Literature Review

AI-Driven Consumer Insights in Business: A Systematic Review and Bibliometric Analysis of Opportunities and Challenges.

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ABSTRACT

Consumer insights driven by AI offer significant opportunities for businesses to deepen their understanding of and connect more effectively with their target audience. However, these prospects come with their own set of challenges. This paper explores the opportunities and challenges associated with implementing AI-driven consumer insights in business practices and how companies can overcome obstacles such as data privacy, bias, and integration to leverage these opportunities fully. Using a systematic literature review with bibliometric analysis, we examined a sample of 91 studies indexed in SCOPUS to identify research activity on this topic until April 2024. AI enables businesses to analyse vast consumer data for personalized experiences, predicting behaviour and trends. Real-time processing yields insights crucial for adapting to market changes, enhancing engagement, and boosting satisfaction. Automation saves time and resources, while segment identification tailors strategies. However, privacy concerns, bias mitigation, and integration challenges must be addressed. Trust and transparency are key to fully realizing AI's potential in consumer insights. This study delves into implementing AI-driven consumer insights in business practices, highlighting opportunities and challenges. Through a systematic literature review and bibliometric analysis, it identifies AI's benefits, such as personalized experiences and real-time processing, alongside critical concerns like data privacy and bias. The study emphasizes the importance of trust and transparency for fully realizing AI's potential in consumer insights, offering valuable insights for companies navigating this complex landscape.

Keywords: AI, consumer insights, business practices.

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1. INTRODUCTION

Artificial intelligence (AI) has emerged as a transformative force in digital marketing, offering unparalleled capabilities to analyze vast datasets, simulate human behaviors, and enhance decision-making processes. Defined by Haleem et al. (2022) as a technology that trains computers to replicate human interactions, AI has found applications in problem-solving, task automation, and enhancing technical support functions such as diagnostics and analytics (Singh & Singh, 2024). In marketing, AI-driven tools have been instrumental in predicting campaign outcomes, optimizing messaging strategies, and providing consumer insights that enable businesses to tailor their offerings to evolving customer needs (Paliwal & Chatradhi, 2024).

These advancements, particularly in consumer insights, have made AI essential for analyzing behaviors, preferences, and patterns. For example, Naveenkumar et al. (2024) highlight the application of machine learning algorithms to predict consumer behavior, enabling personalized marketing and fostering stronger customer relationships. Moreover, AI's ability to process real-time data enhances marketers' responsiveness to trends and shifts in consumer preferences (Ziakis & Vlachopoulou, 2023).

Despite the growing interest in AI's marketing applications, existing studies often focus on broad topics, leaving a gap in understanding the specific role of AI in generating actionable consumer insights. While recent reviews such as Hollebeek et al. (2024), Pentina et al. (2023), and Verma et al. (2021) examine AI in marketing more generally, they do not address the nuanced interplay between AI tools and consumer insight generation. This paper narrows the research scope to focus explicitly on AI-driven consumer insights as a distinct subset of marketing applications, offering a systematic examination of how AI contributes to understanding and predicting consumer behavior.

The aim of this study is to investigate the mechanisms through which AI generates actionable consumer insights and identify the opportunities and challenges associated with their application. Specifically, this paper seeks to address the following sub-objectives:

- To identify and classify AI technologies and recommender systems that are pivotal in generating consumer insights for business applications.

- To analyze the practical applications of AI-driven consumer insights in improving personalization, targeting, customer journey mapping, and strategic decision-making across business domains.

- To investigate the challenges associated with implementing AI-driven insights, including privacy concerns, cybersecurity threats, algorithmic biases, and integration issues, while exploring potential mitigation strategies.

- To examine the opportunities AI creates for new business models, particularly those that emphasize customer-centric approaches, real-time responsiveness, and operational efficiency.

The theoretical contribution of this paper lies in offering a comprehensive categorization of AI mechanisms for consumer insight generation and addressing the challenges inherent in their application. By providing a structured framework, this study advances the literature on AI in marketing by emphasizing the actionable potential of AI insights to improve marketing performance while navigating challenges such as data privacy, system integration, and skill deficiencies (Chaturvedi & Verma, 2023; Rosário & Dias, 2023).

The remainder of this paper is structured as follows: Section 2 details the methodological approach, outlining the systematic literature review and bibliometric analysis framework employed to examine AI-driven consumer insights. Section 3 presents the publication distribution, providing an overview of research trends, key contributors, and citation analysis to contextualize the study within the academic landscape. Section 4 discusses the theoretical perspectives, categorizing key opportunities, challenges, and the application of AI technologies in consumer insights. Section 5 concludes the paper by summarizing the findings, highlighting practical implications for businesses, and identifying limitations and directions for future research. This structure aims to provide a comprehensive and systematic examination of the role of AI in generating consumer insights, offering valuable contributions to both academia and practice. By offering actionable guidance for practitioners and researchers, this paper seeks to bridge the gap between AI's technical potential and its strategic application in marketing, fostering deeper consumer connections and superior marketing outcomes.

2. METHODOLOGICAL APPROACH

The researchers conducted a systematic literature review with bibliometric analysis (SLRBA) to determine the opportunities and challenges of AI-driven consumer insights. According to Xiao and Watson (2019), literature reviews should follow an established methodology, systematically select and analyse existing research, and identify the latest developments in the field. Additionally, they should provide adequate evidence, be reproducible, and be transparent. Kraus et al. (2022) further indicate that this research methodology can produce insights that are difficult to achieve in a single study. Given the increased research on AI technologies, this methodology provides an opportunity to synthesize numerous findings on its applications, opportunities, and challenges. This results in a comprehensive body of knowledge that includes crucial, implementable insights.

In contrast to conventional literature reviews, the SLRBA adopts a thorough approach to examining the published literature about the research topic (Rosário & Dias, 2023a, b; Rosário, 2023). This method condenses the number of articles, focusing on the most relevant ones. Additionally, the researcher provides an audit trail, enabling readers to evaluate the combined studies' methodologies, conclusions, and quality.

Consequently, the SLRBA encompasses meticulous screening and selection of information sources to ensure the precision and validity of the presented data. This process unfolds through three phases and six steps, as delineated by Rosário & Dias (2023a, b) and Rosário (2023) and illustrated in Table 1.

