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Artificial Intelligence in Retail Marketing: Research Agenda Based on Bibliometric Reflection and Content Analysis (2000–2023)

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Abstract: Artificial intelligence (AI) is fundamentally transforming the marketing landscape, enabling significant progress in customer engagement, personalization, and operational efficiency. The retail sector has been at the forefront of the AI revolution, adopting AI technologies extensively to transform consumer interactions, supply chain management, and business performance. Given its early adoption of AI, the retail industry serves as an essential case context for investigating the broader implications of AI for consumer behavior. Drawing on 404 articles published between 2000 and 2023, this study presents a comprehensive bibliometric and content analysis of AI applications in retail marketing. The analysis used VOSviewer (1.6.20.0 version) and Bibliometrix (version 4.3.1) to identify important contributors, top institutions, and key publication sources. Co-occurrence keyword and co-citation analyses were used to map intellectual networks and highlight emerging themes. Additionally, a focused content analysis of 50 recent articles was selected based on their relevance, timeliness, and citation influence. It revealed six primary research streams: (1) consumer behavior, (2) AI in retail marketing, (3) business performance, (4) sustainability, (5) supply chain management, and (6) trust. These streams were categorized through thematic relevance and theoretical significance, emphasizing AI's impact on the retail sector. The contributions of this study are twofold. Theoretically, it integrates existing research on AI in retail marketing and outlines future research in areas such as AI's role in the domain of consumer behavior. From an empirical standpoint, the study highlights how AI can be applied to enhance customer experiences and improve business operations.

Keywords: artificial intelligence; AI; retail marketing; trust in AI; AI sustainability bibliometric reflection; content analysis

1. Introduction

Artificial intelligence (AI) refers to the development of computer systems capable of performing tasks that typically require human intelligence, such as learning, reasoning, and decision making [1]. In recent years, AI has emerged as a cornerstone of innovation across industries, with its ability to predict consumer behavior, automate processes, and optimize business operations. AI is transforming the way companies engage with customers, offering unprecedented insights into consumer preferences and behaviors [2,3].

AI's potential to revolutionize industries is particularly evident in sectors like retail, healthcare, and e-commerce, where businesses have adopted AI-driven solutions to streamline logistics, refine customer relationship management (CRM), and improve personalized recommendations [4,5]. For instance, in the retail industry, AI's influence has led to a reimagining of supply chain management and customer service processes, with tools such

as intelligent inventory systems and chatbots optimizing both back-end operations and front-line customer interactions [6]. AI-driven predictive analytics now enables retailers to tailor their marketing strategies with precision, enhancing customer retention and operational efficiencies [7,8].

The COVID-19 pandemic further accentuated AI's transformative power, as retailers swiftly adapted to disrupted supply chains and rapidly shifting consumer preferences. AI was central in driving innovations, particularly in e-commerce, as it enabled businesses to forecast demand more accurately and enhance their omnichannel strategies [9]. This shift also accelerated the digital transformation of retail, as companies increasingly adopted AI to manage customer interactions across both physical and digital platforms, ensuring seamless experiences in a time of heightened uncertainty [10].

As the retail sector evolves, technological advancements, such as AI, robotics, and the internet of things (IoT), which refers to a network of interconnected devices that collect and exchange data in retail ecosystems [11], are ushering a new era of operational efficiency and customer engagement. These innovations are restructuring how retailers manage inventory, analyze consumer data, and deliver personalized services [12]. Smart shelf technologies and AI-driven customer service bots, for example, have become important tools for optimizing in-store operations and enhancing the customer journey [10]. This transition has forced retailers to rethink their business models, balancing the needs of traditional brick-and-mortar stores with the growing demand for online shopping [13].

While the existing literature on AI in retail marketing highlights its potential for enhancing personalization, operational efficiency, and consumer engagement [14,15] a comprehensive review reveals areas warranting further inquiry. Although AI's role in augmenting personalized marketing and decision making is well documented, the ethical implications surrounding data privacy, algorithmic bias, and potential consumer manipulation need further investigation [15,16]. Furthermore, the application of AI within small and medium-sized enterprises (SMEs) and its integration across omnichannel retail platforms represent a solid ground for future research [17,18]. Additionally, the field of "Green AI" strategies, aimed at mitigating the environmental impact of AI technologies, necessitates further attention [19,20]. A thorough bibliometric and content analysis can help identify research gaps, showing the key developments in AI and retail marketing and offering useful insights for both theory and practical use in the field. Consequently, this study offers a holistic view of AI's application in retail marketing. Specifically, this study addresses the following research questions:

1. How has the literature on artificial intelligence (AI) and retail marketing evolved over time, particularly in terms of publication trends, author contributions, and geographic and institutional influences?
2. What are the current key research streams in the intersection of AI and retail marketing?
3. What are the potential areas for future research in this field?

To answer these research questions, this study adopts a mixed-methods approach, combining bibliometric analysis with content analysis to provide a comprehensive view of AI's role in retail marketing. The bibliometric analysis, conducted on 404 documents published between 2000 and 2023, identifies key trends, key authors, and prominent research themes. Key authors were identified through a rigorous assessment of their citation metrics, using Scopus citation indices as the primary measure, with ORCID records used to verify their contributions. This approach ensures an objective evaluation of each author's influence in their academic field. The contributions of these authors were further scrutinized to confirm their designation as "key" figures in the domain.

The bibliometric analysis also employed co-occurrence networks, co-citation analysis, and bibliographic coupling to visualize and map the intellectual structure of this rapidly evolving field. In parallel, a rigorous content analysis was performed on 50 carefully selected papers to provide deeper insights into the most relevant research streams. These streams include consumer behavior, AI adoption and acceptance, sustainability, business performance, supply chain management, and trust issues. By integrating both

quantitative and qualitative methods, this study delivers a rich, nuanced understanding of AI's applications in retail marketing while also identifying critical areas that warrant further exploration.

The categorization of these research streams is based on studies in the domain of AI and marketing literature, supplemented by insights from previous literature reviews. This dual foundation ensures that the classification of key themes is both structured and validated. The structure of the paper is as follows.

The next section includes a thorough literature review, followed by a detailed methodology section, and concludes with avenues for future research and limitations. The literature review synthesizes the role of artificial intelligence (AI) across key marketing dimensions, such as personalization, consumer behavior, social media, ethical considerations, and business performance. The methodology integrates bibliometric and content analysis to identify the trends, leading contributors, and emerging themes in AI and retail marketing. The study concludes by addressing the implications and limitations while also outlining directions for future research.

2. Literature Review

The integration of artificial intelligence (AI) into marketing has significantly transformed how businesses engage with consumers, optimize strategies, and enhance customer experiences. AI technologies, such as machine learning, natural language processing, and predictive analytics, are driving personalization, improving decision-making, and streamlining marketing processes [14,18]. This review synthesizes the role of AI across various marketing dimensions, with a focus on personalization, consumer behavior, social media, ethical considerations, trust, privacy, business performance, and supply chain management.

2.1. AI in Marketing: Personalization and Consumer Engagement

Personalization is one of the most significant impacts of AI in marketing. Yau et al. (2021) emphasize that artificial intelligence marketing (AIM) automates vast data analysis, enabling businesses to create personalized marketing strategies that resonate with individual consumer preferences [14]. Thus, AI empowers marketers to better understand customer needs and foster stronger engagement, leading to higher satisfaction and loyalty. Similarly, other authors highlight AI's role in predictive analytics, which allows marketers to tailor strategies to specific consumer segments by analyzing customer journeys, ensuring that marketing efforts are well targeted and timely [18].

This hyper-personalization capability transforms how businesses approach market segmentation and targeting, making AI an invaluable tool in today's competitive landscape [21]. Sung et al. (2020) note, that AI also plays a significant role in social media marketing, where its application enhances real-time user experiences, including accurate ad placement and feedback analysis, ultimately deepening the connection between brands and consumers [22]. The capacity of AI to offer personalized content on social media platforms enhances both engagement and brand loyalty, as demonstrated by Mohamed (2024) [23].

AI's integration into social media marketing is also revolutionizing how businesses deliver personalized content, optimize engagement strategies, and measure campaign effectiveness. Mohamed (2024) highlights that AI algorithms can filter out low-quality content and promote relevant information, enhancing user experiences on social media platforms [23]. This capability is significant for businesses aiming to personalize marketing messages and drive consumer interaction, a point reinforced by Devereux et al. (2019), who note that small retailers can leverage AI to optimize posting schedules and boost engagement [24].

AI also plays an increasingly important role in influencer marketing. Millagala (2023) discusses how AI tools can analyze audience sentiment and engagement, enabling marketers to optimize content delivery and enhance the effectiveness of influencer campaigns [25]. Additionally, AI-driven automation simplifies social media monitoring, providing marketers with valuable insights into consumer sentiment and competitor strate-

gies [26]. Despite these advancements, ethical concerns about privacy and data consent remain, particularly in the context of analyzing user-generated data without explicit permission [27]. Ensuring transparency in AI-driven marketing practices is essential for maintaining consumer trust.

2.2. AI and Consumer Behavior

AI's influence on consumer behavior extends beyond personalization. The ability of AI systems to process vast amounts of consumer data allows companies to anticipate consumer needs, thereby shaping purchasing decisions and trust [28]. Yim et al. (2023) argue that AI-powered devices create emotional connections with users, reinforcing consumer engagement through the attachment theory, where the perceived "cuteness" and trustworthiness of AI agents positively impact purchasing behavior [29].

Consumer resistance to AI technologies is a challenge to their adoption. This resistance can stem from cognitive biases like uniqueness neglect [30]. This bias may cause individuals to distrust or hesitate to use AI-based solutions in various contexts, including marketing. On the other hand, the technology acceptance model (TAM) provides a framework for understanding consumer acceptance of AI, emphasizing that positive attitudes toward AI services enhance engagement and loyalty [31]. Moreover, AI's influence in the e-commerce sector is also reshaping operations and consumer expectations for personalized shopping experiences [32]. AI-driven personalization in e-commerce enables businesses to meet the growing demand for tailored services, which has become essential for maintaining competitiveness in a rapidly evolving digital marketplace.

2.3. AI in Marketing: Ethical Considerations, Trust, and Privacy

As AI becomes integral to marketing, the ethical concerns surrounding data privacy, algorithmic fairness, and consumer trust take center stage. AI technologies have the capacity to collect and analyze extensive amounts of personal data, raising questions about how these data are used, stored, and protected [15]. Predictive marketing presents ethical challenges related to consumer autonomy and the potential exploitation of personal data [33]. While AI enhances targeting and personalization, businesses must balance these benefits with ethical considerations that protect consumer rights.

Trust in AI systems is a critical factor in ensuring consumer acceptance. Shifrin et al. (2022) stress the importance of transparency and explainability in AI systems, noting that consumer trust is built when users understand how AI operates [34]. Kim and Song (2021) similarly emphasize that clear communication about AI's limitations and capabilities significantly influences trust [35]. On a broader level, frameworks like AI4People and the Asilomar AI principles are essential for establishing ethical standards and fostering public trust in AI [16].

Privacy concerns are also key to understanding consumer behavior in AI-driven marketing. Pelău et al. (2019) point out that many applications access personal data, such as contacts and locations, without explicit user awareness, which can undermine trust and engagement [36]. Regulatory frameworks like the General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA) are critical in empowering consumers with control over their personal data [37]. As technology evolves, marketers must navigate these ethical landscapes to ensure responsible AI deployment and maintain consumer confidence.

2.4. AI and Business Performance

The integration of AI into business operations has been shown to significantly enhance firm performance by improving decision making, operational efficiency, and innovation. AI-driven decision-making processes allow firms to leverage data for critical areas, such as marketing, product development, and customer relationship management [38]. This aligns with the resource-based view (RBV), which posits that firms can achieve competitive

advantage through unique resources and capabilities, including AI systems that support data-driven insights and forecasting.

For small and medium-sized enterprises (SMEs), AI adoption reduces operational costs and increases productivity through automation [17]. AI's predictive capabilities contribute to product innovation and market responsiveness, accelerating the development cycle and allowing firms to quickly adapt to changing consumer preferences [39]. While firms possessing advanced AI capabilities have demonstrated enhanced financial performance and organizational creativity [40], the heterogeneous impact of generative AI on performance, as observed by Otis (2023) demonstrates the necessity of strategically aligning AI tools with specific business objectives to optimize their efficacy [41].

2.5. AI in Supply Chain Management

AI is playing a transformative role in supply chain management, revolutionizing key areas, such as demand forecasting, inventory management, and logistics. As Singh (2023) observes, AI and machine learning are catalyzing digital transformation in supply chain operations, driving value creation through enhanced predictive analytics [42]. This enables businesses to optimize inventory levels, mitigating both stockouts and overstock situations while simultaneously improving operational efficiency.

AI's capabilities extend to real-time monitoring and risk management, proving particularly valuable in industries where transparency and traceability are paramount, such as the food supply chain [43]. Moreover, AI-driven solutions are instrumental in optimizing logistics and transportation management. Through improved route planning and reduced transportation costs, AI contributes significantly to sustainability efforts [44].

The COVID-19 pandemic has further accelerated the adoption of AI in supply chains, underscoring the necessity for agile and resilient operations that can swiftly adapt to fluctuations in demand [45]. However, it is important to note that the successful integration of AI into supply chain management hinges on addressing challenges such as peer pressure and competitive dynamics. Dora et al. (2021) emphasize the importance of aligning AI systems with overarching business strategies to fully harness AI's potential [46].

2.6. AI and Sustainability in Marketing

AI's potential to promote sustainability in marketing is increasingly recognized. Papić (2023) discusses how AI can be used in neuromarketing to create targeted and sustainable marketing strategies that minimize the environmental impact while generating long-term value [47]. By optimizing marketing campaigns and reducing resource waste, AI supports businesses in aligning their strategies with sustainability goals. Hermann (2021) highlights AI's dual role, where it can either support sustainable consumption or exacerbate unsustainable practices, depending on how it is deployed [48].

The fashion industry provides a pertinent example of how AI can facilitate sustainable marketing. Rathore (2019) emphasizes the importance of AI in supply chain management, where it reduces waste and enhances consumer engagement by promoting eco-friendly products [20]. Furthermore, the emergence of "Green AI" practices, as argued by Verdecchia et al. (2023) underscores the need to consider the environmental impact of AI technologies themselves [19]. By adopting sustainable AI practices, businesses can enhance their environmental credentials while leveraging AI's marketing capabilities.

