The Darkside of Artificial Intelligence to Consumer Behavior: Bibliometric Review

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Abstract: Artificial Intelligence (AI) is a technology that continues to be developed today. Providing a positive impact on life in facilitating human work, unfortunately AI also has a bad side that causes anxiety. The purpose of this research is to explain the negative impacts associated with AI in the world of business management. This research is expected to provide an understanding of the dark side of AI on consumer behavior and its implications through a systematic literature review and in-depth content analysis. The data used in this study were taken from Scopus and Web of Science using bibliometric methods. Using the help of RStudio and biblioshiny applications to manage data. The results showed that there is a significant correlation between the negative impact of Artificial Intelligence (AI) on consumer behavior, where the negative impact of AI significantly affects consumer behavior. This study provides important new knowledge for researchers and the public who seek information about the relationship between the negative impact of AI and consumer behavior.

Keywords: Consumer Behavior, Artificial Intelligence, Darkside, Bibliometric, Rstudio

INTRODUCTION

Artificial Intelligence (AI) technology has penetrated into various industries, including business and marketing (Baber et al., 2023; Khan, 2022). The number of companies looking for ways to incorporate their systems with AI continues to increase as the technology develops (Oliński et al., 2024). The application of AI technology into a work or product is becoming increasingly common in daily life, and even the way of interacting with customers in business may change due to the application of AI in a product (Ameen et al., 2021). In addition, AI components can also build computer systems that can perform tasks that require human intelligence, such as decision-making. A significant application of AI results in better decision-making to improve business performance (Agrawal et al., 2018; Lévesque et al., 2022). AI is a rapidly growing field that has the potential to revolutionize the way we live and work (Global Development Lab, n.d.). The increasing need for AI technology provides convenience and

positive impacts for many people. However, it should also be noted that AI technology is still under development (Aldoseri et al., 2023), so its accuracy needs to be scrutinized. This aspect has led to the need for research on the dark side of AI. The dark side of AI includes various risks and challenges associated with its implementation. One of them is the lack of transparency towards automated decision-making systems in search engine advertising, leading to a negative impact on ad performance (Schultz et al., 2024). In addition, the potential negative consequences of AI adoption extend to issues such as job displacement due to the automation of repetitive tasks, thus affecting occupations such as blue-collar and white-collar (A. Garofalo et al., 2022). Research emphasizes the importance of exploring the unintended consequences of AI technologies and advocates for responsible AI implementation in reducing negative impacts (Saxena et al., 2022). To meet the growing needs of AI applications, innovative solutions such as DARKSIDE, a System-on-Chip with a heterogeneous cluster of RISC-V cores and specialized accelerators, have been developed to improve performance and efficiency in deep neural network operations (A. Garofalo et al., 2022; Mikalef et al., 2022). The great physics scientist Stephen Hawking once warned the world about AI. He said that we do not know whether creating effective AI systems will be the greatest achievement in our history or the worst-case scenario. Humans do not know whether the systems they create will help them or be ignored, pushed aside, and eventually destroyed by AI (Saxena et al., 2022).

The dark side of AI encompasses a wide range of issues, some of which raise concerns about AI such as algorithmic bias, and the potential for AI to manipulate consumer behavior (Trivedi Shekar, 2023). This has led to a greater need for exploration of the potential dark side of AI on consumer behavior. (Lages et al., 2023). Consumers or customers are influenced by various factors, including cultural, social, economic, and personal factors, and their behavior is often difficult to predict (Alawadh & Barnawi, 2024). Individuals' routine behavioral actions and reactions tend to be influenced by social contacts and social interactions with other members of society (Bhukya & Paul, 2023). In addition, consumer behavior is also influenced by targeting algorithms such as a consumer looking for information online will "type in Google" and get results based on Google search algorithm predictions of what the consumer might consider most relevant (Braun et al., 2024). This is due to the development of social life and e-commerce technology.

Thus, the literature on consumer behavior contains a large amount of social influence research (Bhukya & Paul, 2023). As a result, the social influence literature continues to grow and is still very incoherent. More research on social influence is needed (Bhukya & Paul, 2023) Parasocial relationships have been studied regarding opinion leadership and the impact of virtual influencers on consumer behavior (Gerlich, 2023). Studying consumer behavior is a complex and challenging task that requires a deep understanding of the factors that influence consumer decision-making (Alawadh & Barnawi, 2024). This article explores the dark side of AI's impact on consumer behavior through bibliometric analysis, drawing insights from existing research on the interaction of AI and consumer behavior (Durmaz & Yusuf Kilic, 2023; Rana J et al., 2023). The dark side of Artificial Intelligence (AI) on consumer behavior is present in various ways, as highlighted in the research paper (Chen et al., 2022).