Moreover, the SLRBA methodology emphasizes the importance of transparency and reproducibility in research by adopting a systematic approach to literature synthesis (Rosário & Dias, 2023a, b; Rosário, 2023). In our study, we applied clear criteria for selecting articles from the Scopus database, including restricting the search to publications in English, indexing exclusively in Scopus, and including only research articles and conference papers published up to January 2024. Additionally, we focused on studies that incorporated the keyword "AI-Driven" in the title, abstract, or keywords. This rigorous and transparent approach ensures the reliability of the synthesized literature, facilitates future replication, and strengthens the credibility of the findings.

Table 1. Process of SLRBA

Fase	Step	Description
Exploration	Step 1	formulating the research problem
	Step 2	searching for appropriate literature
	Step 3	critical appraisal of the selected studies
	Step 4	data synthesis from individual sources
Interpretation	Step 5	reporting findings and recommendations
Communication	Step 6	Presentation of the SLRBA report

Source: Adapted Rosário & Dias (2023a, b); Rosário (2023).

In conducting their analysis, the team extensively leveraged the Scopus database to sift through several scholarly materials, ensuring the inclusion of esteemed sources within the academic and scientific realms. However, it is essential to acknowledge the inherent limitations of this approach, as it may overlook potentially valuable insights from other databases within the academic and scientific domain.

The researchers conducted a literature search on the Scopus database to identify relevant and high-quality studies. The initial search used the keyword "AI-driven," which generated 2,572 search results. Adding the keyword "consumer" narrowed the results to 91. The documents were published by April 2024 (N=91), as shown in Table 2. The keywords were applied to the title, abstract, and keyword fields of the papers within the Scopus database. This approach ensured that we captured articles where the keywords were explicitly central to the study's focus while minimizing the inclusion of tangentially related works.

After exporting all search results from the Scopus database, the reference management software EndNote was used to identify and remove exact duplicates based on metadata such as title, author, and publication year. Following the automated de-duplication process, the researchers conducted a manual screening of titles and abstracts to ensure no duplicates remained, including cases where slight variations in titles or metadata might have led to duplicates being overlooked by the software.

Given the broad scope of the search terms, some articles addressed overlapping themes but were not duplicates. In such cases, the content was carefully reviewed to ensure that each article contributed distinct insights or findings relevant to the review. A detailed description of this de-duplication process has been included in the revised methodology section of the manuscript.

Table 2. Screening Methodology

Database Scopus	Screening	Publications
Meta-search	Keyword: AI-driven	2572
Inclusion Criterion	Keyword: AI-driven, consumer English language Indexed in Scopus Scientific and academic documents	91
Screening	Keyword: AI-driven, consumer Published until April 2024	

We used content and thematic analysis methodologies to identify, scrutinize, and present a range of documents, following the framework outlined by Rosário & Dias (2023a, b) and Rosário (2023). Subsequently, the 91 scientific and academic documents from Scopus underwent narrative and bibliometric analyses. This dual approach aimed to comprehensively explore the content and uncover recurring themes aligned with the research inquiries articulated by Rosário & Dias (2023a, b) and Rosário (2023). This process resulted in the classification of 91 documents as 53 articles, 21 conference papers, 13 books, and 4 book series.

3. PUBLICATION DISTRIBUTION

Peer-reviewed articles on AI-driven consumer insights in contemporary business practices up to April 2024 indicate a peak in research activity. The year 2023 saw the highest number of such publications, totaling 45, as shown in Figure 1. However, research in this area remains relatively limited.
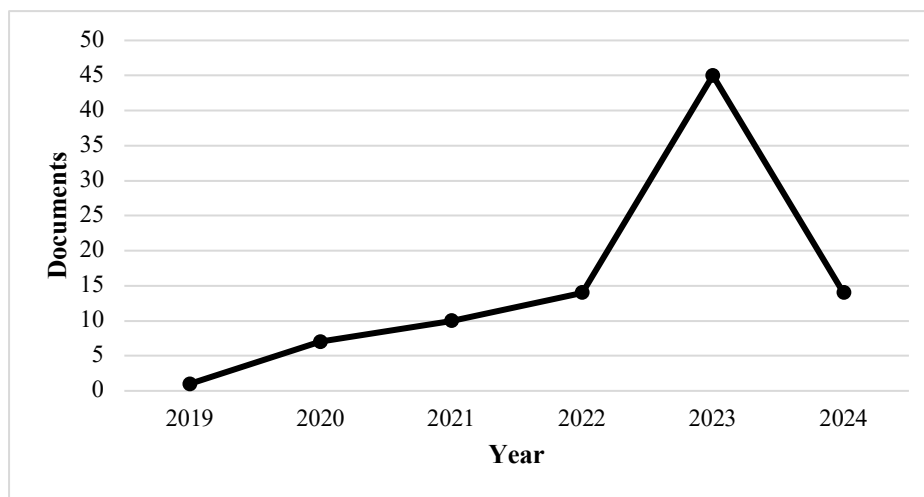

Figure 1. Documents by year

Figure 2 illustrates the countries with the highest scientific output in research areas, specifically highlighting India, the USA, China, and South Korea as the leading contributors in terms of publication volume.
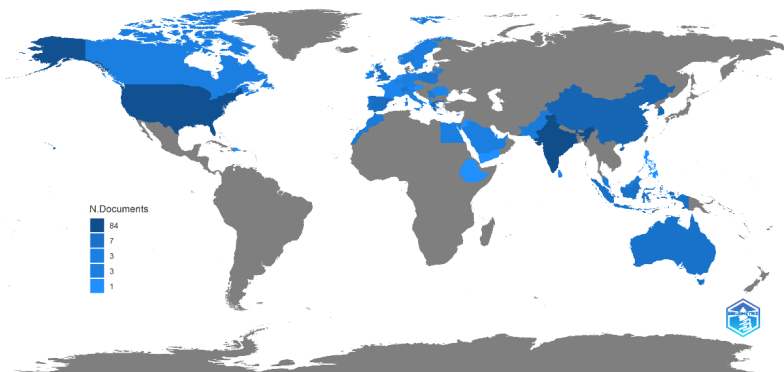

Figure 2. Scientific production by country

Table 3 presents the leading 5 countries that have significantly contributed to scientific research in the fields being analysed. The purpose of this analysis is to determine whether these nations prioritize the application of artificial intelligence in consumer behaviour processes within businesses or focus on enhancing their productivity.

