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Content Automation in Marketing Research: A Bibliometric Analysis using VOSviewer

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Abstract

Objectives: This study conducted a comprehensive assessment of content automation in marketing research using bibliometric analysis spanning 20 years from 2004 to 2024. The primary influential factors, topics, and areas of research were analyzed to determine future research paths. *Methods/Analysis*: Sample selection and data collection were conducted using the Scopus database. The initial dataset was adjusted by applying certain inclusion and exclusion criteria. The final dataset consisting of 149 articles in the RIS format was loaded into the VOSviewer program to perform a bibliometric analysis. Findings: The results revealed key findings, including the highest citation-counting papers, the most common research format, the research field, the year of publication, collaboration countries, the journal, prominent authors, popular themes, areas for further investigation, and the intellectual framework of current research on the topic. *Novelty/ Improvement:* Four areas were identified for future research: marketing automation as digital commerce content marketing, artificial intelligence for digital marketing transformation, automation and optimization for personalized advertising content, and automatic knowledge discovery. The temporal development of these issues was also examined to offer valuable insights into the changing focus of academic interest over time and establish a foundation for future investigations.

Keywords: Marketing Research Automation; Content Marketing; Content Automation; Research Trends; VOSviewer Analysis.

1. Introduction

A 1996 article published on the Microsoft website states that the phrase "Content is king" was coined by Bill Gates, the company founder [1]. Despite being 20 years old, this expression is still widely employed due to the increasing emphasis on content marketing strategies. Online content sharing is now integrated into the daily routines of consumers. Individuals engage in online news consumption, subscribe to YouTube videos, and share this content with their social circles. Numerous marketing approaches, including digital marketing, attempt to mirror this consumer conduct. Individuals utilize the internet to link their offline and online endeavors, including social media platforms and networking channels, in the current digital age [2, 3]. As a consequence, online discourse and interactions have emerged between consumers and brands. The advent of digitalization now delivers messages more efficiently through novel applications consisting predominantly of online dissemination of beneficial information. Content marketing is one of the most effective and widely employed strategies to provide consumers with access to beneficial information at no cost [4, 5]. By incorporating diverse data formats, auditory messages, and geolocations, the notion can be expanded to encompass anything an individual or company creates and distributes to convey their message [6].

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Content marketing has gained significant traction as a marketing instrument and is presently the focal point of most digital marketing initiatives [7, 8]. Recently, a surge in the prominence of content marketing has replaced the diminishing efficacy of conventional marketing approaches. There are numerous methods for delivering content marketing, and the digital environment now predominates over the traditional [9]. In the contemporary information age, where individuals are empowered to engage in various activities, content marketing presents itself as a "new normal" for consumers. Rosário & Dias [10] stated that content marketing effectively fosters consumer engagement by enabling participation and sharing across diverse social media platforms. Furthermore, it offers prospects or existing customer avenues for education, information, and entertainment, which may ultimately generate sales, membership, or advocacy [11].

Software platforms enable the delivery of content in accordance with user-defined rules as marketing automation. Terho et al. [12] define the objective as attracting, establishing, and retaining the trust of current and potential customers through the automated customization of pertinent and useful content to precisely address their requirements. The customization of marketing mix components on an individual level is commonly referred to as "personalization" [13]. To satisfy an individual's expectations, it is essential to view each person as a unique maverick with specific requirements. The likelihood of a message being noticed and, consequently, its effectiveness is positively correlated with its personal and pertinent nature, which can be predicted by the elaboration likelihood model (ELM) [14]. By utilizing cookies and IP addresses to monitor the online activities of website visitors (e.g., page views and navigation paths), marketing automation capitalizes on methods comparable to Web analytics [15–17]. These capabilities are typically absent from Web analytics software tools such as Google Analytics, by contrast to the sophisticated capabilities utilized by marketing automation to identify specific consumers and track their behavior over extended periods. To monitor consistent individual behavior, a website contact form must be filled out by a visitor to verify their identity.

Marketing automation utilizes both active and passive methods to gather information about prospective customers. Active methods entail posing inquiries directly, whereas passive methods rely on information gleaned from previous transactions or clickstream data [18]. Within the realm of marketing automation, active approaches pertain to the dissemination of content to customers by incorporating hyperlinks to websites that are linked to inquiries (e.g., "Are you interested in acquiring further knowledge on this subject?" or "Could our sales representatives please reach out to you?"). Software programs now personalize messages and identify the purchasing stage of potential customers by utilizing both active and passive tools [19].

Bibliometric analysis ensures a comprehensive examination of a particular field pertaining to a) keywords, b) the interrelationships among keywords, c) published articles, and d) the quantity of citations received by each article [20]. Bibliometric analysis, as stated by Munoz-Leiva et al. [21], furnishes quantitative data that contributes to the advancement of research and establishes connections between various published works. The bibliometric analysis technique has been used for marketing a variety of topics related to the thematic structure of papers published in the Journal of Services Marketing (JSM) [22]. These include mapping the characteristics of existing marketing communication in luxury research literature and providing a roadmap for future research [23], analysing academic research on eye tracking technology in marketing [24], exploring the literature on personalised marketing and revealing the importance of designing and producing content and products that resonate with customer preferences [25]. This study highlights emerging research themes for future scholars as the first comprehensive exploration of reference pricing in marketing through a bibliometric lens [26]. A conceptual framework of research on luxury marketing emerged from thematic clusters, guiding future research directions [27] by exploring the evolution of digital marketing [28], examining the evolution of influencer marketing research, performance analysis, and knowledge structures [29], exploring the past, present, and future of augmented reality marketing (ARM) scholarships [30], identifying key characteristics and trends in social media influencer marketing, driving new research and practices [31], identifying gaps in sensory marketing research, and suggesting future directions for further advancements in this field [32]. This examination of marketing research by identifying hot topics and suggesting future research themes [33], provides a comprehensive review of using the technology acceptance model (TAM) in marketing development [34], and reviews influencer marketing research in tourism and hospitality by identifying themes, theoretical underpinnings and methodologies [35].

Numerous bibliometric analyses of content marketing have been conducted. Han et al. [36] assessed the use of artificial intelligence (AI) in B2B marketing innovation by identifying past trends and future directions, while Binh Nguyen et al. [37] explored the role and influence of tourism content marketing in the travel sector. Bubphapant & Brandão [1] examined the evolution of content marketing research due to emerging technologies and online platforms and suggested areas for further investigation, while Guerrero Velástegui et al. [38] analyzed the evolution and trends of scientific production articles in content marketing and content management. Copious scholarly articles about content marketing and marketing strategies have been published, but none of these approaches specifically covered marketing content automation. Information regarding the current research gaps as areas that require investigation is lacking. Therefore, there is a pressing need to synthesize a knowledge bank of the existing literature to identify important research areas and new research directions. This study presents an original systematic literature review and bibliometric analysis of content automation in marketing.

The scientific literature on a particular research discipline or research topic is scattered throughout multiple academic journals, making it difficult to determine the relationships between different developments. Visualization techniques based on bibliometric data can assist in gaining comprehensive overviews of complex research topics [39]. Therefore, this study examined previous research on content automation in marketing using bibliometric methods to identify research gaps.

A comprehensive summary of the main topics and areas of concern was presented, and the following research questions were posited.

RQ1. Which are the most cited articles on content automation in marketing?

RQ2. Which are the most documented types of research publications on content automation in marketing?

RQ3. Which are the research areas where the authors have published research on content automation in marketing?

RQ4. The year in which research papers on content automation in marketing were published between 2004 and 2024?

RQ5. Which countries published research on content automation in marketing, and which countries topped the list in terms of association with the others?

RQ6. Which journals published research on content automation in marketing?

RQ7. Who are the most influential authors in the field of content automation in marketing?

RQ8. Which themes involving content automation in marketing are the most popular among scholars?

RQ9. Which areas involving content automation in marketing need additional study?

RQ10. What is the intellectual structure of current research on content automation in marketing?

An exhaustive bibliometric literature review was conducted to address these research questions and ascertain the trends pertaining to content automation in marketing, its thematic development, and the forthcoming obstacles that this industry must confront. The investigation centered on the 20 years that have passed since the inception of scholarly inquiry into the concept of content automation in marketing. A comprehensive analysis of the scientific literature published in the primary collection of the Scopus database on content automation in marketing was conducted using bibliometric analysis. The current state-of-the-art, emerging trends, potential research areas, and directions for future investigation in this domain were also investigated. This study placed significant emphasis on the identification of annual publication growth, distribution of scientific output by country, patterns of publication, intellectual structures, and cluster analyses.

Our research contributes to the existing body of literature in numerous ways. Firstly, this investigation allows a better comprehension of the intellectual framework of content automation in the marketing research domain by outlining the most recent thematic research trends. Secondly, our research illustrates the development of critical areas within content automation in the marketing discipline over time by using overlay visualization maps. These offer scholars essential information regarding areas that require further investigation and areas that have been previously addressed in content automation in marketing. Thirdly, we developed a cluster of intellectual structures that demonstrated the interrelationships between key terms and various themes in content automation in marketing. Lastly, our study identified research gaps and prospective research questions that can serve as guidelines for future studies in content automation in the marketing research domain.

The remainder of the article is structured as follows: Section 2 outlines the materials and methods and details the research structure and literature review selection process. Section 3 presents the results as insights on current trends in this state-of-the-art field. Section 4 elaborates on the ten research questions outlined in the introduction, while Section 5 summarizes the conclusions. Finally, Section 6 discusses the theoretical and practical research implications and limitations with suggestions for future studies.

2. Material and Methods

This article identified cognitive gaps and current trends of content automation in marketing utilizing a bibliometric analytical approach. This research serves as a crucial instrument by identifying, organizing, and assessing the elements particular to this selected field [40], thereby enabling the detection of substantial deficiencies in the existing research that impede potential advancements in comprehending the phenomenon under investigation [41].

2.1. Research Structure

This study integrated three interdependent phases and thoroughly evaluated the existing literature concerning content automation in marketing as follows:

- ***Bibliographic Data Collection***

  This phase involved establishing a bibliographic database pertinent to the study subject matter. Scientific papers about content automation in marketing were first identified, selected, and gathered. The Scopus bibliographic database facilitates effective literature searches [42] and is widely acknowledged as a crucial resource for bibliometric analyses. This is important in scientific disciplines that are constantly evolving, with frequent revisions and extensive thematic coverage. A thorough evaluation of the influence of specific publications was possible through utilization of the comprehensive citation analysis tools provided by Scopus [43]. The data export functionality simplified the process of gathering and analyzing data. However, one of the constraints of Scopus is its relatively restricted historical coverage compared to other databases and its more stringent approach to source selection, which could potentially introduce biases in material selection. Thus, Scopus does have some drawbacks, but its benefits frequently outweigh these negative aspects, particularly in research that emphasizes timely and comprehensive thematic coverage [43].

- ***VOSviewer Performs Data Transformation and Statistical Analysis***

  The collected data were transformed and prepared for statistical analysis. During this procedure, data subsets, including those pertaining to terms, co-citations, and international collaboration, were transformed utilizing VOSviewer (version 1.6.20), a computer program that is freely accessible and used for creating and visualizing bibliometric maps. Programs like SPSS and Pajek are also frequently utilized for bibliometric mapping, but VOSviewer places particular emphasis on the visual depictions of bibliometric maps in a user-friendly and comprehensible manner [44]. The data were then subjected to statistical analysis to identify the most significant trends, patterns, and relationships [45]. VOSviewer was deemed the optimal selection within this research framework due to its robust visualization functionalities, which are especially beneficial when delineating the intricate and vast web of citations and collaborations within this swiftly progressing discipline. The intuitive interface of VOSviewer also simplifies the analysis process, rendering it accessible to individuals who may lack extensive knowledge of bibliometric methodologies [46].