Recommendations provided by AI have been found to lead consumers to limited information, thus severely limiting exposure to a wide range of products and reducing the quality of decisions made (Sun et al., 2022; Wang et al., 2023). In addition, AI recommendations when compared to human recommendations can reduce consumers' motivation to use green products, lowering their intention to purchase green products unless they have an environmental identity (Marie-Sophie, 2021). In addition, the use of AI personal assistants (AIPAs) may result in poor human-computer interaction experiences due to service failures, impacting consumers' intention to continue purchasing through technostress mechanisms (Sun et al., 2022). These findings underscore the importance of understanding and

mitigating the negative impact of AI on consumer behavior. By examining the negative implications of AI on consumer decision-making processes, purchasing patterns, and overall consumer behavior, this study aims to shed light on the under-explored consequences of AI integration in the world of business management. Through a systematic literature review and in-depth analysis, this research seeks to provide an understanding of the dark side of Artificial Intelligence and its implications on consumer behavior, as well as offer valuable insights for future industry studies and practices.

Based on previous research, there are four studies that have a correlation with this research. These four articles explore various opportunities and challenges regarding ethics related to AI. The first article (Du & Xie, 2021) focuses on AI-enabled products and their ethical implications at the product, societal, and consumer levels. The paper highlights the role of companies in encouraging ethical AI practices and suggests that increased multifunctionality in AI products may reveal product complexity and risk without necessarily increasing consumer satisfaction. The article also raises issues such as algorithmic bias and privacy concerns. The second article. Wach et al., (2023), critically analyzes the negative aspects of generative AI, particularly ChatGPT, emphasizing the ethical and legal challenges in its development and use. The third study Xing et al., (2023), systematically reviewed the literature on the dark side of AI in electronic markets, identifying six key issues: privacy concerns, security threats, ethical challenges, criminal and terrorist abuse, trust issues, and bias. The fourth article, Belanche et al. (2024), addresses the ethical and legal issues of AI in services, proposing a research agenda that includes bias, discrimination, AI aesthetics, and transparency. This article highlights the design challenges and significant impact of AI on customers in marketing and services, looking at AI as both a service provider and a customer while considering its environmental impact.

However, this study has some differences with previous research. In terms of methods, previous studies more often use the literature review method, conceptual framework method, and three conceptual models while this study uses the Bibliometric analysis method. In addition, this study also focuses on the negative impact of AI on consumer behavior. As for the data sources used, this research comes from Scopus and Web of Science data sources. Furthermore, in terms of keywords, this research focuses on Artificial Intelligence and Marketing Strategy. There are several research questions (RQ) in this research that will be answered, namely: 1) What are the current trends of annual research publications on this topic?; 2) What keywords appear most frequently in abstracts or titles of research related to this topic?; 3) Which authors, journals, sources and articles are leading the way on this theme?; 4) What is the network of collaboration among researchers studying the negative impact of AI on consumer behavior, and what are the patterns of co-authorship?; 5) How significant is the impact of publications on this topic, as indicated by citation metrics?; and 6) What are the future research directions for the utilization of artificial intelligence in improving employee performance?.

METHOD

The beginning of the first page paragraph without Our research combines two different methods of analysis: bibliometric analysis and content analysis. This strategic combination allowed us to utilize the strengths of both approaches in exploring the topic in a thorough and multidimensional manner. Bibliometric analysis involves examining bibliographic material quantitatively, relying on data from indexed publications (Bilas Roy & Basak, 2013). Then to complement this quantitative aspect of bibliometric analysis, we incorporate content analysis. Content analysis is a qualitative research method used to study textual, visual, or auditory content in documents, media, or other sources. It helps identify patterns and themes, providing deeper insights into the research subject (Krippendorff, 2019). With in-depth content

examination, this method can reveal subtle details and contextual complexities, making it ideal for qualitative analysis. By combining these two methodologies, this research was able to create a more robust research framework that could assess bibliographic data quantitatively and explore content qualitatively. This approach allowed us to understand the research topic holistically, taking into account both quantitative and qualitative dimensions.

