A Bibliometric Review: Artificial Intelligence in Digital Marketing in Scopus (2003-2025)

Sabrina Bahaz [1], **Aissa Bedrouni** [2], **Imene Nouacer** [3]

[1] Laboratory of Strategies and Economic Policies University of M'sila (Algeria), sabrina.bahaz@univ-msila.dz

[2] Laboratory of Strategies and Economic Policies University of M'sila (Algeria), aissa.bedrouni@univ-msila.dz

[3] University of laghouat, i.nouacer@lagh-univ.dz

Abstract:

AI is increasingly becoming a core component of marketing strategies. A comprehensive study covering the years 2003 to 2025 was undertaken to solve this issue. This research utilized a bibliometric approach, examining 529 journal articles and reviews from the Scopus database published to date. The study applied the Systematic Performance Analysis and Review technique, with data analysis conducted using Excel and VOSViewer, CiteSpace, and Biblioshiny to do a bibliometric review. The analysis investigated 529 journal articles and reviews, indicating that the primary research domains were "business, management, and accounting.

Keywords: Bibliometric, Scopus, Digital Marketing, Artificial intelligence, AI in digital marketing, marketing.

Jel Classification Codes: M31; D83; L86, A12 ‹M21 ‹O32.

_____

Corresponding author: **Sabrina Bahaz**, e-mail: sabrina.bahaz@univ-msila.dz

1. Introduction

Digital marketing experiences a significant transformation due to artificial intelligence, which is currently influencing marketing operations and is anticipated to have an even greater impact in the future. AI can take over many routine and repetitive tasks that marketers currently handle. Combining human effort with machine capabilities is essential to improve marketing results. (Tiago & José, 2020). Artificial intelligence is a technology that can replicate human-like intellect. "Artificial Intelligence derives its power from the Internet, initiating a significant revolution akin to prior technological upheavals" (Li, 2020)Artificial intelligence is a technology simulates human-like intelligence. (Mariani, PEREZ-Vega, & Wirtz, 2022). AI's ability to automate tasks, akin to historical practices, prompts the inquiry of whether marketers will adopt AI to liberate themselves from mundane responsibilities and focus on more valuable endeavours, or perceive it as a danger to their employment. Research indicates difficulties associated with AI-driven marketing innovation, along with the various functions AI may fulfil in this context. Marketers in firms are being urged to utilise AI for the execution and optimization of marketing strategies, encompassing dynamic content production and data profiling (Patrick van & J. Stewart, 2021). Digital marketing is a contemporary method employed by numerous enterprises to enhance sales. The Covid-19 epidemic heightened its significance. Academics have conducted significant study acknowledging the importance of digital marketing in practice. (Hirwani Wan Hussain & Abu H, 2023).

The utilisation of AI in marketing is pertinent in both B2B and B2C sectors (Dominique , 2020). When data analysis reveals insights customer perceptions, preferences, marketers can use Artificial Intelligence to better predict customer needs, desires, and inclinations. This allows for hyper-personalization of value offers. This capability helps reduce negative impacts like customer churn or abandoned shopping carts, which erode profits. Artificial intelligence enables companies to identify customers, understand their needs, and analyze

their behavior, leading to lower costs and improved customer service. (Wirtz, et al., 2018), marketing, and customer management (Lim, Kumar, Verma, & Chaturvedi, 2022). The implementation and use of Artificial Intelligence technologies. is increasing due to these substantial advantages. Artificial intelligence enables machines to comprehend circumstances through algorithms that are educated on data to analyse patterns and render choices (Christoph F. & Maglio, 2020) .
The process of integrating Artificial Intelligence often involves significant complexities and substantial costs and robots result in a gap between digitalised and non-digitalized organisations that is insufficiently examined in the literature (Skare & Riberio Soriano , 2021). The adoption of ADTs for SMEs is more challenging due to their limited resources (Fligstein, 2022). AI technologies are revolutionizing how online retail stores operate. By leveraging AI, companies can identify opportunities for growth and significantly improve their overall performance across various aspects of their business (Oosthuizen, Botha, Robertson, & Montecchi, 2021). Artificial intelligence can transform the online retail industry. It can offer customers a more tailored and smooth shopping journey by providing highly personalized experiences (Ameen , Tarhini , Reppel, & Anand , 2021)Research increasingly emphasizes the growing significance of Artificial Intelligence in decision-making across various industries. This highlights the crucial need for transparency in AI processes, adaptability to changing circumstances, and strategic alignment with organizational goals to ensure successful implementation (Texeira F. Justino, Quirós, Goncalves, & Mucharreira, 2024). This information is crucial for making informed decisions and ultimately improving an organization's performance (Stancu & Ene, 2024).
The bibliometric review method is effective for answering research questions because it can effectively assess the impact and trends within a specific topic. This method quantifies and analyzes large volumes of scholarly publications, allowing researchers to identify key authors, influential works, emerging themes, and collaborative networks within a field (Aria & Cuccurullo , bibliometrix: An R-tool for comprehensive science mapping analysis, 2017)This methodology facilitates the identification of trends, shifts in research focus, and unexplored areas. Although there's a growing body of work on digital competencies in open innovation, there's still a lack of understanding regarding how these competencies have evolved and how they are integrated across different environments and industries. The study addresses this by posing five specific research questions (Q1 to Q5).

Q1: From 2003 to 2025, what are the yearly trends in publications and citations in "Artificial Intelligence" and "Digital Marketing"?

Q2: What are the most prevalent publication types and research areas explored in "Artificial Intelligence" and "Digital Marketing"?

Q3: What are the distinguishing features or contributions of the particular publications at the nexus of "Artificial Intelligence" and "Digital Marketing" that have received the most citations?

Q4: What is the citation impact of the publications from different "countries/regions", "institutions", and "authors"?

Q5: Which "countries", "institutions", and "authors" are most productive in publishing research on "Artificial Intelligence" and "Digital Marketing" from 2003 to 2025?

Q6: To what extent do "countries", "institutions", and "authors" collaborate researching on artificial intelligence and digital marketing, and what are the main collaboration networks??

Q7: What are the major research themes and conceptual structures identified through co-occurrence analysis of keywords in the "Artificial Intelligence" and "Digital Marketing" literature?

Q8: How have the prominent keywords and research themes within the "Artificial Intelligence" and "Digital Marketing" domain evolved over the period 2003-2025, and what emerging trends can be observed through timeline visualization?

The bibliometric analysis of the "Artificial Intelligence" and "Digital Marketing" areas is the major goal of this study, leveraging data from the Scopus database. Its core objectives are to map the scientific landscape by analyzing publication and citation trends, identifying key research areas, influential publications, and significant contributors (countries, institutions, and authors), and exploring the evolution of prominent themes through keyword analysis, ultimately providing a systematic overview of this interdisciplinary field.

2. Methodology

The bibliometric study analysis of published works on digital marketing and artificial intelligence, obtained pertinent works from the Scopus database (Tranfield, Denyer, & Smart, 2003) . To locate relevant publications, a search was conducted utilising the "Boolean" operator "AND" to ensure that results included both "artificial intelligence" and "digital marketing" in the initial query. (Nalbant & Aydın, 2023). By presenting a thorough examination of studies spanning more than 20 years, this method improves the originality of the investigation and provides distinctive insights into the development of the area. The study focuses on how AI has affected various industries. Moreover, the study findings underscore the growing importance of research exploring the potential of AI to enhance digital marketing (Nalbant & Aydin, 2025).

2.1. Data Collection Method

A bibliometric review approach was used to conduct a comprehensive evaluation of the topic from a chronological perspective (Naveen, Satish, Debmalya, Nitesh, & Marc, 2021). Using the Scopus database (Burnham, 2006), By extracting a combination of terms related to digital marketing and artificial Intelligence. It provides academics with high-quality and reliable academic data and has increasingly become the primary source for bibliometric analysis.

The ongoing rivalry between the two databases has been described as "intense" and is deemed to substantially advantage their customers through ongoing enhancements in coverage and search/analysis capabilities, though not in pricing. Complimentary database The Lens constitutes the third component of the principal worldwide academic research databases.

The largest global information resource, covering many different subjects, is Scopus. It has steadily become the most popular source of data for bibliometric analysis and provides scholars with reliable and high-quality academic information (Zhang et al., 2022). The following are the retrieval parameters: TS = "Artificial Intelligence" and TS = "Digital marketing," Database: Scopus Core Collection, Time Period: 1985–2022. A total of 529 publications were obtained as of 2025.6.1. The first, Utilisation of Artificial Intelligence in Market Relationship Management, was published in AI and DM in 2003 (Daskou, Sofia et al., 2003).