- ***Discussion, Conclusions, and Implications***

  The third phase of this research endeavor synthesized the findings acquired in phases one and two to provide the foundation, derive conclusions, and offer recommendations after a thorough evaluation of the present understanding of content automation in marketing [47]. The identified trends, patterns, and relationships in the literature were analyzed in the discussion section, with the implications of implementing content automation in marketing underscored in the concluding section, which provided a summary of key insights. Our recommendations provide guidance for future research endeavors, propose strategies to bridge identified gaps in the literature, and suggest practical applications of the findings. The framework of this study was devised to furnish an exhaustive and all-encompassing comprehension of the function and consequences of content automation in the realm of marketing. Each phase of the investigation constitutes an essential component of the research process and also serves to enhance other phases, thereby establishing a cohesive and integrated research framework.

2.2. Literature Review Selection Process

The literature review protocol is a fundamental component of the bibliometric analysis method when examining scientific publications [47]. This exhaustive protocol specifies the parameters for data searches incorporated by the investigators and examines qualitative criteria, database sequences, and literature inclusion/exclusion criteria [48]. A comprehensive explanation of the specific elements comprising the protocol utilized to refine the outcomes of the publications extracted from the bibliographic database is provided by the following quotation.

"Your query : TITLE-ABS-KEY (content AND automation AND marketing) AND PUBYEAR > 2003 AND PUBYEAR < 2025 AND (LIMIT-TO (PUBSTAGE , "final"))"

The protocol was a fundamental component of the initial phase of this research, functioning as a mechanism to facilitate the effective exploration and curation of pertinent literature. This material established the groundwork for subsequent phases of the investigation and the ultimate synthesis of the findings [45].

A keyword search was conducted using the phrase "content automation marketing" to locate scientific articles that were most pertinent to the intended subject. The scope of this study was limited to recently published scientific articles within the scientific publication database pertaining to the subject matter. The precise identification of citations and co-citations was facilitated by database indexing of scientific articles, which was critical considering the nature of the research. A comprehensive analysis was then conducted on 149 results obtained from the Scopus database, taking into account the aforementioned limitations, with the retrieval date of 31 March 2024. Figure 1 depicts the procedure utilized in the selection of literature reviews.

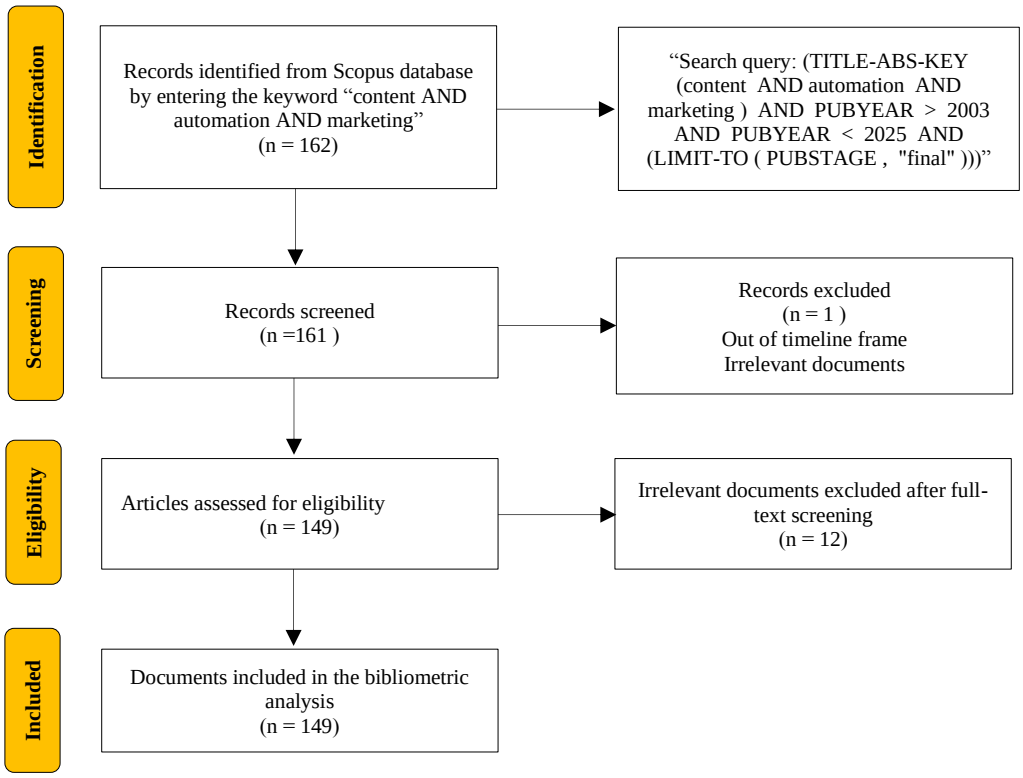

Figure 1. PRISMA flow diagram of the literature review selection process for bibliometric analysis of content automation in marketing

3. Results

The findings of the bibliometric analysis study comprised ten primary stages. By devoting distinct aspects of the analysis to each stage, we were able to better grasp the overarching context of the fundamental nature of content automation in marketing in accordance with the research questions, which are outlined in greater detail below.

3.1. The Most Cited Articles on Content Automation in Marketing (RQ1)

To answer research question RQ1, Which are the most cited articles on content automation in marketing?, we analyzed the annual development of publications pertaining to content automation in marketing using the Scopus database. The most influential articles on content automation in marketing were identified by analyzing the citations. The database comprised 149 publications, and a ranking was established for the ten most frequently cited works. The article "Harnessing marketing automation for B2B content marketing" by Järvinen and Taiminen [49] received the highest number of citations (198) regarding content automation in marketing (Table 1). The article "Detectives: Detecting coalition hit inflation attacks in advertising network streams" by Metwally et al. [50] and the article "Web content support method in electronic business systems" by Vysotska et al. [51] received a combined 89 citations.

Table 1. Most cited articles on content automation in marketing (Top 10)

Title	Authors	Year	Source	Cites
Harnessing marketing automation for B2B content marketing	Järvinen J.; Taiminen H.	2016	Industrial Marketing Management	198
Detectives: Detecting coalition hit inflation attacks in advertising network streams	Metwally A.; Agrawal D.; El Abbadi A	2007	16th International World Wide Web Conference, WWW2007	89
Web content support method in electronic business systems	Vysotska V.; Fernandes V.B.; Emmerich M.	2018	CEUR Workshop Proceedings	59
Mastering structured data on the semantic web: From HTML5 microdata to linked open data	Sikos L.F.	2015	Mastering Structured Data on the Semantic Web: From HTML5 Microdata to Linked Open Data	45
Supporting customer-oriented marketing with artificial intelligence: automatically quantifying customer needs from social media	Kühl N.; Mühlthaler M.; Goutier M.	2020	Electronic Markets	41
Heterogeneous data with agreed content aggregation system development	Chyrun L.; Kowalska-Styczen A.; Burov Y.; Berko A.; Vasevych A.; Pelekh I.; Ryshkovets Y.	2019	CEUR Workshop Proceedings	38
Sales tunnels in messengers as new technologies for effective internet marketing in tourism and hospitality	Bashynska I.; Lytovchenko I.; Kharenko D.	2019	International Journal of Innovative Technology and Exploring Engineering	25
Information technology and marketing: an important partnership for decades	Graesch J.P.; Hensel-Börner S.; Henseler J.	2021	Industrial Management and Data Systems	23
Effects of organisational scheme and labelling on task performance in product-centred and user-centred retail websites	Resnick M.L.; Sanchez J.	2004	Human Factors	22
Business Process Management Systems: Evolution and Development Trends	Szelagowski M.; Lupeikiene A.	2020	Informatica (Netherlands)	21
	Total			**561**

3.2. The Most Documented Types of Research Publications on Content Automation in Marketing (RQ2)

The second research question; which are the most documented types of research publications on content automation in marketing? was next addressed, with publication distribution among various sources depicted in Figure 2. The highest proportion of content automation in marketing studies (41.61%) showed that articles were the predominant dissemination channel. Other significant channels included conference papers (28.19%), book chapters (12.75%), reviews (6.71%), conference reviews (6.04%), books (2.01%), brief surveys (1.34%), erratum and note sections (0.67%), and book chapters (2.01%).

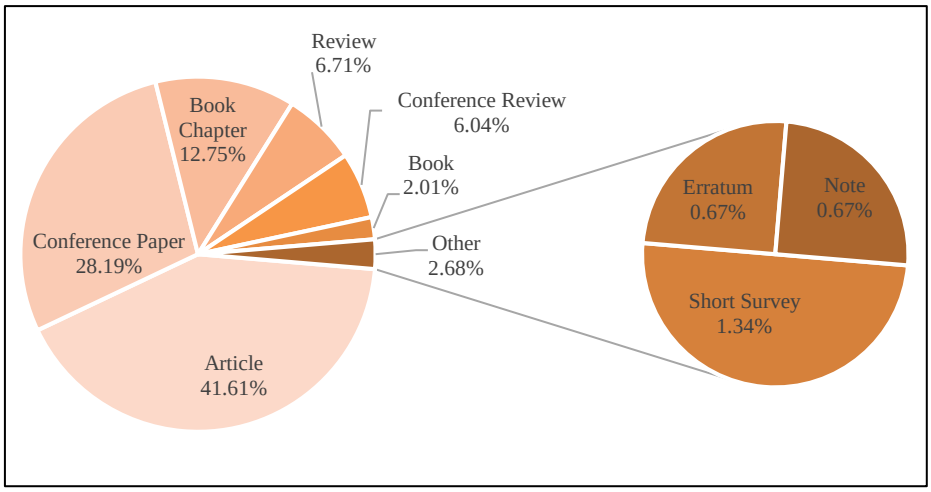

Figure 2. Distribution of publications among different sources

3.3. The Research Areas Where the Authors Have Published Research on Content Automation in Marketing (RQ3)

For the third research question, Which are the research areas where the authors have published research on content automation in marketing?, the quantity of documents published across diverse domains of knowledge is illustrated in Figure 3. Seventy articles in Computer Science were found in the Scopus database, with fifty documents devoted to Engineering, forty-one to Business Management and Accounting, 27 to Social Science, seventeen to Economics, Econometrics and finance, sixteen to Mathematics, twelve to Decision Sciences, nine to Environmental Science and seven each to Materials Science and Medicine. There was a significant disparity in the quantity of documents pertaining to Computer Science compared to the other domains of knowledge. These results suggested that content automation in marketing was a highly pertinent subject within the domains of computer science, engineering, business management, and accounting.

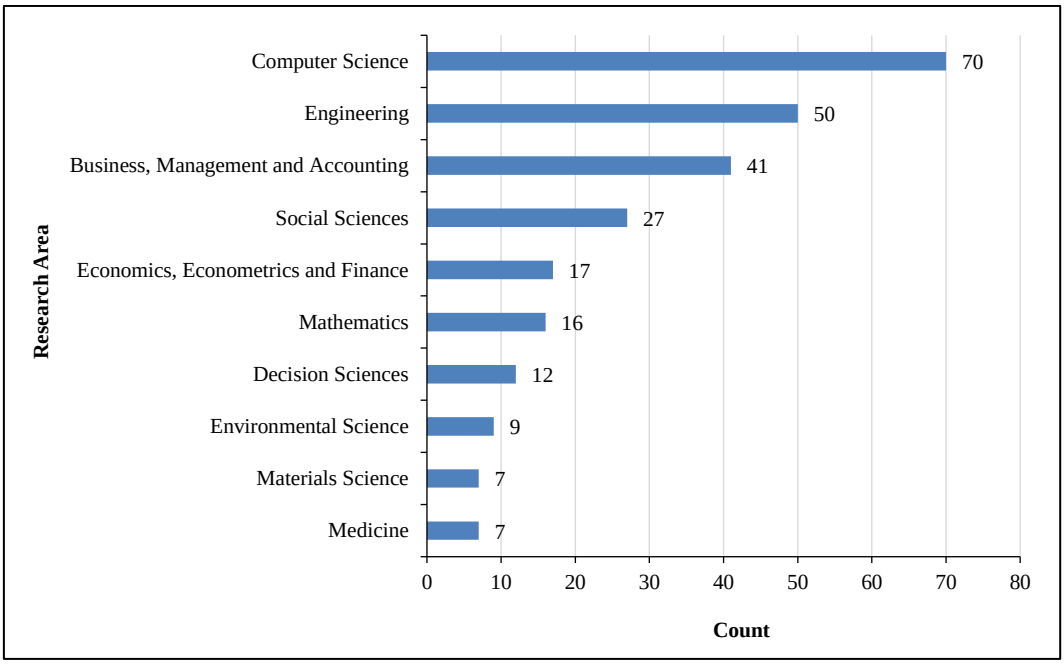

Figure 3. Most prolific research area

3.4. The Year in Which Research Papers on Content Automation in Marketing Were Published Between 2004 and 2024 (RQ4)

The fourth research question, The year in which research papers on content automation in marketing were published between 2004 and 2024 was next addressed, with distribution of the 149 publications identified for content automation in marketing depicted in Figure 4. A consistent decline in the annual quantity of publications about content automation in marketing was recorded from 2004, with an upward trend in quantity of publications observed between 2017 and 2023, culminating in a year with 19 publications. Conversely, the publication pattern then underwent a substantial reversal, with only seven publications in 2024.

