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Artificial Intelligence in Marketing Education: A Bibliometric and Thematic Analysis

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ARTICLE INFO

ABSTRACT

Keywords:
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This study investigates the role of Artificial Intelligence (AI) in marketing education through two integrated studies. Study 1 conducts a bibliometric analysis using Scopus and VOSviewer to map global research trends on AI in higher education, identifying key countries, collaboration networks, and emerging themes such as personalized learning and ethical concerns. Study 2 applies a qualitative approach to analyze the top 10 most-cited publications on AI in marketing education from SCOPUS, revealing how AI tools like ChatGPT are reshaping curricula and pedagogy. Together, the studies highlight both opportunities and challenges, emphasizing the need for strategic and ethical AI integration in academic contexts.

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INTRODUCTION

Artificial Intelligence (AI) tools play a role in teaching and learning at higher education (Baidoo- Anu & Ansah, 2023). Since the AI application with the improvement of information and communication technologies, has a crucial impact on Higher Education (HE) (Alajmi et al., 2020). These Artificial Intelligence tools can be used in multimedia formats which enhance students and teachers to choose the most suitable modalities (Dwivedi et al., 2023) and AI can have a significant impact on our learning and teaching process to make it more productive, engaging and personalized (Alexandara Harry, 2023).

A wide subjects and topics are using AI as supportive tools: language education (Liang et al., 2021), engineering education (Shukla et al., 2019), mathematics education (Hwang & Tu, 2021) and medical education (Winkler-Schwartz et al., 2019). Thus, the marketing discipline is not an exception. Marketing educators need to be aware of the challenges and the benefits of AI applications in their learning and teaching processes.

In the last decade, marketing educators have to guide learners in developing knowledge beyond basic skills. Dhruv Grewal and his colleagues conducted a literature review within 121 papers of Journal of Marketing Education (JME) and explored 5 discussed themes in marketing education: AI, Robots, Digital marketing, Big data and analytics and sustainable development (Dhruv Grewal et al., 2024). Hence, researching AI application in marketing education in this context is suitable with the requirement of technology development and the future trends.

Despite the growing number of research on Artificial Intelligence in higher education, existing studies remain largely fragmented and technology oriented. In particular, prior research has not sufficiently integrated macro level research trends with discipline specific pedagogical implications for marketing education. Moreover, while recent studies increasingly discuss generative AI tools such as ChatGPT, there is still a lack of conceptual synthesis that systematizes these developments into coherent themes relevant to curriculum

design, skill development, and ethical governance in marketing education.

Addressing these gaps, this study adopts a two- stage research design combining bibliometric analysis and qualitative thematic analysis. By integrating insights from both studies, this paper aims to systematize existing knowledge and propose a structured conceptual understanding of AI driven transformation in marketing education.

The study aims to answer three research questions:

RQ1: What are the growth patterns, geographic distribution and collaboration of publications on AI application in higher education around the world?

RQ2: What are the most discussed research contents of AI applications in marketing education?

RQ3: What are the potential challenges of AI application in marketing education?

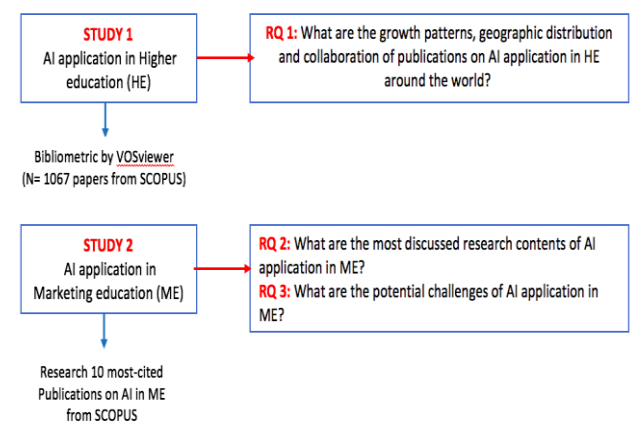


Figure 1: The research structure (Source: Author, 2025)