2.2. Key information about the selected data

The summary generated by RStudio served as the source of the primary data. From 2023 to 2025, Figure 3 shows an annual growth rate of 25.06%, indicating a rise in interest in and extension of digital competencies related to open innovation. With 380 sources and 529 papers, this topic has a broad body of information that exhibits interdisciplinary interest and broad use of digital competencies. The documents' average age was 1.99 years, which was relatively young. This suggests that most of the research in this field is up to date. The average of 28.72 citations per document. The study exhibited a diverse array of research

methodologies and interests among the 1,757 author keywords and 1,646 writers, which included 74 authors of single-authored publications. The 29.11% international co-authorship underscores worldwide collaboration in this domain, though there exists potential for enhanced international cooperation. The majority of the materials consisted of articles (475) and reviews (54). This signifies a predilection for publication in journals, prevalent in disciplines focused on practical research.
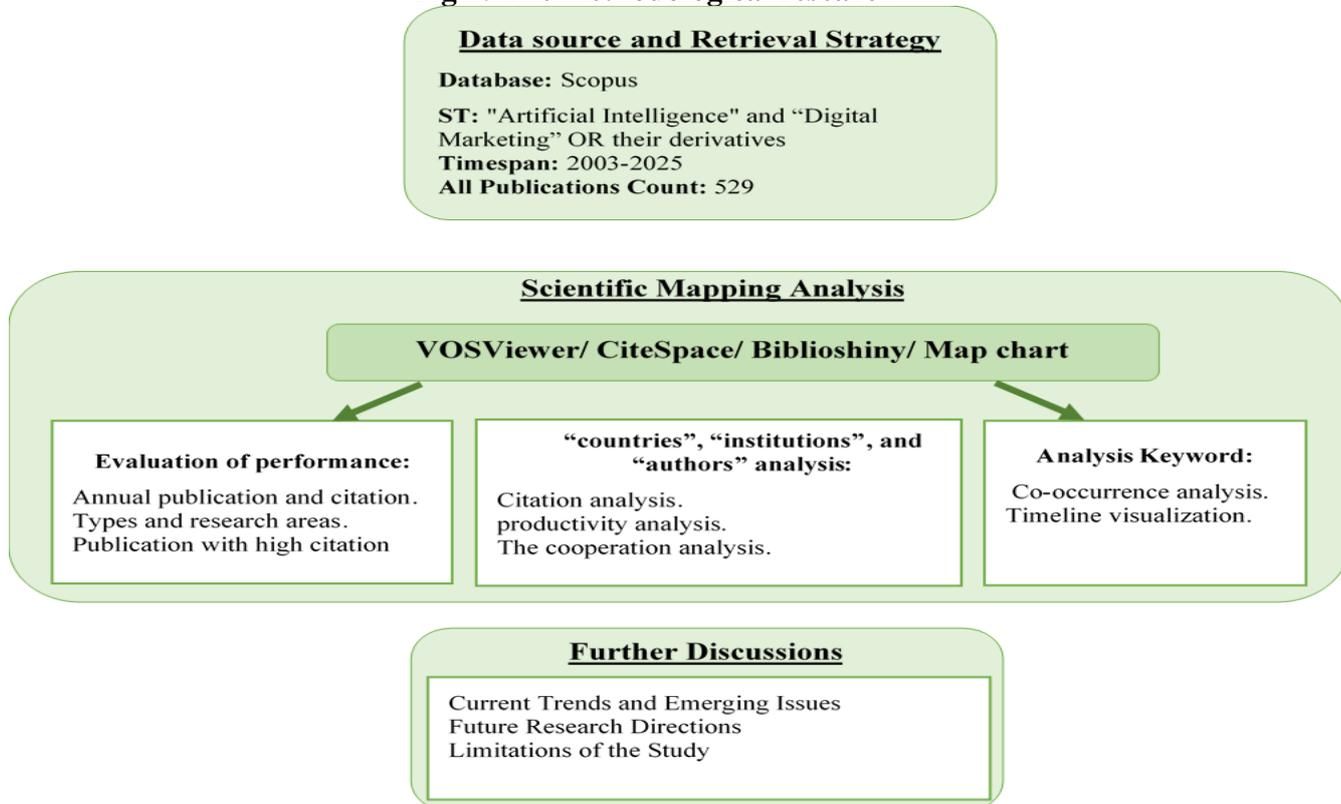
Fig 1: Main information

Timespan	Sources	Documents	Annual Growth Rate
2003:2025	318	529	25.06 %

Authors	Authors of single-authore	International Co-Authorsh	Co-Authors per Doc
1646	74	29.11 %	3.38

Author's Keywords (DE)	References	Document Average Age	Average citations per doc
1757	32249	1.99	28.72

Source: Prepared by the authors based on RStudio

2.3. Bibliometric methods

Bibliometrics is a predominant strategy employed to assess literature. Integrating many bibliometric methodologies enhances the und

erstanding of issues within that research domain (Rohit Bansal, 2024). The rapid spread of blogs and the multiple features used in blog posts, including the topic of the post, its length, the links to be included in it, the relationship between the links and the post, and the location of these links within it. (Bar-ilan, 2004). The R Studio software, utilized for statistical analysis and visualisation, was employed alongside the Biblioshiny package. (Ziakis & Vlachopoulou, 2023), to do a more in-depth data analysis (Aria & Cuccurullo , 2017).

Fig 2: The methodological research

Data source and Retrieval Strategy

Database: Scopus

ST: "Artificial Intelligence" and "Digital Marketing" OR their derivatives
Timespan: 2003-2025
All Publications Count: 529

Scientific Mapping Analysis

VOSViewer/ CiteSpace/ Biblioshiny/ Map chart

Evaluation of performance:

Annual publication and citation.
Types and research areas.
Publication with high citation

"countries", "institutions", and "authors" analysis:

Citation analysis.
productivity analysis.
The cooperation analysis.

Analysis Keyword:

Co-occurrence analysis.
Timeline visualization.

Further Discussions

Current Trends and Emerging Issues
Future Research Directions
Limitations of the Study

Source: Prepared by the authors

3. results
3.1. Evaluation of performance

### 3.1.1. Yearly metrics of publications

Table (2) and Fig. 3 illustrate that the inaugural publication, titled ''Artificial Intelligence in Managing Market Relationships: The Use of Intelligence Agents'', was released in 2003, followed by the second publication in 2005. The quantity of articles had a general rising trajectory with minor variations. Prior to 2018, AI&MD had no more than twelve papers; however, it has emerged as a prominent research focus since then. Specifically, the substantial increase in publications from 2018 to 2025 has garnered heightened interest from experts in this discipline. Based on the current trajectory, the number of publications in 2025 will be at least equal to that of preceding years.

Table 2 : Distribution of Documents by Year (2003–2025)

Year	2003	2005	2009	2011	2014	2015	2016
NP	1	1	1	1	3	3	1
NC	17	35	30	90	46	290	14
Year	2018	2019	2020	2021	2022	2023	2024
NP	7	19	19	43	52	73	170
NC	303	793	2389	3996	1932	3821	1097

Source: Prepared by the authors based on VosViewer.
Fig. 3. Annual publication and citation
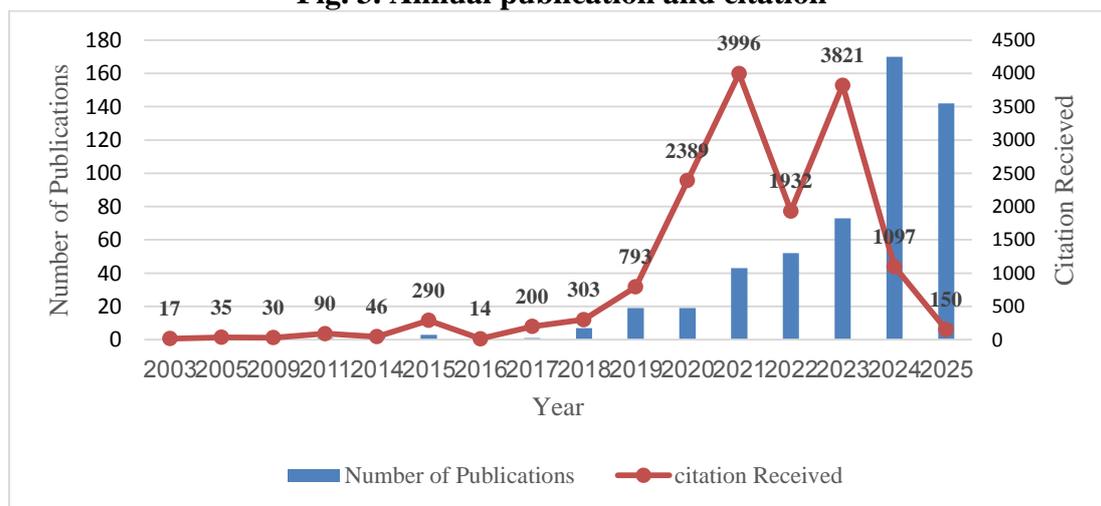
Source: Prepared by the authors uzing Excel

3.1.2. Publication with high citation

Table 4 lists the ten most cited research papers in descending order of total citations, as well as the ten publications with the highest average citations, ranked by citations for each year. The most cited publication (2263) in 2023 was by Yogesh K et al., titled "What if it was written by ChatGPT?"