The literature review clearly highlights that AI is revolutionizing marketing, enabling unprecedented levels of personalized consumer engagement, optimizing business operations, and enhancing decision making across diverse sectors, such as retail, social media, and supply chain management. However, this transformative technology is not without its challenges. The adoption of AI brings forth significant ethical, trust, and privacy concerns that businesses must proactively address to maintain consumer confidence and ensure the responsible deployment of AI. Table 1 provides a comprehensive summary of the key findings from the literature review.

Table 1. Summary of key themes.

Key Themes	Main Findings	Key Authors	Limitations	Comments
AI Personalization and Consumer Engagement	AI-driven personalization allows businesses to create tailored marketing strategies, enhancing consumer satisfaction and loyalty. Further trust in AI is multifaceted and requires addressing transparency, fairness, and ethical concerns.	[14,15,22,23,25,26]	Over-reliance on data can risk privacy issues and diminish human touch in customer interactions. Ethical concerns regarding privacy and data consent remain unresolved, particularly with user-generated data.	AI's ability to foster engagement depends heavily on the quality and volume of consumer data.
	AI enhances social media user experiences through personalized content and ad placement, driving deeper brand-consumer engagement.			AI plays a critical role in influencer marketing and content delivery optimization.
AI and Consumer Behavior	AI helps anticipate consumer needs and shapes purchasing decisions through emotional connections with AI agents.	[28–30]	Cognitive biases and resistance to AI technologies, such as "uniqueness neglect", need better management.	AI's emotional connection with consumers impacts loyalty but also raises questions about AI dependency.
AI in Marketing Ethics, Trust, and Privacy	Trust in AI systems is built through transparency, explainability, and ethical handling of data. Regulatory frameworks like GDPR and CCPA help address privacy concerns.	[15,16,34,35,37,49]	Regulatory compliance is not always sufficient; businesses must also maintain trust through transparency.	Balancing data collection with privacy and ethical considerations remains a challenge. Trust in AI is multifaceted and requires addressing transparency, fairness, and ethical concerns.
AI in Business Performance	AI adoption boosts firm performance by enhancing decision making, operational efficiency, and innovation, particularly in small and medium-sized enterprises (SMEs).	[17,38–40]	The uneven impact of generative AI on business performance depends on its alignment with specific goals.	AI can drive innovation and financial outcomes but requires careful integration with business objectives.
AI in Supply Chain Management	AI optimizes supply chains by improving demand forecasting, inventory management, and logistics efficiency, contributing to sustainability efforts.	[42–44,50]	High implementation costs and the need for skilled personnel present barriers to full AI adoption.	AI has been transformative in managing supply chain disruptions, particularly during the COVID-19 pandemic.
AI and Sustainability in Marketing	AI helps design sustainable marketing strategies by optimizing campaigns and minimizing environmental impact.	[19,20,47,48]	Ethical concerns arise over the environmental footprint of AI technologies themselves ("Green AI").	"Green AI" strategies promote sustainability, but firms must balance AI's carbon footprint.
AI Adoption and Consumer Acceptance	Factors, and some theoretical models TAM UTAUT, AIDUA, and sRAM models influence AI adoption.	[35,51,52]	High implementation costs, data privacy concerns, and the need for skilled personnel can hinder AI adoption.	Understanding the factors driving AI acceptance helps tailor AI solutions to consumer and business needs.

The literature on AI in retail marketing is expanding rapidly, showcasing significant advancements in personalization, operational efficiency, and consumer engagement [14,15]. However, a closer look reveals notable gaps that warrant further investigation. While AI's role in enhancing personalized marketing and decision making is well established, concerns regarding data privacy, algorithmic biases, and the potential for consumer manipulation remain insufficiently addressed [15,16]. Furthermore, the current literature often overlooks the specific challenges and opportunities of AI adoption in small and medium-sized enterprises (SMEs), as well as the integration of AI across omnichannel retail platforms [17,18]. Additionally, research exploring AI's contribution to sustainable business practices, especially "Green AI" strategies that mitigate the environmental impact of AI technologies, is

still in its nascent stage [19,20]. A comprehensive bibliometric and content analysis can help address these gaps. By mapping the intellectual landscape of AI in retail marketing, such an analysis will not only provide actionable insights into addressing these challenges but also contribute to both theoretical advancements and practical applications in the field.

3. Methodology

This study employs a dual research approach, integrating both bibliometric analysis and content analysis to comprehensively examine the intersection of artificial intelligence (AI) and retail marketing. The bibliometric analysis provides a quantitative evaluation of the literature, identifying key trends, influential authors, and institutions, while the content analysis offers deeper insights into emerging research themes based on high-impact studies.

Bibliometric analysis was chosen as the primary methodology for this study due to its well-established capability in quantitatively mapping the intellectual landscape of a field [53,54]. By systematically examining the publication patterns, citation metrics, and source impact, it allows researchers to identify leading contributors, influential journals, and key institutions while also uncovering the connections between authors, keywords, and countries [55]. Its systematic and objective approach has made it particularly valuable in fields like business and management research [15,53,56]. Within this study, bibliographic coupling was employed to reveal the underlying structure of AI research within the information systems domain. This network analysis technique, which examines the relationships between documents based on their shared references, facilitates the identification of connections between authors and the thematic focus of their work [53]. Utilizing VOSviewer software, clusters of articles were formed, each representing a distinct research theme [57]. Compared to other review methods like corpus-based analysis, keyword analysis, and systematic literature reviews, bibliometric analysis offers a greater degree of objectivity. While these alternative methods may rely on qualitative interpretations that can introduce subjectivity, bibliometric analysis leverages citation data and co-occurrence networks to provide replicable, quantitative insights [53]. This data-driven approach minimizes bias and fosters a clearer understanding of the field. It is worth noting, however, that this does not invalidate other methods but rather, as Donahue et al. (2021) suggests, that they may lack the rigorous protocols bibliometric analysis employs, especially when dealing with large datasets [53].

Data collection for this study began on 4 December 2023, using the Scopus database. Scopus was chosen for its broad coverage of AI and retail marketing literature across multiple disciplines, including science, social sciences, and the humanities. Compared to Web of Science, which focuses primarily on ISI-indexed journals, Scopus offers a more comprehensive repository of over 20,000 peer-reviewed journals [58]. The data collection followed three key stages: identification, screening, and selection. The study primarily focused on research articles published between 2000 and 2023, with a focus on journals with an impact factor (IF) > 2. The time frame of 2000–2023 was selected to capture the evolution of AI technologies and their integration into retail marketing over the past two decades. AI's transformative impact gained momentum around 2000, and this period effectively represents the key developments in this domain [59]. Only peer-reviewed articles relevant to AI and retail marketing are included, covering aspects such as consumer behavior, AI adoption, sustainability, business performance, and trust issues. Articles outside of the retail marketing context, studies not peer-reviewed, or those published before 2000 are excluded. Non-English publications and papers not specifically addressing AI in retail are also not included in the analysis.

In the identification stage, articles containing the keywords "Artificial Intelligence" or "AI" and "Retail Marketing" were retrieved, resulting in 5301 documents. During the screening process, a language filter (English) was applied, narrowing the dataset to 404 documents, which included published articles, conference proceedings, and book chapters. From this dataset, the most relevant documents were selected for further analysis, using criteria such as citation influence and journal impact. To improve the accuracy of the

findings, a rigorous screening process was implemented. Each paper was evaluated for its relevance to AI developments in retail marketing, and those meeting the inclusion criteria were further analyzed in detail. Additionally, the selection process was reviewed by multiple team members who cross-verified the inclusion of the papers based on the predefined criteria. While formal inter-rater agreement was not conducted, this approach allowed the research team to maintain a high standard of accuracy and relevance throughout the data analysis. The selection of 50 documents for content analysis aimed for a balance between depth and manageability while prioritizing relevance, quality and representation across key AI research streams, and achievement of content saturation. Table 2 outlines a summary of the data collection process.

Table 2. Data collection process.

Stage	Description	Process Details	Outcome
Identification	Initial search conducted using the Scopus database to gather a broad dataset on AI and retail marketing.	- Search terms: (artificial AND intelligence) OR ("Artificial neural network") OR ("ai") OR (data AND analytics) OR (big AND data AND analytics) OR ("data mining" OR "data science" OR "deep learning" OR "Machine Learning") OR (business AND analytics) AND (retail AND marketing) with Title and abstract - Date range: 2000–December 2023. - Document types: journal articles, conference proceedings, book chapters. - Limited to subject area of Social Science.	5301 documents retrieved
Screening (Phase 1)	First round of filtering based on relevance to AI and retail marketing and language type only English.	- Subjects related to AI and retail marketing. - Language filter: English only.	4800 documents retained after the first filter
Screening (Phase 2)	Applied specific inclusion/exclusion criteria, such as exact keyword and publication type, to refine the dataset further.	- Limited to the exact keyword ("Artificial Intelligence", "Retailing", "Retail Marketing") - Included peer-reviewed journal articles and high-quality book chapters. - Title and abstract screening for relevance to retail marketing and AI applications.	404 documents retained for bibliometric analysis
Selection	Selected high-impact recent articles based on journal quality, recency, and citation metrics for content analysis.	- Inclusion criteria: impact factor > 2, publication year > 2022. - Citation influence and relevance to AI applications in retail marketing were prioritized.	Final 50 documents selected for content analysis
Bibliometric Analysis	Conducted quantitative bibliometric analysis to identify key authors, institutions, citation patterns, and emerging research areas.	- Utilized Bibliometrix package in R for co-citation, keyword co-occurrence, and citation network analysis. - Used VOSviewer for visualization of intellectual networks.	Mapped intellectual landscape, key contributors, and trends in AI retail marketing research
Content Analysis	Detailed qualitative analysis of the top 50 selected documents to explore emerging themes, research gaps, and new directions in AI retail marketing literature.	- Focused on six key themes: consumer behavior, AI adoption, sustainability, business performance, supply chain management, and trust.	In-depth insights into critical research themes, identification of gaps and future research directions

4. Results

Publication and citation analysis.

4.1. Publication and Citation Trends

The volume of published work within a particular field often indicates the development of that field and the academic community's growing interest. Figure 1 illustrates the number of research papers and their citation metrics related to artificial intelligence (AI) and retail marketing published between 2000 and 2023. In the early 2000s, the field received minimal attention, with only one publication titled "Improving Retail Effectiveness through

Technology: A Survey of Analytical Tools for Physical and Online Retailers" [60]. This limited attention likely reflects the nascent stage of AI technology, as its business applications were not yet widely recognized.
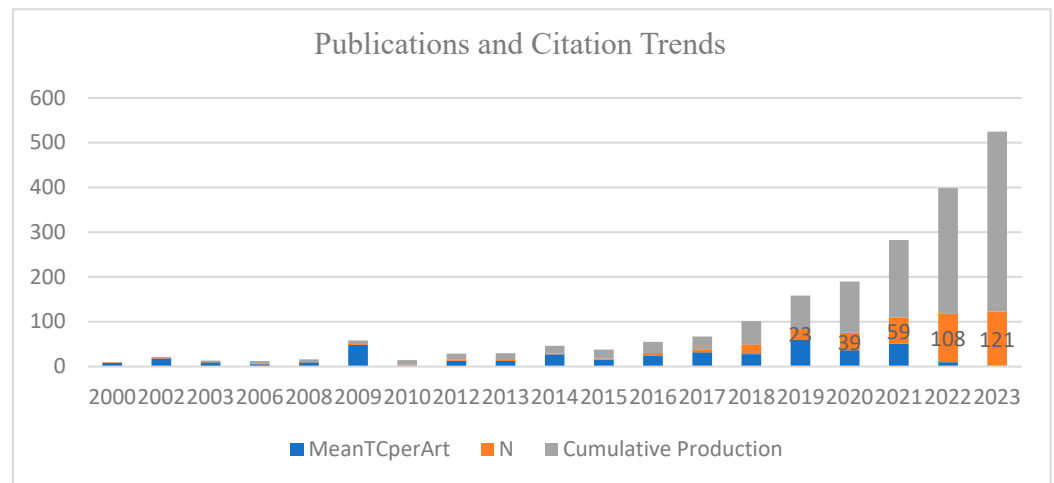
Figure 1. Publication and citation trends.

In 2001, only one additional paper was published, accruing a mean total citation (TC) of 18. A significant rise occurred in 2019, when publications reached 23, coupled with the highest mean TC of 60.35. This indicates the increased scholarly interest and the growing recognition of AI's impact on retail marketing. Even though the number of publications fluctuated between 2001 and 2023, 2023 marked a pivotal year, with 121 documents, representing 47.23% of the total publications in this domain. However, 2023 also had the lowest mean TC of 1.68, which could be attributed to the recency of the publications and the limited time for them to accrue citations.

The trend observed from 2019 to 2020 shows a burgeoning interest in AI applications in retail, as research focused on topics such as AI (15%), retailing (12%), sales (5%), e-commerce (3%), and sustainability and supply chain management (2%). The substantial increase in 2023 suggests that this is a fast-growing field, providing numerous opportunities for future research, particularly in emerging keywords and topics.

4.2. Subject-Wise Publication Distribution

Figure 2 presents the distribution of the top 10 most representative categories in AI and retail marketing. These categories include Computer Science (14.4% of 845 articles), Engineering (7.6% of 404 articles), Decision Science (5.2% of 404 articles), Economics (3.3%), Psychology (1.3%), Arts and Humanities (2.7%), Environmental Science (8.8% of 845 articles), Business Management (13.1%), and Social Sciences (34.3%).