The quantity of annual publications after 2019 with nine documents increased in 2019 to nineteen documents and remained constant until 2023. This recent publication trend demonstrated the scientific community's increasing interest in this subject and the significance of establishing a connection between content automation and marketing. This phenomenon highlights the increasing scholarly focus on content automation in marketing during the past five years, particularly following the pivotal year of 2018.

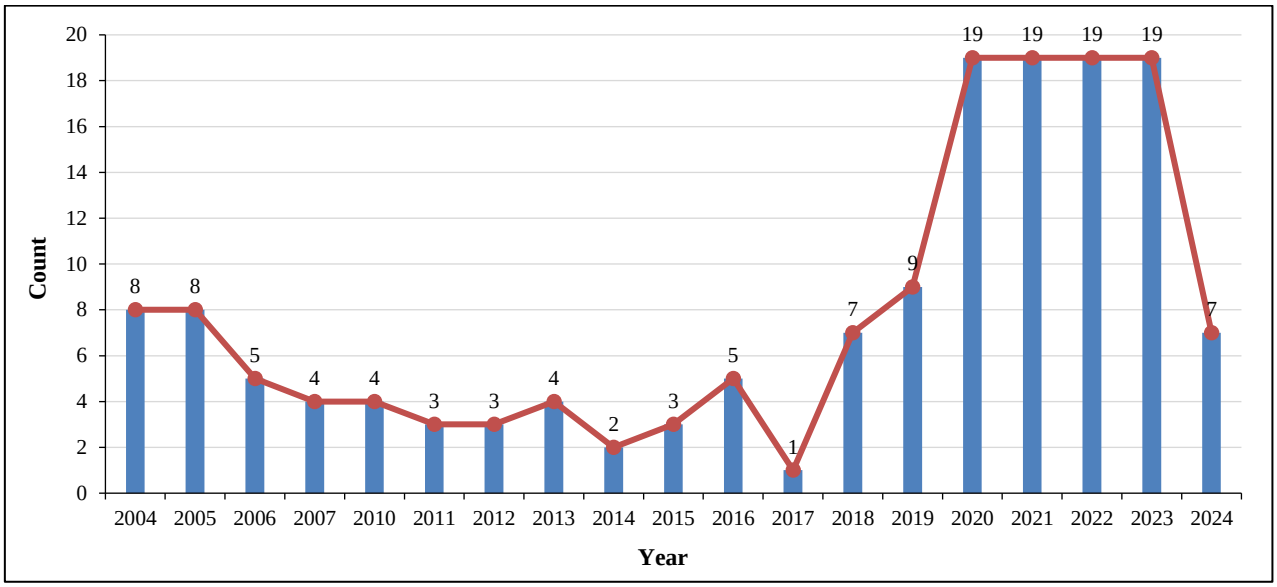

Figure 4. Publications trend analysis

3.5. Which Countries Published Research on Content Automation in Marketing and Which Countries Topped the List in Terms of Association with The Others (RQ5)

The fifth research question, which countries published research on content automation in marketing and which countries topped the list in terms of association with the others, is addressed in Figure 5, which illustrates the geographical distribution of the studies. Results indicate that the United States was the leading country in terms of dissemination, contributing the most to content automation in marketing research at 29.41%. Germany constituted a significant contribution as 13.73% of the total, with the United Kingdom 10.78%, India 8.82%, Portugal 6.86%, and the Russian Federation 5.88%, while Australia, Italy, Spain, Ukraine, and China conducted the least amount of research on content automation in marketing.

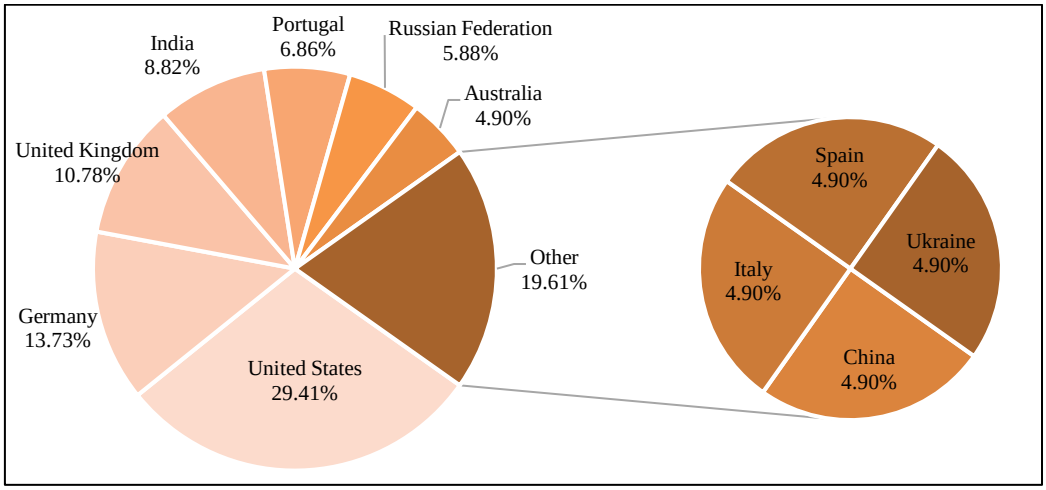

Figure 5. Distribution of authors among different countries

The contributions of the remaining nations to content automation in marketing covered a variety of scientific fields. A bibliographic coupling of leading countries was established to examine the importance of the interrelation among nations. The lines indicate interconnections between the research efforts of various nations. Five distinct clusters are depicted on the map in Figure 6. Countries with the most influence comprise the red cluster. Many nations including Portugal and the United Kingdom are affiliated with the United States.

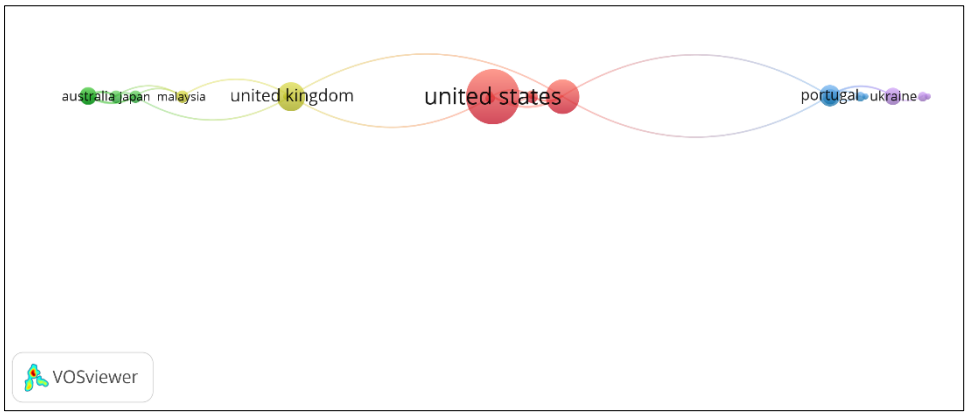

Figure 6. Countries co-occurrence map

3.6. Which Journals Published Research on Content Automation in Marketing *(*RQ6*)*

Figure 7 illustrates the distribution of publication counts for fourteen journals that published the greatest number of papers on content automation in marketing to address the sixth research question, Which journals published research on content automation in marketing?. Journals with the most articles devoted to content automation in marketing comprised Management for Professionals (6), Ceur Workshop Proceedings (5), and Lecture Notes in Networks and Systems (4). The substantial volume of scholarly articles in these esteemed journals was evidence that content automation is a critical area of investigation within the marketing field.

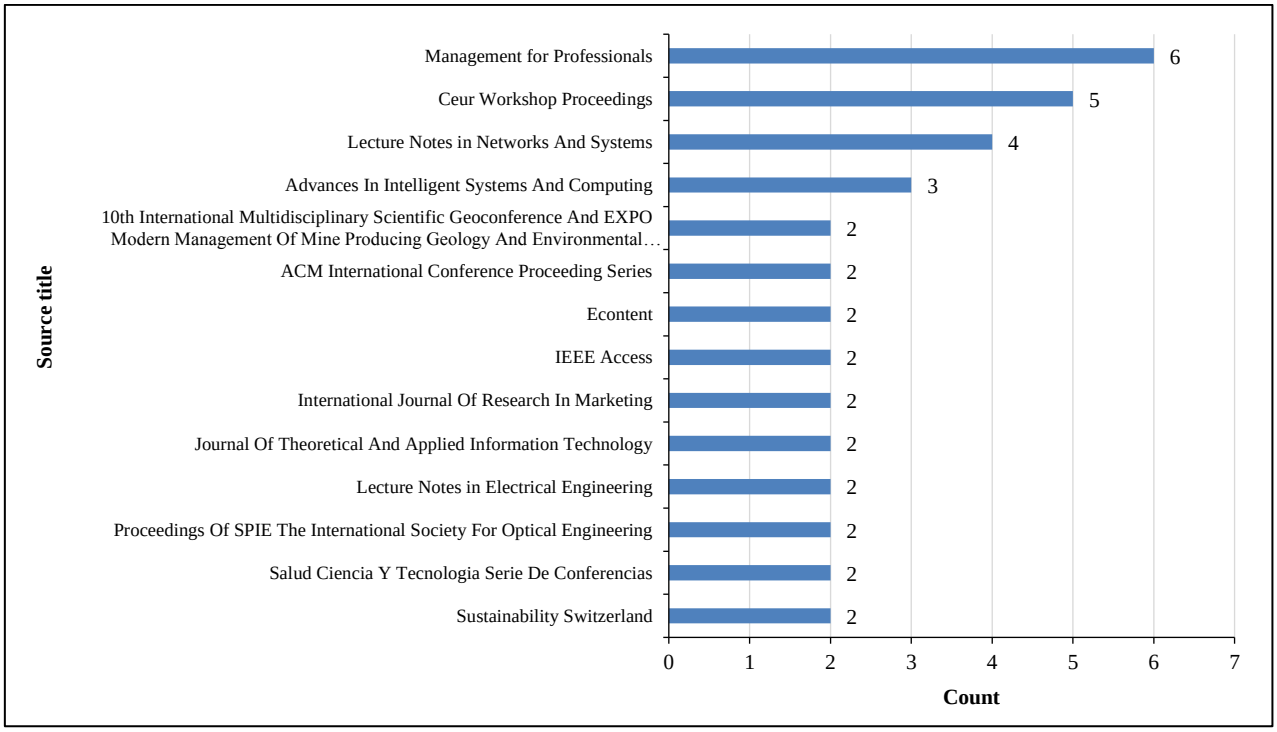

Figure 7. Most prolific journals

3.7. The Most Influential Authors in The Field of Content Automation in Marketing (RQ7)

To address the seventh research question pertaining to the most influential authors in the domain of content automation in marketing, an examination was conducted to identify the authors who received the highest number of citations (h-index). The results are presented in Table 2, with rankings based on the h-index and total citations. Agrawal, Divyakant was the most cited. His study defined the advertising network model and concentrated on the most

sophisticated types of deceptions by fraudsters forming coalitions. By augmenting the Similarity-Seeker algorithm with several previously published theoretical findings, it is possible to identify coalitions formed by pairings of fraudsters. The solution should then be generalized to coalitions of any size. For the purpose of proof of concept, exhaustive experiments were performed on data samples before deploying our system on an actual network. The outcomes were exceedingly precise and identified a number of coalitions, each of which was established using a unique methodology and encompassing multiple locations. This demonstrated the broad applicability of the author's model.