Table 3. Top 5 countries by number of publications (cumulative count based on author nationalities)

Country	Number of Publications
INDIA	84
USA	67
CHINA	17
SOUTH KOREA	16
GREECE	13

The distribution of peer-reviewed publications is as follows: IEEE Transactions on Consumer Electronics (5); Journal of Business Research (3); AI Impacts in Digital 3Consumer Behavior (3); Lecture Notes in Networks and Systems (2); International Journal of Intelligent Systems and Applications in Engineering (2); 5th IEEE International Conference on Cybernetics, Cognition, and Machine Learning Applications (ICCCMLA 2023) (2). The remaining publications each contributed with one document.

Analysis of the Scimago Journal & Country Rank (SJR) revealed that the Journal of Consumer Research is the most cited, with an SJR of 5,430, a first-quartile (Q1) ranking, and an H-index of 220. There are 30 Q1 publications, 9 in Q2, 4 in Q3, and 2 in Q4. Q1 publications constitute 38% of the 78 titles, Q2 comprises 12%, Q3 5%, and Q4 3%. A significant 42% of the publications, totaling 33 titles, lack indexing data.

The 91 scientific and/or academic documents span several disciplines: Computer Science (47); Business, Management, and Accounting (30); Engineering (28); Social Sciences (23); Economics, Econometrics, and Finance (10); Mathematics (9); Decision Sciences (9); Arts and Humanities (6); Medicine (4); Environmental Science (4); Energy (4); Physics and Astronomy (3); Neuroscience (3); Materials Science (3); Chemical Engineering (2); and one each in Multidisciplinary, Earth and Planetary Sciences, Biochemistry, Genetics, and Molecular Biology, and Agricultural and Biological Sciences.

The most cited article, "Understanding the Role of Artificial Intelligence in Personalized Engagement Marketing," by Kumar et al. (2019), received 239 citations and was published in the California Management Review. It has an SJR of 3,330, ranks in the best quartile (Q1), and has an H-index of 155. This article examines how artificial intelligence supports personalized engagement marketing to create, communicate, and deliver tailored customer offerings.

Figure 3 provides an analysis of citation trends for documents published up to April 2024. It shows a positive net growth in citations from 2014 to 2024 with an R^2 of 55%, culminating in 801 citations in April 2024.
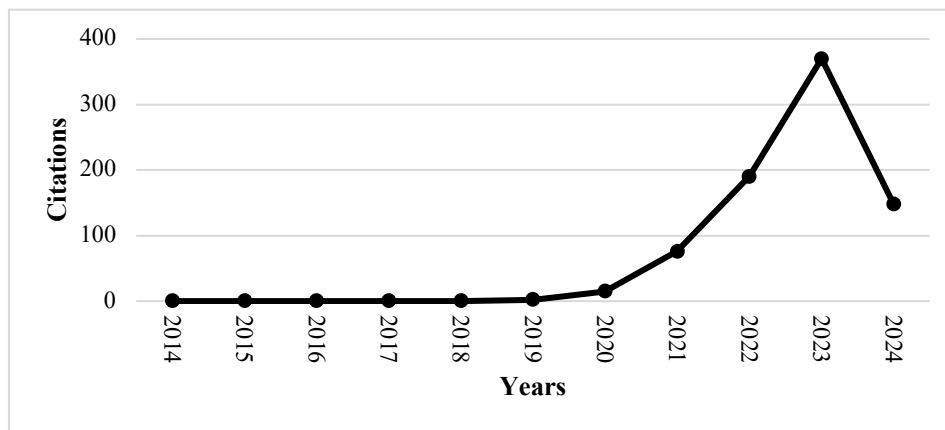

Figure 3. Evolution of citations between 2014 and 2024

The h-index, which gauges both the productivity and the impact of scholarly work, indicates the maximum number of papers by a researcher that have been cited at least that many times. In our study, 13 of the analysed documents met the criterion of being cited at least 13 times, signifying their significant impact within their respective fields.

From 2014 to April 2024, we conducted a detailed review of citation data for 91 documents, which collectively amassed 801 citations, reflecting substantial academic engagement. However, 45 of these documents did not receive any citations, suggesting that these research areas are either emerging or niche or require more active dissemination and engagement to gain traction.

The analysis also revealed a pronounced phenomenon of self-citation, with 737 instances recorded among the documents published within the timeframe. This high self-citation rate could indicate a close-knit community where researchers frequently reference their previous work, or it may suggest a lack of diversity in perspectives and research within the field.

We employed the bibliometric software VOSviewer to analyse the key terms "AI-driven" and "consumer." This bibliometric examination sheds light on the dynamics and evolution of the discourse within the examined documents. Our study identified core themes and trends that characterize the corpus by focusing on these keywords, as illustrated in Figure 4. This exploration provided insights into how concepts related to AI-driven consumer research have evolved and their intersections with other research domains.

These findings are vital for comprehending the trajectory of research on AI-driven applications and consumer behaviour. They offer a roadmap for future inquiries and highlight influential works and contributors in the field.
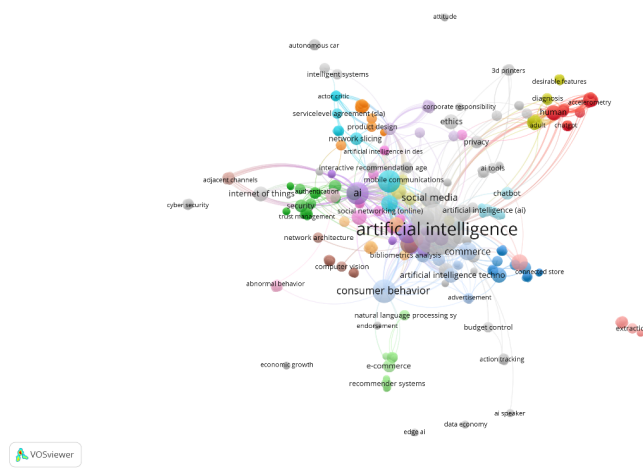

Figure 5. A network of all keywords

This study delves into the vast potential of AI-driven consumer insights within contemporary business practices, using a dataset comprised of scientific and academic documents. Visualizing interconnected keywords in Figure 5 is critical in this analysis, illustrating the relationships among terms across the scientific articles examined. This not only aids in identifying the central topics discussed within these studies and sheds light on emerging trends and directions for future research.