LITERATURE REVIEW

AI Application in Higher Education

Artificial Intelligence (AI) is increasingly recognized as a transformative tool in higher education, capable of executing tasks such as data analysis, predictive modeling, and language- based interaction functions once considered exclusive to human intelligence (Copeland, 2020). AI includes a broad set of technologies, such as machine learning, natural language processing, and generative AI, all of which are becoming more prevalent in educational environments. These technologies contribute to streamlining administrative operations, enhancing teaching methods, and customizing learning pathways for individual

students (Ferrell & Ferrell, 2020). For example, generative AI applications like ChatGPT leverage advanced language models to provide informative and relevant responses, assisting both educators and learners (Guha et al., 2023). The relevance of AI in education is underscored by evolving workforce demands. Employers increasingly seek graduates with AI related competencies. According to recent surveys, a significant majority of hiring managers (77% of 781) see AI proficiency as a key differentiator (Cohen, 2023) and many consider experience with tools like ChatGPT as a desirable job qualification (Grewal et al., 2024). Additionally, jobs requiring AI expertise may offer salaries up to 25% higher than average, reflecting the value of such skills (PwC, 2024). However, due to limited opportunities for learning AI on the job, educational institutions are expected to play a central role in preparing students with these competencies (Microsoft, 2024).

From a teaching and learning perspective, AI supports the development of essential 21st century skills, including critical thinking, creativity, and analytical problem solving. ChatGPT and similar tools can act as interactive learning aids, offering real-time feedback, promoting idea generation, and personalizing support (Baidoo-Anu & Ansah, 2023). Despite these benefits, concerns such as algorithmic bias, misinformation, and risks of overreliance highlight the importance of ethical usage and human supervision (van Dis et al., 2023). Therefore, integrating AI into higher education necessitates a rethinking of curricula and pedagogical approaches to better equip students for an AI driven world.

AI Application in marketing education

AI has significantly reshaped the marketing industry by automating complex tasks like customer profiling, behavior forecasting, content generation, and strategic decision-making. These technologies empower marketers to extract actionable insights from large datasets, enabling the creation of more personalized and effective campaigns (Wedel & Kannan, 2016; Huang & Rust, 2018). Tools such as chatbots, recommendation engines, and predictive analytics platforms are now common, offering efficiency and deeper consumer

engagement (Elhajjar et al., 2021). As a result, AI has become integral to how brands operate and connect with audiences in today's data centric landscape (Ferrell & Ferrell, 2020).

Marketing education is evolving to incorporate AI tools that align academic instruction with real world industry demands. By embedding technologies like ChatGPT into coursework, students gain practical experience in data interpretation, digital communication, and creative problem solving (Guha et al., 2023). Research indicates that such exposure can enhance academic performance, foster engagement, and prepare students for roles in AI augmented marketing environments (Elhajjar et al., 2021). Furthermore, business schools are encouraged to update traditional pedagogies to include interdisciplinary methods and ethics focused discussions, ensuring graduates are prepared for the complexities of modern marketing careers (Grewal et al., 2024; Ferrell & Ferrell, 2020).

OVERALL RESEARCH DESIGN AND METHODOLOGY

This study adopts a mixed qualitative-bibliometric research design comprising two complementary studies. Study 1 applies bibliometric analysis to map the intellectual structure, growth patterns, and thematic evolution of research on AI in higher education. Study 2 employs qualitative thematic analysis to examine how AI applications are conceptualized and implemented within marketing education. The two studies are sequential and integrative in nature. Study 1 provides a macro level overview of global research trends, while Study 2 offers a micro level, discipline-specific analysis. The integration of these findings enables the identification of cross cutting themes and theoretical implications for marketing education in the AI era.

STUDY 1: AI APPLICATION IN HIGHER EDUCATION

Research method

Data source

There are two main sources for bibliometric dataset which provide a wide range of publications: Web of Science (WOS) and Scopus. However, within the education field, Scopus is considered more extensive than WOS

(Hallinger, 2019). In addition, in terms of recording books and book chapters (which are important in the social science field generally and education field specifically) (Qian, 2015), Scopus is more exact than WOS Tabacaru (2019). Hence, the author chooses Scopus as the dataset.

Data collection method

Following the Preferred Reporting Items for Systematic Review and Meta- Analysis (PRISMA) (Moher et al., 2009), the author develops the data collection process into 4 steps which is illustrated in the figures below.

Step 1: Searching: The Scopus website is used with the advanced document research with the “Article Title, Abstract and Keywords” search frame. The author writes down the keywords “AI application OR artificial AND intelligence OR artificial AND intelligence AND higher AND education AND teaching AND learning” and searches. (Retrieved from Scopus database, dated 20/5/2025). N=2185.