Social sciences occupied the highest position, signifying the importance of studying the social implications of AI in retail marketing. Although other fields, such as computer science and engineering, are vital to understanding the technical development of AI, the predominance of social sciences emphasizes the relevance of analyzing consumer behavior, ethics, and societal implications of AI-driven retail practices. Therefore, this study places a stronger focus on published articles, conference papers, and book chapters in the social sciences, as they reflect the growing need for a deeper understanding of the societal and behavioral changes driven by AI in retail.
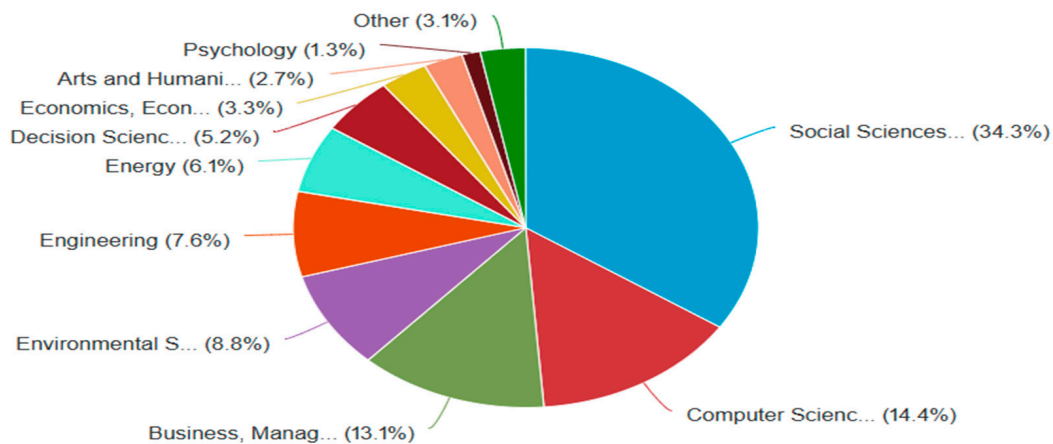
Figure 2. Subject-wise production.

4.3. Analysis of Productive Authors, Universities, Countries, and Sources

Table 1 provides an overview of the top 20 authors, countries, institutions, and sources contributing to AI research. China ranks first, contributing 77 publications and receiving 1088 citations. Although the United Kingdom produced a similar number of publications (75), it achieved a higher citation count of 1305, demonstrating its research impact. The United States and South Korea both published 37 articles, with the U.S. ranking third in total citations (634). Other notable contributors include India (20 articles, 519 citations) and France (7 articles, 354 citations).

Single-country publications (SCPs) were more prevalent than multiple-country publications (MCPs), particularly in China and the UK. China's research output may be driven by its larger population, government investment in AI research, and growing technological leadership. In contrast, the UK's higher citation impact reflects its focus on high-quality, globally influential research. Non-English-speaking countries like China may also face language barriers that affect publication patterns, while the dominance of English in academic publishing benefits countries like the UK and the U.S.

4.3.1. Analysis of Productive Authors, Universities, Countries, and Sources

Table 3 presents a comprehensive overview of the top 20 authors, countries, institutions, and sources contributing to the literature on AI. Among the countries, China ranks first, with 77 publications and a total of 1088 citations. Although the United Kingdom produced a similar volume of publications (75), it received the highest citation count of 1305, showing the significant impact of its contributions. The United States and Korea both published 37 articles, with the U.S. ranking third in total citations (634). India and France also made notable contributions, with India publishing 20 articles and receiving 519 citations, while France, despite publishing only 7 articles, garnered 354 citations. European countries, such as Ireland, Romania, and the Netherlands, published a smaller number of articles but achieved high citation counts, reflecting the high quality of their publications.

An analysis of publication patterns reveals that most countries publish their research independently. China and the UK, however, have demonstrated a stronger inclination toward international collaboration, with 21 and 24 collaborative publications, respectively, alongside a similar number of single-country publications (SCPs) at 56 and 51 articles. The prevalence of SCPs over multiple-country publications (MCPs) suggests that researchers from the same country are more inclined to collaborate with domestic colleagues rather than international peers. The United States, however, has shown a tendency to collaborate with technologically advanced countries, such as Korea and Australia, as well as with China, a populous nation, which likely influences U.S. researchers to engage in these international collaborations.

Table 3. Analysis of productive authors, universities, countries, and sources.

Authors	NP	h-Index	g-Index	m-Index	TC	Most Affiliated University	Most Productive Country	Articles	SCP	MCP	Top Paper (Year) with Sources	Paper TC
Wang Y	5	5	5	0.714	616	Seoul National University	China	77	56	21	[61]	830
Clarke G	3	3	3	0.474	65	University of Liverpool	United Kingdom	75	51	24	[62]	634
Dolega L	3	4	4	0.48	72	Swansea University	USA	37	23	14	[52]	378
Dwivedi Y K	6	6	6	0.714	165	University of Leeds	Korea	37	28	9	[63]	313
Birkin M	3	3	3	0.013	60	Huazhong University of Science and Technology	India	17	13	4	[64]	198
Chen Y	3	3	3	0.75	99	Manchester Metropolitan University	Italy	13	11	2	[65]	243
Kar A.K.	3	3	3	0.75	990	Southwest Jiaotong University	Spain	13	11	2	[66]	240
Li X	3	3	3	0.75	31	University of Glasgow	Australia	10	10	0	[67]	168
Li Y	3	3	3	0.75	112	Wuhan University	Germany	8	7	1	[68]	168
Pantano E	3	3	3	0.273	104	Bucharest University of Economic Studies	Jordan	8	7	1	[69]	151
Wang X	5	5	5	0.75	51	Universiti Putra Malaysia	Canada	8	5	3	[9]	37
Adamopoulos P	3	3	3	0.286	115	Al-Ahliyya Amman University	Portugal	7	5	2	[70]	90
Bawack RE	3	3	3	0.5	102	Beijing University of Posts and Telecommunications	France	7	5	2	[71]	40
Beckers J	3	3	3	0.667	9	Department of Computer Technology	Malaysia	6	4	2	[72]	115
Cammaranano A	3	3	3	0.75	104	Indian Institute of Management Ranchi	Romania	6	4	2	[73]	73
Caputo M	3	3	3	0.5	112	Jilin University	Saudi Arabia	6	3	3	[74]	90
Carillo KDA	3	3	3	0.5	102	Massachusetts Institute of Technology	Belgium	5	4	1	[75]	46
Cheshire J	2	2	2	0.333	102	Shenzhen University	Ireland	4	3	1	[76]	90
Culi	3	3	3	0.75	113	Transilvania University of Brasov	The Netherlands	4	3	1	[77]	168
Dennehy D	3	3	3	0.5	170	University Do Vale do Rio Dos Sinos-Unisinos	Turkey	6	5	2	[78]	31

Note: NP: number of publications; h-index: a metric that measures both productivity and citation impact of the publications; g-index: a metric that gives more weight to highly cited articles; m-index: the h-index divided by the number of years since the first publication; TC: total citations; SCP: single-country publication; MCP: multi-country publication.

The table further illustrates that the most influential authors in the field generally have lower h-indices, with only four or five authors standing out with higher values. The h-index, recognized as a reliable metric for mapping scientific contributions and individual achievements, reveals that the leading author, Wang Y, published five papers between 2000 and 2023, accumulating 616 citations and achieving an h-index of 5, indicating his significant influence in the AI and retail marketing literature [79,80]. Among the top 20 authors, 40% have an h-index of 2, including Bawack Re and Carillo KDA, who received 102 citations [81], followed by Cui L with 113 citations [82]. The g-index, a modified version of the h-index proposed by Leo Egghe, shows that only Dwivedi et al. achieved a g-index of 6, followed by Wang Y with a g-index of 5, while other authors typically had a g-index around 3.

A total of 155 documents have been published by the top twenty universities contributing to the AI and retail marketing literature, indicating a growing interest and investment in this domain. Seoul National University leads the list with 15 publications, while three prominent universities from the UK—University of Liverpool (15 publications), Swansea University (14 publications), and University of Leeds (13 publications)—also demonstrate significant contributions. The Huazhong University of Science and Technology ranks fourth, highlighting the substantial contributions from UK institutions, which collectively produced 75 articles and garnered 1305 citations. Additionally, the Indian Institute of

Management Ranchi has made notable contributions to the literature, further emphasizing the global interest in this research area.

In terms of publication sources, the Sustainability journal holds the leading position with 68 out of 404 documents, followed by Logistics and Transportation (18 publications) and the International Journal of Information Management (16 publications). When considering total citation counts, the top 20 most-cited documents are distributed among 15 leading journals. The most-cited document, "AI: Multidisciplinary Perspective on Emerging Challenges, Opportunities, and Agenda for Research, Practice, and Policy", authored by Dwivedi et al. [61], was published in the International Journal of Information Management and has received 830 citations. Another significant paper, "Setting the Future of Digital and Social Media Marketing Research: Perspectives and Research Propositions", also by Dwivedi et al. [62] and published in 2021 in the same journal, ranks second with 570 citations. Additionally, the same journal achieved a "hat trick" by publishing a document authored by Gursoy et al. [52], which accumulated 378 citations. While Sustainability leads in terms of publication volume, the International Journal of Information Management stands out for its citation impact. Furthermore, notable publications in the Tourism Management journal by de Kervenoal et al. [65] and Li et al. [66] received 243 and 240 citations, respectively. These results demonstrate the dominant influence of the International Journal of Information Management in the field despite the significant contribution of Sustainability in terms of publication volume in AI and retail marketing literature.

4.3.2. Authorship Country

The below graph illustrates the most influential countries in co-authorship within the field of AI and retail marketing, along with the corresponding document and citation details for the top 22 countries. China leads the rankings, contributing 75 documents and amassing 1088 citations, followed by Canada with 7 documents and 36 citations and Singapore with a single document garnering 8 citations. Despite publishing only half the number of documents as China (37 documents), the United Kingdom achieved the highest total citation count, with 1305 citations, highlighting the substantial impact of its research. China has invested heavily in AI research and development as part of its national strategy to become a global leader in technology [83]. The Chinese government's significant funding for AI research, combined with an emphasis on international collaborations, has contributed to the high number of publications from China.

As illustrated in Figure 3, the green cluster in the graph represents the collaborative efforts of European countries, including Germany, Spain, Turkey, and the Netherlands. Among these, India stands out as the top-cited country within this cluster, with 519 total citations. The United States is represented in the yellow cluster and ranks third in total citations (634), comparable to the UK in its influence. France, with its national AI strategy and public funding, has promoted international collaborations and research partnerships, especially within the European Union, focusing on ethical AI and technological advancement [84]. Similarly, Romania has leveraged European-funded projects and government-backed digital initiatives to foster its AI research presence [85], while South Korea's heavy investment in AI technologies has led to robust industry–academic collaborations and international partnerships [86]. Meanwhile, Italy and Poland have seen a rise in citation counts, largely driven by their growing emphasis on AI development as a strategic economic pillar. Italy's national AI initiatives and participation in European projects have significantly contributed to its research impact, while Poland's AI strategies, which aim to transform its economy, have fueled research output and visibility in sectors like retail. These combined efforts have strengthened the global research footprint of these countries, contributing to the increasing collaboration and influence of European and Asian nations in AI and retail marketing research.
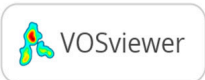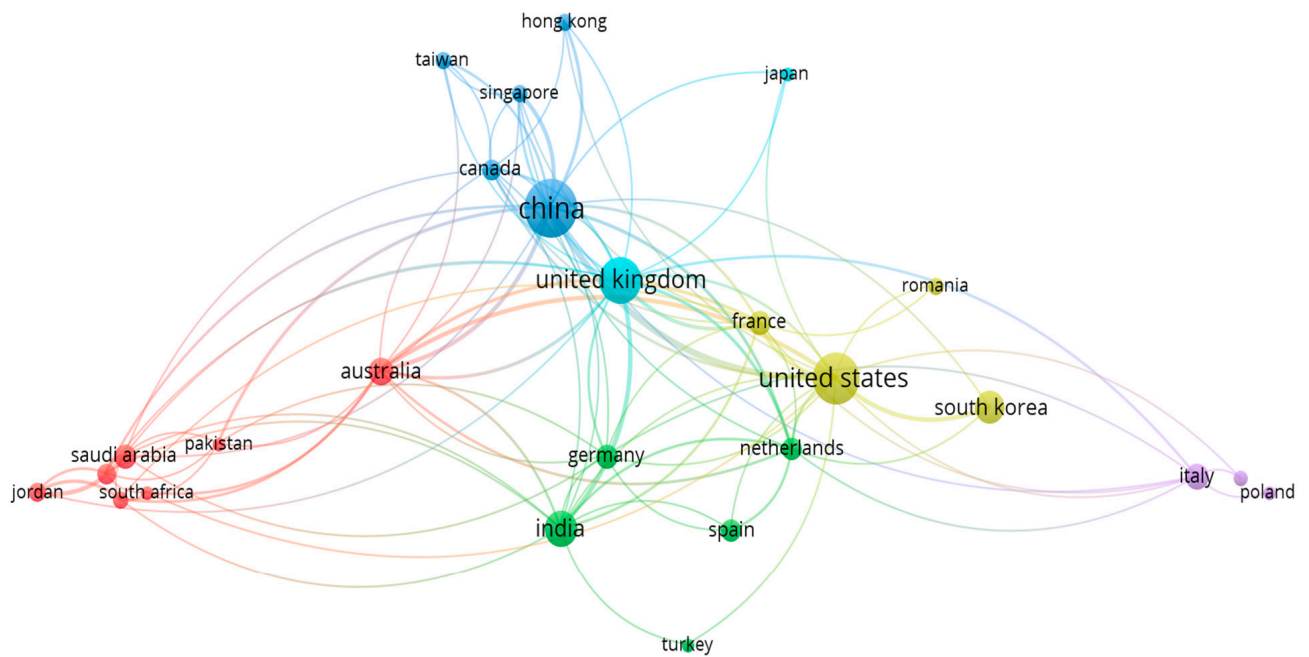
Figure 3. Authorship country.