The second most cited study simplified content automation support technology and described the processes of information resource processing in electronic business systems. The primary issues with content function administration services and e-commerce were examined. Establishing a tool for processing information resources and integrating the Web content support module created by Emmerich, Michael, and Vysotska, Victoria are both possible with the proposed method. Chyrun Lyubomyr conducted research centered on the development of a web-based service to automate the administration of contextual advertising for the Google AdWords system and authored additional studies that were highly cited in the literature. The authors Emmerich Michael, Agrawal Divyakant, and Vysotska Victoria were cited the most in the archived literature.

Table 2. Top-10 researchers ranked by corpus specific H-Index and citations

Rank	Author	H-Index	Rank	Author	Citations
1	Agrawal, Divyakant	54	1	Agrawal, Divyakant	11144
2	Vysotska, Victoria	35	2	Emmerich, Michael	6365
3	Emmerich, Michael	32	3	Vysotska, Victoria	3451
4	Chyrun, Lyubomyr	23	4	Chyrun, Lyubomyr	1391
5	Burov, Yevhen	19	5	Metwally, Ahmed	1217
6	Metwally, Ahmed	15	6	Burov, Yevhen	823
7	Fernandes, Vitor Basto	14	7	Järvinen, Joel	670
8	Sikos, Leslie F.	13	8	Taiminen, Heini	645
9	Bashynska, Iryna	13	9	Kühl, Niklas	586
10	Kühl, Niklas	12	10	Fernandes, Vitor Basto	531

The contributions of the remaining authors in the field of science were multifaceted, thereby enhancing the value of content automation in marketing. Bibliographic coupling was used to examine the importance of the interconnections among leading authors. Two distinct groupings are evident on the map presented in Figure 8. The lines indicate the interconnections between the research endeavours of the authors. The author who has had the greatest impact (Table 2) is illustrated in the cluster in Figures 8 and 9. Chyrun Lyubomyr is affiliated with several authors including Burov Yevhen and others who are highly cited and influential authors with 19 h-index values (823).

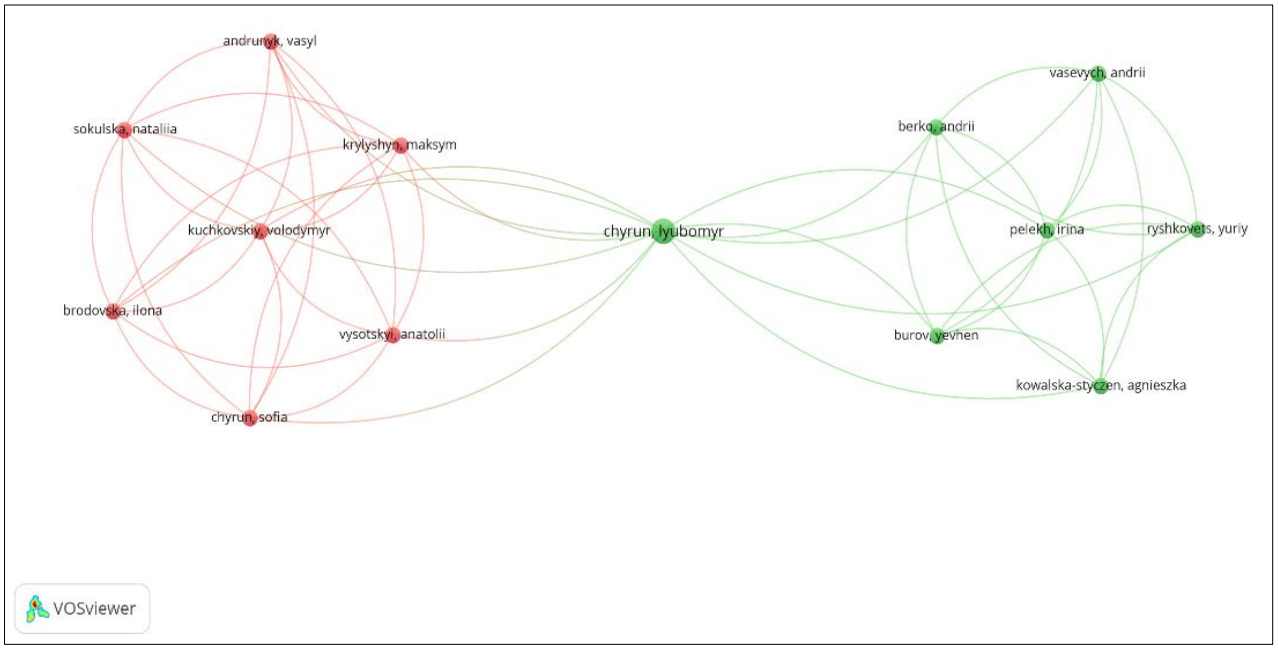

Figure 8. Authors co-occurrence network

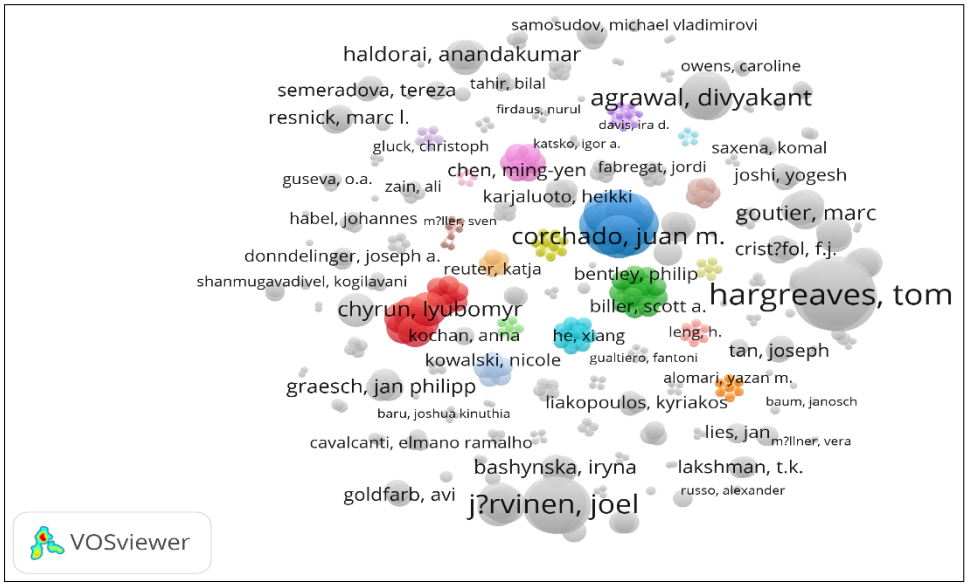

Figure 9. Author and Co-authorship

3.8. Which Themes Involving Content Automation in Marketing Are the Most Popular Among Scholars (RQ8)

The eighth research question, Which themes involving content automation in marketing are the most popular among scholars? was then investigated. VOSviewer can produce a map by utilizing a range of indicators, including the frequency of occurrences of a specific keyword. This map greatly facilitated comprehension of the thematic concentrations present in the literature, as shown in Figure 10.

A total of 1396 terms were identified during the data analysis and extracted from the abstracts. To facilitate the presentation of the results, a threshold of five occurrences per term was established as the minimum, yielding a total of 32 keywords. Then, 32 terms were chosen, representing 100% of the predefined pool of terms. Selection was based on frequency of occurrence and contextual relationships by analyzing how terms related to one another within the context of their use and to other terms to determine their validity and relevance to the entire set of publications. The developers of the VOSviewer tool suggested that this proportion was ideal for establishing a map structure that facilitated a profound comprehension of the prevailing subjects and detected nuanced connections among and between them.

The frequency of occurrence of particular phrases was visually represented on the map through the use of nodes that varied in size. The results demonstrated the frequency at which keywords occurred in close proximity to one another, and this frequency significantly influenced the formation of textual clusters. Employing this approach to publication analysis identified the subjects that were addressed most frequently in the body of literature. "Marketing," "Automation," "Commerce," "Artificial Intelligence," and "Social Media" were the most frequently used terms.

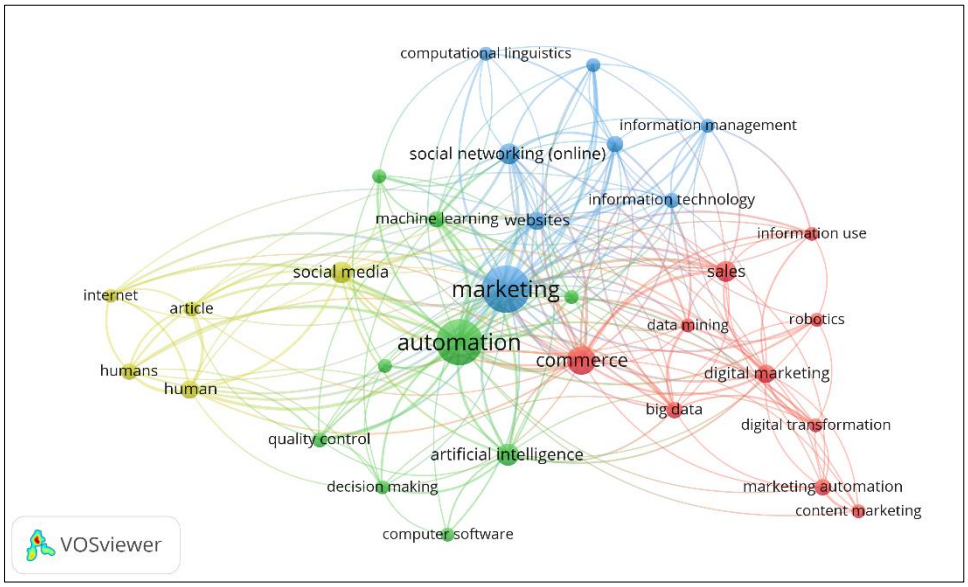

Figure 10. Co-occurrence of all keywords

3.9. Which Areas Involving Content Automation in Marketing Need Additional Study? (RQ9)

To examine the ninth research question, Which areas involving content automation in marketing need additional study? involved keyword analysis of the Scopus database, as depicted in Figure 11. The data indicated that most research concerning the relationship between marketing automation and computer software, robotics, the internet, humans, and relationships was undertaken between 2012 and 2017. Conversely, most research concerning marketing automation and artificial intelligence, machine learning, learning systems, computational linguistics, big data, social media, commerce, content marketing, digital marketing, and digital transformation was conducted more recently (2020-2024). This observation implied a potential avenue for future research in this domain: by examining the interplay among and between automation technology, content marketing and social media commerce.