Step 2: Screening: The author chooses to collect the publications belonging to “Social Science” and “English” only.

Step 3: Eligibility: In this step, the author deletes publications which do not meet the requirement based on the abstracts and the main contents (publications include the keywords but the contents are not relevant).

Step 4: Include: The clean data is collected, N= 1066 documents totally.

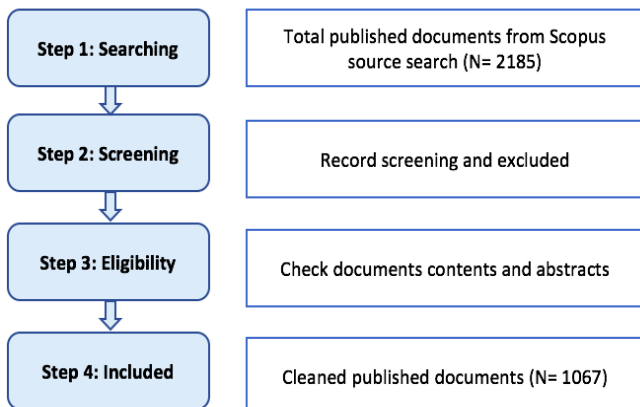


Figure 2: PRISMA diagram of the data collection process (Source: Author, 2025)

Data analysis

Bibliometric analysis was introduced by Pritchard (1969), is one of the most popular methods to research statistics as well as

bibliometric analyses (including citation and co-citation analysis). The method enables researchers to explore the research trends over the time and forecast the future potential of the research topics (Hallinger & Nguyen, 2020). By using this method, this study discovers the co-authorship, co- citation by authors, and sources. Co- authorship analysis the collaboration of authors from different countries in researching the topic (ibid). VOSviewer is a software tool for constructing and analyzing bibliometric networks, in this research, the author applies the VOSviewer version 1.6.20 to visualize the data.

Findings

The study 1 aims to answer the RQ1: What are the growth patterns, geographic distribution and collaboration of publications on AI application in higher education around the world?

Co- author collaboration network by country

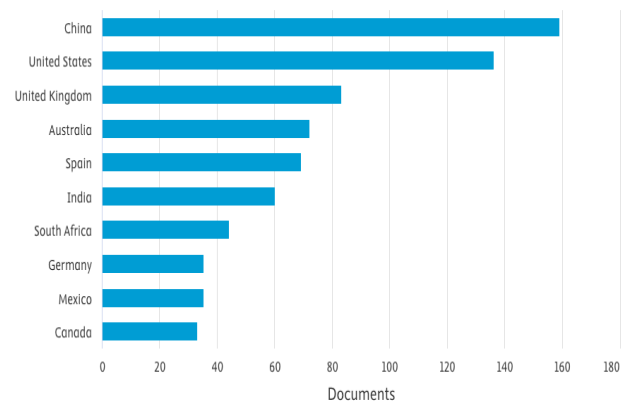


Figure 3: 10 countries have the most published documents (Source: Scopus, 2025)

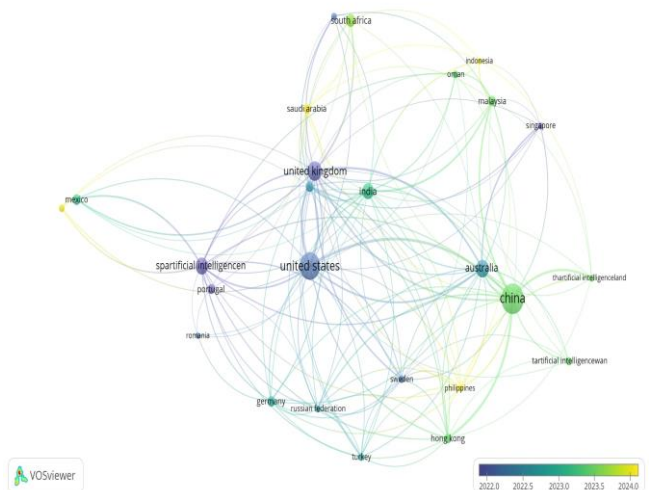


Figure 4: Co- author collaboration network by country from AI application in higher education (Source: Author’s analysis by VOSviewer 1.6.20)

The VOSviewer network visualization reveals the global landscape of academic research, focusing on countries and key terms, especially artificial intelligence (AI). Central symbols, such as the United States, United Kingdom, and China, indicate prominent research hubs, while smaller symbols like Mexico and Portugal suggest less central involvement. The color gradient shows temporal shifts from 2022 (purple) to 2025 (yellow), illustrating emerging trends and the evolving nature of academic research. Clusters around regions like China, Australia, and the U.S. reflect geographical collaborations. The visualization highlights the increasing global focus on AI, with newer research areas and collaborations emerging, suggesting a dynamic, interconnected academic landscape.