The core research areas are distinctly grouped into three major clusters, each representing a different aspect of AI-driven consumer insights. The first cluster, identified by the color red, encompasses the most extensive set of interconnected topics, with a total of 81 topics. This cluster covers the broader and more established aspects of AI applications in consumer research, such as data analytics and consumer behaviour modeling. The second cluster, marked in green, contains 37 interconnected topics and may focus on more specialized areas such as ethical considerations, privacy concerns, and the socio-economic impacts of AI technology in consumer markets. Similarly, the third cluster, colored in blue and comprising 37 topics, possibly explores the technological advancements and methodological approaches in deploying AI for consumer insights, including machine learning techniques, neural networks, and predictive analytics.

Figure 6 provides a more detailed analysis, revealing a substantial volume of co-citations and units for cited reference analysis. This figure highlights the most frequently cited works and authors, offering a deeper understanding of the foundational texts and influential researchers driving this field. The co-citation analysis not only helps recognize the seminal works that have shaped the landscape of AI-driven consumer research but also assists in identifying collaborative networks and academic lineages.

Overall, these analytical tools and visualizations are invaluable for dissecting the complex web of topics that define AI-driven consumer insights. They offer a comprehensive overview of the field's past developments and point towards its future trajectory. This structured approach contextualizes the current research landscape and sets the stage for upcoming innovations and interventions in business intelligence.
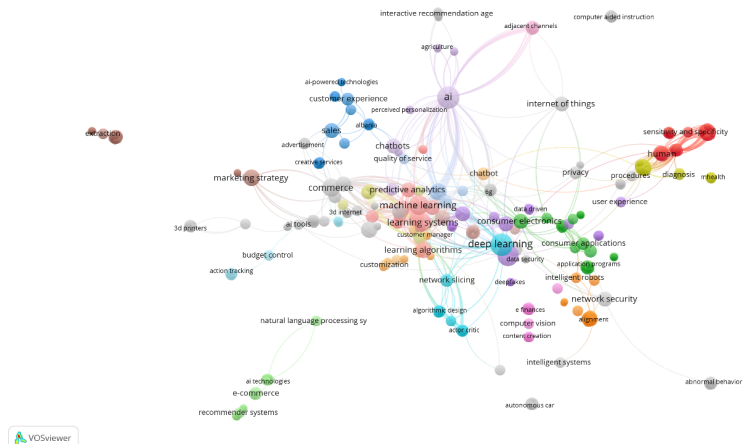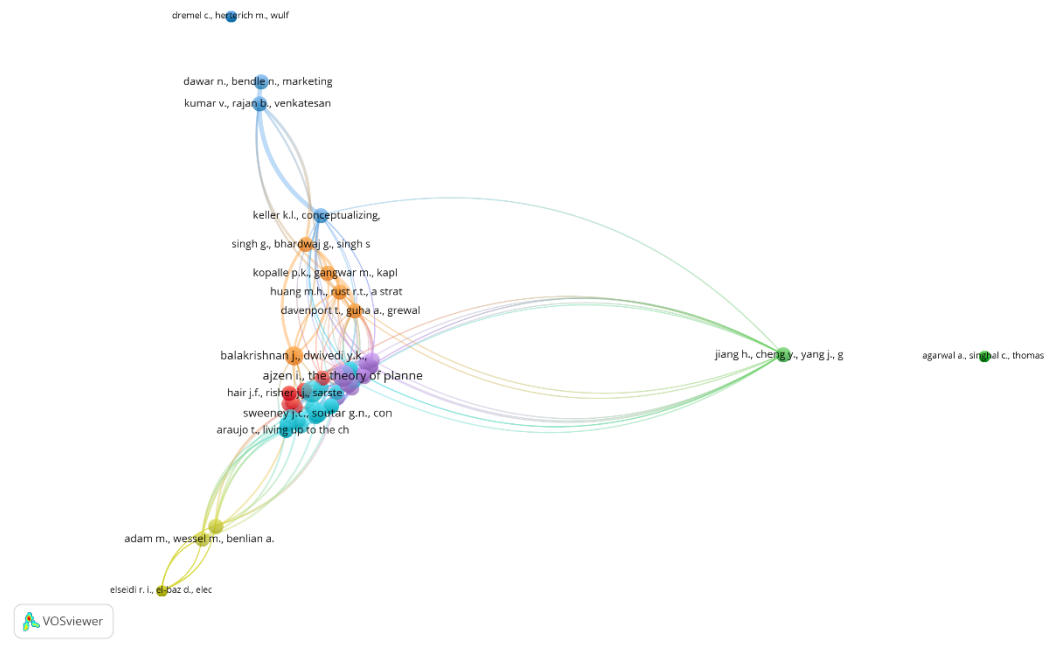
Figure 6. A network of Linked Keywords

Figure 7. A network of co-citation

4. THEORETICAL PERSPECTIVES

AI has significantly impacted consumer insights, improving data-driven decision-making and personalized experiences. For instance, advancements in AI technologies have led to an improved understanding of consumer behaviour and preferences (Babu et al., 2023b). AI innovations like predictive analytics, natural language processing, and machine learning algorithms empower businesses to extract actionable insights from vast volumes of data. Consequently, this enables

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them to anticipate market trends, optimize product offerings, and precisely tailor marketing strategies (Chadha et al., 2022; Hayes et al., 2021). This paradigm shift in consumer insights influences how businesses engage with their target audiences and underscores the need to understand the opportunities and challenges accompanying this technological evolution.

4.1 AI-Driven Consumer Insights

AI-driven insights use AI technologies to analyse large data sets and uncover valuable information about consumer behaviour, preferences, and trends, aiding businesses in understanding their target audiences more deeply (Hamilton et al., 2021). These insights cover a range of consumer interactions, such as purchasing behaviours, product preferences, and online activity, including sentiment from social media and demographic insights (Kumar, 2022). AI helps identify patterns and correlations that might be missed, supporting strategic decisions in product development, marketing, pricing, and customer engagement (Vitorino et al., 2022). Additionally, AI enhances personalized customer experiences, boosting satisfaction and loyalty (Hamper, 2024; Song et al., 2023). This shift in market research and consumer analytics significantly improves business competitiveness by aligning with evolving consumer needs.