As a result, our research findings are comprehensive and interconnected, thus enhancing their depth and breadth. We analyzed the following three dimensions: 1) Bibliometric citation analysis; 2) Bibliometric analysis of co-authorship; 3) Content analysis. The analysis was conducted using the "Bibliometrix" package in RStudio together with "Biblioshiny". By using this package, visualizations will be generated that can be further interpreted. This research covers all papers related to artificial intelligence and consumer behavior. The data sources we used came from two databases, namely Scopus and Web of Science. To find relevant literature, we used appropriate keywords. In the keyword search process, we used various possible alternatives (synonyms) to get more comprehensive results, so the keywords we used were: ("incivility" OR "aggression" OR "rage" OR "misbehav*" OR "mistreatment" OR "devian*" OR "revenge" OR "dysfunction*") AND ("AI" OR "artificial intelligence" OR "machine learning" OR "robot" OR "automation" OR "soft computing") AND ("consum*" AND "behav*" OR "social influence" OR "consumer behaviour" OR "Consumer behavior" OR "purchase behavior" OR "buying behaviour" OR "Purchase behaviour" OR "buyer behaviour" OR "buyer behavior" OR "buying decision" OR "decision making" OR "usage behaviour" OR "user behaviour" OR "user behavior" OR "tourist behavior" OR "customer behavior") (Bhukya & Paul, 2023; Cruz-Cárdenas et al., 2021; Lages et al., 2023; Zhang, 2024).

RESULTS AND DISCUSSION

The results of the study explain straightforwardly the research questions by using the results table of research data processing not only to describe the results of the research table but more directly than the analysis of the research results. This research uses a Systematic Literature Review with reference to the PRISMA Flowchart. Seen in Figure 1, there are 4 stages of the review process that must be carried out, including: 1) identification; 2) screening; 3) eligibility; and 4) analysis.

Identification Process

The identification process is carried out by identifying articles using two databases, namely Scopus and Web of Science. In the next stage, we search for relevant articles using specific keywords. We use strings taken from 3 main criteria to find strings/keywords: Consumer Behavior, Dark Side, Artificial Intelligence. Using these keywords, we found 82 articles from Scopus and 335 articles from Web of Science. A detailed list of the search terms we used is shown in table 1.

Filtering Process

All 172 articles obtained from data identification will be filtered based on criteria. There are three criteria used in this study, namely document (article), language (English), and access (Open Access). After the filtering process, 172 articles were obtained from Scopus and Web of Science. The results of the search will later be downloaded, where the information to be exported includes citation information, bibliographic information, abstracts & keywords, and other information. The two data sources are then processed using R Studio software to eliminate duplicate data.

Eligibility Process

At this stage, a recheck will be carried out regarding the downloaded literature, this check is carried out by manually filtering the data by understanding the abstract thoroughly. At this stage there are two steps, the first step is to review the title, abstract, and keywords. We had 172 articles out of 175. This thorough check was done to ensure that each article met the necessary criteria for inclusion in the study, ensuring the reliability and relevance of the research findings. The second step was to review the articles to verify that they met the requirements for analysis. If literature was found that was not relevant to mergers and acquisitions in technology companies, then the downloaded data would be deleted and would not be used.

Table 1. Keyword search

| Topic	String
Darkside	(“incivility” OR “aggression” OR “rage” OR “misbehav*” OR “mistreatment” OR “devian*” OR “revenge” OR “dysfunction*”) - Cristiana R. Lages
Artificial Intelligence	(“AI” OR “artificial intelligence” OR “machine learning” OR “robot” OR “automation” OR “soft computing”)
Consumer Behavior	(“consum*” AND “behav*” OR “social influence” OR “consumer behaviour” OR “Consumer behavior” OR “purchase behavior” OR “buying behaviour” OR “Purchase behaviour” OR “buyer behaviour” OR “buyer behavior” OR “buying decision” OR “decision making” OR “usage behaviour” OR “user behaviour” OR “user behavior” OR “tourist behavior” OR “customer behavior”)
Full String	(“incivility” OR “aggression” OR “rage” OR “misbehav*” OR “mistreatment” OR “devian*” OR “revenge” OR “dysfunction*”) AND (“AI” OR “artificial intelligence” OR “machine learning” OR “robot” OR “automation” OR “soft computing”) AND (“consum*” AND “behav*” OR “social influence” OR “consumer behaviour” OR “Consumer behavior” OR “purchase behavior” OR “buying behaviour” OR “Purchase behaviour” OR “buyer behaviour” OR “buyer behavior” OR “buying decision” OR “decision making” OR “usage behaviour” OR “user behaviour” OR “user behavior” OR “tourist behavior” OR “customer behavior”)