The red cluster signifies collaboration among countries such as Australia, Pakistan, Saudi Arabia, South Africa, and Jordan. Within this group, Australia is the most prolific, with 8 documents and 193 citations. Research interest is also notably increasing in Italy and Poland, with these countries securing significant citation counts (198 and 113, respectively). This growing collaboration among countries across various clusters reflects an expanding global interest in AI and retail marketing, with a diversity of contributions from different regions.
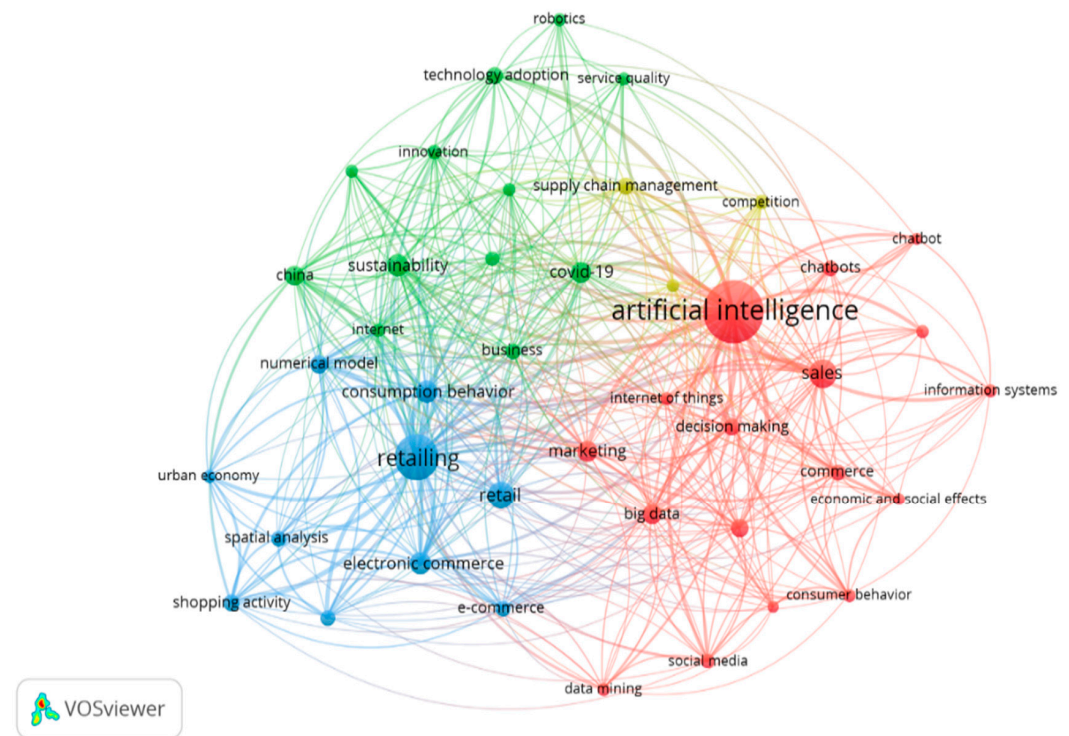
4.3.3. Co-Occurrence Network Analysis through Keywords

Keyword network analysis serves as a powerful tool to delineate the research fields and central themes within a subject by constructing co-occurrence networks of keywords. In this study, a co-occurrence network of keywords derived from 404 documents was generated using VOSviewer software (1.6.20.0 version), providing a comprehensive depiction of the AI and retail marketing domain. The analysis identified 42 keywords(see Appendix A) with a minimum of 10 co-occurrences, which were organized into four distinct clusters, visually represented in red, green, yellow, and blue. Among these, "AI" accounts for 15% of the keywords, while "retailing" represents 12%.

As shown in Figure 4, the red cluster, the most prominent, is centered around the keyword "artificial intelligence" and connects with terms such as the "Internet of Things (IoT)", "decision-making", "marketing", "commerce", "big data", "social media", "data mining", consumer behavior, economic and social studies, information systems, sales, and chatbots. Within this cluster, "AI" stands out as the keyword with the highest volume of associated work. The strong linkage between AI (243 co-occurrences), sales (51), and consumer behavior (33) highlights the centrality of AI in these areas. According to Ref. [87], numerous AI-enabled marketing activities exist, influencing technology adoption, social media, and various forms of digital marketing, particularly within SMEs. These AI-driven activities are predicted to significantly enhance organizational sales volumes. Future

research could further explore the influence of data-driven technologies, chatbots, big data, and social media on consumer purchase behavior and marketing applications [88].

Figure 4. Co-occurrence network analysis (keywords).

In a related study, [89] examined AI in the banking industry, recommending that bank management and technology regulatory authorities take necessary actions to enhance security systems and protective measures, thereby improving customer service and increasing the reliability of AI technologies in banking services. The adoption of AI in Asian countries, particularly in the banking sector, has been shown to support strategic decision making [90]. Beyond banking, the financial and tourism industries are also poised to benefit from AI integration, which can create significant economic and social impacts that accelerate commerce [91].

Turning to the blue cluster, the keyword "retail" (131 co-occurrences) emerges as the most prevalent. The retail industry is undergoing a global transformation, driven by automation and technological advancements that are reshaping customer interactions within stores. For instance, in China, Ref. [6] studied the impact of AI on wholesale and retail trade (WRT), identifying key areas for future research expansion. Conversely, Ref. [92] have raised concerns about the growing threat to urban retail due to changing shopping behaviors, as the shopping experience shifts from human interaction to machine-based systems, exemplified by Amazon's cashier-less stores. AI and robotics are increasingly being recognized as new agents within the retail landscape.

Retailing is closely linked to e-commerce, consumption behavior, and shopping activity. Ref. [90] suggest that e-commerce can be accelerated through performance testing, enhancing the retail user experience, targeted advertising, and customer retention strategies. Notably, AI within the red cluster is strongly connected to retailing through its involvement in marketing. AI has notably transformed aspects of e-commerce and online retail [90] Additionally, retailing intersects with the IoT, as noted by Ref. [92], who explored the diffusion of smart retail technology through IoT. Their study on an automated pizza vending machine in France illustrates the potential for IoT technologies to rapidly penetrate markets, generating significant socio-economic effects through decentralized, bottom-up processes.

The green cluster encompasses keywords such as business, internet, China, sustainability, innovation, technology adoption, supply chain management, and robotics, with "China" accounting for the highest percentage (3%). In the context of advanced technologies, it is also important to focus on innovation for business sustainability. Ref. [93] emphasize the importance of tools like ChatGPT and the role of skilled workers in achieving business sustainability, with leadership motivation being a key factor. ChatGPT is an AI language model developed by OpenAI, built on the generative pretrained transformer (GPT) architecture. It is designed to understand and generate human-like text based on the input it receives [94]. Moreover, environmental sustainability in multichannel retailing, considering strategies and practices, has also garnered attention [95]. Researchers have further investigated the sustainability of chatbots by examining AI and systemic factors [96]. Despite high expectations, chatbot usage has been inconsistent, with low satisfaction levels reported [96], thus demonstrating the need for future research and development to ensure sustainable chatbot services, particularly in AI-driven customer service (AISC).

In the 21st century, the adoption of robo-advisory services has enhanced financial sustainability among millennials, with findings suggesting that financial knowledge, perceived usability, and trust positively impact their willingness to embrace these technologies [97]. Ref. [98] highlights the growing significance of a robotics, AI, and service automation (RAISA)-based economy. The green cluster indicates that researchers are actively exploring the adoption of robotics technology to improve service quality. Concurrently, there is a need to understand how customers respond to service robots with varying levels of intelligence [99]. Ref. [13] noted that service robots can significantly influence consumer emotions through sentiment and evaluation models related to AI. Furthermore, the study of facial recognition technology (FRT) and its associated technology paradoxes and self-efficacy provides insights into users' resistance behaviors, which have critical implications for managers, policymakers, and future researchers [70].

Scholars have also explored offline retailers' internet market innovations in China [100], as well as digital innovation and platform ecosystems in food retailing [79]. These studies demonstrate how online retailers in China are adopting digital data capabilities and innovative methods, potentially transforming the food retail sector's competitive landscape. Future research may further explore how internet market innovations can enhance performance [79]. In today's competitive market, survival has become increasingly challenging, necessitating firms to strengthen their competitiveness by considering factors such as COVID-19, competition, supply chain management, AI, digitalization trends, and strategic responses to overcome these challenges [101].

4.3.4. Coupling Documents

Although the analysis encompassed 404 documents and 1088 authors, the network analysis was strategically focused on highlighting the most prominent co-authorship relationships within the field. This approach ensured that the analysis captured the most influential contributors who have played pivotal roles in shaping the discourse on AI and retail marketing.

As demonstrated in Figure 5, The red cluster comprises seven authors who have concentrated on various AI challenges and opportunities, including the transformative potential of AI, its application in e-commerce, awareness of AI and robotics, and the role of AI in information systems during the Fourth Industrial Revolution. Notably, Authors Dwivedi et al. (2021) are central to this cluster, with their seminal paper on "AI: Emerging Challenges, Opportunities, and Agenda for Research, Practice, and Policy" serving as a cornerstone for subsequent research [61]. The prominence of authors is further underscored by their 830 global citations, representing the strongest network within the red cluster [61]. Choi (2019) follows with the second highest global citation count (313), focusing on blockchain technology in supply chain platforms [63]. Moreover, AI and technical innovations, particularly through text-mining applications of big data, have the potential to transform numerous tasks and processes in emerging management disciplines [69]. Future

research should explore the broader societal and industrial implications of AI to guide its development.

Figure 5. Coupling documents.

In the blue cluster, Dwivedi et al., 2021 [62] highlighted the perspectives and propositions related to social media and digital innovation in marketing research. However, Suel and Polak (2017) [102] noted that the complexities of digital innovation have not been fully captured when analyzing consumer behavior in traditional retail environments. To sustain growth and innovation in both retailing and online channels, researchers must focus on the evolving shopping behaviors of consumers. Suel and Polak (2017) developed a joint model for grocery shopping that integrates channel, store, and travel mode preferences [102]. Regarding new channels and technologies in e-commerce and retail marketing, customer satisfaction remains a critical concern. Ingaldi and Ulewicz (2019) assessed customer satisfaction using Kano's model, emphasizing the importance of sustainable development for the success of e-commerce [103]. Within this cluster, Di Vaio et al. (2020) explored sustainable business models of AI in the agri-food system, particularly the role of stakeholders [9]. Sung et al. (2021) found that the use of AI leads to a positive customer experience [104]. Moreover, scholars are increasingly focusing on developing sustainable business models that apply AI technologies, reflecting a growing emphasis on social responsiveness.

The purple cluster, represented by de Kervenoael et al. (2020), contributed significantly to the understanding of human–robot interaction in hospitality services, with a particular focus on perceived value, information sharing, and empathy, garnering 243 global citations [65]. Bawack et al. (2021) further explored customer experience performance by examining the roles of personality, trust, and privacy in shaping consumer interactions [81]. Additionally, Kayande (2009) discussed the impact of feedback mechanisms within decision support systems (DSSs) on evaluative processes [105]. Additionally, Mishra et al. (2021) discussed the impact of AI on business value proposition [106].

The yellow cluster focuses on the acceptance of AI technology in service delivery within tourism-related industries. Gursoy et al. (2019) investigated customers' willingness to use AI devices in service encounters (AIDUA), finding that customer acceptance of AI technology in service interactions requires a generational shift [52]. Ivanov et al. (2022) expanded on the opportunities for automation technologies to mitigate the negative economic impacts of biosecurity threats, particularly in the travel, tourism, and hospitality (TTH) sectors [107]. Their study explored the costs and benefits of automation, as well as the suitability of business models in tourism industries, highlighting both micro- and macroeconomic implications. Liu et al. (2020) further examined the antecedents of users' resistance toward facial recognition technology (FRT) in microfinance platforms; their study garnered 115 citations [70].

The green cluster addresses the "humanization" of AI-enabled customer service agents (chatbots), as discussed by Schanke et al. (2021) in their study of dual-channel clothing

retailers in the USA [108]. The research highlights how consumers engage with chatbots to share their retail experiences, ultimately influencing the transaction process. Factors such as trust, perceived risk, and satisfaction are crucial in the AI and service automation business environment, particularly in clothing retailing [109]. Verma et al. (2021) emphasized the need for hospitality marketers to understand consumer acceptance of robot services, as this understanding is key to encouraging revisit intentions in robot-operated restaurants, a topic that warrants further exploration in future research [67]. Additionally, Chen et al. (2021) used bibliometric analysis to analyze and visualize the citation network of the AI-marketing interface [110].

4.3.5. Trending Papers' Content Analysis

The content analysis discovered 50 more recently published influential papers, particularly those published in journals with an impact factor of 2 and released after 2021. An in-depth manual reading of 50 papers explored six streams of AI and retail marketing research areas where retailers apply AI: consumer behavior, AI adoption/acceptance, business performance, sustainability, supply chain management, and trust (Table 4).

Table 4. Trending Paper (Theme, Sub-theme, and Findings).