Moreover, these magazines predominantly concentrate on digital marketing, consumer behaviour, various topics, marketing, and content. All publications are notably produced through cooperation. Specifically, about fifty percent are global collaborations, whilst the remainder are domestic. This signifies that collaboration effectively facilitates significant contributions to research, reflecting a trend of heightened cooperation among nations and regions in the fields of AI and DM.

Table 4 shows the most notable productive journals, with Sustainability Switzerland and Applied Marketing Analytics ranking first, each publishing 14 relevant papers. The Journal of Interactive Marketing Research has the highest ranking (641) and second-highest ranking

(71.2), while the Journal of Digital Marketing and social media has nine affiliated publications. The Journal of Business Research stands out with its second ranking (602) and first ranking (100.3), despite publishing only six articles. This means that each article is cited by an average of between 100 and 101 documents.

Table 4 : The most notable publications contribute to AI and DM

Posssion	Research title	Institution	Type	Year	NC	AC	AN	IN	CN
1	"So what if ChatGPT wrote it?" Multidisciplinary perspectives …… for research, practice and policy" (Dwivedi et al. Y. , 2023)	International J. of Information Management	Article	2023	**2263**	1131.5	74	68	19
2	Setting the future ….. research propositions (Dwivedi et al., 2021)	International J. of Information Management	Article	2021	**1253**	313.25	18	16	9
3	"Machine learning and AI in ….. to human insights" (Ma & Sun, 2020)	International Journal of Research in Marketing	Article	2020	**395**	79	2	2	1
4	"The Challenges and Opportunities ….. in a Post-COVID-19 World" (Almeida, Fernando ; Duarte Santos, José ; Augusto Monteiro, José ;, 2020)	IEEE Engineering Management Review	Article	2020	**347**	69.4	3	3	1
5	"Artificial intelligence in marketing: Topic modeling, … and research agenda" (Mekhail et al., 2021)	J. of Business Research	Article	2021	**344**	86	4	4	4
6	"Human capital and AI in industry 4.0. …. in Russia" (Gennadievna Popkova & Sergi, 2020)	J. of Intellectual Capital	Article	2020	**305**	61	2	2	2
7	"Digital technologies … and data" (Quach et al., 2022)	J. of the Academy of Marketing Science	Article	2022	**273**	91	5	3	2
8	"The future of marketing" (Rust, 2020)	International J. of Research in Marketing	Article	2020	**245**	49	1	1	1
9	"On the Design of and Interaction … Interaction Research" (Diederich et al., 2022)	J. of the Association for Information Systems	Article	2022	**236**	78.66	4	4	4
10	"Artificial intelligence in marketing … review" (Verma et al., 2021)	International J. of Market Research	Article	2022	**234**	78	4	1	1

*NC: citation's number; AC: citations per year number; AN: Authors number ; IN: institution's number; CN: countries' number

Source: Prepared by the authors based on VosViewer.

Table 5 : Top 10 high productive journals.

Rank	Journal	NP	NC	AC
1	Sustainability Switzerland	**14**	**225**	**16**
2	Applied Marketing Analytics	**14**	53	3.8
3	J. of Research in Interactive Marketing	9	**641**	**71.2**
4	J. of Digital and Social Media Marketing	9	31	3.4
5	Technological Forecasting and Social Change	8	**472**	**59**
6	Cogent Business and Management	8	23	2,8
7	J. of Business Research	6	**602**	**100.3**
8	J. of Retailing and Consumer Services	6	**234**	**39**
9	J.of Business and Industrial Marketing	6	**98**	**16.3**
10	Worldwide Hospitality and Tourism Themes	6	61	10.1

Source: Prepared by the authors based on VosViewer.

3.1.3. Categories and study domains of articles

As shown in the table 3, Two types of publication were chosen, Articles constitute the predominant portion, totalling 486, or 90.34%. This is succeeded immediately by Review Articles (52, 9.66%). Table 3 illustrates the distribution of document kinds.

The principal research domains are "business, Management and accounting" (294) and "computer science" (196), with 26.4% and 17.8%, respectively. It is followed by "social sciences" (171), "engineering" (96), "Decision Sciences" (74), "Economics, Econometrics and Finance" (73), "Environmental science" (41), In Fig. 4.
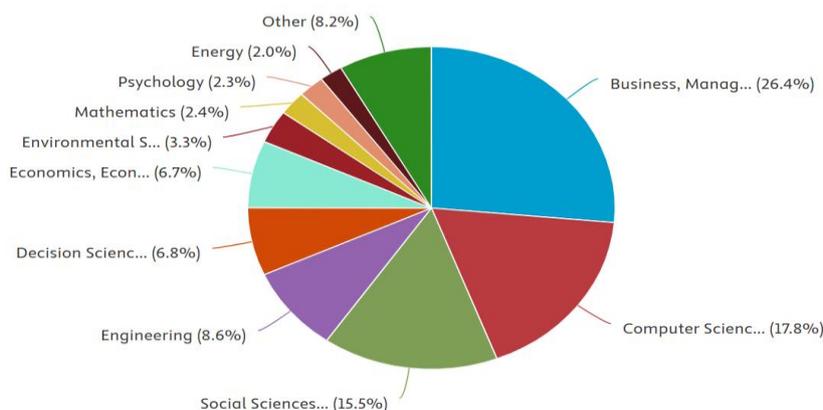
Table 3 : Classification of document categories

D. Type	N	%
Article	486	90.34%
Review	52	9.66%
ALL	**538**	**100%**

Source: Prepared by the authors based on Scopus results.

Fig 4. The top 10 research areas

Documents by subject area

Other (8.2%)
Energy (2.0%)
Psychology (2.3%)
Mathematics (2.4%)
Environmental S... (3.3%)
Economics, Econ... (6.7%)
Decision Scienc... (6.8%)
Engineering (8.6%)
Social Sciences... (15.5%)
Business, Manag... (26.4%)
Computer Scienc... (17.8%)

Source: Prepared by the authors based on Scopus results.

3.2. study of the countries, institutions, and authors

This segment examines "countries/regions", "institutions", and authors" from three perspectives: Firstly, "The citation analysis", "the productivity", and "the cooperation analysis", getting (3*3=9) results.

3.2.1. analysis of Citation

Table 6 lists the ten most frequently cited countries/regions, institutions, and authors of publications, along with their relevant details. The "United States"" possesses the highest NC for its publications, with 7,220. This is succeeded by "Australia" (4876), "India" (4713), "United Kingdom" (4693), and "France" (4383), "Germany" (4120), "Italy" (3110), "Singapore" (3030). Besides, the remaining five countries (Spain, Saudi Arabia) receive less than 3000 citations.

The distribution of the top 10 countries includes seven developed and three developing nations. This distribution suggests that developed countries still dominate the research landscape; however, emerging economies, particularly India and Singapore, are making significant contributions. European countries collectively exhibit strong representation and interconnectedness, with "United states", "Australia", "United Kingdom", "France", "Germany", "Italy", and the "Spain" all maintaining robust research outputs and citation impacts.

From an institutional perspective," symbiosis inter. (deemed university), pune, India" has 1265 citations, and all the rest institutions have 1253 citations, which are: *audencia business school, marketing department* in France, "*college of business, DM and media innovation", Universität der Bundeswehr München* in Germany, *department of economics and management, university of Helsinki* in Finland, "*emerging markets research Centre (emarc)", school of management, Swansea university* in UK. The rest shown in the table 6. Concerning the authors in Table 6, *Filieri, Raffaele* Professor at Audencia Business School from France rank first in NC, at 1370. This is followed by *Dwivedi, Yogesh k* from Saudi Arabia at (1360), and *wang, yichuan* from China at (1348). This is followed by Dwivedi, yogesh k from Swansea University, Swansea, United Kingdom. (1360 citation), and wang, yichuan (1348 citation). Among the top 10 authors, three originate from UK, two are from the France, and the rest originate from United States, Australia, Canada, India, and Finland.

Table 6 : The ten most frequently mentioned countries, institutions, and authors.