Source: Data Processed (2024)
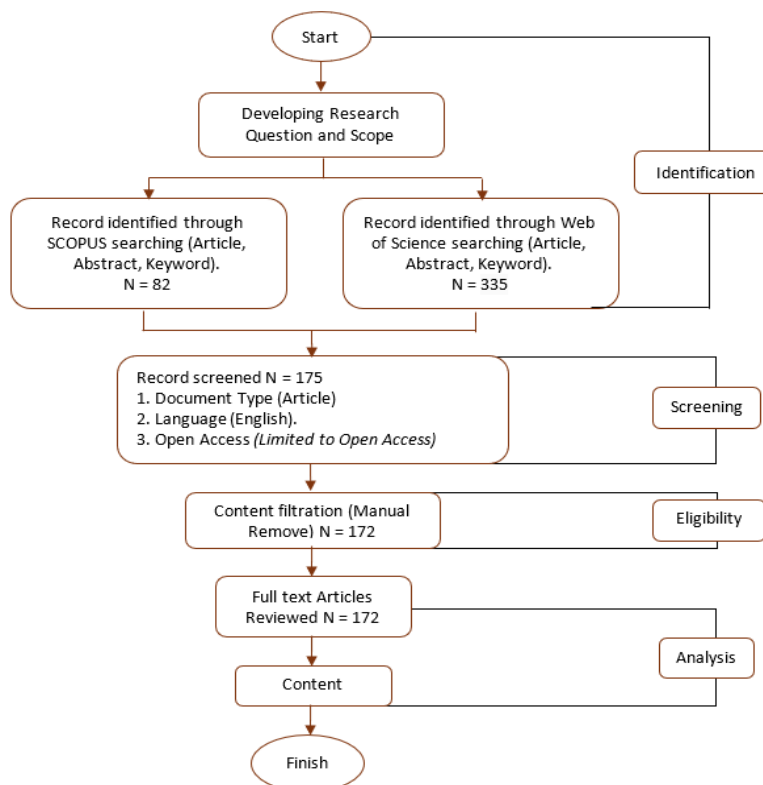
Figure 1. Prism Diagram
Source: Data Processed (2024)

Main Information

Figure 2. Main Information
Source: Data Processed (2024)

The bibliometric analysis of this study analyzed related articles from 2004 to 2024. The study covered 136 varied sources, including journals, books and other academic materials, forming a corpus of 175 documents. The annual growth rate of 11.29% indicates a growing interest. With an average document age of 3.35 years, the focus is clearly on recent and contemporary contributions to literature. The impact of this research is evidenced by the average citation rate of 16.03 citations per document, reflecting its influence within the academic community. An investigation of 678 Author Keywords revealed nuanced and diverse aspects of the research topic. 1349 authors were involved, with 4 documents authored by one person and an average of 8.49 co-authors per document. The international co-author percentage of 29.65% indicates a significant level of global collaboration.