Theme.	Sub-Theme	Methods	Sample	Key Findings	Authors
AI and Consumer Behavior	Purchase Intention and Attitudes	Surveys/experiments	Diverse demographics	AI enhances personalization, increasing customer satisfaction and purchase intentions.	[4,5,31,111]
	Resistance to AI Adoption	Mixed Methods	Geographically diverse	Resistance to AI is influenced by uniqueness neglect.	[30,111]
	Impact on Consumer Decision Making	Experimental Designs, Surveys	Industry-specific (e.g., retail)	AI recommendations shape consumer decision making and influence value co-creation behaviors.	[112,113]
	AI in Influencer Marketing	Literature Review	N/A	AI-driven influencer marketing impacts consumer engagement through visual cues like color effects.	[25]
AI and Business Performance	Impact on Sales and Operational Efficiency	Surveys	Diverse representation	AI adoption enhances sales growth, operational efficiency, and customer satisfaction.	[6,114–116]
	AI Implementation in Business Contexts	Field experiment	Retail and manufacturing	AI impacts business decision	[41]
	Intellectual Trends in AI and Business	Bibliometric Analysis	N/A	AI enhances innovation and efficiency, mapping the field for future AI business research.	[117]
	AI's Role in Marketing Strategies	Interviews	Retailers	AI-driven marketing strategies positively affect consumer behavior and drive business growth.	[95]
	Resistance to AI in Business	Surveys and Literature Review	SMEs	Resistance to AI adoption is driven by perceived risks, but transparency can enhance trust and acceptance.	[118,119]
	AI's Impact on Innovation	Surveys and Literature Review	SMEs	AI drives product innovation and improves resilience.	[120,121]
AI in Retail Marketing	AI Adoption in Retail	Quantitative Surveys	Diverse businesses	AI adoption enhances marketing performance, customer satisfaction, and operational efficiency.	[3,8,112]
	AI Applications in Retail	Interviews and case analysis	Retail stakeholders	AI impacts online customer experience and create value for businesses.	[7,122]

Table 4. *Cont.*

Theme.	Sub-Theme	Methods	Sample	Key Findings	Authors
	Intellectual Trends in AI and Retail	Literature Review and experiments	N/A	Highlights key trends in domain of AI. individuals perceive interactions with machines and AI differently than with humans, as experiments reveal.	[3,123]
	Consumer Behavior and AI-Driven Marketing	Interviews	Consumer segments	AI-driven marketing strategies positively influence purchasing behavior.	[124]
	AI's Role in Innovation	Survey	Retail consumers	Positive prior experience with AI technologies positively impact AI use readiness.	[125]
	Ethical Implications	Literature Review	N/A	Key issues raised—AI biases, ethical design, consumer privacy, cybersecurity, individual autonomy and wellbeing, and unemployment.	[126]
AI and Sustainability	AI Adoption in Sustainability	Literature Review	N/A	AI enhances sustainability performance by optimizing resource use and reducing waste.	[127]
	AI Applications in Sustainability	Literature Review	N/A	AI supports sustainability through energy management and supply chain optimization.	[128]
	Intellectual Trends in AI and Sustainability	Bibliometric Analysis	N/A	Bibliometric analysis maps the research landscape, revealing trends and gaps in AI and sustainability.	[129]
	Ethical Considerations in AI Adoption	Mixed Methods	Geographically diverse SMEs	Ethical AI adoption is critical for building trust and ensuring responsible, sustainable marketing.	[17,130,131]
	AI-Driven Innovation for Sustainability	Literature Survey	SMEs	Rethink and redesign business models for sustainability	[9]
	Challenges in AI Implementation	Case Studies	N/A	Challenges include data quality, expansive technologies, and the need for skilled personnel in AI adoption	[132]
AI and Trust	Trust in AI Adoption	Literature Review, Surveys	Diverse demographics (age, gender, socio-economic status)	Trust is a critical factor in AI adoption, influenced by reliability, transparency, and ethical considerations.	[36,133,134]
	Ethical Considerations in AI	Case Studies	Industry-specific	Ethical AI systems that demonstrate accountability increase consumer trust and adoption.	[135–137]
	AI Autonomy	Literature Review	N/A	Transparency, complementarity, and privacy regulation are vital for increasing consumer autonomy.	[138]
AI and Supply Chain Management	AI Adoption and Efficiency	Surveys	Diverse industry representation (retail, manufacturing, agriculture)	AI adoption significantly enhances supply chain efficiency, improving operational performance.	[139,140]
	Decision Making in Supply Chain	Case Studies	Various Contexts	AI improves decision making in supply chain operations, optimizing supplier selection and enhancing resilience.	[9]

Table 4. *Cont.*

Theme.	Sub-Theme	Methods	Sample	Key Findings	Authors
	Critical success factors for AI in Supply Chain	Experimental Designs	SMEs	AI adoption is influenced by various factors including technical readiness, sufficient security and privacy	[46]
	AI-Driven Supply Chains	Survey	Firms	Information sharing and Supply chain integration are important for mitigating risk in AI-driven supply chain management.	[141]
	AI-Driven Innovation in Supply Chain	Systematic review	N/A	AI fosters innovation by enabling new product development and enhancing supply chain agility.	[142]

5. Discussion

This content analysis reveals several key themes within the domain of AI and retail marketing, each offering significant insights into the applications and implications of AI technologies across various facets of the industry.

One of the most leading themes identified was the application of AI in understanding and influencing consumer behavior [4,5,31,111,116]. AI's ability to analyze vast amounts of real-time data has enabled retailers to respond more effectively to customer needs, significantly transforming how they craft personalized communications to influence purchase intentions [5,143,144]. AI-powered personal assistants and AI robot shopping assistants are increasingly being used to augment traditional retail services, enhancing customer experiences through tailored, interactive services [145,146]. These technologies, alongside AI's predictive algorithms, have redefined product recommendations and contributed to improvements in inventory management [147]. Additionally, the integration of AI into social media platforms has further amplified its impact on consumer engagement and behavior. AI environments, as shown in studies, have been found to significantly influence repurchase intentions and online purchasing behaviors [4,5]. However, while the potential for AI to revolutionize consumer behavior analytics is evident, resistance to AI-based services persists, particularly when consumers perceive AI interactions as lacking empathy [30,111,148,149]. This highlights an ongoing challenge in understanding the specific consumer segments less inclined to embrace AI services, as further explored by Ref. [70].

The business performance theme shows AI's role in enhancing operational efficiencies and driving innovations across industries [6,114–116]. AI adoption in retail has led to the reshaping of customer spending patterns and significant productivity gains, especially in sectors such as food retail [6,114,115]. Notably, research suggests that even marginal increases in AI penetration can yield substantial business productivity [41], as seen in cases like Starbucks, where AI implementation drove significant revenue growth within a short period [150]. The ability of AI to facilitate innovation is also evident, particularly in countries such as Saudi Arabia, where AI-driven manufacturing companies have optimized production processes through machine learning and neural networks [151]. In other sectors, such as banking, AI adoption has contributed to enhanced customer service and overall sector growth [18,89]. These findings affirm the broad applicability of AI across industries and its potential to drive both exploitative and exploratory innovation [152].

Another key theme within the content analysis relates to the adoption and acceptance of AI in retail marketing [3,7,8,95,104]. Emerging technologies, particularly in fashion retail, demonstrate the importance of factors such as perceived ease of use (PEOU), perceived usefulness (PU), and perceived enjoyment (PE) in driving AI technology adoption [153]. The role of training in enhancing AI adoption, as well as the influence of organizational readiness and top management support, further shows the importance of institutional support for successful AI integration [154,155]. Studies also highlighted that prior experience with AI technologies significantly influences consumer readiness to use AI, with positive experiences enhancing readiness and perceived risks serve as a barrier. [89,125,126].

Sustainability emerged as another important theme, with AI's role in supporting sustainable business practices and supply chain management (SCM) receiving significant attention. AI technologies are increasingly being adopted to address global market opportunities and sustainability challenges, particularly in retail markets where environmentally conscious consumers are driving shifts in production and consumption patterns [77,131].

Moreover, AI's role in promoting sustainable supply chain performance is particularly evident within SMEs, where AI chatbots and robo-advisory services are being leveraged to optimize resource use and improve overall supply chain efficiency [127,128,156,157]. However, ethical and social concerns continue to pose challenges to the widespread adoption of AI in sustainability efforts, necessitating a focus on the digitization of business processes to develop more sustainable models [17,130,131,158].

Trust also plays a central role in the adoption of AI technologies [133,134], particularly in marketing. As previous studies have shown, consumer trust in AI systems is influenced by a variety of factors, including perceived risk, satisfaction, and privacy concerns [81]. Despite the potential of AI to enhance retail commerce, studies suggest that as AI autonomy increases, consumers may hesitate to fully embrace these systems, highlighting the importance of managing trust-related concerns in AI implementation [159,160].

Further complicating this dynamic are the differing ethical considerations and behaviors exhibited by consumers when interacting with AI versus human-operated services [135,136]. Prior studies [123] also reveal that consumers are less likely to express moral intentions in AI interactions, demonstrating the need for ongoing research into the ethical dimensions of AI in marketing [48,161].

Lastly, the theme of AI in supply chain management (SCM) highlights AI's growing importance in optimizing logistical processes, from demand forecasting to warehouse automation [9,139,140,162]. AI chatbots have demonstrated their effectiveness in streamlining supply chain operations, particularly within SMEs [156]. However, achieving sustainable supply chain performance (SCP) requires careful consideration of supply chain risks, with AI playing a central role in mitigating these risks [46,141]. The complexities of AI adoption in the e-commerce supply chain further illustrate the challenges faced by manufacturers and platforms as they seek to balance innovation with profitability [163].

The analysis of identified themes reveals that AI and consumer behavior and AI in retail marketing dominate the landscape, as highlighted by the considerable number of studies exploring AI's role in enhancing personalization, customer engagement, and real-time decisionmaking. This reflects a strong research focus on how AI-driven innovations are transforming consumer interactions and business models within the retail sector. In contrast, the relatively fewer studies on AI and sustainability suggest that this remains an under-researched yet vital area. Given the increasing reliance on AI to drive operational efficiencies, there is significant scope for further exploration of AI's potential to foster sustainable practices, especially as sustainability becomes a matter of concern across industries.

6. Conclusions

This study provides a comprehensive analysis of AI and retail marketing literature, based on 404 documents sourced from the Scopus database. Using various bibliometric parameters, the study identifies China, Dwivedi, Seoul National University, and Sustainability as the most productive countries, authors, institutions, universities, and sources in the field of AI and retail marketing. Moreover, the content analysis reveals six key research streams: consumer behavior, AI adoption/acceptance, business performance, sustainability, supply chain management, and trust.

The study contributes to the existing literature by highlighting the benefits of AI in retail marketing, particularly through the use of technologies such as chatbots, service robots, and robo-advisory services. AI's implementation across diverse industries, including retail, food, clothing, banking, finance, and tourism, has significant micro- and macroeconomic implications. AI adoption in these sectors is poised to accelerate commerce and enhance

future competitiveness [91,164]. By focusing on AI and retail marketing, organizations can develop sustainable business models that support long-term growth [131].

Technology regulatory authorities and policymakers must proactively enhance security and protection protocols, thereby improving customer service. Additionally, future research should emphasize the need for regulators and decisionmakers to protect public funds and prevent cyberattacks through new legislation. Marketers should also develop policies to address these challenges.

Looking ahead, researchers and practitioners should expand their focus on integrating AI technologies across a broader range of sectors, including e-commerce, banking, tourism, food, agriculture, and small to medium-sized enterprises. There is considerable potential for using chatbots, robotics, automation services, and service robots to enhance customer service at the retail level in the future.

7. Directions for Future Research

The findings from this review provide a solid foundation for advancing research in AI and retail marketing. However, several challenges and opportunities remain unexplored, presenting a fertile ground for future scholarly inquiry. This section outlines key areas for future research, organized under specific subheadings to guide the academic community in addressing these gaps.

7.1. Expanding the Scope of AI in Retail and Wholesale Trade

AI's application in retail marketing has shown significant potential, but its utilization in wholesale trade is relatively untapped. Future research should investigate how AI can enhance operational efficiency, supply chain management, and customer engagement in wholesale settings. There is also a need to examine the socio-economic impacts of AI on these sectors, especially in emerging markets where AI adoption is still in its nascent stages [69].

7.2. Enhancing Consumer Interaction with AI Technologies

The integration of AI technologies, such as big data, data mining, chatbots, and social media analytics, has revolutionized consumer behavior analysis. However, future research should delve deeper into understanding how these technologies influence consumer decision-making processes and purchase behaviors across different demographic segments. Additionally, investigating the role of AI in enhancing consumer trust, reducing perceived risks, and increasing satisfaction in AI-driven retail environments is imperative [109]. Studies should also consider how AI can be leveraged to improve service quality in e-commerce platforms, particularly through the development of more advanced and human-like AI assistants [67].

7.3. AI and Strategic Decision Making in the Banking Sector

AI's role in strategic decision making within the financial industry, particularly in enhancing security and improving customer service, presents a significant research opportunity. Future studies should focus on developing frameworks that integrate AI with cyber governance to protect against cyberattacks, especially in sectors like Islamic banking, where security concerns are paramount [165]. Moreover, research should explore how AI can be utilized to optimize decision-making processes in banking, thereby improving overall business performance and customer satisfaction [89].

7.4. AI in Business Performance and Innovation

The potential of AI to drive innovation and enhance business performance across various industries, including food retail, manufacturing, and tourism, warrants further investigation. Future research should examine how AI-enabled marketing activities can increase organizational competitiveness and sales volume, particularly in rapidly evolving

markets [79,151]. Additionally, exploring the costs and benefits of AI-driven automation in business models could provide valuable insights for managers and policymakers [92].

7.5. Sustainability and AI Integration

AI's impact on sustainability is a burgeoning area of interest; yet, many challenges remain. Future research should focus on how AI can be harnessed to develop sustainable business models, particularly in SMEs, supply chain management, and the healthcare sector [156,166]. The role of AI in promoting sustainability through innovative chatbot services and robo-advisory systems also requires further exploration, especially in terms of enhancing trust, usability, and customer engagement [97]. Additionally, research should address the ethical and social implications of AI in sustainability, ensuring that these technologies contribute positively to societal welfare [158].

7.6. Overcoming User Resistance to AI

User resistance to AI technologies remains a critical challenge for both researchers and practitioners. Future studies should investigate the factors that drive resistance, such as lack of empathy, perceived risks, and moral concerns, particularly in service interactions involving AI [123,149]. Understanding how to mitigate these resistance factors and improve consumer acceptance of AI in various sectors, including retail, banking, and healthcare, is essential for the successful implementation of AI technologies.

7.7. Trust, Ethics, and AI in Retail Marketing

Trust remains a pivotal issue in AI adoption, particularly in retail marketing. Future research should explore how trust can be built and maintained in AI-driven retail environments, especially through the use of autonomous chatbots [167] and other AI systems such as service robots [168]. Additionally, the ethical implications of AI in retail, particularly in hiring processes and consumer interactions, need to be thoroughly examined to ensure that AI technologies are used responsibly and transparently [161]. Researchers should also consider how trust, perceived risk, and satisfaction influence retail commerce, providing insights into how AI can be better integrated into the retail industry.

7.8. Addressing Challenges in AI Research

While the potential of AI in retail marketing is immense, the scholarly community faces several challenges that must be addressed to advance research in this field. These include the need for robust methodologies to assess the impact of AI, the ethical considerations of AI deployment, and the complexities of integrating AI with existing business models. Moreover, as AI technologies continue to evolve, researchers must stay ahead of the curve by exploring new applications and addressing emerging challenges in AI adoption and implementation.

8. Implications and Limitations

For companies, the study demonstrates the importance of integrating AI, retail marketing, and technology adoption to develop e-commerce infrastructures and ensure high service quality. In the hospitality sector, AI adoption can significantly enhance consumer experiences [153], especially using robot-operated services [169]. Research suggests that the use of AI to improve consumer engagement and experience leads to increased consumer revisit intentions and satisfaction [4]. Marketers must focus on these evolving consumer preferences to ensure successful AI implementation in service encounters. Organizations must also address user resistance to AI adoption, as various studies have identified behavioral barriers that hinder the smooth integration of AI technologies [30]. Moreover, managers, technology designers, and researchers need to consider both micro- and macroeconomic impacts when integrating AI into business models, ensuring they balance the costs and benefits of automation [131]. The digitization of business processes is increasingly

essential for developing sustainable business models that can enhance overall business performance [95].