4.1.1 Temporal Analysis of AI-Driven Consumer Insights

To provide a comprehensive understanding of the evolution of AI-driven consumer insights, a temporal analysis was conducted, examining trends in publications, citations, and key research themes. This approach helps uncover relationships between technological advancements and the adoption of AI in consumer analytics, offering both descriptive and inferential insights.

Publication Trends

An analysis of publication data reveals a steady increase in the number of studies focusing on AI-driven consumer insights over the past decade. Between 2015 and 2017, the number of publications grew modestly, reflecting the early stages of research interest in applying AI technologies like machine learning and basic analytics to marketing and consumer behavior. From 2018 onward, a marked acceleration occurred, coinciding with significant advancements in AI technologies, such as the integration of natural language processing (NLP) into consumer-facing tools like chatbots.

This publication trend aligns with technological milestones and industry adoption patterns, indicating a strong relationship between practical AI innovations and scholarly output. For

instance, the sharp rise in publications during 2019–2020 corresponds to increased adoption of predictive analytics and personalized marketing solutions across industries.

Citation Trends and Impact Ratios

A closer look at citation data reveals notable patterns in the academic impact of AI-related studies. While the number of citations per year increased in parallel with publications, the citation-to-publication ratio highlights periods of heightened academic influence. For example, the period from 2018 to 2020 shows the highest citation-to-publication ratios, indicating that studies published during this time significantly shaped subsequent research and applications. Key drivers of this influence include the adoption of deep learning models for customer segmentation and advances in real-time data processing technologies.

The analysis suggests that periods of technological breakthroughs are accompanied by an increase in high-impact studies, underlining the reciprocal relationship between academic research and practical implementation.

Shifts in Research Themes

Temporal analysis also highlights evolving research priorities over time. Three distinct phases emerge:

1. Exploratory Phase (2015–2017): Research focused primarily on foundational applications of AI, such as data clustering and predictive modeling.

2. Expansion Phase (2018–2020): Emphasis shifted toward consumer personalization, recommender systems, and chatbots, coinciding with the wider adoption of these technologies in e-commerce and marketing.

3. Ethics and Trust Phase (2021–2023): Increasing attention to ethical considerations, algorithmic transparency, and consumer privacy, reflecting societal and regulatory pressures.

Inferential Insights

The observed patterns suggest that research in AI-driven consumer insights is closely linked to both technological advancements and external factors, such as evolving consumer expectations and data privacy regulations. For instance, the rise in publications during the "Expansion Phase" corresponds to industry investments in personalization technologies, which drove academic exploration of related methodologies. Also, the recent focus on ethics and trust highlights the

interplay between societal concerns and research directions, suggesting that future studies will likely prioritize responsible AI practices.

4.2 AI Technologies for AI-Driven Consumer Insights

Businesses leveraging AI-driven consumer insights must invest in various core AI technologies. Research has identified examples of machine learning, natural language processing (NLP), recommender systems, intelligent personal assistants, and chatbots. These innovations enable businesses to collect and analyse consumer data, thereby gaining actionable insights that help them understand and serve their customers.

4.2.1 Machine Learning

Machine learning (ML) is a crucial innovation for data analysis. Ngai and Wu (2022) define ML as the process where computer programs learn from experience to perform specific tasks better. ML enables businesses to extract valuable patterns and insights from vast consumer data. According to Ullal et al. (2021), ML algorithms allow computers to learn from data, identify patterns, and make predictions or decisions without explicit programming. ML is applied to various tasks, such as predictive analytics, customer segmentation, and personalized marketing in AI-driven consumer insights. For instance, predictive analytics algorithms can analyse historical consumer data to forecast future trends (Kim et al., 2022). This practice enables businesses to anticipate consumer behaviour and tailor their strategies accordingly. Customer segmentation algorithms use ML to categorize consumers into distinct groups based on shared characteristics or behaviours, allowing businesses to target their marketing efforts more effectively (Ullal et al., 2021). ML-powered systems can analyse consumer preferences and past behaviours to suggest personalized products or content. Leveraging ML helps enhance consumer experience and drives sales.

4.2.2 Natural Language Processing

Natural language processing (NLP) is a fundamental AI technology that enables computers to understand, interpret, and generate human language. It is used in AI-driven consumer insights to analyse textual data from social media, customer reviews, and surveys. For instance, Vigenesh et al. (2023) indicate that sentiment analysis algorithms in NLP can classify consumer feedback as positive, negative, or neutral, providing businesses with valuable insights into consumer sentiment toward their products or services. Additionally, NLP-powered communication tools, such as chatbots, engage with consumers in natural language, providing personalized recommendations,

answering queries, and facilitating customer support (Babu et al., 2023a). Another application of NLP is text summarization algorithms, which extract critical insights from large volumes of textual data, enabling businesses to quickly identify relevant information and trends (Charles et al., 2023; Ienca & Ignatiadis, 2020). NLP technologies allow enterprises to gain deeper insights into consumer preferences, opinions, and behaviours, enhancing their ability to make data-driven decisions and optimize strategies.

4.2.3 Recommender Systems

Recommender systems are AI-powered algorithms that analyse consumer data to offer personalized product, service, or content suggestions. These systems significantly enhance the consumer experience, driving engagement and sales by using collaborative and content-based filtering methods to provide tailored recommendations (Acharya et al., 2023; Habil et al., 2023; Necula & Păvăloaia, 2023). Collaborative filtering identifies user patterns and similarities for personalized recommendations, while content-based filtering suggests items based on user interactions and item attributes. Hybrid systems combine both approaches for improved accuracy and variety in recommendations (Kim, 2020). For instance, in e-commerce, recommender systems suggest products tailored to user preferences, impacting significant sales and contributing to about 35% of Amazon's sales (Acharya et al., 2023). Similarly, in content streaming, they recommend media based on viewing or listening habits. These systems are integral to business strategies, enhancing customer satisfaction, retention, and revenue by delivering personalized experiences.