Position	Country	NC	Institu	NC	Author	NC
1	United states	**7220**	symbiosis inter. (deemed university), pune, India	**1265**	Filieri, Raffaele	**1370**
2	Australia	**4876**	audencia business school inst, from marketing department, Nantes, in France	**1253**	Dwivedi, yogesh k.	**1360**
3	India	**4713**	college of business, digital marketing and media innovation, Univer inst. From der Bundeswehr München, neubiberg, in Germany	**1253**	wang, yichuan	**1348**
4	United Kingdom	**4693**	department of economics and management inst, from university of Helsinki, Helsinki, in Finland	**1253**	Carlson, Jamie	**1253**
5	France	**4383**	emerging markets research Centre (emarc), school of management, Swansea university, bay campus, United Kingdom	**1253**	Hughes, d. Laurie	**1253**
6	Germany	**4120**	emerging markets research centre (emarc) inst, from school of management, swansea university, in UK	**1253**	Ismagilova, Elvira	**1253**
7	Italy	**3110**	faculty of business and law inst, from university of newcastle, newcastle, in australia	**1253**	Jacobson, Jenna	**1253**
8	Singapore	**3030**	international business, marketing and branding research centre inst, from school of management, university of bradford, bradford, in UK	**1253**	Jain, varsha	**1253**
9	Spain	**2985**	john l. grove college of business inst, from shippensburg university, shippensburg, in united states	**1253**	karjaluoto, heikki	**1253**
10	Saudi Arabia	**2670**	marketing & international business inst, from university of nevada, las vegas, in united states	**1253**	kefi, hajer	**1253**

Source: Prepared by the authors based on VosViewer.

3.2.2. Productivity analysis

Table 7 enumerates the ten most productive countries, organisations, and writers. Ninety-two countries participated in the study, and Figure 9 depicts the geographic distribution of countries with notably high publishing density. Diverse hues of red signify the volume of publications. A deeper shade of red signifies a higher quantity of publications in the respective country or region. The chart indicates that the United States is the most prolific nation, with 99 publications, followed by India with 65. China and the United Kingdom follow, with 50 and 44 publications, respectively. Publications are predominantly focused in North America, Asia, and Europe, signifying a notable geographic concentration of AI and digitalisation research.

Scopus indicates that 1,292 institutions have disseminated relevant publications in this domain. "The Department of E-Marketing and Social Communication at Irbid National Univ in Irbid, Jordan", is the most prolific institution, having produced four documents. This is followed by the Faculty of International Tourism and Management at City University of Macau in Macao (3 papers). To examine the collaborative network of

institutions, set the minimal criterion of one document and citation per institution, resulting in a total of 558 institutions meeting this requirement. Figure 6 depicts the collaborative network of 1002 colleges. Due to the lack of interconnection among specific persons.

Figure 9(b) shows that 213 institutions from diverse countries and regions form an interconnected collaborative network, highlighted in distinct colors. A node represents an institution, the dimensions of a node signify the overall strength of its connections with other institutions. The existence of two interconnected nodes signifies that these institutions possess publications pertinent to the collaboration. The larger the node size, the stronger the overall partnership of that institution with other institutions. Table 7 lists the seven universities with the strongest collaborative relationships, along with related information.

Evaluating the works of diverse authors over multiple years uncovers patterns indicative of their scholarly contributions and potential academic career paths, as illustrated in Fig 5. Wirtz.j has demonstrated a consistent rise in production, commencing with one publication annually in the initial years and culminating at three publications in 2024. The fig. 10 displays an "Authors' Production over Time" plot, which visualizes the publication activity of several authors across different years (2021, 2023, 2025 are visible). Each horizontal line represents an author, and the circles along the line indicate publications in specific years. The size and shade of the circles correspond to the number or impact of publications in that year, with larger and darker circles suggesting more significant output. For instance, WIRTZ J. appears to have publications in 2023 and 2025, with a notable output in 2023, while Dahl AJ shows consistent publication activity from 2021 through 2025, with a particularly prominent output in 2021. The plot effectively illustrates individual author publication trends and their research longevity or intensity over the observed period. Wang X, Liu H, Xu y and Cutler K began publishing in 2023, with moderate increases.

Table 7 : The notable 10 productive Countries/Institutions/Authors of publications.

| Position	Country	NP	Institute	NP	Authors	NP
1	United States	99	APPLIED MARKETING ANALYTICS	14	WIRTZ J	8
2	India	65	SUSTAINABILITY (SWITZERLAND)	13	WANG X	5
3	China	50	J. OF DIGITAL AND SOCIAL MEDIA MARKETING	9	WANG Y	5
4	UK	44	J. OF RESEARCH IN INTERACTIVE MARKETING	9	DWIVEDI YK	4
5	Spain	31	COGENT BUSINESS AND MANAGEMENT	8	LIU H	4
6	Australia	29	TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE	8	XU Y	4
7	France	24	IEEE ACCESS	6	AL KURDI B	3
8	Ukraine	22	J. OF BUSINESS AND INDUSTRIAL MARKETING	6	AL-ABABNEH HA	3
9	Saudi Arabia	21	J. OF BUSINESS RESEARCH	6	CUTLER K	3
10	Jordan	19	J. OF RETAILING AND CONSUMER SERVICES	6	DAHL AJ	3

Source: Prepared by the authors based on VosViewer.

Fig. 9: Density map of publications across various nations
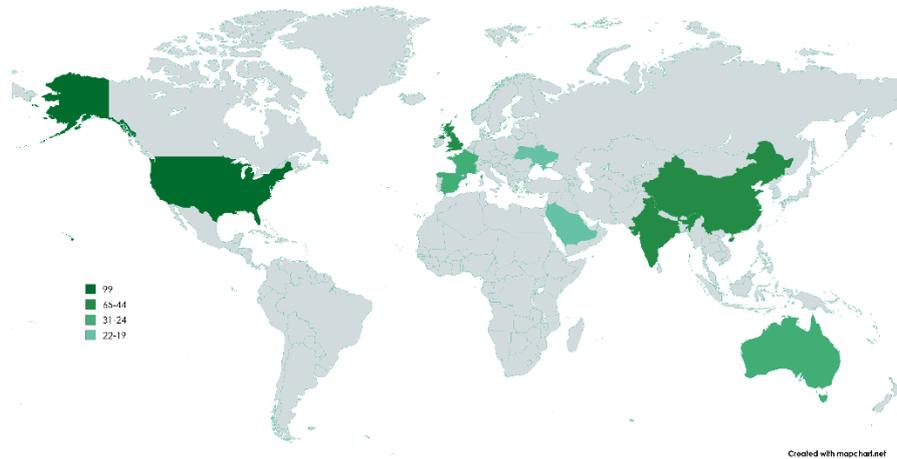
Source: Prepared by the authors based on Map Chart.

Fig 10: Authors' Production over Time
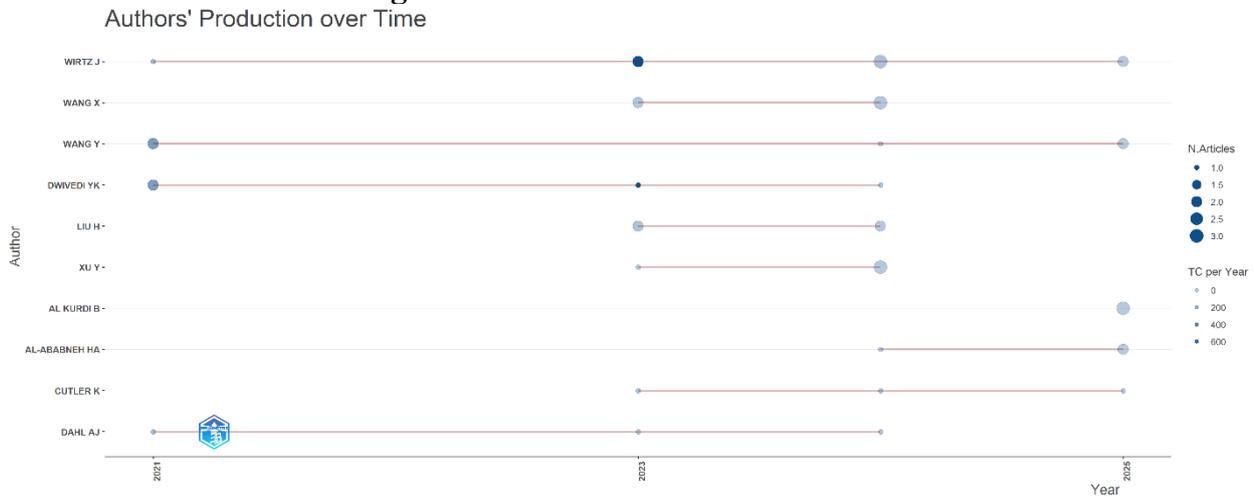
Source: Prepared by the authors based on biblioshiny.

3.2.3. The cooperation analysis

Countries: Figure 6 illustrates the collaborative network among countries and regions. Derived from CiteSpace. Nodes signify countries or regions, while a link between two nodes denotes collaborative publications between those entities. A larger node indicates a greater volume of relevant publication in the associated country. The broader the connection, the more intimate the collaboration between the two nations/regions. Furthermore, an increase in the circle's size correlates with elevated centrality. Figure 11 illustrates that the notable 3 countries are "United States", "India"", China", and "United Kingdom". The dense web of lines between these nodes signifies extensive international research collaboration, highlighting key global players in the depicted field and their interconnectedness. Strong collaborative bridges exist across the Atlantic (USA-Europe) and between Europe and Asia. Conversely, regions like Africa and South America appear to have significantly less involvement in this specific collaboration network. This type of visualization is useful for understanding the geographical distribution of research influence and partnership patterns in a given field.