Despite the comprehensive nature of our analysis, there are several limitations worth noting. First, the study relied solely on the Scopus database, which, while extensive, may not encompass all relevant studies from other databases, such as Web of Science or Google Scholar. Future research should consider incorporating additional databases to ensure a more diverse and inclusive dataset. Additionally, focus on articles published between 2000 and 2023 was intended to capture recent developments in AI and retail marketing; however, some earlier foundational studies may have been excluded.

Furthermore, the selection of 50 documents for content analysis, though justified by the focus on high-impact literature, may limit the breadth of perspectives covered. Future studies could expand the sample size to include a broader range of documents, which may offer deeper insights into niche areas of AI adoption in retail. Lastly, while our content analysis was thorough, alternative qualitative methodologies, such as the grounded theory or discourse analysis, could further enrich the understanding of emerging themes in this field.

Another limitation is the focus on 27 key authors, which, while providing a network analysis of leading scholars, might overlook other influential voices in the field. Additionally, the analysis only considered journals with an impact factor of 2.0 or higher, which could further limit the scope by excluding valuable contributions from lower-ranked or non-impact journals.

Moreover, when considering the high citation counts of journals such as Sustainability (MDPI), the factors of open-access (OA) versus non-OA publications should be acknowledged. Open-access journals tend to receive more citations due to their wide accessibility, which may influence citation metrics and skew the perceptions of research impact [169]. This factor could affect the interpretation of citation trends in the literature analyzed, and future studies should incorporate a comparison of OA and non-OA publications to provide a more nuanced understanding.

In summary, while this study offers a comprehensive overview of AI in retail marketing, future research should address the limitations concerning database scope, key author focus, journal impact factor restrictions, and the potential bias introduced by open-access publishing. This will help build a more holistic understanding of the domain of AI in retail marketing.

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Appendix A Keyword Analysis

Red Cluster (AI-focused):

1. Artificial Intelligence
2. Internet of Things (IoT)
3. Decision Making
4. Marketing
5. Commerce

6. Big Data
7. Social Media
8. Data Mining
9. Consumer Behavior
10. Economic and Social Effects
11. Information Systems
12. Sales (51 co-occurrences)
13. Chatbot/Chatbots
14. Digital Marketing
15. Technology Adoption

Blue Cluster (Retail-focused):

16. Retail (131 co-occurrences)
17. Retailing
18. E-commerce
19. Consumption Behavior
20. Shopping Activity
21. Wholesale and Retail Trade (WRT)
22. Targeted Advertising
23. Customer Retention
24. User Experience
25. Smart Retail Technology
26. Shopping Behavior

Green Cluster (Sustainability and Innovation):

27. Business
28. Internet
29. China
30. Sustainability
31. Innovation
32. Technology Adoption
33. Supply Chain Management
34. Robotics
35. Environmental Sustainability
36. Leadership Motivation
37. Service Robots

Additional Keywords from Various Clusters:

38. COVID-19
39. Competition
40. Strategic Decision Making
41. Digitalization Trends
42. Financial Sustainability

References

1. Cocco, H.; De-Juan-Vigaray, M. A typology of omnichannel retailer activities during the COVID-19 pandemic. *Int. J. Retail Distrib. Manag.* **2022**, *50*, 1062–1094. [CrossRef]
2. Ledro, C.; Nosella, A.; Vinelli, A. Artificial intelligence in customer relationship management: Literature review and future research directions. *J. Bus. Ind. Mark.* **2022**, *37*, 48–63. [CrossRef]
3. Heins, C. Artificial intelligence in retail—A systematic literature review. *Foresight* **2022**, *25*, 264–286. [CrossRef]
4. Nazir, S.; Khadim, S.; Ali Asadullah, M.; Syed, N. Exploring the influence of artificial intelligence technology on consumer repurchase intention: The mediation and moderation approach. *Technol. Soc.* **2023**, *72*, 102190. [CrossRef]
5. Yin, D.; Li, M.; Qiu, H. Do customers exhibit engagement behaviors in AI environments? The role of psychological benefits and technology readiness. *Tour. Manag.* **2023**, *97*, 104745. [CrossRef]
6. Jian, L.; Guo, S.; Yu, S. Effect of Artificial Intelligence on the Development of China's Wholesale and Retail Trade. *Sustainability* **2023**, *15*, 10524. [CrossRef]

7. Calvo, A. The role of artificial intelligence in improving the omnichannel customer experience. *Int. J. Retail Distrib. Manag.* **2023**, *51*, 1174–1194. [CrossRef]
8. Fu, H.; Chang, T.; Lin, S.; Teng, Y.; Huang, Y. Evaluation and adoption of artificial intelligence in the retail industry. *Int. J. Retail Distrib. Manag.* **2023**, *51*, 773–790. [CrossRef]
9. Di Vaio, A.; Boccia, F.; Landriani, L.; Palladino, R. Artificial intelligence in the agri-food system: Rethinking sustainable business models in the COVID-19 scenario. *Sustainability* **2020**, *12*, 4851. [CrossRef]
10. Davenport, T.; Guha, A.; Grewal, D.; Breßgott, T. How artificial intelligence will change the future of marketing. *J. Acad. Mark. Sci.* **2019**, *48*, 24–42. [CrossRef]
11. Rose, K.; Eldridge, S.; Chapin, L. The internet of things: An overview. *Internet Soc. ISOC* **2015**, *80*, 1–53.
12. Guha, A.; Grewal, D.; Kopalle, P.K.; Haenlein, M.; Schneider, M.J.; Jung, H.; Moustafa, R.; Hegde, D.R.; Hawkins, G. How artificial intelligence will affect the future of retailing. *J. Retail.* **2021**, *97*, 28–41. [CrossRef]
13. Pantano, E.; Scarpi, D. I, Robot, You, Consumer: Measuring Artificial Intelligence Types and their Effect on Consumers Emotions in Service. *J. Serv. Res.* **2022**, *25*, 583–600. [CrossRef]
14. Yau, K.; Saad, N.; Chong, Y. Artificial intelligence marketing (aim) for enhancing customer relationships. *Appl. Sci.* **2021**, *11*, 8562. [CrossRef]
15. Kumar, D. Ethical and legal challenges of AI in marketing: An exploration of solutions. *J. Inf. Commun. Ethics Soc.* **2024**, *22*, 124–144. [CrossRef]
16. Winter, P.; Carusi, A. If you're going to trust the machine, then that trust has got to be based on something. *Sci. Technol. Stud.* **2022**, *35*, 58–77. [CrossRef]
17. Badghish, S. Artificial intelligence adoption by smes to achieve sustainable business performance: Application of technology–organization–environment framework. *Sustainability* **2024**, *16*, 1864. [CrossRef]
18. Gao, Y.; Liu, H. Artificial intelligence-enabled personalization in interactive marketing: A customer journey perspective. *J. Res. Interact. Mark.* **2022**, *17*, 663–680. [CrossRef]
19. Verdecchia, R.; Sallou, J.; Cruz, L. A systematic review of green AI. *Wiley Interdiscip. Rev. Data Min. Knowl. Discov.* **2023**, *13*, e1507. [CrossRef]
20. Rathore, B. Fashion sustainability in the AI era: Opportunities and challenges in marketing. *Eduzone Int. Peer Rev./Ref. Multidiscip. J. EIPRMJ* **2019**, *8*, 17–24. [CrossRef]
21. Su, Y. Ethical marketing AI? A structured literature review of the ethical challenges posed by artificial intelligence in the domains of marketing and consumer behavior. In Proceedings of the Hawaii International Conference on System Sciences (HICSS) 2023, Maui, HI, USA, 3–6 January 2023. [CrossRef]
22. Sung, H.J.; Jeon, H.M. Untact: Customer's acceptance intention toward robot barista in coffee shop. *Sustainability* **2020**, *12*, 8598. [CrossRef]
23. Mohamed, E. The impact of artificial intelligence on social media content. *J. Soc. Sci.* **2024**, *20*, 12–16. [CrossRef]
24. Devereux, E.; Grimmer, L.; Grimmer, M. Consumer engagement on social media: Evidence from small retailers. *J. Consum. Behav.* **2019**, *19*, 151–159. [CrossRef]
25. Zhang, L.; Wei, W. Influencer marketing: A comparison of traditional celebrity, social media influencer, and AI influencer. *Boston Hosp. Rev.* **2021**, 1–11.
26. Perakakis, E.; Mastorakis, G.; Kopanakis, I. Social media monitoring: An innovative intelligent approach. *Designs* **2019**, *3*, 24. [CrossRef]
27. Sufi, F. A new social media analytics method for identifying factors contributing to COVID-19 discussion topics. *Information* **2023**, *14*, 545. [CrossRef]
28. Guerra -Tamez, C. Decoding gen z: AI's influence on brand trust and purchasing behavior. *Front. Artif. Intell.* **2024**, *7*, 1323512. [CrossRef]
29. Yim, A.; Cui, A.; Walsh, M. The role of cuteness on consumer attachment to artificial intelligence agents. *J. Res. Interact. Mark.* **2023**, *18*, 127–141. [CrossRef]
30. Mou, Y.; Xu, T.; Hu, Y. Uniqueness neglect on consumer resistance to AI. *Mark. Intell. Plan.* **2023**, *41*, 669–689. [CrossRef]
31. Chin, J.; Do, C.; Kim, M. How to increase sport facility users' intention to use AI fitness services: Based on the technology adoption model. *Int. J. Environ. Res. Public Health* **2022**, *19*, 14453. [CrossRef]
32. Khrais, L. Role of artificial intelligence in shaping consumer demand in e-commerce. *Future Internet* **2020**, *12*, 226. [CrossRef]
33. Naz, H. Artificial intelligence and predictive marketing: An ethical framework from managers' perspective. *Span. J. Mark. Esic* **2024**. [CrossRef]
34. Shifrin, M.; Khavtorin, A.; Danilov, G. Artificial intelligence: On the way to doctor's trust. *Stud. Health Technol. Inform.* **2022**, *295*, 534–537. [CrossRef] [PubMed]
35. Kim, T.; Song, H. Communicating the limitations of AI: The effect of message framing and ownership on trust in artificial intelligence. *Int. J. Hum.-Comput. Interact.* **2023**, *39*, 790–800. [CrossRef]
36. Pelău, C.; Stanescu, M.; Şerban, D. Big-data and consumer profiles—The hidden traps of data collection on social media networks. *Proc. Int. Conf. Bus. Excell.* **2019**, *13*, 1070–1078. [CrossRef]
37. Cooper, D.; Yalcin, T.; Nistor, C.; Macrini, M.; Pehlivan, E. Privacy considerations for online advertising: A stakeholder's perspective to programmatic advertising. *J. Consum. Mark.* **2022**, *40*, 235–247. [CrossRef]

38. Chen, D.; Esperança, J.; Wang, S. The impact of artificial intelligence on firm performance: An application of the resource-based view to e-commerce firms. *Front. Psychol.* **2022**, *13*, 884830. [CrossRef]

39. Stępień, S. Are small farms sustainable and technologically smart? Evidence from poland, romania, and lithuania. *Cent. Eur. Econ. J.* **2023**, *10*, 116–132. [CrossRef]

40. Gudigantala, N.; Madhavaram, S.; Bicen, P. An AI decision-making framework for business value maximization. *AI Mag.* **2023**, *44*, 67–84. [CrossRef]

41. Otis, N. *The Uneven Impact of Generative AI on Entrepreneurial Performance*; Center for Open Science: Charlottesville, VA, USA, 2023. [CrossRef]

42. Singh, P. Digital transformation in supply chain management: Artificial intelligence (AI) and machine learning (ml) as catalysts for value creation. *Int. J. Supply Chain Manag.* **2023**, *12*, 57–63. [CrossRef]

43. Atadoga, A. AI in supply chain optimization: A comparative review of usa and african trends. *Int. J. Sci. Res. Arch.* **2024**, *11*, 896–903. [CrossRef]

44. Eyo-Udo, N. Leveraging artificial intelligence for enhanced supply chain optimization. *Open Access Res. J. Multidiscip. Stud.* **2024**, *7*, 001–015. [CrossRef]

45. Modgil, S.; Singh, R.; Hannibal, C. Artificial intelligence for supply chain resilience: Learning from COVID-19. *Int. J. Logist. Manag.* **2021**, *33*, 1246–1268. [CrossRef]

46. Dora, M.; Kumar, A.; Mangla, S.; Pant, A.; Kamal, M. Critical success factors influencing artificial intelligence adoption in food supply chains. *Int. J. Prod. Res.* **2021**, *60*, 4621–4640. [CrossRef]

47. Papić, T. Advanced technologies as a framework for sustainable marketing campaigns (AI application in neuromarketing). In Proceedings of the Sinteza 2023—International Scientific Conference on Information Technology, Computer Science, and Data Science, Belgrad, Serbia, 27 May 2023; pp. 180–184. [CrossRef]

48. Hermann, E. Artificial intelligence in marketing: Friend or foe of sustainable consumption? *AI Soc.* **2021**, *38*, 1975–1976. [CrossRef]

49. Draws, T.; Szlávik, Z.; Timmermans, B.; Tintarev, N.; Varshney, K.; Hind, M. Disparate impact diminishes consumer trust even for advantaged users. In Proceedings of the International Conference on Persuasive Technology, Virtual Event, 12–14 April 2021; pp. 135–149. [CrossRef]

50. Baru, R.I.; Sanders, N.; Aloysius, J.; Williams, D. Utilizing people, analytics, and AI for decision making in the digitalized retail supply chain. *J. Bus. Logist.* **2023**, *45*, e12355. [CrossRef]

51. Kaartemo, V.; Helkkula, A. A systematic review of artificial intelligence and robots in value co-creation: Current status and future research avenues. *J. Creat. Value* **2018**, *4*, 211–228. [CrossRef]

52. Gursoy, D.; Chi, O.H.; Lu, L.; Nunkoo, R. Consumers acceptance of artificially intelligent (AI) device use in service delivery. *Int. J. Inf. Manag.* **2019**, *49*, 157–169. [CrossRef]

53. Donthu, N.; Kumar, S.; Mukherjee, D.; Pandey, N.; Lim, W.M. How to conduct a bibliometric analysis: An overview and guidelines. *J. Bus. Res.* **2021**, *133*, 285–296. [CrossRef]

54. Mukherjee, A.G.; Wanjari, U.R.; Chakraborty, R.; Renu, K.; Vellingiri, B.; George, A.; CR, S.R.; Gopalakrishnan, A.V. A review on modern and smart technologies for efficient waste disposal and management. *J. Environ. Manag.* **2021**, *297*, 113347. [CrossRef]

55. Akther, N.; Abdullah Al Mamun, M.; Abul Kalam Azad, M.; Sorwar, G. Review of Human Resource Management (HRM) Literature: A bibliometric Analysis (1981–2019). *DLSU Bus. Econ. Rev.* **2022**, *32*, 176–190.