4.2.4 Intelligent Personal Assistants

Intelligent personal assistants (IPAs) are AI-powered applications that provide personalized assistance to users, performing tasks and providing information based on natural language commands or queries. IPAs in AI-driven consumer insights enhance the consumer experience and facilitate interactions between businesses and consumers (Hamilton et al., 2021). IPAs can assist users with various tasks, such as searching for products, making purchases, tracking orders, and providing recommendations based on their preferences and past interactions (Aoujil et al., 2023; Baek, 2023). For example, IPAs integrated into e-commerce platforms can help users find products, compare prices, and make informed purchasing decisions by answering questions and offering personalized suggestions. Moreover, IPAs can provide proactive assistance by notifying users of relevant promotions, discounts, or product updates based on their preferences and purchase history (Agarwal et al., 2021). Businesses can use IPAs to streamline the consumer

journey, enhance engagement, and build stronger customer relationships. These goals can be achieved by providing personalized and responsive assistance tailored to individual customer needs and preferences.

4.2.5 Chatbots

Chatbots are AI-powered conversational agents interacting with users through natural language, typically via text or voice interfaces. They enable businesses to engage with consumers, provide support, and gather valuable insights (Cheng & Jiang, 2020). Chatbots can be deployed across various channels such as websites, mobile apps, social media platforms, and messaging apps to offer customer service, answer queries, and assist with tasks such as product recommendations or booking appointments (Fan et al., 2021; Sidlauskiene et al., 2023). Chatbots leverage NLP technology to understand and interpret user inquiries, respond with relevant information, and even engage in contextual conversations. Additionally, chatbots can collect user feedback and gather information about their preferences and behaviours (Pfoertsch & Sulaj, 2023). These tasks provide valuable insights to businesses for decision-making and strategy optimization. Moreover, chatbots can offer personalized recommendations based on user interactions and historical data, enhancing the consumer experience and driving conversions (Sidlauskiene et al., 2023). These applications make chatbots powerful tools for businesses to improve customer engagement, streamline operations, and gain actionable insights into consumer behaviour and preferences.

4.3 Opportunities for AI-Driven Consumer Insights

AI-driven insights create numerous opportunities to improve customer relationships, offers, and overall business growth (table 4). For instance, they can leverage the insights to deliver personalized services and promotional content. This approach can improve consumer satisfaction and loyalty, contributing to the company's long-term growth and development.

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Table 4. Opportunities for AI-Driven Consumer Insights

Opportunity	Description	Key benefits	References
Prediction and Targeting	Uses AI to analyze consumer data for accurate behavior prediction and marketing precision.	Improved targeting, increased conversion rates, optimized budgets, enhanced customer experience.	Babu et al., 2023a; Wang et al., 2024
Personalization	Tailors products and services to consumer preferences using AI-driven analysis of interaction data.	Enhanced engagement, loyalty, reduced cognitive load, differentiation in competitive markets.	Kumar et al., 2023; Baldauf et al., 2020
Customer Journey Mapping	Analyzes consumer interaction across touchpoints to develop detailed purchasing journey maps.	Optimized touchpoints, tailored content, increased cross-selling and retention opportunities.	Sinha et al., 2023; Richards & Harrison, 2022
Building Consumer-Brand Relationships	Uses AI to analyze consumer data for personalized and authentic brand interactions.	Strengthened trust, loyalty, empathy, and customer-brand bonds.	Bergner et al., 2023; Sardjono & Cholidin, 2023
New Business Models	Leverages insights for customer-centric innovations such as subscription-based and platform-based models.	New revenue streams, market differentiation, improved scalability and efficiency.	Cavazza et al., 2023; Dakwala et al., 2022
Strategic Business Decision-Making	Extracts actionable insights to inform business decisions using predictive analytics and machine learning.	Enhanced agility, competitiveness, operational efficiency, and cost-effectiveness.	Gupta et al., 2023; Elvas et al., 2023
Talent Acquisition	Uses AI for recruitment, including candidate matching, resume screening, and interview scheduling.	Streamlined hiring processes, reduced turnover, and diverse, skilled workforce.	Agnihotri et al., 2023; Lawry, 2022
Analyzing Purchasing Intentions	Predicts purchasing intentions through advanced data analytics and machine learning.	Optimized marketing strategies, better targeting, real-time behavior adaptation.	Mittal et al., 2023; Kunz & Wirtz, 2024
Building Consumer Trust	Enhances trust by addressing consumer concerns with AI-driven transparency and security measures.	Strengthened relationships, improved loyalty, and real-time reputation management.	Lewis & Moorkens, 2020; Awan et al., 2024

4.3.1 Prediction and Targeting

Prediction and targeting are critical benefits of AI-driven consumer insights, enabling businesses to use vast data from consumer digital footprints to forecast behaviours and enhance marketing precision accurately. By leveraging predictive analytics, companies can anticipate product preferences, content engagement, and optimal purchasing times, improving targeting efficiency and message relevance (Babu et al., 2023a; Habil et al., 2023; Xu, 2022). This capability optimises marketing budgets, boosts conversion rates, and drives revenue growth. Additionally, predictive targeting allows businesses to personalize interactions, delivering messages and offers tailored to individual consumer preferences, thus enhancing the customer experience, fostering loyalty, and increasing brand advocacy (Wang et al., 2024; Babu et al., 2023b). These strategies underscore the significant strategic advantages of AI in driving effective business decisions.

4.3.2 Personalization

Personalization allows businesses to tailor experiences, products, and services to individual consumer preferences using AI algorithms that analyse extensive consumer interactions and demographics data, uncovering unique insights (Baldauf et al., 2020; Bhardwaj et al., 2023). This enables the creation of personalized experiences across marketing, product recommendations, and customer service. However, effective personalization involves more than just using names; it includes delivering content and offers that truly resonate with individuals (Jindal and Gouri, 2024). By implementing AI-driven personalization, businesses can enhance consumer engagement, loyalty, and lifetime value (Kumar et al., 2023; Solakis et al., 2022), streamline decision-making, reduce cognitive load, and foster a sense of recognition (Abbas et al., 2023). This strategic use of AI differentiates businesses in competitive markets and drives customer satisfaction and sustainable growth.

4.3.3 Customer Journey Mapping

AI-driven customer journey mapping gives businesses a detailed understanding of consumer interactions across various touchpoints, from initial awareness to post-purchase engagement. By analysing extensive datasets on consumer behaviours, preferences, and engagement patterns, AI helps marketers identify crucial stages and touchpoints in the purchasing process (Richards and Harrison, 2022; Kumar et al., 2023). This insight allows businesses to develop detailed maps that capture typical consumer pathways and highlight motivations, pain points, and opportunities for enhancement at each stage (Sinha et al., 2023; Rezazadeh et al., 2021). Consequently, companies

can optimize touchpoints, tailor content, address consumer needs promptly, and identify opportunities for cross-selling, upselling, and retention. This strategic approach fosters innovation, differentiation, and sustainable business growth.