Fig. 11: The collaboration network of countries
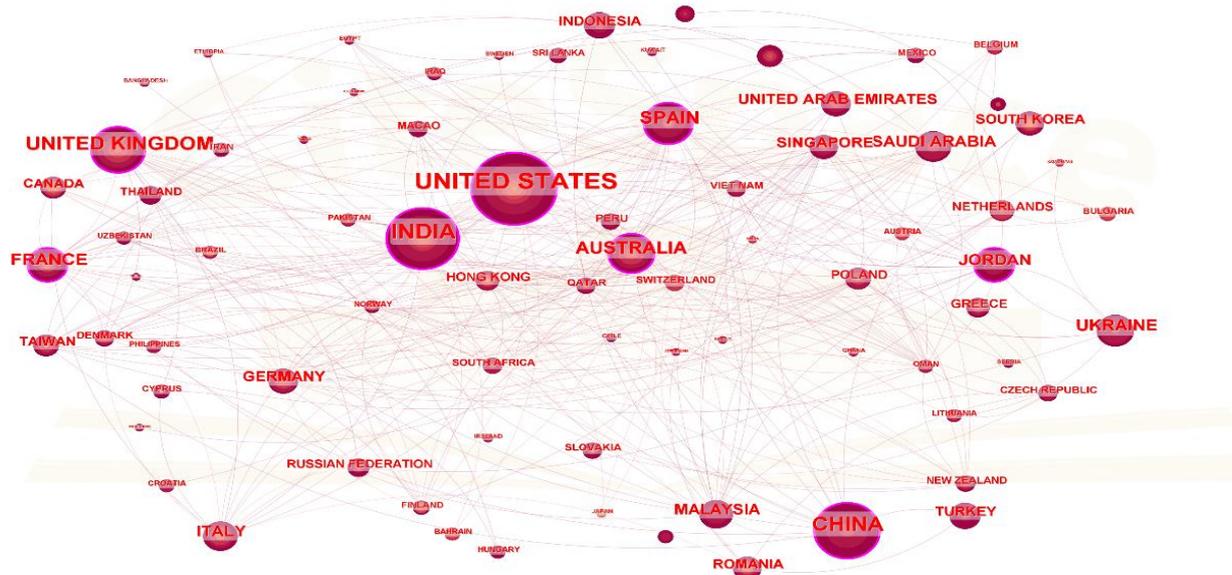
Source: Prepared by the authors based on CiteSpace.

Institutions: The network suggests a sequential and thematic flow of collaboration. It appears that research or projects might originate from institutions like the "Norwegian business school" and "faculty of international tourism," then move to "symbiosis international (deeme)" which acts as a central intermediary, and finally connect with "audencia business school." The thickness of the lines indicates active and substantial collaborative ties across these institutions. This visualization highlights the key institutional players and the strong partnerships among them within the specific research area being analyzed. It can be particularly useful for understanding academic networks, identifying leading institutions, and tracing collaborative pathways.

Fig 12. institutions collaboration
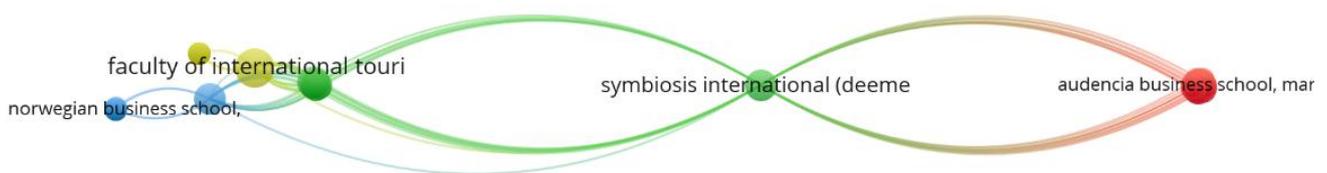
Source: Prepared by the authors based on VosViewer.

Authors: collaboration network of authors visually depicts the links among researchers in the domain of AI and DM. VOSViewer indicates that 1,620 authors have produced pertinent documents. Establish the minimum threshold for both documents and citations for an author at 1. A total of 1,254 authors met the criterion. The most extensive interconnected network consists of 63 authors Figure 9. A node signifies an author, and the node's size reflects the author's total collaborative strength with other authors. A connection between two nodes signifies collaboration among authors. In Figure 13(a), the 29 authors are categorised into seven clusters, each represented by distinct colours. Clusters 1 and 2 are denoted by blue and yellow nodes, whilst orange and green nodes signify Clusters 3 and 4. The colours purple, crimson, and light blue correspond to Clusters 5, 6, and 7, respectively. Jochen Wirtz possesses the most partnership strength, succeeded by Yogesh Dwivedi, Pawel

Korczynski, and Raffaele Villeri. Figure 13(b) shows the temporal distribution of publications by several authors. Node's color indicates the average year of publication of author. The deeper color indicates the average previous publication year for the respective author. Collaborations between authors in Clusters 5, 6, and 7 are relatively new, with 2021 being the primary publication year for most authors in the other clusters.

Fig 13: Authors collaboration network
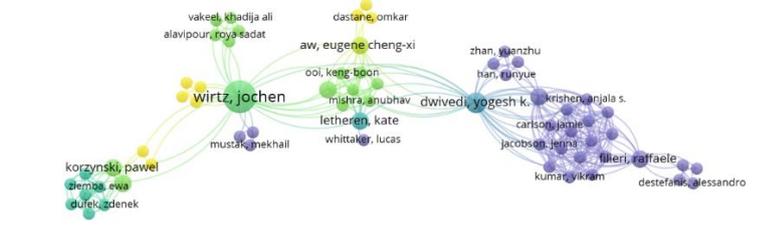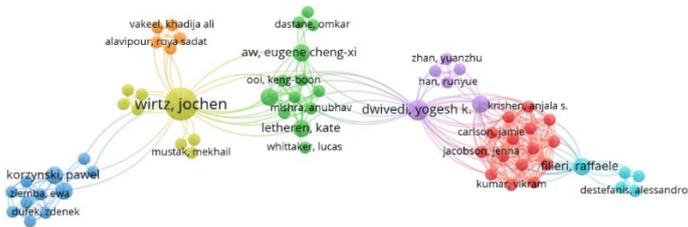
Fig. 13(a): Author's collaborative network

Fig. 13(b): Author's cooperative network with a timeline

Source: Prepared by the authors based on VosViewer.

Counties/Institutions/Authors: This Sankey diagram fig. 14 illustrates the intricate relationships between scholarly journals (SO), authors (AU), and their respective countries (AU_CO). On the left, it lists several journals, categorized by their color and thickness, indicating their relative prominence or number of associated publications. For instance, "journal of retailing and consumer services," "sustainability (Switzerland)," and "journal of business research" appear to have a broad reach. In the middle, a large list of authors is displayed, and the connections from the journals to these authors show which authors publish in which journals. For example, DWIVEDI YK is a prolific author across many journals including "cogent business and management" and "international review of management and marketing." Finally, on the right, the authors are linked to their countries, revealing the geographical distribution of the authors. The diagram clearly shows a global network, with authors from countries such as USA, India, United Kingdom, and China contributing to a diverse range of publications, and the width of the connecting bands represents the volume of these relationships.

Fig. 14: Interconnections between institutions, authors, and countries

Source: Prepared by the authors based on R-studio.

3.3. Analysis of keywords

This section examines the co-occurrence of keywords in posts using VOSViewer. The minimum term co-occurrence threshold is 5, with 90 of the 2,796 keywords meeting this requirement. Figure 16(a) illustrates the term co-occurrence network. Nodes represent keywords, and a link between two nodes indicates that the two terms appear in the same post. Node size is positively correlated with keyword frequency.

fig. 15. Keyword co-occurrence network

(a) Keywords co-occurrence network   **(b) Keywords co-occurrence network**

Source: Prepared by the authors based on VosViewer.

3.3.1. Co-occurrence analysis

To elucidate the cluster structure, we employed Principal Component Analysis (PCA) to diminish the dataset's dimensionality and project it into a two-dimensional space. Given the high dimensionality of the original data, which was transformed into TF-IDF vectors, PCA allows us to capture the majority of the variance in just two principal components. This approach provides a more interpretable visualization of the five clusters produced by the K-Means algorithm.