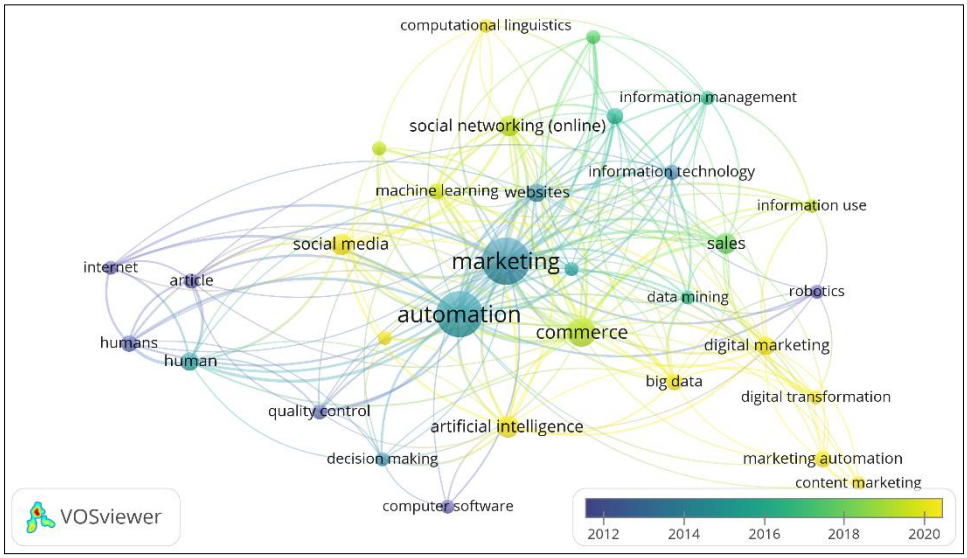

Figure 11. Author keywords dispersed in an overlay visualisation map from 2004 to 2024

3.10. The Intellectual Structure of Current Research on Content Automation in Marketing (RQ10)

To answer the tenth research question, What is the intellectual structure of current research on content automation in marketing?, the primary objective of cluster analysis is to identify the most widely discussed topics among scholars regarding content automation in marketing. The generated map comprised eight instances of a keyword as the minimum number that must be observed. The map comprised 32 outcomes. VOSviewer software was utilized to manufacture a set of four clusters as depicted in Figure 12. The cluster labeled blue, comprising ten keywords, was determined to have the highest density. The green section comprised nine keywords, with eight keywords enclosed in red and five keywords in yellow. "Commerce," "Sales," and "Digital Marketing" predominated within the crimson cluster. Automation, artificial intelligence, and machine learning were dominant in the green cluster, with information management, "marketing," and "websites" dominant in the blue cluster. Social media, the internet, and "human" were present in the yellow cluster. The findings suggested that the academic literature examined regarding content automation in marketing research was predominately devoted to the subject matter described in the following section.

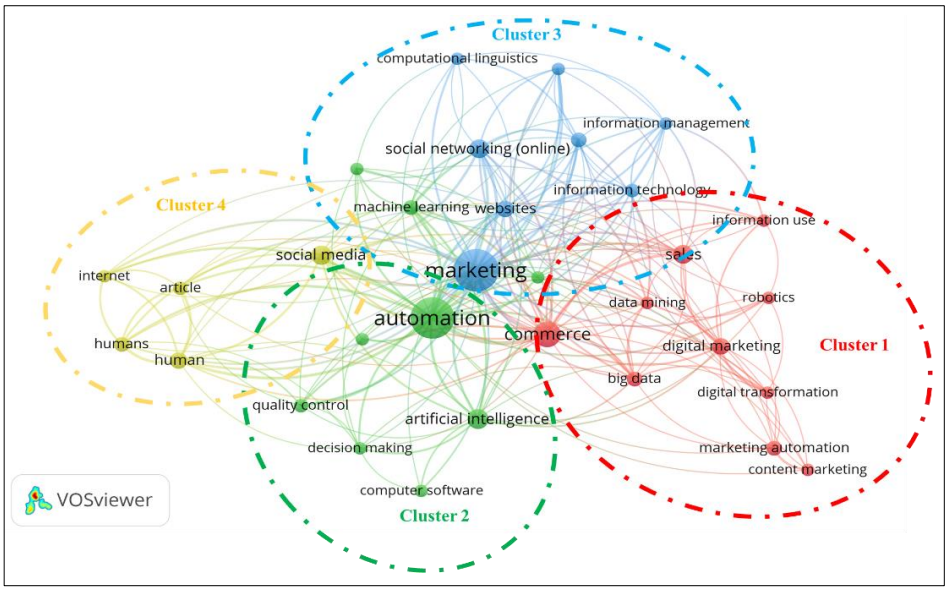

Figure 12. Clusters of author keywords dispersed in a network visualization map from 2004 to 2024

- ***Cluster 1 (red color: marketing automation for digital commerce content marketing)***

Cluster 1 comprised ten keywords, depicted in red in Figure 13 as the most extensive cluster. Within this cluster, the term "commerce" appeared most frequently in conjunction with other keywords such as "sales," "content marketing," "big data," and "marketing automation". This cluster contained numerous keywords with high occurrence, reflecting the evolution of the notion of marketing automation for digital commerce content marketing. The magnitude of the circle relates to its reliance on sales and digital marketing. A robust correlation existed between clusters two, three, and four, suggesting that scholars have investigated the correlation between content marketing in digital commerce and the implementation of diverse marketing automation technologies, with particular focus on the human aspect.

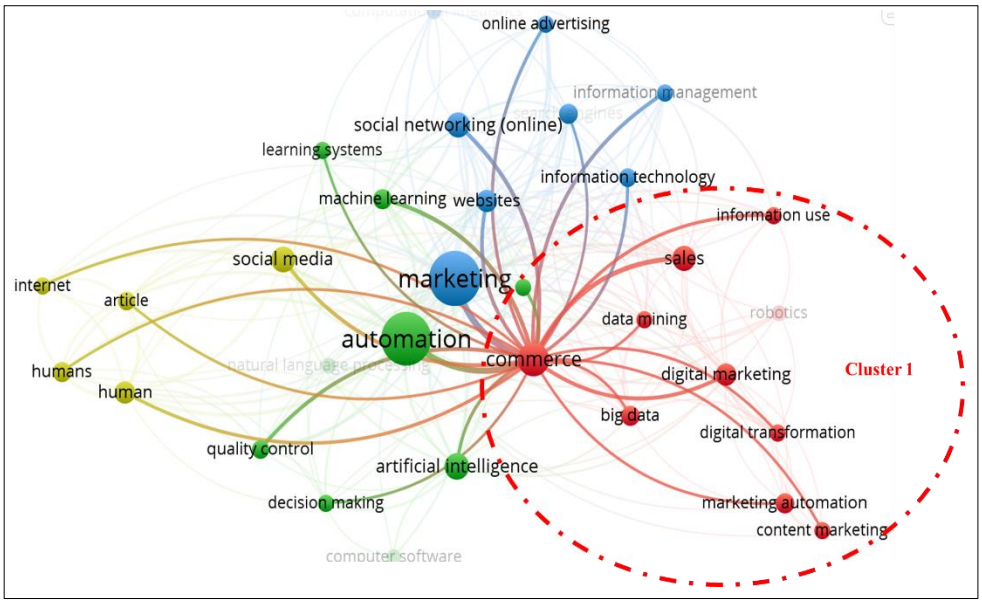

Figure 13. Cluster 1 (red color: marketing automation for digital commerce content marketing)

The analysis of organizational processes for generating timely and valuable content to satisfy customer requirements and for integrating content marketing with business-to-business (B2B) selling procedures comprised most of the literature accessible through the Scopus database. By utilizing content personalization and behavioral targeting, the outcomes of this solitary case study illustrated how marketing automation can be employed to generate high-quality sales leads. A business benefit-generating integration of content marketing with B2B selling through marketing automation was demonstrated [47]. The research contributed to the comprehension of the organizational processes that supported content marketing. Weisbrich et al. [52] investigated the process of converting programmatic media into dynamic brand messaging by focusing on four key areas: structure, creative development, technology, and performance, while Bashynska et al. [53] introduced sales tunnels in messengers as novel technologies to enhance internet marketing effectiveness in the tourism and hospitality sectors.

- ***Cluster 2 (Green color: artificial intelligence for digital marketing transformation)***

The domain of an artificial intelligence application for the transformation of digital marketing is represented in Cluster 2, which is depicted in green in Figure 14. Aspects including artificial intelligence, quality control, decision-making, machine learning, learning systems and natural language processing were interconnected with automation as the focal point of this cluster. The correlation between this cluster and Cluster 4 was substantial, highlighting the investigations conducted by researchers into the correlation between artificial intelligence-powered automation systems utilised in digital marketing transformation and social media users.

As stated previously, research conducted by Lies [54] described the implementation of artificial intelligence (AI) in programmatic advertising, automated price adjustment, and life-cycle marketing to increase marketing efficiency. Nevertheless, this research contends that the integration of Big Data and AI for assessing creativity will continue to encounter initial challenges in its development. Moreover, computer games as computer-based interactive entertainment were suggested by Riedl [55] to be optimal platforms for the automated customization of interactive content by providing experiences that are both timely and on-demand. By utilizing artificial intelligence for user modeling and content generation, this system has the capability to generate customized interactive experiences automatically, with the potential to solve the issue of scalable personalization.

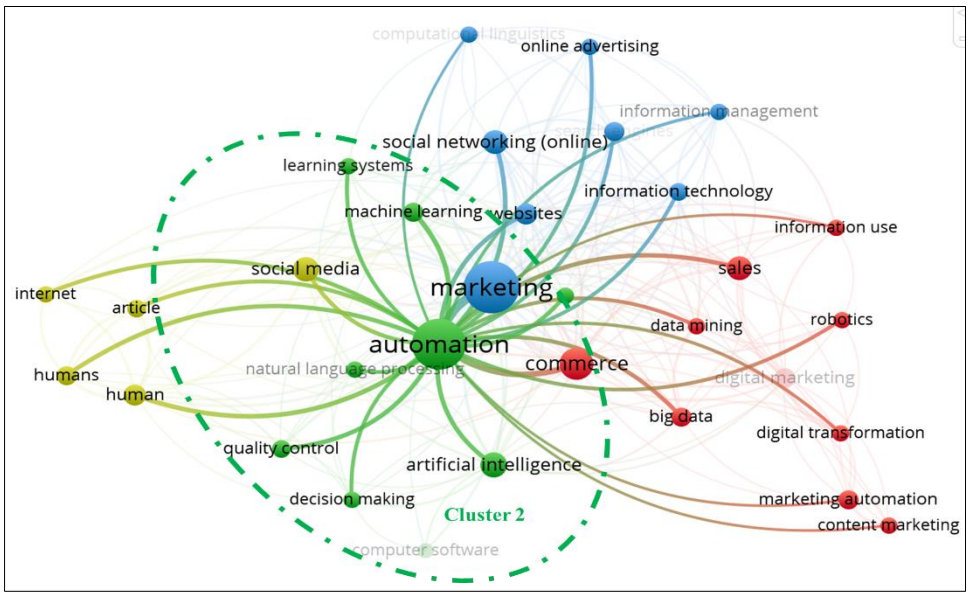

Figure 14. Cluster 2 (Green color: artificial intelligence for digital marketing transformation)

Furthermore, Gera & Sinha [56] introduced T-Bot, an innovative framework for bot detection powered by artificial intelligence (AI), which utilizes both fundamental and derived attributes to identify automated bot accounts on the Twitter network. Zeeshan & Saxena [57] conducted an investigation on Automated Marketing, an emerging phenomenon that is poised to revolutionize digital organizations and their operations, as well as intelligent content marketing that utilizes artificial intelligence in digital marketing to predict the current state of the digital market using predictive searches and social media applications. Their results demonstrated the transformative potential of artificial intelligence in digital marketing and its capacity to generate significant advancements in marketing efficiency. The future of marketing may have a profound impact on contemporary society because artificial intelligence and machine learning will significantly transform marketing strategies through the introduction of novel domains.

- ***Cluster 3 (Blue color: Automation and optimization development for personalized advertising content)***

Figure 15 illustrates Cluster 3, which is denoted by blue and encompasses the domains of online advertising, websites, information technology, information management, social networking (specifically online), search engines, and information technology. A correlation was observed between marketing, the focal point of this cluster, and additional keywords from distinct clusters, including social media (yellow), commerce (red), and automation (green). Within the context of social networking or social media commerce platforms, results suggested that automation and optimization development for personalized advertising content has been the subject of copious research.