4.3.4 Building Consumer-Brand Relationships

Building consumer-brand relationships involves using AI algorithms to analyse extensive consumer data—interactions, preferences, and feedback—to gain insights into consumer sentiments, behaviours, and values (Bergner et al., 2023). This data helps create personalized and authentic experiences that resonate deeply with individuals. For example, businesses can use these insights to provide relevant content, tailored offers, and personalized interactions, enhancing empathy, understanding, and commitment to consumers (Mohammadi et al., 2022). These practices foster trust and loyalty, enabling businesses to anticipate needs, address concerns proactively, and offer value-added services (Sardjono & Cholidin, 2023). This approach strengthens consumer-brand bonds, boosting engagement, advocacy, and lifetime value.

4.3.5 New Business Models

AI-driven consumer insights are catalysing the development of new business models centred around customer-centric practices. These insights allow businesses to adapt to market shifts and consumer needs by analysing vast amounts of data to identify trends, market gaps, and opportunities (Cavazza et al., 2023; Bilgihan et al., 2024; Dakwala et al., 2022). For example, AI-powered predictive analytics can support subscription-based models that offer personalized services or products, anticipating consumer preferences. Additionally, these insights facilitate the creation of platform-based models that support peer-to-peer transactions, collaborative consumption, or data monetization (Chergui et al., 2021; Trivedi, 2024). Businesses can use AI technologies like machine learning and natural language processing to automate processes, personalize experiences, and optimize operations for increased efficiency and scalability (Desmal et al., 2023). Utilizing AI-driven insights to innovate business models opens new revenue streams, enables market entry, and enhances differentiation.

4.3.6 Strategic Business Decision-Making

AI-driven consumer insights are pivotal for strategic business decision-making and performance optimization. Using AI algorithms, businesses can extract actionable insights to inform decisions across various functions such as product development, marketing, pricing, and resource allocation (Gupta et al., 2023; Diwanji et al., 2023; Elvas et al., 2023). These insights help businesses identify

trends, predict consumer demand shifts, and assess competitive dynamics accurately. Predictive analytics and machine learning enable companies to forecast outcomes, mitigate risks, and seize opportunities in real-time. Additionally, AI-driven insights enhance operational efficiency and cost-effectiveness by automating routine tasks, streamlining workflows, and personalizing customer interactions (Edwards & Imming, 2023; Dhawan et al., 2024). These improvements lead to increased productivity and customer satisfaction while reducing costs. Leveraging AI for insights and decision-making helps businesses remain agile, competitive, and responsive.

4.3.7 Talent Acquisition

AI-driven consumer insights significantly enhance talent acquisition, enabling businesses to use AI technologies to streamline recruitment and attract top talent effectively (Agnihotri et al., 2023). Innovations like predictive analytics and natural language processing analyse large data sets to identify ideal candidates for specific roles (Lawry, 2022; Li et al., 2022). These insights help develop targeted recruitment strategies and optimize the use of recruitment channels. Additionally, AI-powered applicant tracking systems automate tasks such as resume screening, candidate matching, and interview scheduling, which conserves recruiter time and resources. By using AI-driven insights, businesses can more accurately assess candidate fit and potential, reducing hiring mismatches and turnover and ultimately helping to build a skilled and diverse workforce that fosters innovation and growth.

4.3.8 Analysing Purchasing Intentions

AI-driven consumer insights give organisations the tools to accurately analyse and predict purchasing intentions (Arachchi & Samarasinghe, 2023). By utilizing advanced data analytics and machine learning, businesses can detect patterns and trends from data like browsing history, past purchases, and interactions with marketing campaigns, which indicate purchasing intentions (Mittal et al., 2023; Kunz & Wirtz, 2024). These insights enable businesses to effectively tailor marketing strategies and product offerings to consumer preferences and target potential buyers. Additionally, AI helps businesses anticipate and adapt to real-time consumer behaviour shifts, optimizing marketing efforts and improving conversion rates (Mahmood et al., 2023).

4.3.9 Building Consumer Trust

Marketing professionals and businesses can use AI-driven consumer insights to enhance consumer trust by leveraging advanced analytics to understand better and address consumer preferences and concerns, such as transparency, security, and reliability (Awan et al., 2024). These insights enable

proactive actions like improving data privacy, providing accurate product information, and offering responsive support (Lewis & Moorkens, 2020). AI-driven personalization also plays a crucial role in fostering trust and loyalty by delivering tailored experiences that reflect empathy and respect for individual preferences (Baldauf et al., 2022). Additionally, sentiment analysis allows businesses to monitor and swiftly respond to brand sentiment and reputation issues in real time (Chattopadhyay et al., 2021). Utilizing AI-driven insights to build trust can significantly strengthen consumer relationships and boost loyalty.

4.4 Challenges Related to the Use of AI-Driven Consumer Insights

AI-driven insights are associated with multiple challenges that hinder adoption and implementation (table 5). For instance, Sharif and Mohammed (2022) found that cybersecurity losses increased from US$3 trillion in 2015 to $6 trillion in 2021. Such significant financial costs can result in a reluctance among businesses to adopt AI innovations. Other issues identified include increased privacy concerns, integration challenges, and bias.