The fig. 15 (a) displays a co-occurrence network of keywords, primarily focusing on "artificial intelligence" and its related concepts, The nodes represent individual keywords, with their size indicating frequency or relevance, and the lines (edges) signifying co-occurrence in the same documents. Different color clusters highlight distinct but interconnected research themes: a central light blue cluster centered around "artificial intelligence" and "digital marketing," surrounded by themes such as green (e.g., "sentiment analysis," "e-learning," "commerce"), purple/red (e.g., "virtual reality," "metaverse," "influencer marketing," "digital technologies"), yellow (e.g., "big data," "generative ai," "industry 4.0," "digital transformation"), and blue (e.g., "machine learning," "data mining," "customer satisfaction"). The density of lines within and between clusters reveals strong conceptual links, for instance, between AI and marketing, as well as its connections to emerging technologies like metaverse, traditional business concepts, and data-driven analytical methods. Belong to cluster 1 (light blue).

The temporal evolution displayed in the VOSViewer net-work is illustrated through a color gradient (from purple to yellow), highlighting a significant shift in the research focus from foundational concepts to specific applications and implementations. The network

visualisation identifies five distinct clusters, each representing different research streams. Fig. 15 (b).

The plot shows that the clusters are generally well- separated, with some overlap between certain regions. This indicates that the K-Means algorithm has effectively identified meaningful groupings within the data. However, there are a few insights that can be drawn from the visualization:

Cluster overlap. While the majority of the clusters are well- defined, there are regions where clusters overlap slightly, particularly between clusters 2 and 4. This suggests that some documents may share characteristics across themes, making them harder to classify definitively

Outliers. A few points appear to be outliers, falling farther away from the densest parts of their clusters. These documents may represent unique or niche content that does not fit neatly into the broader themes captured by the rest of the cluster.

Cluster size variation. The variation in the size of the clusters is also notable. Some clusters, such as cluster 1, have a tighter grouping of points, indicating that the documents within this cluster are more homogenous. Other clusters, like cluster 3, display a broader spread, suggesting greater diversity within the documents grouped in that cluster.

Employing PCA for visualisation provides significant insights into the distribution of clusters. and allows us to assess the efficacy of the clustering algorithm. While the clusters are generally well-formed, the presence of overlapping points and outliers suggests areas where further refinement of the clustering or preprocessing could enhance the clarity of the results.

This figure (16) presents a tree map visualization that effectively illustrates the most prevalent topics within a dataset. The size of each colored rectangle is proportional to the frequency or percentage of its associated topic. "Artificial intelligence" dominates the landscape, accounting for a significant 22% of the total, followed by "digital marketing" (9%) and "marketing" (8%), highlighting their central importance. Other substantial categories include "machine learning" (5%), "commerce" (3%), "digital transformation" (3%), and "social media" (3%). The numerous smaller blocks represent a diverse array of related, more niche topics such as "innovation," "big data," "generative AI," "ChatGPT," "metaverse," and "sustainability," collectively indicating a strong focus on the intersection of advanced technologies with business, consumer behavior, and marketing strategies.

Fig 16. Visualization of keyword treemaps using VOSviewer

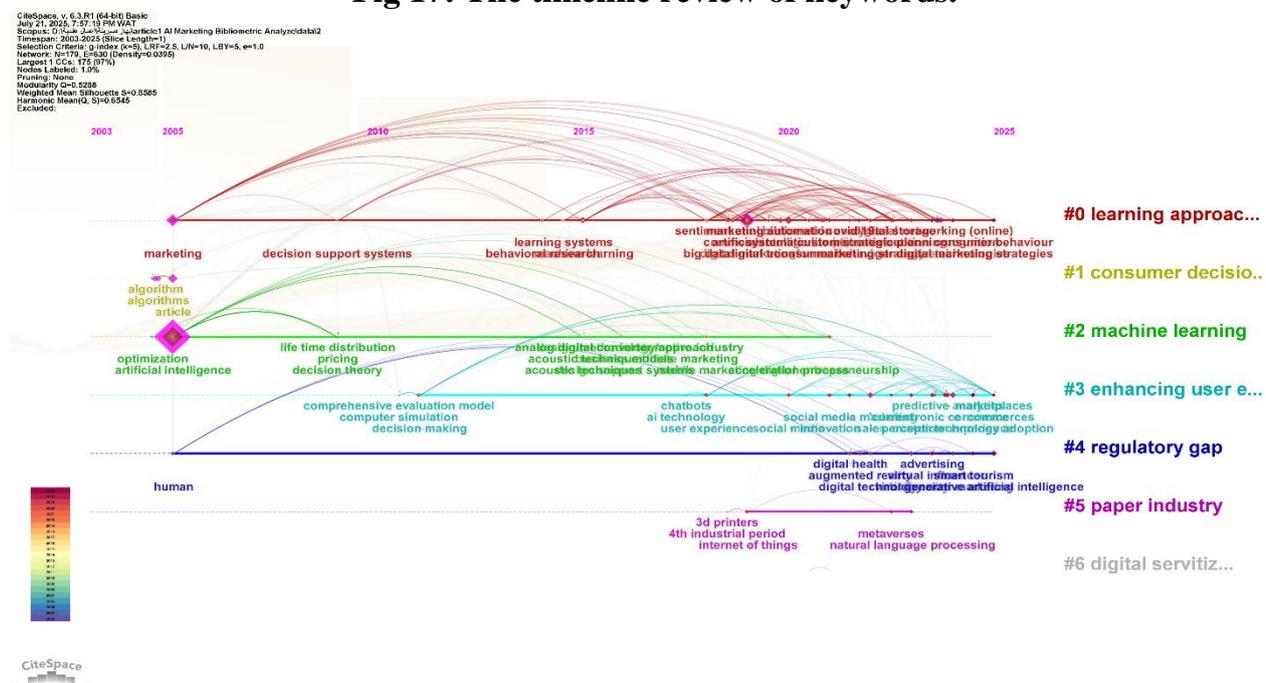**Source:** Prepared by the authors based on VosViewer**.**

3.4.3. Timeline representation

Figure 17 illustrates the timeline analysis of keywords from 2003 to 2025 using CiteSpace. The timeline is set to 1. The keywords are organized into seven groups. The sequence of keywords within each group is determined by their occurrence times.

Figure 17 depicts that the "Learning approach" constitutes the initial cluster, designated as cluster #0, with publications spanning from 2005 to 2024. The remaining clusters are designated as "consumer decision," "Machine Learning," "Enhancing user Experience," "Regulatory gap," "Paper industry," and "digital servitization," respectively. The extended period of clusters #0 and #4 demonstrates that the Learning method and Enhancing user Experience have consistently been focal points of research and trends. Cluster #6 (digital servitization) concluded in 2020, exhibiting the briefest duration.

The fig. presents a dynamic timeline visualization, commonly known as a "burst detection" or "thematic evolution" chart, illustrating the emergence, growth, and decline of various research topics or keywords over time, spanning from 2003 to 2025. The horizontal axis represents the years, while individual keywords or phrases are positioned along vertical lines indicating their period of activity and prominence. Thicker, often red, lines signify "bursts" or periods of heightened research focus, for example, around "social networking (online)," "sentiment analysis," and "e-learning" in the mid-2010s, or the sustained presence of "artificial intelligence" and its related concepts like "chatbots" and "augmented reality" in later years. The interconnections between keywords across different time points reveal how themes evolve and influence one another, with "artificial intelligence" notably serving as a foundational concept from which more specific applications and research interests branch out.

Fig 17: The timeline review of keywords.

Source: Prepared by the authors based on VosViewer.

Table 8: Summary list of cluster information. (From CiteSpace)

Cluster ID	Size	Mean (Year)	Cluster name	Keywords ranked by LLR
0	44	2020	**Learning Approach**	**learning approach; using deep learning technique; systematic review; artificial intelligence technologies; digital marketing strategies AI; DM; ML; SM; future direction**
1	43	2005	**Consumer decision**	electronic stethoscope; consumer decision journey stage; user-generated content | consumer decision journey stage; user-generated content; electronic stethoscope
2	39	2011	**Machine Learning**	artificial intelligence; digital marketing; research agenda; production rate; electronic stethoscope; machine learning; unraveling consumer perception; digital marketing trend
3	27	2020	**Enhancing user Experience**	artificial intelligence; social media; digital marketing; enhancing user experience; machine learning | customer engagement; new approach; new digital era; fuzzy multi-criteria method; decision-making system
4	13	2021	**Regulatory gap**	**alternative pathway; regulatory gap; digital health; human-like virtual influencer; social presence | intelligent influencer marketing; human influencer; ai-powered virtual influencer; short video advertisement; human v**
5	5	2020	**Paper industry**	**4th industrial revolution; paper industry; sustainable growth strategy; virtual reality; natural language processing | natural language processing; guardian metaverse article; exploratory content; ubiquitous semantic metaverse; virtual reality**
6	4	2021	**digital servitization**	Framework for value co-creation in the digital servitization of AI services : a research agenda for digital transformation inside financial service ecosystems.

4. "Discussion and Managerial Implications

4.1. Research Themes on AI in DM

This work informs a forthcoming research agenda grounded in cluster analysis.