Publication Trends

Analyzing publication trends involves examining the shift and development of scholarly articles in a given subject or field over a period of time. The annual scientific production data from 2004 to 2024 shows an interesting trend in the number of publications produced each year. In the initial period from 2004 to 2013, production was relatively low and fluctuating, with some years producing no publications at all. However, starting in 2014, there was a significant increase in the number of publications. 2014 recorded 4 articles, and although there was a slight decrease in 2015 with only 1 article. Although there was a slight decline in 2024 with 17 articles, overall, this period showed significant growth in scientific production. These drastic changes indicate a positive shift in the scientific environment that is becoming more productive over time.
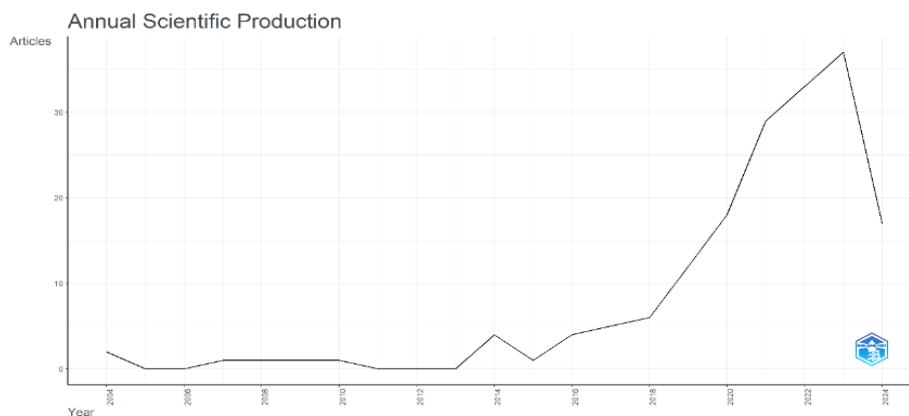

Figure 3. Annual Scientific Production
Source: Data Processed (2024)

Country Production Analysis

The Country Production Analysis provides a clear picture of which countries produce the most scholarly works on research topics. Table 3 presents the distribution of scholarly articles across countries, which provides insight into research production in a given bibliometric analysis. Analysis of scientific production by country shows that the United States leads significantly with 307 publications, indicating its dominant role in global research output. China followed as the second highest contributor with 164 publications, indicating its growing influence in the scientific community. Spain, South Korea, Italy, and Germany, with 33, 29, 24, and 19 publications, respectively, complete the list, highlighting their role in advancing scientific knowledge. These countries collectively represent major centers of scientific research, contributing significantly to the global scientific landscape.

Table 2. Production Country

Country	Freq
USA	307
China	164
Canada	54
Netherlands	53
Uk	46
Australia	35
Spain	33
South Korea	29
Italy	24
Germany	19

Analysis of Trending Topics and Co-words from high-frequency keywords

The Topic and Co-Word Trend Analysis of High-Frequency Keywords revealed patterns and themes worth noting in the research landscape of this topic. This analysis, as presented in Table 3, identified the most common topics and words that appear frequently in the literature. Analysis of trending topics and high-frequency keywords from the dataset revealed significant insights into areas of research focus over the past few years. The term "men" appeared most frequently, with 22 mentions, and showed consistent relevance in 2018 (Q1), 2020 (Median), and 2022 (Q3). Overall, the data shows a dynamic and evolving landscape of research topics, with certain keywords remaining in demand while others emerge and peak over time, reflecting shifting research priorities and advancements in various fields.

Table 3. High Frequency Keyword

Term	Frequency	Year (Q1)	Year (Median)	Year (Q3)
male	22	2018	2020	2022
article	18	2018	2020	2023
female	18	2019	2020	2023
decision-making	18	2019	2022	2023
dysfunction	18	2021	2022	2023
human	17	2019	2021	2023
machine learning	17	2021	2021	2023
aged	14	2018	2019	2024

Table 3 shows that The co-occurrence network mapping shown in the figure visualizes the relationship and frequency of key terms in this theme: "The Darkside of Artificial Intelligence to Consumer Behavior: Bibliometric Review" Different colors group related terms into clusters, with the size of the terms indicating their prominence and the lines between them indicating their interrelationships. The green cluster focuses on terms related to "non-human," "animal," and "automation," with key terms such as "animal experiment," "stroke," and "non-human" closely interlinked, indicating significant research attention in this area. The blue cluster is dominated by terms such as "article," "male," and "priority journal," indicating a large

amount of research involving demographic factors or publication sources. The red cluster is centered around "human," "human," "machine learning," and "artificial intelligence," with other important terms such as "cognition," "brain," "depression," and "algorithms," highlighting a strong focus on the human impact and cognitive aspects of AI. In addition, there are smaller clusters and individual terms such as "decision making," "dysfunction," "validation," "risk," "expression," and "impact," indicating new or specialized areas of research within the broader topic. This network mapping reveals the complexity and multifaceted nature of research on the dark side of AI in consumer behavior.
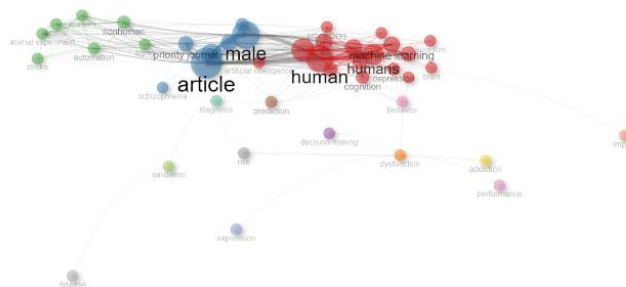