Table 5. Challenges Related to the Use of AI-Driven Consumer Insights

Challenges	Description	Key issues	References
Privacy concerns	Extensive data collection raises apprehension about personal information handling, transparency, and data security.	Potential data misuse, lack of transparency, regulatory compliance (e.g., GDPR), and consumer trust issues.	Carmody et al., 2021; Cheng & Jiang, 2020
Cyber-Security Issues	Merging AI technologies with legacy systems and workflows is complex, involving data compatibility, scalability, and organizational resistance.	Technical barriers, lack of skilled talent, cultural resistance, and high integration costs.	Zafeiropoulou et al., 2023; Chadha et al., 2022
Integration Challenges	Analyzes consumer interaction across touchpoints to develop detailed purchasing journey maps.	Optimized touchpoints, tailored content, increased cross-selling and retention opportunities.	Sinha et al., 2023; Richards & Harrison, 2022
Bias	Biases in AI algorithms and training data can perpetuate societal inequalities, leading to unfair outcomes in decision-making processes.	Discriminatory practices, lack of diversity in training data, and difficulty in identifying and mitigating biases.	Penedo & Kramcsák, 2023; Jin, 2021

4.4.1 Privacy Concerns

Privacy concerns are significant challenges in using AI-driven consumer insights due to the extensive collection and analysis of consumer data, leading to apprehension about personal information handling and usage (Carmody et al., 2021). These concerns are heightened by fears of potential misuse or exploitation of data by businesses or third parties (Wang et al., 2024), as well as issues related to transparency, data security, and potential breaches (Cheng & Jiang, 2020). The enforcement of stringent data privacy regulations like the GDPR underscores the need for businesses to adopt clear, transparent data practices, secure explicit consumer consent, and prioritize robust data protection measures to effectively address these privacy issues (Koolen, 2023; Penedo & Kramcsák, 2023).

4.4.2 Cyber-Security Issues

AI-driven consumer insights pose significant cyber-security challenges, with vulnerabilities including identity theft, spoofing, fraud, and email compromises, alongside malware, ransomware, phishing, and data breaches (Sharif and Mohammed, 2022). The collection and analysis of vast consumer data increase business susceptibility to these threats (Debello et al., 2023). Additionally, the interconnected nature of digital ecosystems and the proliferation of connected devices expand potential entry points for cyber-attacks (Kavitha & Rajini, 2024). The reliance on AI also introduces new risks, like adversarial attacks on AI models and algorithmic biases that may lead to security weaknesses. To combat these issues, businesses should adopt stringent security protocols, including data encryption and access controls, and stay updated on emerging threats to protect consumer data and maintain the integrity of AI-driven insights.

4.4.3 Integration Challenges

Integrating AI-driven consumer insights into existing business processes and systems poses significant challenges due to the complexity of merging AI technologies with legacy systems, disparate data sources, and varied organizational workflows (Zafeiropoulou et al., 2023). Technical issues like data compatibility, interoperability, and scalability further complicate these efforts (Pfoertsch & Sulaj, 2023). Additionally, cultural resistance within organizations can hinder the effective adoption of AI-driven insights. The necessity for specialized AI skills exacerbates these integration challenges (Chadha et al., 2022) as businesses need help finding and retaining adequately skilled talent. To successfully integrate AI, companies must prioritize interoperability

and scalability and invest in training programs to upskill employees to utilize AI-driven insights effectively.

4.4.4 Bias

Bias in AI algorithms, stemming from inherent limitations in the data used for training, poses a critical challenge as it can perpetuate or amplify existing societal biases. This issue arises from various factors, including biased data collection practices, algorithmic biases in AI models, and systemic societal biases (Penedo & Kramcsák, 2023; Jin, 2021). For instance, biased training data can lead to discriminatory outcomes in decision-making processes such as hiring, lending, or marketing, thus perpetuating inequality and exclusion among certain demographic groups. The complexity and opacity of AI algorithms often make it difficult to pinpoint and address the roots of these biases. To counteract this, companies should take proactive steps to detect and mitigate bias, ensure diversity and inclusivity in data collection and model training, and enforce transparency and accountability to promote fairness and equity in AI-driven consumer insights.

5. DISCUSSION

Adopting AI across various industries has revolutionized access to valuable AI-driven consumer insights, enhancing business decision-making and strategy implementation. Technologies such as machine learning, natural language processing (NLP), and chatbots enable businesses to extract precise data insights, interpret human language, and provide real-time, personalized customer interactions. These tools are pivotal in helping organizations adapt to evolving consumer behaviors and dynamic market conditions.

This study systematically synthesizes the existing literature on AI-driven consumer insights, filling a significant research gap by focusing specifically on the mechanisms through which AI generates actionable insights and the associated challenges. Unlike prior studies that broadly examine AI applications in marketing, this research categorizes the mechanisms of insight generation and explores their interplay with strategic marketing outcomes. By doing so, the study advances theoretical understanding, providing a conceptual framework that demonstrates how AI can be operationalized to predict consumer behavior, improve segmentation, and foster hyper-personalized experiences.

The findings of this study highlight the transformative potential of AI-driven consumer insights, but they also underscore the nuanced challenges organizations face in implementation. From a

scientific perspective, this research contributes to the literature by offering a structured synthesis of key opportunities (e.g., personalization and predictive analytics) and challenges (e.g., privacy concerns and algorithmic biases). This dual focus equips academics with a comprehensive overview of the field, laying the groundwork for further exploration of both technological advancements and ethical considerations in AI-driven marketing.

From a practical standpoint, the study provides actionable guidance for professionals, emphasizing how businesses can enhance customer satisfaction and loyalty through personalized experiences, optimize marketing efforts with improved segmentation, and stay responsive to market trends via real-time decision-making. These insights are particularly valuable for businesses navigating the increasingly complex landscape of consumer expectations and digital transformation. The study also addresses the critical role of trust and transparency in AI applications, offering recommendations for robust, ethical governance frameworks to maximize the value of consumer insights.

While this study contributes to both theory and practice, it acknowledges certain limitations. The exclusive reliance on the Scopus database may have excluded relevant studies indexed in other databases, such as Web of Science and ProQuest. To mitigate this, the research employed a rigorous systematic review process, using carefully selected keywords and inclusion criteria to ensure that the most relevant and high-quality studies were captured. Additionally, the study recognizes the potential biases inherent in bibliometric analyses and took steps to validate the synthesis of findings through thematic cross-referencing and citation analysis. Future research could broaden the scope by incorporating additional data sources and prioritizing high-impact publications to enhance the robustness of the findings.

6. CONCLUSION

In conclusion, AI-driven consumer insights hold significant transformative potential, enabling businesses to innovate and maintain a competitive edge by better understanding and predicting consumer behavior. The study underscores the importance of integrating diverse data types, advancing NLP capabilities, and addressing ethical concerns to further refine the practical applications of AI in consumer analysis. By synthesizing existing knowledge and offering practical guidance, this research contributes to the scientific literature and provides professionals with a roadmap for leveraging AI technologies to drive sustainable growth and foster stronger customer

relationships. Future research should continue to explore these dimensions, ensuring that the full potential of AI-driven technologies is realized in both academic and business contexts.

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