56. Zupic, I.; Čater, T. Bibliometric methods in management and organization. *Organ. Res. Methods* **2015**, *18*, 429–472. [CrossRef]

57. Van Eck, N.; Waltman, L. Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics* **2010**, *84*, 523–538. [CrossRef]

58. Rosado-Serrano, A.; Paul, J.; Dikova, D. International franchising: A literature review and research agenda. *J. Bus. Res.* **2018**, *85*, 238–257. [CrossRef]

59. Ofosu-Ampong, K. Artificial intelligence research: A review on dominant themes, methods, frameworks and future research directions. *Telemat. Inform. Rep.* **2024**, *14*, 100127. [CrossRef]

60. Rao, B.P. Improving retail effectiveness through technology: A survey of analytical tools for physical and on-line retailers. *Technol. Soc.* **2000**, *22*, 111–122. [CrossRef]

61. Dwivedi, Y.K.; Hughes, L.; Ismagilova, E.; Aarts, G.; Coombs, C.; Crick, T.; Duan, Y.; Dwivedi, R.; Edwards, J.; Eirug, A. Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *Int. J. Inf. Manag.* **2021**, *57*, 101994. [CrossRef]

62. Dwivedi, Y.K.; Ismagilova, E.; Hughes, D.L.; Carlson, J.; Filieri, R.; Jacobson, J.; Jain, V.; Karjaluoto, H.; Kefi, H.; Krishen, A.S.; et al. Setting the future of digital and social media marketing research: Perspectives and research propositions. *Int. J. Inf. Manag.* **2021**, *59*, 102168. [CrossRef]

63. Choi, T.-M. Blockchain-technology-supported platforms for diamond authentication and certification in luxury supply chains. *Transp. Res. Part E Logist. Transp. Rev.* **2019**, *128*, 17–29. [CrossRef]

64. Sima, V.; Ileana Georgiana, G.; Jonel, S.; Dumitru, N. Influences of the industry 4.0 revolution on the human capital development and consumer behavior: A systematic review. *Sustainability* **2020**, *12*, 4035. [CrossRef]

65. de Kervenoael, R.; Hasan, R.; Schwob, A.; Goh, E. Leveraging human-robot interaction in hospitality services: Incorporating the role of perceived value, empathy, and information sharing into visitors' intentions to use social robots. *Tour. Manag.* **2020**, *78*, 104042. [CrossRef]

66. Li, J.J.; Bonn, M.A.; Ye, B.H. Hotel employee's artificial intelligence and robotics awareness and its impact on turnover intention: The moderating roles of perceived organizational support and competitive psychological climate. *Tour. Manag.* **2019**, *73*, 172–181. [CrossRef]

67. Verma, S.; Sharma, R.; Deb, S.; Maitra, D. Artificial intelligence in marketing: Systematic review and future research direction. *Int. J. Inf. Manag. Data Insights* **2021**, *1*, 100002. [CrossRef]

68. Collins, C.; Dennehy, D.; Conboy, K.; Mikalef, P. Artificial intelligence in information systems research: A systematic literature review and research agenda. *Int. J. Inf. Manag.* **2021**, *60*, 102383. [CrossRef]

69. Kushwaha, A.K.; Kar, A.K.; Dwivedi, Y.K. Applications of big data in emerging management disciplines: A literature review using text mining. *Int. J. Inf. Manag. Data Insights* **2021**, *1*, 100017. [CrossRef]

70. Liu, A.; Urquía-Grande, E.; López-Sánchez, P.; Rodríguez-López, Á. How technology paradoxes and self-efficacy affect the resistance of facial recognition technology in online microfinance platforms: Evidence from China. *Technol. Soc.* **2022**, *70*, 102041. [CrossRef]

71. Fan, X.J.; Ning, N.X.; Deng, N.Q. The impact of the quality of intelligent experience on smart retail engagement. *Mark. Intell. Plan.* **2020**, *38*, 877–891. [CrossRef]

72. Adamopoulos, P.; Ghose, A.; Todri, V. The impact of user personality traits on word of mouth: Text-mining social media platforms. *Inf. Syst. Res.* **2018**, *29*, 612–640. [CrossRef]

73. Rana, N.P.; Chatterjee, S.; Dwivedi, Y.K.; Akter, S. Understanding dark side of artificial intelligence (AI) integrated business analytics: Assessing firm's operational inefficiency and competitiveness. *Eur. J. Inf. Syst.* **2022**, *31*, 364–387. [CrossRef]

74. Grewal, D.; Motyka, M.; Levy, M. The evolution and future of retailing and retailing education. *J. Mark. Educ.* **2018**, *40*, 85–93. [CrossRef]

75. Tang, X.L.; Li, X.; Ding, Y.; Song, M.; Bu, Y. The pace of artificial intelligence innovations: Speed, talent, and trial-and-error. *J. Informetr.* **2020**, *14*, 101094. [CrossRef]

76. Mahroof, K. A human-centric perspective exploring the readiness towards smart warehousing: The case of a large retail distribution warehouse. *Int. J. Inf. Manag.* **2019**, *45*, 176–190. [CrossRef]

77. Zhang, D.; Pee, L.G.; Cui, L. Artificial intelligence in E-commerce fulfillment: A case study of resource orchestration at Alibaba's Smart Warehouse. *Int. J. Inf. Manag.* **2021**, *57*, 102304. [CrossRef]

78. Akram, U.; Hui, P.; Khan, M.K.; Yan, C.; Akram, Z. Factors affecting online impulse buying: Evidence from Chinese social commerce environment. *Sustainability* **2018**, *10*, 352. [CrossRef]

79. Wang, W.Y.; Wang, Y. Analytics in the era of big data: The digital transformations and value creation in industrial marketing. *Ind. Mark. Manag.* **2020**, *86*, 12–15. [CrossRef]

80. Dwivedi, Y.K.; Wang, Y. Guest editorial: Artificial intelligence for B2B marketing: Challenges and opportunities. *Ind. Mark. Manag.* **2022**, *105*, 109–113. [CrossRef]

81. Bawack, R.E.; Wamba, S.F.; Carillo, K.D.A. Exploring the role of personality, trust, and privacy in customer experience performance during voice shopping: Evidence from SEM and fuzzy set qualitative comparative analysis. *Int. J. Inf. Manag.* **2021**, *58*, 102309. [CrossRef]

82. Cui, L.; Guo, S.; Zhang, H. Coordinating a green agri-food supply chain with revenue-sharing contracts considering retailers' green marketing efforts. *Sustainability* **2020**, *12*, 1289. [CrossRef]

83. Omaar, H. How Innovative is China in AI? Information Technology & Innovation Foundation. Available online: https://itif.org/publications/2024/08/26/how-innovative-is-china-in-ai/ (accessed on 26 August 2024).

84. European Commission. France AI Strategy Report. Available online: https://ai-watch.ec.europa.eu/countries/france/france-ai-strategy-report_en (accessed on 1 March 2024).

85. Rotaru, F.; Matei, A.; Bolboacă, S.D.; Cordoș, A.A.; Bulboacă, A.E.; Muntean, C. Age-Inclusive Healthcare Sustainability: Romania's Regulatory and Initiatives Landscape in the European Union Context. *Sustainability* **2024**, *16*, 1827. [CrossRef]

86. The Korean Artificial Intelligence Industry—Asian Insiders. Available online: https://asianinsiders.com (accessed on 4 February 2024).

87. Amiri, A.M.; Kushwaha, B.P.; Singh, R. Visualisation of global research trends and future research directions of digital marketing in small and medium enterprises using bibliometric analysis. *J. Small Bus. Enterp. Dev.* **2023**, *30*, 621–641. [CrossRef]

88. Dolega, L.; Rowe, F.; Branagan, E. Going digital? The impact of social media marketing on retail website traffic, orders and sales. *J. Retail. Consum. Serv.* **2021**, *60*, 102501. [CrossRef]

89. Noreen, U.; Shafique, A.; Ahmed, Z.; Ashfaq, M. Banking 4.0: Artificial Intelligence (AI) in Banking Industry & Consumer's Perspective. *Sustainability* **2023**, *15*, 3682. [CrossRef]

90. Yeruva, A.R.; Ramu, V.B. AIOps research innovations, performance impact and challenges faced. *Int. J. Syst. Syst. Eng.* **2023**, *13*, 229–247. [CrossRef]

91. Wang, G.; Guo, Y.; Zhang, W.; Xie, S.; Chen, Q. What type of algorithm is perceived as fairer and more acceptable? A comparative analysis of rule-driven versus data-driven algorithmic decision-making in public affairs. *Gov. Inf. Q.* **2023**, *40*, 101803. [CrossRef]

92. Jamme, H.T.; Connor, D.S. Diffusion of the Internet-of-Things (IoT): A framework based on smart retail technology. *Appl. Geogr.* **2023**, *161*, 103122. [CrossRef]

93. Vrontis, D.; Chaudhuri, R.; Chatterjee, S. Role of ChatGPT and Skilled Workers for Business Sustainability: Leadership Motivation as the Moderator. *Sustainability* **2023**, *15*, 12196. [CrossRef]

94. Biswas, S.S. Potential use of chat gpt in global warming. *Ann. Biomed. Eng.* **2023**, *51*, 1126–1127. [CrossRef]

95. Zhang, D.; Frei, R.; Wills, G.; Gerding, E.; Bayer, S.; Senyo, P.K. Strategies and practices to reduce the ecological impact of product returns: An environmental sustainability framework for multichannel retail. *Bus. Strategy Environ.* **2023**, *32*, 4636–4661. [CrossRef]

96. Park, A.; Lee, S.B. Examining AI and systemic factors for improved Chatbot sustainability. *J. Comput. Inf. Syst.* **2023**, 1–15. [CrossRef]

97. Yi, T.Z.; Rom, N.A.M.; Hassan, N.M.; Samsurijan, M.S.; Ebekozien, A. The Adoption of Robo-Advisory among Millennials in the 21st Century: Trust, Usability and Knowledge Perception. *Sustainability* **2023**, *15*, 6016. [CrossRef]

98. Cifci, I.; Taspinar, O.; Rather, R.A. Vocational Commitment and Postgraduate Intentions of Gastronomy Students: Mediating Role of Robotics, Artificial Intelligence, and Service Automation (RAISA)-based Economy Concerns. *J. Hosp. Tour. Educ.* **2023**, 1–13. [CrossRef]

99. Schepers, J.; Belanche, D.; Casaló, L.V.; Flavián, C. How Smart Should a Service Robot Be? *J. Serv. Res.* **2022**, *25*, 565–582. [CrossRef]

100. Lu, C.; Gu, T.; Chen, J.; Liu, Z. Will internet market newness improve performance? An empirical study on the internet market Innovation of Offline Retailers in China. *Sustainability* **2021**, *13*, 12619. [CrossRef]

101. Mi, L.; Liu, W.; Yuan, Y.H.; Shao, X.; Zhong, Y. Adoption of AI in response to COVID-19—A configurational perspective. *Pers. Ubiquitous Comput.* **2023**, *27*, 1455–1467. [CrossRef] [PubMed]

102. Suel, E.; Polak, J.W. Development of joint models for channel, store, and travel mode choice: Grocery shopping in London. *Transp. Res. Part A Policy Pract.* **2017**, *99*, 147–162. [CrossRef]

103. Ingaldi, M.; Ulewicz, R. How to make e-commerce more successful by use of Kano's model to assess customer satisfaction in terms of sustainable development. *Sustainability* **2019**, *11*, 4830. [CrossRef]

104. Sung, E.C.; Bae, S.; Han, D.I.D.; Kwon, O. Consumer engagement via interactive artificial intelligence and mixed reality. *Int. J. Inf. Manag.* **2021**, *60*, 102382. [CrossRef]

105. Kayande, U.; De Bruyn, A.; Lilien, G.L.; Rangaswamy, A.; Van Bruggen, G.H. How incorporating feedback mechanisms in a DSS affects DSS evaluations. *Inf. Syst. Res.* **2009**, *20*, 527–546. [CrossRef]

106. Mishra, A.N.; Pani, A.K. Business value appropriation roadmap for artificial intelligence. *VINE J. Inf. Knowl. Manag. Syst.* **2021**, *51*, 353–368. [CrossRef]

107. Ivanov, S.H.; Webster, C.; Stoilova, E.; Slobodskoy, D. Biosecurity, crisis management, automation technologies and economic performance of travel, tourism and hospitality companies—A conceptual framework. *Tour. Econ.* **2022**, *28*, 3–26. [CrossRef]

108. Schanke, S.; Burtch, G.; Ray, G. Estimating the impact of "humanizing" customer service chatbots. *Inf. Syst. Res.* **2021**, *32*, 736–751. [CrossRef]

109. Seo, K.H.; Lee, J.H. The emergence of service robots at restaurants: Integrating trust, perceived risk, and satisfaction. *Sustainability* **2021**, *13*, 4431. [CrossRef]

110. Chen, J.; Ablanedo-Rosas, J.H.; Frankwick, G.L.; Arévalo, F.R.J. The state of artificial intelligence in marketing with directions for future research. *Int. J. Bus. Intell. Res. IJBIR* **2021**, *12*, 1–26. [CrossRef]

111. Ghazwani, S.; Esch, P.; Cui, Y.; Gala, P. Artificial intelligence, financial anxiety and cashier-less checkouts: A saudi arabian perspective. *Int. J. Bank Mark.* **2022**, *40*, 1200–1216. [CrossRef]