The impact of various degrees of personalized advertisements utilizing the sophisticated campaign targeting tool known as Facebook Lookalike Audiences was examined by Semeradova and Weinlich [58]. The Facebook Lookalike Audiences function estimates the similarity between users and a target audience according to advertiser-defined criteria. Utilizing data from 840 Facebook advertisements featuring varying degrees of personalization, the authors evaluated the efficacy of diverse targeting configurations. Profitability was assessed in relation to the average time spent on a website, number of viewed pages, number of conversions, reach, number of reactions, and frequency of impressions exhibited by these advertisements. By utilizing data from actual Facebook ad campaigns, the results presented in this research enhanced our understanding of the variables that impact user reactivity to personalized online advertising.

A similar concept was illustrated by Zhang et al. [59]. They introduced Commonsense-Enriched Advertisement on Search Engine (CHASE); an automated system designed to produce persuasive advertisements. Successful advertisements were generated through the utilization of a custom-built language model that combined keywords, texts relevant to common sense, and marketing content. The language model underwent pre-training utilizing extensive collections of explicit knowledge and was subsequently fine-tuned using robust quasi-parallel corpora. This allowed precise regulation of the relevance of generated advertisements to commonplace and the fitness of the ads to their keywords. By manually evaluating and analyzing real-world web traffic, the efficacy of the proposed CHASE method was documented. The outcomes of A/B experiments determined that the advertisements produced by CHASE increased the CTR by 11.13%. The proposed model has been implemented across three advertisement domains at Baidu, the largest search engine in China, namely child education, psychological counseling, and beauty e-commerce, with an estimated daily revenue increase of one million RMB (Chinese Yuan).

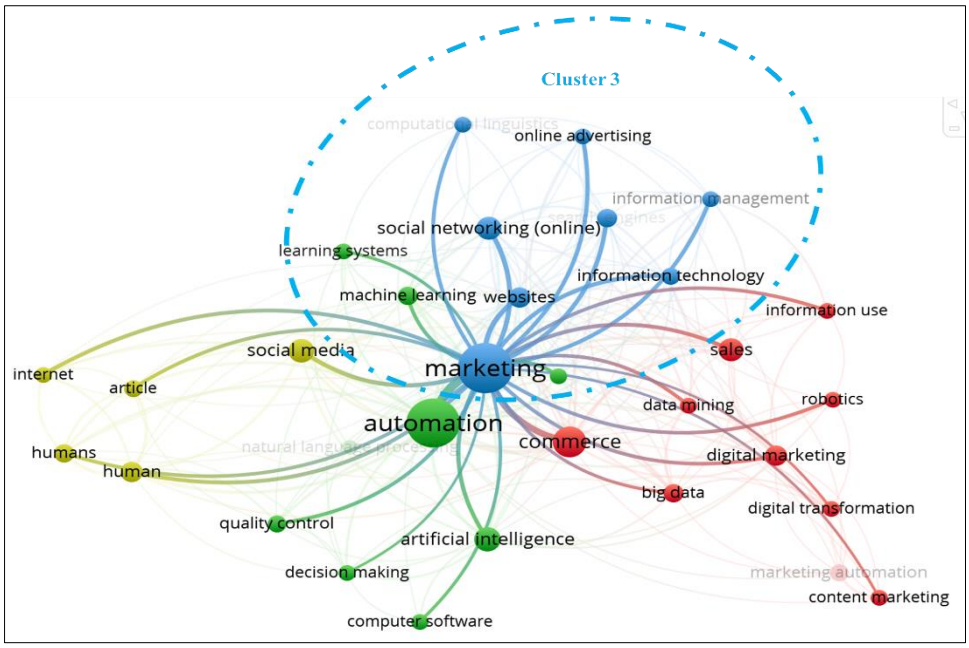

Figure 15. Cluster 3 (Blue color: Automation and optimization development for personalized advertising content)

Remondes et al. [60] investigated the essential instruments and approaches for navigating the ever-changing digital marketing environment and making well-informed decisions. They explored the profound levels of expertise, talents, and methodologies that underlie successful personalization and programmatic advertising, providing scholars, instructors, learners, and practitioners with invaluable perspectives. Personalised communication, programmatic advertising, online advertising strategies, personalized marketing, media campaigns, marketing automation, artificial intelligence, augmented reality, multichannel marketing, and immersive technologies were among the significant subjects addressed.

A technological innovation called programmatic advertising was created by Jain et al. [61]. This enabled seamless automation of transactions involving the purchase and sale of online advertising, predominantly in the realm of digital advertising, and the significance of data science in addressing a number of its intricate challenges. The authors then undertook an in-depth exploration of several widely used advertising terminologies and techniques to better comprehend the fundamentals of digital advertising and its relationship to data science.

- ***Cluster 4 (Yellow color: Automatic knowledge discovery and humanized content)***

Cluster 4, denoted in yellow in Figure 16, pertains to the automatic discovery of knowledge and humanized content on social media platforms. The association between Cluster 4 and Cluster 3 suggested that the two were correlated. The components of Cluster 4 were humanity, social media, and the internet.

The research within this cluster centered on surmounting a significant drawback of traditional websites as their disorganized and isolated content, primarily designed for human consumption, through the implementation of robust formats that added structure and significance to web page content and established connections between related data [62-64]. A cognitive automation approach was also introduced by researchers to leverage Artificial Intelligence (AI) algorithms to search, read, and comprehend documents and content designed for human consumption in an automated and efficient manner. The system that executed the suggested methodology through an application in the domains of financial risk assessment and lending automation was also introduced in this study. This method enables users to acquire insights and evaluations that are beneficial for enhancing the capacity of various business domains to oversee lending procedures, predict risky situations, generate leads, and create tailored marketing and sales strategies for the finance sector [65-67].

Another research investigation examined the potential of artificial intelligence (AI) to enhance the merge of digital technology and human intervention in the push/pull wealth management process [68] to determine what consumers thought of brands that utilized GenAI to generate content. The results of three experimental studies suggested that adoption of GenAI by brands elicited adverse behavioral and attitude responses from followers, as supported by the existing body of literature on algorithm aversion and brand authenticity. Generation AI disclosure has the potential to activate effects mediated by followers' perceptions of brand authenticity. Moreover, the substitution of human labor with automation during the creation of content mitigated adverse responses generated by GenAI. The significance of these results emphasizes the necessity for brands to exercise caution when implementing GenAI and achieve financial advantages while maintaining positive consumer relationships [69].

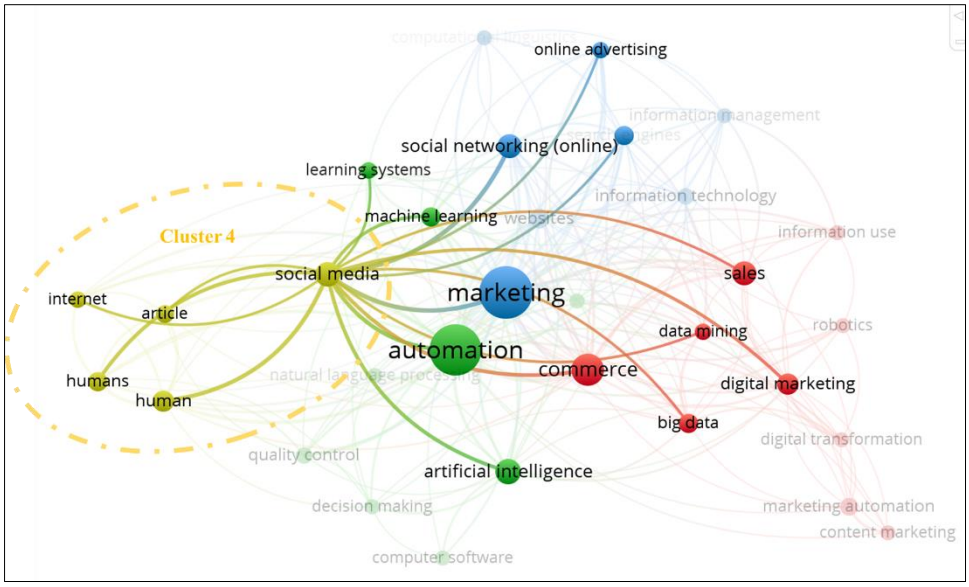

Figure 16. Cluster 4 (Yellow color: Automatic knowledge discovery and humanized content)

4. Discussion

The analysis results of the ten research questions outlined in the Introduction are succinctly summarized below.

4.1. RQ1 Which Are the Most Cited Articles on Content Automation in Marketing?

Based on our research, the article "Harnessing marketing automation for B2B content marketing" by Järvinen and Taiminen [49] received the highest number of citations (198) among articles concerning content automation in marketing. The articles were authored by 159 individuals and comprised 149 documents as significant theoretical contributions. This study contributed to the body of knowledge concerning organizational processes that facilitate the generation and distribution of timely and valuable content in accordance with consumer requirements. This research demonstrated how content marketing strategies and selling processes can be harmonised using marketing automation to generate advantageous outcomes. An innovative depiction of a marketing and sales procedure was introduced, whereby the two functions were integrated into a single funnel, denoted as a marketing and sales funnel. This research study makes a technological contribution to the ongoing discourse surrounding the segregation of marketing and sales systems by illustrating the substantial operational efficiency gains that can be achieved by the integration of marketing automation and CRM into marketing and sales organizations. This article was the most cited regarding content automation in marketing.

These results concurred with Kshetri et al. [9], who asserted that marketing content generated by generative artificial intelligence (GAI) was more likely to be personally relevant than that generated by previous generations of digital technologies. They emphasized the effectiveness of insights generated by GAI in personalizing content and offerings. Elhajjar et al. [70] suggested that practical automation entailed the transformation of organizational internal structure through the delegation of a set of repetitive, low-value, and arduous tasks to computer systems as opposed to human resources. The primary aim of this automation initiative was to enhance productivity through cost reduction and the elimination of unnecessary formalities, thereby enabling the various teams to allocate more time towards critical tasks that provide greater value-added benefits, including customer relations, analysis, and the subsequent execution of complex procedures. Automated processes, including marketing and sales administration, enable increased effectiveness and efficacy in a variety of organizational activities. Moreover, to optimize the benefits of automation in digital marketing, Fernandez et al. [71] proposed that businesses should incorporate automation into all facets of their operations. Digital transformation is an indispensable precondition for the effective implementation of marketing automation. By consciously utilizing automation platforms in digital marketing, marketing firms can enhance their decision-making capabilities. Despite the difficulties inherent in the process, marketing automation facilitates the formation of efficient marketing teams to maximize the advantages.

4.2. RQ2 Which Are the Most Documented Types of Research Publications on Content Automation in Marketing?

Our results showed that research on content automation in marketing is primarily disseminated through articles that furnish readers with dependable and extensively researched data relating to a diverse array of subjects. The comprehension of existing concepts can be enhanced, and readers can acquire information on novel subjects through the use of academic articles and other written endeavors to bolster a debate or argument. These articles frequently include

hyperlinks to supplementary resources. Maintaining knowledge of current events, trends, and research in particular areas of interest is easily accomplished through reading articles that contribute valuable insights into intricate subjects that might not be found elsewhere and are frequently authored by authorities in the field.

These findings were consistent with the results of a bibliometric analysis conducted to carry out an exhaustive review of the current body of literature on content marketing. An equally exhaustive research analysis in the field by Elhajjar et al. [70] determined that most of the articles on automation in business research were documents. Analogously, Binh Nguyen et al. [37] stated that articles serve as a widely circulated resource that elucidates all-encompassing concepts pertaining to content marketing within the travel industry.