Co- occurrence by keywords

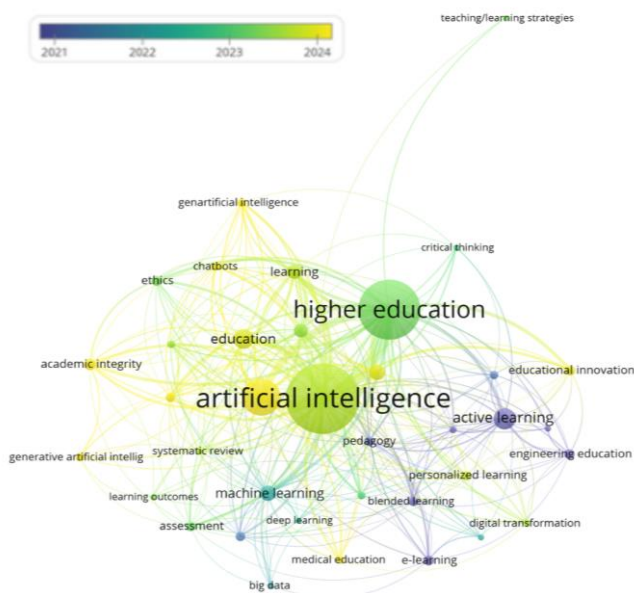


Figure 5: Co- occurrence by keywords from AI application in higher education
(Source: Author's analysis by VOSviewer 1.6.20)

The visualization presented above offers an insightful analysis of the co-occurrence of keywords related to the application of Artificial Intelligence (AI) in higher education, as seen through the lens of bibliometric data from the years 2021 to 2024. The central clusters in the visualization clearly illustrate the key areas of focus in AI's application to higher education. The **Artificial Intelligence** cluster, presented by terms such as "generative artificial intelligence,"

"chatbots," "AI," and "machine learning," is indicative of the significant attention being paid to the deployment of AI technologies for educational purposes. These terms emphasize AI's transformative role in automating and enhancing various aspects of higher education, including the development of intelligent tutoring systems, adaptive learning platforms, and personalized education tools. The **Higher Education** cluster, which includes core terms like "education," "learning," and "higher education," underlines the broader context within which AI is being integrated. This suggests an ongoing exploration of how AI can address critical challenges within higher education systems, such as improving learning outcomes, reducing dropout rates, and fostering more inclusive educational environments.

In addition to the core clusters, the map also highlights the growing interest in **Active Learning**. Keywords like "active learning," "pedagogy," "personalized learning," and "blended learning" represent a shift towards more student-centered, interactive learning environments. These keywords indicate that AI is not just being used for administrative purposes, but also in facilitating and optimizing instructional strategies that encourage deeper engagement and critical thinking. The increasing prominence of these terms reflects an educational paradigm shift where technology and AI are leveraged to create more dynamic, personalized learning experiences. Furthermore, the appearance of "digital transformation" within this cluster suggests that AI is being positioned as a key driver in the modernization of educational practices.

The temporal aspect of the visualization is particularly noteworthy, as the color gradient from blue (representing 2021) to yellow (representing 2024) suggests a shift in the focus of academic research over time. Keywords that appear in more recent years, such as "critical thinking," "teaching/learning strategies," and "ethics," underscore the increasing concern about the ethical implications of AI within educational contexts. This temporal shift indicates that while early discussions centered on the technological potentials of AI, more recent research has turned to address the

ethical, philosophical, and pedagogical questions raised by AI's growing presence in academia. The inclusion of terms like "academic integrity" and "ethics" suggests a rising awareness of the need to establish guidelines and frameworks for responsible AI use in education, ensuring that AI applications do not compromise academic standards or student wellbeing.

Moreover, the network analysis reveals the emergence of specialized fields, such as **Medical Education** and **Engineering Education**, where AI is making a distinct impact. The appearance of these domain-specific keywords, such as "medical education" and "engineering education," highlights the increasing application of AI technologies to discipline specific teaching and learning models. In these contexts, AI is being utilized to enhance technical skills, simulate complex scenarios, and offer tailored learning experiences for students in fields that require specialized knowledge and competencies.