112. Huang, W.; Zhang, L.; Sheng, A.; Li, M.; Guo, B. From "human-to-human" to "human-to-non-human"—Influence factors of artificial intelligence-enabled consumer value co-creation behavior. *Front. Psychol.* **2022**, *13*, 863313. [CrossRef]

113. Jain, V. Artificial intelligence consumer behavior: A hybrid review and research agenda. *J. Consum. Behav.* **2023**, *23*, 676–697. [CrossRef]

114. Chowdhury, S.; Budhwar, P.; Dey, P.K.; Joel-Edgar, S.; Abadie, A. AI-employee collaboration and business performance: Integrating knowledge-based view, socio-technical systems and organisational socialisation framework. *J. Bus. Res.* **2022**, *144*, 31–49. [CrossRef]

115. Giuggioli, G.; Pellegrini, M. Artificial intelligence as an enabler for entrepreneurs: A systematic literature review and an agenda for future research. *Int. J. Entrep. Behav. Res.* **2022**, *29*, 816–837. [CrossRef]

116. Wang, X.; Lin, x.; Shao, B. How does artificial intelligence create business agility? Evidence from chatbots. *Int. J. Inf. Manag.* **2022**, *66*, 102535. [CrossRef]

117. Han, R.; Lam, H.K.; Zhan, Y.; Wang, Y.; Dwivedi, Y.K.; Tan, K.H. Artificial intelligence in business-to-business marketing: A bibliometric analysis of current research status, development and future directions. *Ind. Manag. Data Syst.* **2021**, *121*, 2467–2497. [CrossRef]

118. Ahmad, M.; Husin, N.; Ahmad, A.; Abdullah, H.; Wei, C.; Nawi, M. Digital transformation: An exploring barriers and challenges practice of artificial intelligence in manufacturing firms in malaysia. *J. Adv. Res. Appl. Sci. Eng. Technol.* **2022**, *29*, 110–117. [CrossRef]

119. Awan, U.; Sroufe, R.; Shahbaz, M. Industry 4.0 and the circular economy: A literature review and recommendations for future research. *Bus. Strategy Environ.* **2021**, *30*, 2038–2060. [CrossRef]

120. Al-Matari, A.; Amiruddin, R.; Aziz, K.; Al-Sharafi, M. The impact of dynamic accounting information system on organizational resilience: The mediating role of business processes capabilities. *Sustainability* **2022**, *14*, 4967. [CrossRef]

121. Ahlstrand, J.; Boldt, M.; Borg, A.; Grahn, H. Preliminary Results on the use of Artificial Intelligence for Managing Customer Life Cycles. *Swed. Artif. Intell. Soc.* **2023**, 68–76. [CrossRef]

122. Cao, L. Artificial intelligence in retail: Applications and value creation logics. *Int. J. Retail Distrib. Manag.* **2021**, *49*, 958–976. [CrossRef]

123. Giroux, M.; Kim, J.; Lee, J.C.; Park, J. Artificial Intelligence and Declined Guilt: Retailing Morality Comparison Between Human and AI. *J. Bus. Ethics* **2022**, *178*, 1027–1041. [CrossRef]

124. Chopra, K. Indian shopper motivation to use artificial intelligence. *Int. J. Retail Distrib. Manag.* **2019**, *47*, 331–347. [CrossRef]

125. Kolar, N. Factors for customers' AI use readiness in physical retail stores: The interplay of consumer attitudes and gender differences. *Information* **2024**, *15*, 346. [CrossRef]

126. Du, S.; Xie, C. Paradoxes of artificial intelligence in consumer markets: Ethical challenges and opportunities. *J. Bus. Res.* **2021**, *129*, 961–974. [CrossRef]

127. D'Amore, G.; Vaio, A.; Balsalobre-Lorente, D.; Boccia, F. Artificial intelligence in the water–energy–food model: A holistic approach towards sustainable development goals. *Sustainability* **2022**, *14*, 867. [CrossRef]

128. Ta, M. Applying artificial intelligence to promote sustainability. *Sustainability* **2024**, *16*, 4879. [CrossRef]

129. Hasas, A. AI for social good: Leveraging artificial intelligence for community development. *J. Communit. Serv. Soc. Empower.* **2024**, *2*, 196–210. [CrossRef]

130. Jankovic, S. Strategic integration of artificial intelligence for sustainable businesses: Implications for data management and human user engagement in the digital era. *Sustainability* **2023**, *15*, 15208. [CrossRef]

131. Wright, S.A.; Schultz, A.E. The rising tide of artificial intelligence and business automation: Developing an ethical framework. *Bus. Horiz.* **2018**, *61*, 823–832. [CrossRef]

132. Sharma, M.; Luthra, S.; Joshi, S.; Kumar, A. Implementing challenges of artificial intelligence: Evidence from public manufacturing sector of an emerging economy. *Gov. Inf. Q.* **2022**, *39*, 101624. [CrossRef]

133. Song, D. *How Learners' Trust Changes in Generative AI over a Semester of Undergraduate Courses*; Research Square Platform LLC: Durham, NC, USA, 2024. [CrossRef]

134. Krügel, S.; Ostermaier, A.; Uhl, M. Zombies in the loop? Humans trust untrustworthy AI-advisors for ethical decisions. *Philos. Technol.* **2022**, *35*, 17. [CrossRef]

135. Guan, J. Artificial intelligence in healthcare and medicine: Promises, ethical challenges and governance. *Chin. Med. Sci. J.* **2019**, *34*, 76–83. [CrossRef]

136. Prakash, S.; Balaji, J.N.; Joshi, A.; Surapaneni, K.M. Ethical Conundrums in the application of artificial intelligence (AI) in healthcare—A scoping review of reviews. *J. Pers. Med.* **2022**, *12*, 1914. [CrossRef]

137. Zolanvari, M.; Yang, Z.; Khan, K.; Jain, R.; Meskin, N. TRUST XAI: Model-agnostic explanations for AI with a case study on IIoT security. *IEEE Internet Things J.* **2021**, *10*, 2967–2978. [CrossRef]

138. Bjørlo, L.; Moen, Ø.; Pasquine, M. The role of consumer autonomy in developing sustainable AI: A conceptual framework. *Sustainability* **2021**, *13*, 2332. [CrossRef]

139. Mwangi, J. Analyzing the role of artificial intelligence and machine learning in optimizing supply chain processes in Kenya. *Int. J. Supply Chain Manag.* **2024**, *9*, 39–50. [CrossRef]

140. Olan, F.; Arakpogun, E.; Jayawickrama, U.; Suklan, J.; Liu, S. Sustainable supply chain finance and supply networks: The role of artificial intelligence. *IEEE Trans. Eng. Manag.* **2024**, *71*, 13296–13311. [CrossRef]

141. Nayal, K.; Raut, R.; Priyadarshinee, P.; Narkhede, B.E.; Kazancoglu, Y.; Narwane, V. Exploring the role of artificial intelligence in managing agricultural supply chain risk to counter the impacts of the COVID-19 pandemic. *Int. J. Logist. Manag.* **2022**, *33*, 744–772. [CrossRef]

142. Younis, H.; Sundarakani, B.; Alsharairi, M. Applications of artificial intelligence and machine learning within supply chains: Systematic review and future research directions. *J. Model. Manag.* **2021**, *17*, 916–940. [CrossRef]

143. Wirth, N. Hello marketing, what can artificial intelligence help you with? *Int. J. Mark. Res.* **2018**, *60*, 435–438. [CrossRef]

144. Powers, G.; Johnson, J.P.; Killian, G. To Tell or Not to Tell: The Effects of Disclosing Deepfake Video on US and Indian Consumers' Purchase Intention. *J. Interact. Advert.* **2023**, *23*, 339–355. [CrossRef]

145. Adwan, A.A.; Aladwan, R. Use of artificial intelligence system to predict consumers' behaviors. *Int. J. Data Netw. Sci.* **2022**, *6*, 1223–1232. [CrossRef]

146. Rauf, A.; Zurcher, M.; Pantelidis, I.; Winbladh, J. Millennials' perceptions of artificial intelligence in hotel service encounters. *Consum. Behav. Tour. Hosp.* **2022**, *17*, 3–16. [CrossRef]

147. Zhao, T.; Cui, J.; Hu, J.; Dai, Y.; Zhou, Y. Is Artificial Intelligence Customer Service Satisfactory? Insights Based on Microblog Data and User Interviews. *Cyberpsychol. Behav. Soc. Netw.* **2022**, *25*, 110–117. [CrossRef]

148. Peng, C.; van Doorn, J.; Eggers, F.; Wieringa, J.E. The effect of required warmth on consumer acceptance of artificial intelligence in service: The moderating role of AI-human collaboration. *Int. J. Inf. Manag.* **2022**, *66*, 102533. [CrossRef]

149. Yang, F.X.; Li, Y.; Li, X.; Yuan, J. The beauty premium of tour guides in the customer decision-making process: An AI-based big data analysis. *Tour. Manag.* **2022**, *93*, 104575. [CrossRef]

150. Harvard Business Review Report 2023 on Customer Experience in the Age of AI (hbr.org). Available online: https://hbr.org/2022/03/customer-experience-in-the-age-of-ai (accessed on 1 March 2023).

151. Alghamdi, O.A.; Agag, G. Boosting Innovation Performance through Big Data Analytics Powered by Artificial Intelligence Use: An Empirical Exploration of the Role of Strategic Agility and Market Turbulence. *Sustainability* **2023**, *15*, 14296. [CrossRef]

152. wael AL-khatib, A. Drivers of generative artificial intelligence to fostering exploitative and exploratory innovation: A TOE framework. *Technol. Soc.* **2023**, *75*, 102403. [CrossRef]

153. Arachchi, H.A.D.M.; Samarasinghe, G.D. Intention to adopt intelligent clothing in the fashion retail industry: Extending the Hisam Model With Technology Readiness. *Int. J. Hum.–Comput. Interact.* **2023**, 1–15. [CrossRef]

154. Alamayreh, E.M.R.; Almajali, D.; Alsmadi, L.A.; Masa'deh, R.; Al-Sherideh, A.S.; Majali, S. Antecedents of understanding the investors' acceptance of artificial intelligence: Perceptions from Jordanian context. *Int. J. Data Netw. Sci.* **2023**, *7*, 1861–1874. [CrossRef]

155. Ronaghi, M.H. The influence of artificial intelligence adoption on circular economy practices in manufacturing industries. *Environ. Dev. Sustain.* **2023**, *25*, 14355–14380. [CrossRef]

156. Panigrahi, R.R.; Shrivastava, A.K.; Qureshi, K.M.; Mewada, B.G.; Alghamdi, S.Y.; Almakayeel, N.; Almuflih, A.S.; Qureshi, M.R.N. AI Chatbot Adoption in SMEs for Sustainable Manufacturing Supply Chain Performance: A Mediational Research in an Emerging Country. *Sustainability* **2023**, *15*, 13743. [CrossRef]

157. Wang, H. Linking AI supply chain strength to sustainable development and innovation: A country-level analysis. *Expert Syst.* **2022**, *41*, e12973. [CrossRef]

158. Thamik, H.; Wu, J. The Impact of Artificial Intelligence on Sustainable Development in Electronic Markets. *Sustainability* **2022**, *14*, 3568. [CrossRef]

159. Frank, D.A.; Jacobsen, L.F.; Søndergaard, H.A.; Otterbring, T. In companies we trust: Consumer adoption of artificial intelligence services and the role of trust in companies and AI autonomy. *Inf. Technol. People* **2023**, *36*, 155–173. [CrossRef]

160. Schepman, A.; Rodway, P. The General Attitudes towards Artificial Intelligence Scale (GAAIS): Confirmatory Validation and Associations with Personality, Corporate Distrust, and General Trust. *Int. J. Hum.-Comp. Interact.* **2023**, *39*, 2724–2741. [CrossRef]

161. Figueroa-Armijos, M.; Clark, B.B.; da Motta Veiga, S.P. Ethical Perceptions of AI in Hiring and Organizational Trust: The Role of Performance Expectancy and Social Influence. *J. Bus. Ethics* **2023**, *186*, 179–197. [CrossRef]

162. Dubey, R.; Bryde, D.J.; Blome, C.; Roubaud, D.; Giannakis, M. Facilitating artificial intelligence powered supply chain analytics through alliance management during the pandemic crises in the B2B context. *Ind. Mark. Manag.* **2021**, *96*, 135–146. [CrossRef]

163. Feng, L.; Jin, M. Platform vs. Manufacturer: Who should implement innovation in e-commerce supply chains? *Transp. Res. Part E Logist. Transp. Rev.* **2022**, *166*, 102858. [CrossRef]

164. Hradecky, D.; Kennell, J.; Cai, W.; Davidson, R. Organizational readiness to adopt artificial intelligence in the exhibition sector in Western Europe. *Int. J. Inf. Manag.* **2022**, *65*, 102497. [CrossRef]

165. Alghadi, M.; Alqudah, H.; Lutfi, A.; Ananzeh, H.; Marei, A.; Almaiah, M.; Al-Matari, Y. Enhancing cyber governance in Islamic banks: The influence of artificial intelligence and the moderating effect of COVID-19 pandemic. *Int. J. Data Netw. Sci.* **2024**, *8*, 307–318. [CrossRef]

166. Sciarretta, E.; Mancini, R.; Greco, E. Artificial Intelligence for Healthcare and Social Services: Optimizing Resources and Promoting Sustainability. *Sustainability* **2022**, *14*, 16464. [CrossRef]

167. Wong, L.-W.; Tan, G.W.-H.; Ooi, K.-B.; Dwivedi, Y. The role of institutional and self in the formation of trust in artificial intelligence technologies. *Internet Res.* **2023**, *34*, 343–370. [CrossRef]

168. Wirtz, J.; Kunz, W.; Paluch, S. The service revolution, intelligent automation and service robots. *Eur. Bus. Rev.* **2021**, *29*, 909.

169. Piwowar, H.; Priem, J.; Larivière, V.; Alperin, J.P.; Matthias, L.; Norlander, B.; Farley, A.; West, J.; Haustein, S. The state of OA: A large-scale analysis of the prevalence and impact of Open Access articles. *PeerJ.* **2018**, *6*, e4375. [CrossRef]