- Using AI to analyze customer data to understand individual preferences, predict behavior, and deliver tailored experiences across different channels (e.g., email, social media, websites).
- Using AI to generate text, images, and other creative assets for social media, blogs, and ad campaigns.
- The use of vast amounts of consumer data by AI raises concerns about privacy.

The impact of AI on search engine optimization is another key area. Research explores how AI-driven tools help with tasks like keyword research, content optimization, and understanding user search intent

Artificial intelligence is expected to impact consumer behavior, particularly in interactions with businesses and purchasing choices. Researchers are focusing on how AI-powered tools can predict and influence preferences, enabling more targeted marketing strategies. Concerns are being raised about the ethical implications of AI's influence on consumer behavior. Reducing bias will become critical as AI becomes increasingly embedded in business processes.

4.2. Emerging trends and challenges of the study

Artificial intelligence is revolutionising digital marketing operations, fundamentally altering the methodologies and framework of e-marketing. Utilising AI algorithms, marketers can

analyse extensive databases, identify patterns, and forecast trends, signalling a new epoch of marketing innovation (Zaharia, Apostol, Savin, & Tanase, 2024). The potential of AI in marketing, which requires further research, undoubtedly extends beyond the findings of this study.

According to (De Cicco, Francioni , Curina , & Cioppi, 2025). AIGC liberates human creators from laborious jobs, improves efficiency and personalization, and decreases expenses (Büttgen, Büttgen, & Schepers, 2024) (Chen, Xie, Dong, & Wang, 2019).

These shortcomings can be addressed through systematic comparison of different forms of everyday educational content. For example, research can be conducted to evaluate the effectiveness of the content in conveying the message (Roberta, Barbara, Ilaria, & Marco, 2025). Future research could also evaluate the interactivity of online content.

4.3. Limitations

While this study contributes substantially to understanding artificial intelligence and Digital Several constraints in marketing should be recognised. Initially, depending exclusively on Scopus may have omitted pertinent papers from alternative databases. Moreover, the bibliometric method possesses intrinsic limits in its capacity to assess research quality.

Secondly, limiting the study to publications in English may have led to the neglect of other important studies in other languages. Given the global nature of sustainability challenges, future studies should incorporate publications in other languages, particularly from emerging economies where significant developments in green production are occurring.

The analysis period (2003–2025) may not encompass recent advancements in the industry, especially considering the swift progression of technology and customer tastes. Subsequent research may concentrate on shorter, contemporary intervals to yield a more nuanced examination of emerging tendencies.

Conversely, technical advancement and shifts in the dynamics of open innovation may render conclusions increasingly unrepresentative. The generalizability of the findings is constrained by the geographical concentration of the examined studies, which may not accurately represent variances in digital competences and open innovation across diverse contexts. External factors, like governmental policies and global crises, which are not thoroughly analyzed, also influence the development and implementation of these competencies and innovations. Excluding press items may have resulted in the oversight of emerging research. Conversely, technological advancement and shifts in open innovation dynamics may render conclusions increasingly unrepresentative over time (Sánchez-Núñez, Heras-Pedrosa, & Peláez, 2020).

5. Conclusions

This bibliometric analysis, conducted on the Scopus database from 2003 to 2025, reveals a comprehensive overview of the research landscape at the intersection of artificial intelligence and digital marketing. The performance evaluation highlights a significant growth in publications over the specified period, with an increasing number of highly-cited works, suggesting a maturing and influential field. The analysis of countries, institutions, and authors has identified key contributors and collaboration networks, pointing to the major research hubs and influential scholars driving the discourse. Furthermore, the keyword co-occurrence analysis and timeline visualization have successfully mapped the evolution of research themes, from foundational concepts to more recent and emerging topics such as ethical considerations, personalization, and marketing automation.

In conclusion, the study provides a robust scientific mapping of the field, demonstrating its rapid expansion and diversification. The findings not only outline the current state of research but also serve as a crucial foundation for identifying current trends, emerging issues, and outlining future research directions. By understanding the historical trajectory and current landscape, researchers and practitioners can better navigate the complexities and opportunities presented by the convergence of AI and digital marketing." Finally, further discussion is conducted. The summary, extracted from the previous analysis, is presented in Table 9.

Table 9: Summary of key findings from bibliometric analysis

Key area		Results
Annual publication and citation (Q1)		from 2018 to 2024, publications and scholarly impact significantly increased. This period features two remarkable citation peaks (3996 in 2021 and 3821 in 2023). The publication volume consistently increased during this phase, peaking in 2024 with 170 publications. Research activity remained high from 2021 to 2025, with 43–142 articles published annually.
Highly cited publications (Q2)		the notable publication was attributed to "*Yogesh K et al"*. titled by "So what if ChatGPT wrote it?" Multidisciplinary perspectives ….. practice and policy", with the highest NC (2263) in 2023
Types and research areas (Q3)		Two types of publication were chosen, with Articles accounting for the largest share (486, 90.34%). This is followed closely by Review Articles (52, 9.66%)
The Citation analysis (Q4)	Countries	USA with 7220, Australia (4876), India (4713), United Kingdom (4693), France (4383), Germany (4120), Italy (3110), and Singapore (3030), lead in citations.
	Institutions	Journals like" symbiosis international (deemed university), pune, India" has 1265 citations, and all the nine institutions have 1253 citations, like "*audencia business school, marketing department* in France" publish the most impactful studies
	Authors	*Filieri, Raffaele* Professor at Audencia Business School from France rank first in NC, at 1370. This is followed by *Dwivedi, Yogesh k* from Saudi Arabia at (1360), and *wang, yichuan* from China at (1348). This is followed by "*D, yogesh*" k from "*Swansea University, Swansea, UK*". (1360 citation).
The Productivity analysis (Q5)	Countries	The majority of publications originate from a limited number of nations, with the United States leading at 99 publications and India following in second place with 65 publications. Subsequently, China and the UK follow, with 50 and 44 publications, respectively.
	Institutions	The most productive institution is *department of e – marketing and social communication, Irbid national university, Irbid* in Jordan (4 documents). This is followed by *faculty of international tourism and management, city university of Macau* in Macao (3 documents).
	Authors	The plot effectively illustrates individual author publication trends and their research longevity or intensity over the observed period. Wang X, Liu H, Xu y and Cutler K began publishing in 2023, with moderate increases.
The cooperation analysis (Q6)	Countries	Strong collaborative bridges exist across the Atlantic (USA-Europe) and between Europe and Asia. Conversely, regions like Africa and South America appear to have significantly less involvement in this specific collaboration network.
	Institutions	It appears that research or projects might originate from institutions like the "Norwegian business school" and "faculty of international tourism," then move to "symbiosis international (deeme)" which acts as a central intermediary, and finally connect with "audencia business school."
	Authors	"Wirtz Jochen" possesses the greatest TLS, followed by Dwivedi Yogesh K, Korzinski Pawel and Filieri Raffaele. Different authors' temporal distribution of publications.
	Counties/ Institutions/ Authors	DWIVEDI YK is a prolific author across many journals including "cogent business and management" and "international review of management and marketing. authors from countries such as USA, India, United Kingdom, and China contributing to a diverse range of publications

Keyword analysis (Q7-Q8)	Co-occurrence analysis	"Artificial intelligence" and "digital marketing," surrounded by themes such as green (e.g., "sentiment analysis," "e-learning," "commerce"), purple/red (e.g., "virtual reality," "metaverse," "influencer marketing," "digital technologies"), yellow (e.g., "big data," "generative ai," "industry 4.0," "digital transformation"), and blue (e.g., "machine learning," "data mining," "customer satisfaction").
	Timeline visualization	The "Learning approach" constitutes the initial cluster, designated as cluster #0, with articles spanning from 2005 to 2024. The remaining clusters are designated as "consumer decision," "Machine Learning," "Enhancing user Experience," "Regulatory gap," "Paper industry," and "digital servitization" sequentially. The extended period of clusters #0 and #4 demonstrates that the Learning method and Enhancing user Experience have consistently been focal points of research and trends. Cluster #6 (digital servitization) concluded in 2020, exhibiting the briefest duration.

Source: Prepared by the authors

This research has evidenced substantial rise in the utilisation of artificial intelligence inside digital marketing positions, indicating an advancement in the embrace of novel technology and approaches. This study's bibliometric analysis reveals an increase of its topics.

Performance analysis indicates a consistent increase in both publications and citations, reflecting a growing academic interest in AI and digital marketing in recent years. Publications predominantly comprise papers (90.34%), with the most prevalent research domains being business administration and management, accounting, and computer science. The most influential publications were attributed to Yogesh K. Davidi et al., with the highest number of citations (2,263). Given the double overlap between scientific journals, AI and digital marketing research is moving towards an interdisciplinary direction. Sustainability Switzerland Reviews and Applied Marketing Analytics are among the most productive scientific journals. This geographical distribution and collaboration pattern suggests a globally integrated research field, which exhibits clear leadership from developed nations and emerging strength from developing economies.