In conclusion, the visualization reveals a growing body of research that underscores the multifaceted role of AI in higher education and highlights four interrelated trends in AI's role in higher education. **First**, there is an increasing concern about the ethical implications of AI, with keywords like ethics and academic integrity underscoring worries about fairness, plagiarism, and bias, particularly around ChatGPT. **Second**, there is an expanding application of AI technologies to discipline-specific teaching and learning models, such as medical and engineering education, where AI supports simulations and specialized skill development. **Third**, the figures indicate a growing emphasis on student-centered and active learning approaches, with terms such as personalized learning, blended learning, and critical thinking pointing to AI's role in reshaping pedagogy toward more interactive, adaptive, and engaging models. **Finally**, the maps show AI's central role in driving digital transformation across education, positioning it as a key enabler of modernization in curricula, assessment, and teaching strategies. Together, these trends illustrate a dual focus on leveraging AI's transformative potential while simultaneously

addressing its ethical, pedagogical, and systemic challenges.

STUDY 2: AI APPLICATIONS IN MARKETING EDUCATION

Research method

Qualitative research method is used to explore the insights of recent research about AI application in marketing education. The data source is SCOPUS, the author focuses on discussing top 10 publications in AI applications in marketing education ranked by number of citations (*see Table 11*). *The qualitative analysis followed a thematic analysis approach. The selected articles were coded inductively in three stages: open coding, axial coding, and selective coding. Initial codes focused on AI tools, pedagogical applications, skill development, and ethical concerns. These codes were then grouped into higher order themes, allowing for the identification of recurring patterns and conceptual categories within AI driven marketing education research.*

Findings

The Study 2 aims to answer two research questions: RQ2: What are the most discussed research contents of AI application in marketing education? and RQ3: What are the potential challenges of AI application in marketing education?

Theme 1: AI-driven curriculum transformation in marketing education

A prominent theme across the reviewed studies is the need for systematic curriculum transformation in marketing education to reflect the growing role of AI in contemporary marketing practice. Empirical evidence from Elhajjar Samer et al. (2021), based on interviews with marketing practitioners and educators across multiple countries, highlights that traditional marketing curricula are no longer sufficient in preparing students for AI-driven marketing environments. Instead, marketing programs need to be updated with dedicated content related to artificial intelligence, data analytics, and AI-enabled marketing applications.

This curriculum transformation involves not only introducing new AI related courses but also integrating AI concepts into core marketing subjects such as consumer behavior, marketing

research, and strategic marketing. As Grewal et al. (2024) argue, AI fundamentally reshapes foundational marketing activities including segmentation, targeting, and customer engagement, requiring educators to redesign course content to reflect real world, technology-augmented marketing practices. Collectively, these studies indicate a shift from theory dominated curricula toward AI-embedded and practice-oriented marketing education models.

Theme 2: AI enhanced development of higher-order marketing skills

Beyond curriculum redesign, the literature consistently emphasizes AI's role in fostering higher-order cognitive and professional skills among marketing students. AI-enabled tools allow students to engage in data-driven decision-making processes, such as analyzing customer behavior, forecasting sales, and developing personalized marketing strategies (Elhajjar et al., 2021). Through these applications, AI supports the development of critical thinking, creativity, and problem-solving skills competencies that are increasingly valued in the digital economy.

In marketing research education specifically, AI tools such as ChatGPT and other generative AI applications can be used as supportive learning aids. For example, students may employ ChatGPT to simulate focus group discussions, practice survey design, or explore experimental research scenarios (Dhruv Grewal et al., 2024). Similarly, generative AI can be used to test product concepts and marketing ideas by mimicking consumer opinions and behavioral patterns (Dillon et al., 2023; Brand et al., 2023). These applications position AI not merely as a technical tool, but as a cognitive partner that enhances experiential learning and the acquisition of advanced analytical skills.

Theme 3: Ethical challenges and academic integrity in AI-integrated marketing education

Alongside its pedagogical benefits, the integration of AI into marketing education raises significant ethical and academic integrity concerns. Studies consistently caution that AI tools may generate biased, inaccurate, or misleading outputs, which can undermine learning quality if used uncritically. Issues such as

plagiarism, overreliance on AI generated content, and data privacy risks are particularly salient in educational contexts where assessment and knowledge construction are central.