4.3. RQ3 Which Are the Research Areas Where the Authors Have Published Research on Content Automation in Marketing?

According to our findings, the three primary research domains in which the authors have disseminated studies on content automation in marketing were computer science, engineering, business management, and accounting. This may explain why content marketing and social media marketing have comparable business objectives, with the former focusing primarily on narrative transmission rather than the promotion of communications. Content marketing can also be defined as a process or tactic that is executed on social media platforms [72]. Social media encompasses a variety of platforms and channels that enable the dissemination and interchange of content. A marketing automation system is composed of a software platform that enables the distribution of content according to the criteria specified by the user. The objective is to successfully develop, maintain, and earn the trust of current and prospective clients by independently tailoring relevant and advantageous content to their specific needs. Marketing automation utilizes approaches similar to those observed in web analytics through the surveillance of website visitors' online behaviors (e.g., navigation paths and page views) through the utilization of IP addresses and cookies [15, 16, 17].

Scholarly articles exploring the application of content automation in marketing were published in these aforementioned research fields. Our results aligned with the conclusions drawn by Dwivedi et al. [73], Kshetri et al. [9], and Mingotto et al. [74]. They suggested that the most pertinent academic disciplines for publishing articles on the subjects of automation in digital marketing and business performance were computer science, engineering, business management, and accounting.

4.4. RQ4 The Year in Which Research Papers on Content Automation in Marketing Were Published Between 2004 and 2024

Our results suggested that research on content automation in marketing was at its most fruitful in 2019. The increasing scholarly attention towards this topic and the criticality of establishing a correlation between automation and content marketing are evidenced by this recent publication trend. By 2020, consumers may have automated systems in place to manage 85% of their relationships. A considerable proportion (67%) of marketing executives have adopted the practice of consistently utilizing marketing automation software. Marketing automation has emerged as the predominant instrument for developing individualized consumer experiences. As evidenced by the various keywords extracted from the overlay visualization map using the VOSviewer software that emerged during the aforementioned years—including marketing automation, content marketing, machine learning, and computational linguistics—there has been an ongoing progression of research on content automation in marketing since 2020.

The significance of this is evident from frequently referenced research examples, including "Agile logic for SaaS implementation: capitalizing on marketing automation software in a start-up" by Mero et al. [75], "Supporting customer-oriented marketing with artificial intelligence: automatically quantifying customer needs from social media" by Yigitcanlar et al. [76], and "Information technology and marketing, an important partnership for decades" by Graesch et al. [77]. "The perceived authenticity of a brand is diminished when generative artificial intelligence is used to generate social media content," Brüns & Meißner [69].

4.5. RQ5 Which Countries Published Research on Content Automation in Marketing and Which Countries Topped the List in Terms of Association with the Others?

According to our findings, the United States is the foremost nation in terms of the top three dissemination rankings, making the greatest contribution to content automation in the field of marketing research, followed by Germany and the United Kingdom. Moreover, an analysis of the significance of inter-nationalism revealed that the United States exerted the greatest influence on international collaboration with other nations, particularly Portugal and the United Kingdom.

This could be because the aforementioned three nations are all technologically advanced, as evidenced by the 2024 QS World University Rankings in the field of Engineering & Technology, which rank them among the top twenty nations in this regard. Six institutions are rated in the United States, including the University of California, Berkeley (UCB), Massachusetts Institute of Technology (MIT), and Stanford University (UCB). These were ranked first, second, and

fifth, respectively, enabling the United States to become a nation capable of conducting research on content automation in marketing and to establish partnerships with research networks from renowned nations in this domain. This result concurred with the findings of Obreja et al. [78]. They indicated that Germany, the United Kingdom, and the United States were the leading nations in artificial intelligence innovations (AI-I) research. Furthermore, Elhajjar et al. [70] reported that most studies conducted on automation in business research occurred in the United States.

4.6. RQ6 Which Journals Published Research on Content Automation in Marketing?

According to our research, Management for Professionals published the greatest number of articles concerning marketing automation, followed by The Ceur Workshop Proceedings and Lecture Notes in Networks and Systems. The compilation entitled "Management for Professionals" consists of scholarly business and management texts designed for executives, MBA candidates, and business researchers with a practical approach. All subjects pertinent to enterprises and the business ecosystem were addressed. Combining scientific expertise, best practices, and an entrepreneurial spirit, the authors—prominent professors and seasoned business experts—offered potent insights into attaining business excellence. CEUR Workshop Proceedings, accessible at CEUR-WS.org, is a publication service that offers free open access to Computer Science Workshops that are specifically concerned with the domain of automation. The most recent advancements in Networks and Systems were published as Lecture Notes in Networks and Systems expeditiously, informally, and with superior quality. This source type is composed primarily of original research that has been published in proceedings and post-proceedings. As a result, publishing academic works, particularly those concerning business automation, such as content marketing, has embraced these source formats.

Consistent with the research conducted by Informa UK Limited, an Informa Group Company [79], this discovery implied that readers benefit greatly from immediate open access to the most recent studies. Furthermore, the authors benefited from publishing open access, and their research gained greater visibility and readership. They showcased its societal impact; they can freely distribute their work and adhere to funder requirements. As a consequence, more academic studies, particularly those relating to content automation in marketing, were published using the aforementioned source types.

4.7. Who Are the Most Influential Authors in the Field of Content Automation in Marketing?

Based on our research findings, Agrawal, D. emerged as the preeminent author in the domain of content automation in marketing, with substantial citations and corpus-specific H-index Scopus awarded high-performance indicators. Agrawal, D. co-authored publications with researchers from other countries/regions (27.1%), publications cited in the top 10% most frequently globally (32.9%), publications ranked in the top journal percentiles (46%), publications with academic and corporate affiliations (16.5%), and field-weighted citation impact (2.2). "Database scalability, elasticity, and autonomy in the cloud (Extended abstract)" by Agrawal, D. garnered the greatest number of citations (636), all within the domain of automation. The author provided a comprehensive examination of efforts to incorporate the aforementioned "cloud features" into a database system to facilitate diverse cloud-based applications. The paper discussed the development of intelligent and autonomic controllers for system management that operated without human intervention, the implementation of scalable database management architectures based on the principles of data fission and data fusion, and the implementation of low-cost live database migration to enable lightweight elasticity. Moreover, the significance of the interrelationships between authors suggested that Chyrun, L. made the most substantial contributions to the field of content automation in marketing. Chyrun, L. co-authored a significant number of documents (20.0%) with researchers from other countries/regions, with 16 scholarly outputs, 265 citations, 16.6 citations per publication, and a 4.12 field-weighted citation impact. These two authors are preeminent international collaborators and influential authors in the field of content automation in marketing.

This finding concurred with Mazumdar et al. [80], who suggested that Agrawal, D. was an influential author in the field of big data management marketing. Demchuk et al. [81] noted that Chyrun, L. was a co-author with a 20 Scopus metric, 97th percentile, and a 5.10 Field-Weighted Citation impact in the field of commercial content distribution systems based on neural networks and machine learning.

4.8. Which Themes Involving Content Automation in Marketing Are the Most Popular Among Scholars?

According to our research results, the most discussed topics among academics regarding content automation in marketing were "Social media," "Marketing," "Automation," "Commerce" and "Artificial intelligence." Content automation in marketing entails the implementation of software, technology, or artificial intelligence to optimize and expedite the processes of digital content creation, distribution, and administration, thereby improving the efficiency and precision of the content production procedure through the automation of repetitive duties. In marketing, content automation can be implemented across a multitude of content categories, including but not limited to blogs, articles, social media posts, videos, and images. Hence, pertinent scholarly investigations demonstrated that central themes relating to content automation in marketing were the most favoured. The application of generative artificial intelligence in social media content to undermine perceived brand authenticity was demonstrated by Brüns and Meißner [69], while

a comprehensive analysis of the impact of artificial intelligence (AI) on content management systems (CMS) was conducted by Boukar et al. [82]. The authors also evaluated emergent AI methodologies and their application in a business setting. Furthermore, Lyu et al. [83] investigated the effects of cloud-based learning technologies and big data on marketing automation in healthy and smart cities, while Pereira et al. [84] assessed the prospective ramifications of artificial intelligence in the realm of digital marketing. An investigation was conducted by Martínez-Castaáo et al. [85] to determine the real-time automation challenge pertaining to the focused extraction of social media users. This aforementioned empirical research promoted the widespread recognition of these fundamental themes among scholars in many nations. These results aligned with research conducted by Kshetri et al. [9], who provided an overview of the current state of generative artificial intelligence in the marketing field. Singh [86] examined the relationship between enablers for social media marketing and the success of businesses, while Barbosa et al. [87] delineated the stages of the consumer journey undertaken by entrepreneurs implementing digital marketing strategies, and Ettrich et al. [88] devised token classification-based automated systems to discern customer requirements within user-generated content.

4.9. Which Areas Involving Content Automation in Marketing Need Additional Study?

Our finding indicated that most research relating to the relationship between marketing automation and computer software, robotics, the internet, humans, and relationships was undertaken between 2012 and 2017. Conversely, most research concerning marketing automation and artificial intelligence, machine learning, learning systems, computational linguistics, big data, social media, commerce, content marketing, digital marketing, and digital transformation was conducted more recently (2020-2024). This observation implied that potential areas involving content automation in marketing need additional research study to include the domains of automation technology, content marketing, and social media commerce.

The impact of artificial intelligence on Content Management Systems (CMS) in the context of a business corporation was discussed [82], while the effect that big data and cloud-based learning technologies have on marketing automation in healthy and smart cities was also investigated [83]. The effectiveness of human effort in online reviews can be enhanced by using deep learning techniques to develop automated content, synthesize the reviews [89], and introduce generative models to serve as the foundation for optimizing advertising texts [90]. This finding concurred with Chiarello et al. [91], who stated that the application of ChatGPT in social media, office automation, and search engines was an emerging area for further study.

4.10. What Is the Intellectual Structure of Current Research on Content Automation in Marketing?

Our findings indicated that the intellectual structure of current research on content automation in marketing comprises four clusters as 1) marketing automation for digital commerce content marketing; 2) artificial intelligence for digital marketing transformation; 3) automation and optimization development for personalized advertising content; and 4) automatic knowledge discovery and humanized content. We found that keywords in the same cluster shared a similar hotspot. Cluster 1 contained keywords related to commerce, sales, big data, digital marketing, marketing automation, and content marketing. Therefore, this cluster was named marketing automation for digital commerce content marketing. This result concurred with Ngaruiya et al. [92], who suggested that the integration of automation technology as artificial intelligence (AI) into digital work has revolutionized content creation, interaction, and consumption and also substantially enhanced efficiency and productivity. Hidayati [93] proposed an automation framework whereby machine learning algorithms enhanced precise marketing strategies and customer experiences in the digital landscape, while Lyu et al. [83] stated that with the development of big data and cloud-driven technology, marketing methods have undergone tremendous changes and automated marketing has become the future trend.

In Cluster 2, the keywords were mainly types of emerging technology applied to marketing transformation, including artificial intelligence, quality control, decision-making, machine learning, learning systems, and natural language processing. Therefore, this cluster was named artificial intelligence for digital marketing transformation, conforming with Medina Aguerrebere et al. [94], who suggested that companies should implement an in-house artificial intelligence department to develop digital transformation from an industry, branding, and communication perspective. Company branding efforts on smart platforms should focus more on brand content so that stakeholders can understand their uniqueness. Zghurska et al. [95] stated that the development of artificial intelligence with real-time analytics and forecasting autonomous campaigns plays a key role in the economic efficiency of marketing project development and implementation. Giannakopoulos et al. [96] also highlighted that the integration of artificial intelligence-based modeling and digital marketing analytics through big data provided valuable insights for future investment strategies and better decision-making processes. Swan et al. [97] indicated that the value co-creation process of artificial intelligence (AI) technologies via a function of inputs, tech-enabled experiences, and AI outputs influenced the digital transformation of healthcare.