6. References

1. Ameen, N., Tarhini, A., Reppel, A., & Anand, A. (2021). Customer experiences in the age of artificial intelligence. *Computers in Human Behavior, 114*, 106548. https://doi.org/10.1016/j.chb.2020.106548

2. Almeida, F., Santos, J. D., & Monteiro, J. A. (2020). The challenges and opportunities in the digitalization of companies in a post COVID-19 world. *IEEE Engineering Management Review, 48*(3), 97–103. https://doi.org/10.1109/EMR.2020.3013206

3. Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics, 11*(4), 959–975. https://doi.org/10.1016/j.joi.2017.08.007

4. Burnham, J. F. (2006). Scopus database: A review. *Biomedical Digital Libraries, 3*, Article 1. https://doi.org/10.1186/1742-5581-3-1

5. Büttgen, M., & Schepers, J. (2024). Designing collaborative intelligence systems for employee–AI service co-production. *Journal of Service Research.* https://doi.org/10.1177/10946705241238751

6. Chen, G., Xie, P., Dong, J., & Wang, T. (2019). Understanding programmatic creative: The role of AI. *Journal of Advertising, 48*(1), 1–9. https://doi.org/10.1080/00913367.2019.1654421

7. Christoph, B. F., & Maglio, P. (2020). Accountable algorithms? The ethical implications of data-driven business models. *Journal of Service Management, 31*(2), 163–185. https://doi.org/10.1108/JOSM-03-2019-0073

8. De Cicco, R., Francioni, B., Curina, I., & Cioppi, M. (2025). AI, human or a blend? How the educational content creator influences consumer engagement and brand-related outcomes. *Journal of Services Marketing, 39*(10), 52–70. https://doi.org/10.1108/JSM-10-2024-0539

9. Diederich, S., Hofeditz, L., Brendel, A. B., & et al. (2022). On the design of and interaction with conversational agents: An organizing and assessing review of human–computer interaction research. *Journal of the Association for Information Systems.* https://doi.org/10.17705/1JAIS.00724

10. Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research, 133*, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070

11. Dominique, H. (2020). AI, marketing science and sustainable profit growth. In *The future of management in an AI world* (pp. xx–xx). https://doi.org/10.1007/978-3-030-20680-2_8

12. Dwivedi, Y., et al. (2023). "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management, 71*, 102642. https://doi.org/10.1016/j.ijinfomgt.2023.102642

13. Dwivedi, Y., et al. (2021). Setting the future of digital and social media marketing research: Perspectives and research propositions. *International Journal of Information Management, 59*, 102168. https://doi.org/10.1016/j.ijinfomgt.2020.102168

14. Fligstein, N. (2022). The power of creative destruction: Economic upheaval and the wealth of nations. *Administrative Science Quarterly, 67*(3). https://doi.org/10.1177/00018392221080616

15. Gennadievna Popkova, E., & Sergi, B. S. (2020). Human capital and AI in Industry 4.0: Convergence and divergence in social entrepreneurship in Russia. *Journal of Intellectual Capital.* https://doi.org/10.1108/JIC-09-2019-0224

16. Grassini, S., & Koivisto, M. (2024). Understanding how personality traits, experiences, and attitudes shape negative bias toward AI-generated artworks. *Scientific Reports, 14*(1). https://doi.org/10.1038/s41598-024-54294-4

17. Li, R. (2020). *Artificial intelligence revolution: How AI will change our society, economy, and culture.* Skyhorse Publishing.

18. Lim, W. M., Kumar, S., Verma, S., & Chaturvedi, R. (2022). Alexa, what do we know about conversational commerce? Insights from a systematic literature review. *Psychology & Marketing, 39*(6), 1129–1155.

19. Ma, L., & Sun, B. (2020). Machine learning and AI in marketing: Connecting computing power to human insights. *International Journal of Research in Marketing, 37*(3), 481–504. https://doi.org/10.1016/j.ijresmar.2020.04.005

20. Mariani, M., Pérez-Vega, R., & Wirtz, J. (2022). AI in marketing, consumer research and psychology: A systematic literature review and research agenda. *Psychology & Marketing, 39*(4), 755–776.

21. Mekhail, A., et al. (2021). Artificial intelligence in marketing: Topic modeling, scientometric analysis, and research agenda. *Journal of Business Research, 124*, 389–404. https://doi.org/10.1016/j.jbusres.2020.10.044

22. Nalbant, K., & Aydın, S. (2023). Development and transformation in digital marketing and branding with artificial intelligence and digital technologies dynamics in the metaverse universe. *Journal of Metaverse, 3*(1), 9–18. https://doi.org/10.57019/jmv.1148015

23. Nalbant, K., & Aydın, S. (2025). A bibliometric approach to the evolution of artificial intelligence in digital marketing. *International Marketing Review.* https://doi.org/10.1108/IMR-04-2024-0132

24. Noy, S., & Zhang, W. (2023). Experimental evidence on the productivity effects of generative artificial intelligence. *Science, 381*(6654), 187–192. https://doi.org/10.1126/science.adh2586

25. Oosthuizen, K., Botha, E., Robertson, J., & Montecchi, M. (2021). Artificial intelligence in retail: The AI-enabled value chain. *Australasian Marketing Journal, 29*(3), 264–273. https://doi.org/10.1016/j.ausmj.2020.07.007

26. Paschen, J., Pala, E., & Kietzmann, J. (2021). Artificial intelligence and value co-creation in B2B sales: Activities, actors and resources. *Australasian Marketing Journal.*

27. Paul, J., Lim, W. M., O'Cass, A., et al. (2021). Scientific procedures and rationales for systematic literature reviews (SPAR-4-SLR). *International Journal of Consumer Studies, 45*(4), 01–16. https://doi.org/10.1111/ijcs.12695

28. Patrick, V., & Stewart, B. J. (2021). Artificial intelligence (AI): Revolutionizing digital marketing. *Australasian Marketing Journal, 29*(3), 199–203.

29. Quach, S., Crespo, M., et al. (2022). Digital technologies: Tensions in privacy and data. *Journal of the Academy of Marketing Science, 50*(1). https://doi.org/10.1007/s11747-022-00845-y

30. Rust, R. T. (2020). The future of marketing. *International Journal of Research in Marketing, 37*(1), 15–26. https://doi.org/10.1016/j.ijresmar.2019.08.002

31. Sánchez-Núñez, P., Heras-Pedrosa, C., & Peláez, J. (2020). Opinion mining and sentiment analysis in marketing communications: A science mapping analysis in Web of Science (1998–2018). *Social Sciences, 9*(3), 23. https://doi.org/10.3390/socsci9030023

32. Skare, M., & Soriano, D. R. (2021). How globalization is changing digital technology adoption: An international perspective. *Journal of Innovation & Knowledge, 6*(4), 222–233.

33. Song, M., Chen, H., Wang, Y., & Duan, Y. (2024). Can AI fully replace human designers? Matching effects between declared creator types and advertising appeals on tourists' visit intentions. *Journal of Destination Marketing & Management, 32*, 100892. https://doi.org/10.1016/j.jdmm.2024.100892

34. Stancu, A., & Ene, C. (2024). Highlights of food waste consumer behaviour in households and food services sector. In *Contemporary marketing and consumer behaviour in sustainable tourism* (p. 36).

35. Teixeira, F. J., Quirós, J., Gonçalves, A., & Mucharreira, P. (2024). The role of artificial neural networks in supporting strategic management decisions. *Journal of Risk and Financial Management, 17*(4). https://doi.org/10.3390/jrfm17040164

36. Tiago, R., & José, L. (2020). Artificial intelligence applied to digital marketing. In *Trends and innovations in information systems and technologies* (Vol. 1160, pp. 158–169).

37. Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management, 14*(3), 207–222.

38. Verma, S., et al. (2021). Artificial intelligence in marketing: Systematic review and future research direction. *International Journal of Information Management Data Insights, 1*(1), 100002. https://doi.org/10.1016/j.jjimei.2020.100002

39. Wirtz, J., Patterson, P., Kunz, W. H., Gruber, T., Lu, V., Paluch, S., & Martins, A. (2018). Brave new world: Service robots in the frontline. *Journal of Service Management, 29*(5), 907–931.

40. Wu, Y., Mou, Y., Li, Z., & Xu, K. (2020). Investigating American and Chinese subjects' explicit and implicit perceptions of AI-generated artistic work. *Computers in Human Behavior, 104*, 106186. https://doi.org/10.1016/j.chb.2019.106186

41. Zaharia, G.-E., Apostol, I., Savin, P., & Tanase, I. (2024). Digital frontiers: Assessing the influence and ethical challenges of AI in online marketing. *Proceedings of the International Conference on Business Excellence, 18*(1). https://doi.org/10.2478/picbe-2024-0300