As highlighted in the literature, students must be explicitly guided on how to use AI tools responsibly and ethically. Rather than prohibiting AI use, marketing education should incorporate ethical discussions, critical evaluation of AI outputs, and transparent usage guidelines. Ethical governance thus emerges as a core dimension of AI integrated marketing education, ensuring that technological adoption does not compromise academic standards or learning integrity.

Theme 4: Faculty readiness and institutional adaptation

The final theme concerns the readiness of educators and institutions to effectively integrate AI into marketing education. While AI tools offer significant pedagogical potential, their successful adoption depends heavily on faculty members' technological competencies and pedagogical adaptability. Educators are required not only to understand AI applications but also to continuously update their knowledge in response to rapid technological change (Marr, 2018).

At the institutional level, business schools and universities must support this transition through faculty development programs, curriculum governance mechanisms, and strategic investment in educational technologies. As the literature suggests, balancing current AI knowledge with emerging trends remains a major challenge for both educators and institutions. Therefore, AI driven transformation in marketing education is not solely a technological issue, but an organizational and institutional process that requires coordinated adaptation at multiple levels.

What needs to be paid attention to?

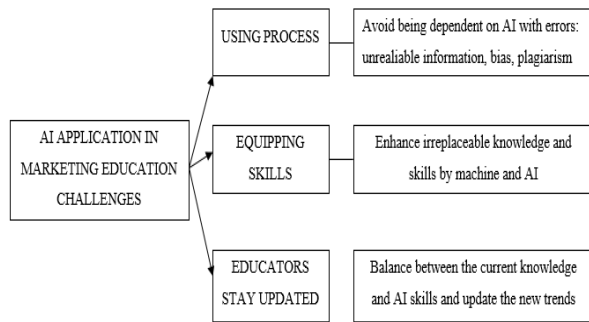


Figure 6: Challenges of AI application in marketing education (author, 2025)

AI tools can make errors and bias and ethical challenges. Thus, learning how to use the AI tools needs to have a strategy. For example, Chat GPT is an AI tool which reaches more than 100 million users in less than one year (Ruby, 2023). Chat GPT is considered as the most popular AI tool with the abilities such as generating contents, answering questions, designing a project plan, etc with an instantaneous speed (Elbanna & Armstrong, 2023). With all the impressive capabilities of Chat GPT, it still makes mistakes such as “lies to you” (Bowman, 2022); “short coming around bias” (Harris, 2023); “risks of plagiarism” (Nolan, 2023); privacy concern.

The learners must be guided to control the applications of AI and how to overcome its challenges. Clearly, the market requires the workforce to be equipped with technology skills and it will continue in the future. However, soft skills such as emotional skills, cross-cutting skills (empathy, creativity, etc) and high intellectual skills for complex projects will also be demanded as these skills are excluded from the machine and technology. On the other hand, various basic skills such as basic cognitive skills and physical and manual skills will be less required (Elhajjar Samer et al., 2021). Thus, to equip students with essential knowledge and irreplaceable skills by AI development is one of the key points of higher education educators generally and marketing educators specifically.

Additionally, both students and teachers benefit from technology so the teachers also need to be updated with technology and machine development as well (Marr, 2018). To successfully teach students irreplaceable skills by AI development, it is necessary for educators to

develop their skills and knowledge. However, with the rapid development of technologies and AI, balancing the current AI knowledge and skills with chasing the new trends is an essential issue that not only educators but also institutions need to pay attention to.

Despite of the author’s efforts in enhancing the research process, this study still has limitations. First, the bibliometric analysis relied solely on the Scopus database and included only English- language publications, which may exclude relevant regional studies. Second, Study 2 focused on the top 10 most-cited articles, potentially overlooking emerging but less cited research. Third, the study did not include empirical classroom data, such as student learning outcomes or experimental interventions.

Future research could extend this work by incorporating multiple databases, conducting empirical studies in marketing classrooms, and examining student and instructor perceptions of AI adoption. Longitudinal and experimental research designs are also recommended to assess the long- term pedagogical impact of AI tools in marketing education.

CONCLUSION

This study provides a comprehensive examination of Artificial Intelligence (AI) applications in marketing education by integrating bibliometric analysis and qualitative thematic analysis. By synthesizing macro level research trends in AI and higher education with micro level insights from marketing education, the study offers a structured understanding of how AI is reshaping curricula, pedagogy, and institutional practices.