Most of the keywords in Cluster 3 were from online advertising, websites, information technology, information management, social networking (specifically online), search engines, and information technology. Therefore, this cluster was named automation and optimization development for personalized advertising content. This result complied with

Lyu et al. [83], who stated that the development of big data and cloud-driven technology with real-time optimization of advertising information content correlated with customer retention rate and sales growth. Therefore, big data and cloud drives have an important impact on marketing automation. Likewise, Pereira et al. [84] proposed that the adoption of artificial intelligence (AI) enhanced content marketing for social media marketing and advertising, while Martínez et al. [98] pointed out that the application of artificial intelligence (AI) automation innovation efficiency in large unstructured data sets, processing, predictive/prescriptive analysis, natural language recognition, and image recognition affected all phases of the advertising process and transformed the effectiveness of market research and analysis, creativity, media planning, and buying.

Finally, the keywords in Cluster 4 were mainly related to research articles on social media, the internet, and humanity. Therefore, this cluster was named automatic knowledge discovery and humanized content. This result concurred with Brüns & Meißner [69], who indicated that the application of generative artificial intelligence for assisting humans in social media content creation rather than replacing them through automation could reduce the negative reactions of consumer behavior and enhance brand authenticity. Boukar et al. [82] also highlighted that integrating artificial intelligence (AI) with content management systems (CMS) could significantly enhance search functionalities and streamline numerous processes. Individuals engaged in website ownership, content generation, and marketing should acquaint themselves with the most recent advancements in content management systems (CMS) and artificial intelligence (AI) within the corporate environment. Restrepo & Lis-Gutiérrez [99] provided evidence that Generative Pre-trained Transformer (GPT) chat could be used for content creation, consumer insight, personalized marketing strategy development, segment targeting, copywriting, market research, report development, and cost reduction, while Mero & Leinonen [75] suggested that the implementation of marketing automation (MA) Software-as-a-Service (SaaS) facilitated the key processes of sales, management, content marketing, and customer intelligence for start-up firms to improve their mutual fit and achieve goals.

5. Conclusions

Marketing automation uses tools to streamline repetitive tasks, giving marketing departments the ability to automate monotonous processes such as email marketing, social media posting, and ad campaigns. This automation increases productivity and also provides a more personalized experience for consumers. Therefore, it is important to analyze automation when evaluating marketing trends. A bibliometric analysis of content automation in marketing research was conducted to identify the research areas, and the following research questions were posited. RQ1. Which are the most cited articles on content automation in marketing? RQ2. Which are the most documented types of research publications on content automation in marketing? RQ3. Which are the research areas where the authors have published research on content automation in marketing? RQ4. The year in which research papers on content automation in marketing were published between 2004 and 2024? RQ5. Which countries published research on content automation in marketing, and which countries topped the list in terms of association with the others? RQ6. Which journals published research on content automation in marketing. RQ7. Who are the most influential authors in the field of content automation in marketing? RQ8. Which themes/terms involving content automation in marketing are the most popular among scholars? RQ9. Which areas involving content automation in marketing need additional study? RQ10. What is the intellectual structure of current research on content automation in marketing?

First, the findings highlighted that the article "Harnessing marketing automation for B2B content marketing" by Järvinen & Taiminen [49] was the most cited on content automation in marketing. Second, articles were the most common type of research publications on content automation in marketing. Third, Computer Science was the area where the authors published research on content automation in marketing. Fourth, 2019 to 2023 demonstrated recent publication trends and the scientific community's increasing interest in the subject of content automation in marketing and the significance of establishing a connection between content automation and marketing. This phenomenon highlights the increasing scholarly focus on content automation in marketing since 2020. Fifth, the United States was the leading country where the authors published research on content automation in marketing and topped the list in terms of the association with the others. Sixth, the Management for Professionals Journal published the most research on content automation in marketing. Seventh, Agrawal, Divyakant, was the most influential author in the field of content automation in marketing, with rankings based on H-index and total citations, while Chyrun, Lyubomyr, was an influential co-occurrence network author. Eighth, "Marketing," "Automation," "Commerce," "Artificial intelligence" and "Social media" were the most frequently used terms among scholars involved with content automation in marketing. Ninth, the areas involved with content automation in marketing require additional study to determine the interplay between automation technology, content marketing, and social media commerce, especially the domains of marketing automation, artificial intelligence, machine learning, learning systems, computational linguistics, big data, social media, commerce, content marketing, digital marketing, and digital transformation. Lastly, the intellectual structure of current research on content automation in marketing comprises four clusters as 1) marketing automation for digital commerce content marketing; 2) artificial intelligence for digital marketing transformation; 3) automation and optimization development for personalized advertising content; and 4) automatic knowledge discovery and humanized content.

6. Implications

A thorough analysis of the documents in the primary Scopus database was conducted, and several significant findings were deduced that will be advantageous for future researchers investigating content automation in marketing. The application of bibliometric analysis to content automation in marketing will yield both practical and theoretical benefits.

6.1. Theoretical Implications

This study mapped the intellectual structure of content automation in the marketing field using bibliometric analysis. Intellectual networks, influential authors, and pivotal concepts within the discipline were discerned. Identification and analysis of publication trends can illuminate emergent topics and areas of increasing or decreasing interest to disclose the evolution of content automation in marketing research. Bibliometric analysis has the capacity to direct subsequent research and generate novel theoretical frameworks in the field of content automation in marketing through the identification of research lacunas in the existing body of literature.

6.2. Practical Implications

Practitioners in academic and real-world contexts, including marketers, advertisers, and marketing managers, will benefit from the insights gleaned from this bibliometric analysis when implementing content marketing. Implications derived from the assessment will be beneficial for companies and professionals in digital marketing, including managers and specialists who are presently implementing or intend to implement content marketing automation strategies. This information can be utilized by practitioners to develop marketing content automation systems that are more efficient and aid in the identification of pivotal contributors: Bibliometric analysis can assist professionals in the field of content automation in marketing to discern sources of dependable information and expertise by identifying the most influential authors and publications. By benchmarking the research output of nations, institutions, or individuals in the field of content automation in marketing, bibliometric analysis sheds light on the productivity and influence of such research. Bibliometric analysis of content automation in marketing can furnish practitioners and researchers with invaluable insights, thereby augmenting our comprehension of this critical field of study and its pragmatic implementations.

6.3. Limitations

This research had several limitations. Scopus is commonly recognized as an all-encompassing database for social scientific research [100]. However, our search technique may not have uncovered all the relevant articles and may have excluded certain publications. The data presented in this research may also have been updated over time. Multiple databases, including Science Direct, Web of Science (WoS), and Google Scholar, could be used to obtain a more comprehensive set of bibliometric values. This study only utilized the search phrases "content", "automation", and "marketing". Future research should also utilize synonyms or relevant terms in different languages.

6.4. Future Research Directions

Integration of additional bibliometric indicators, including co-citation analysis, bibliographic coupling, and citation counts, should be the subject of future research to provide a more comprehensive understanding of the subject. Further investigation is also warranted into temporal patterns in the field of content automation in marketing, involving analyzing shifts in the study's focus, modifications in the publications, and critical contributors over time, as well as the impact of historical occurrences. Additional research should also investigate the effects of content automation in marketing research on a cross-disciplinary level, encompassing the utilization of concepts and approaches from related fields such as consumer behavior, emergent technologies, customer relationship management, and marketing and advertising software development. One potential approach to examining the effects of content automation in marketing across various regions, countries, or cultural contexts is through the implementation of comparative bibliometric studies.

Despite its primarily quantitative nature, further research should explore methods to incorporate qualitative insights, such as content analysis of publications, to provide a more comprehensive picture of content automation in marketing research. To forecast forthcoming trends in content automation within the realm of marketing research, detect emerging topics, and gauge the impact of novel publications and authors, we must assume that future predictive algorithms will be constructed using bibliometric data. Further research should, therefore, investigate the effects of implementing open science practices, including data sharing, open access publishing, and transparent research practices, on the dissemination and impact of marketing research content automation. By conducting bibliometric analyses, these prospective research avenues will augment our comprehension of the development, consequences, and further developments of content automation in marketing. Table 3 lists some future lines of research and possible research questions.

Table 3. Future lines of investigation and potential research questions.

Future lines of investigation	Future research directions
Marketing automation for digital commerce content marketing	A variety of multi-criteria decision making (MCDM) techniques could be utilised to examine the critical success factors of marketing automation (MA) for digital commerce content marketing. These techniques include the Analytic Hierarchy Process (AHP), Analytic Network Process (ANP), Technique for order of preference by similarity to ideal solution (TOPSIS), Multi-attribute utility theory (MAUT), Preference ranking organisation method for enrichment of evaluations (PROMETHEE), Weighted Aggregates Sum Product Assessment, Elimination and Choice Translating Reality (ELECTRE), Data Envelopment Analysis (DEA) and VlseKriterijumska Optimizacija I Kompromisno Resenje (VIKOR). These could be used to design and apply marketing automation to generate content marketing on digital commerce platforms.
Artificial intelligence for digital marketing transformation	Artificial-intelligence-based tools for implementing dynamic branding initiatives could be developed as a framework for leveraging artificial intelligence in future marketing decision support.
	Business values from investments in digital marketing transformation could be maximised by developing artificial intelligence to create personalised experiences and retain customers.
	Marketing analytics techniques with artificial intelligence could be developed to target potential customers in online retailing contexts.
	Companies can facilitate the regulation of AI applications in digital marketing through the creation of AI frameworks that prioritise impartiality, transparency and responsible practices.
	What are the most significant obstacles to integrating AI into digital marketing strategies and what are some potential solutions to resolve these obstacles?
Automation and optimisation development for personalised advertising content	The operational mechanisms of recommendation systems in the context of advertising personalisation, as well as an examination of how algorithms handle massive amounts of data to enhance the performance and precision of recommendation models should be assessed.
	The mechanisms and variables involved in the efficient acquisition and processing of real-time user data for the purpose of personalising advertising content should adapt to market changes and promptly address user demands.
	The mechanisms by which automation technology parses and interprets user sentiment data for the purpose of personalisation to develop personalised advertising through the use of Natural Language Processing (NLP) technologies should be assessed. Research on the application of automation technology in sentiment analysis should also be conducted.
	Brand promotion efficacy can be enhanced by predicting how advertising personalisation mechanisms will continue to develop and advance alongside automation technology.
	The potential of integrating automation technology with various technological approaches and innovative ideologies to generate more targeted and engaging advertising content should be investigated.
	The mechanisms through which advertising placement strategies are optimised by automation technology in the light of evolving consumer demands and behaviours should be explored to facilitate more efficient utilisation of emergent technologies such as augmented reality and virtual reality.
Automatic knowledge discovery and humanised content	The design and development of a personalised advertising generator based on automatic analysis of consumer preferences and style traits should be considered.
	Automatic methods for generating humanised marketing content utilising machine learning techniques should be investigated.
	Humanised content could be generated via consumer social media discourse and internet search queries using multimodal deep learning.
	Automatic content selection criteria based on human–nature interactions in social media photographs and computer vision require development.
	An innovative influence quantification model on social media platforms that leverages data science principles to enhance digital marketing outcomes and facilitates targeted business advertising would be beneficial, while the utilisation of image transmission mechanisms on short video platforms to increase online user engagement with brief video endorsement content will boost sales.
	Using topic modelling to conduct text-based content analysis on social media platforms will also support digital content marketing.

7. Declarations

7.1. Author Contributions

Conceptualization, T.P. and R.T.; methodology, T.P. and R.T.; software, T.P.; validation, R.T.; formal analysis, T.P.; investigation, N.S. and R.T.; resources, N.S. and R.T.; data curation, N.S. and R.T.; writing—original draft preparation, T.P. and R.T.; writing—review and editing, T.P.; visualization, N.S. and R.T; supervision, N.S. All authors have read and agreed to the published version of the manuscript.

7.2. Data Availability Statement

The data presented in this study are available in the article.

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7.4. Institutional Review Board Statement

Not applicable.

7.5. Informed Consent Statement

Not applicable.

7.6. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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