Theoretical implications

This study contributes to the literature by conceptualizing AI applications in marketing education through four integrative themes: AI-driven curriculum transformation, AI-enhanced skill development, ethical challenges and academic integrity, and faculty readiness and institutional adaptation. While prior studies have largely examined AI in education in a fragmented and technology-centric manner, this research advances theoretical understanding by systematizing dispersed findings into a coherent

conceptual structure specific to marketing education.

By linking bibliometric trends with qualitative insights from highly cited studies, the research extends existing literature on AI in higher education and responds to calls for discipline-specific theoretical development. The proposed thematic framework helps bridge the gap between general AI-in-education research and marketing education scholarship, thereby enriching the conceptual foundations for future studies in this domain.

Practical implications

At the level of higher education institutions, the findings highlight the necessity of strategic and holistic integration of AI into teaching and learning practices. Universities should move beyond ad hoc adoption of AI tools and instead embed AI competencies within curriculum design, assessment strategies, and faculty development initiatives. The results suggest that AI can effectively support student-centered and experiential learning when aligned with pedagogical objectives and ethical guidelines. Continuous professional development for educators is therefore essential to ensure that AI adoption enhances, rather than undermines, learning quality and academic integrity.

For marketing and business education specifically, the study underscores the need to redesign curricula to reflect AI-driven marketing practices. Marketing programs should integrate AI tools such as generative AI, analytics platforms, and decision-support systems into core subjects including marketing research, consumer behavior, and strategic marketing. Such integration enables students to develop higher-order skills, critical thinking, creativity, and data driven decision making that are increasingly demanded in AI-augmented business environments. Importantly, marketing educators should balance technological proficiency with the cultivation of soft skills and ethical awareness that remain irreplaceable by AI.

From a policy perspective, the findings suggest that policy makers should consider developing institutional and national guidelines for responsible AI use in education. These

policies should address issues such as academic integrity, data privacy, transparency, and ethical governance while encouraging innovation and digital transformation. In addition, policy frameworks should support investment in faculty training, curriculum modernization, and infrastructure development to ensure equitable and effective AI adoption across higher education institutions. By aligning educational policies with labor market needs and ethical standards, policy makers can help maximize the societal benefits of AI-driven transformation in marketing education.

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Table 1: Top 10 publications in AI applications in Marketing Education ranked by number of citations (Source: Scopus)

No	Author	Title	Year	Source	Citation
1	Grewal D.; Motyka S.; Levy M.	The Evolution And Future Of Retailing And Retailing Education	2018	Journal of Marketing Education	126
2	Ferrell O.C.; Ferrell L.	Technology Challenges And Opportunities Facing Marketing Education	2020	Marketing Education Review	57
3	Guha A.; Grewal D.; Atlas S.	Generative Ai And Marketing Education: What The Future Holds	2024	Journal of Marketing Education	49
4	Amjad T.; Abdul Rani S.H.B.; Sa'atar S.B.	Entrepreneurship Development And Pedagogical Gaps In Entrepreneurial Marketing Education	2020	International Journal of Management Education	48
5	Elhajjar S.; Karam S.; Borna S.	Artificial Intelligence In Marketing Education Programs	2021	Marketing Education Review	44
6	Gulati A.; Saini H.; Singh S.; Kumar V.	Enhancing Learning Potential: Investigating Marketing Students' Behavioral Intentions To Adopt Chatgpt	2024	Marketing Education Review	28
7	Qaffas A.A.	Improvement Of Chatbots Semantics Using Wit.Ai And Word Sequence Kernel: Education Chatbot As A Case Study	2019	International Journal of Modern Education and Computer Science	21
8	Dongbo M.; Miniaoui S.; Fen L.; Althubiti S.A.; Alsenani T.R.	Intelligent Chatbot Interaction System Capable of Sentimental Analysis Using Hybrid Machine Learning Algorithms	2023	Information Processing and Management	19
9	Dingus R.; Black H.G.	Choose Your Words Carefully: An Exercise To Introduce Artificial Intelligence To The Marketing Classroom Using Tone Analysis	2021	Marketing Education Review	10
10	Grewal D.; Guha A.; Beccacece Satornino C.; Becker M.	The Future Of Marketing And Marketing Education	2025	Journal of Marketing Education	7