Figure 4. The co-Occurrence Network Mapping
Source: Data Processed (2024)

Most Relevant Authors

In the research on "The Darkside of Artificial Intelligence to Consumer Behavior: Bibliometric Review" the most relevant authors are highlighted in the table based on their fractional contribution and number of published articles. With five publications overall and a fractional score of 0.72, LEE J. stands out as the most relevant author. This indicates not only strong production but also noteworthy individual contributions in this area. Several authors produced four publications each, including J. J., LEE S, LI H, WANG H, WANG X, WANG Y, ZHU T, and ZHU X. With the highest fractional value of 0.66 among them, WANG Y seems to have a significant individual influence compared to other researchers who have published an equivalent number of works.

Table 4. Most Relevant Author

Authors	Articles	Fractionalized
Lee J	5	0,72
J. J	4	0,26
Lee S	4	0,52
Li H	4	0,49
Wang H	4	0,42
Wang X	4	0,48
Wang Y	4	0,66
Zhu T	4	0,40
Zhu X	4	0,40
A. A	3	0,22

Source: Data Processing

Thematic and Collaboration Networks

The Thematic Map analysis in Figure 6 shows the main topics and clusters of ideas related in this study. The thematic map provides a detailed visualization of the various themes based on the level of development (density) and relevance (centrality). The map is divided into four quadrants. The upper left quadrant, labeled Special Themes, includes well-developed but less central themes such as "division," "relevance," and "research center." The upper right quadrant, known as Motor Themes, contains highly developed and highly relevant themes such

as "automation," "non-human," and "animal," with "article, human, male" standing out as a particularly important and growing theme. The lower left quadrant, categorized as Emerging or Declining Themes, displays themes with low development and relevance, indicating that they may be new or less relevant. Examples include "diastolic dysfunction", "events", and "neural networks". The bottom right quadrant, Basic Themes is identified as themes that are highly relevant but not well developed, indicating basic areas that need more growth such as "decision making", "dysfunction", and "risk", with relatively small clusters here. Major themes such as "model," "artificial intelligence," and "score" are moderately developed and relevant, forming the core of the thematic structure and linking various other themes. Themes such as "classification," "expression," and "results" are major themes on the relevance axis, but have moderate development, indicating a growing focus. Overall, the thematic map depicts the landscape in research, highlighting key, central themes, emerging areas, and established but less central themes, providing insight into current areas of focus and potential future research directions.
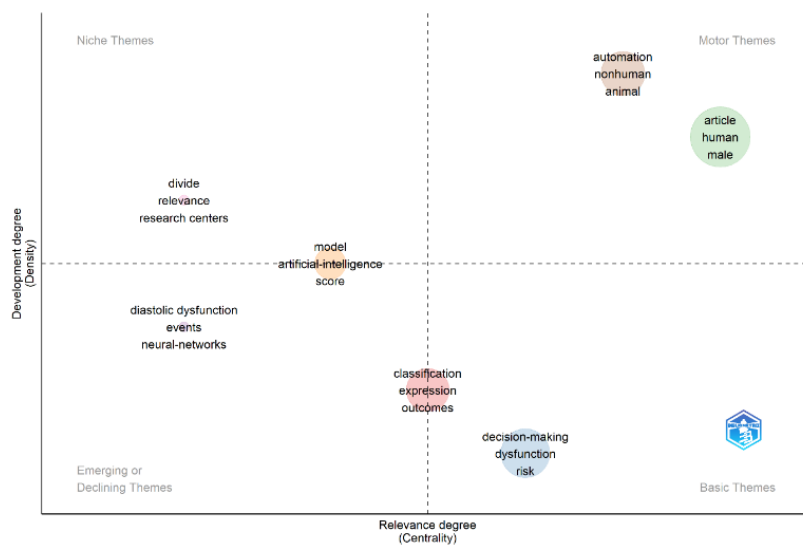

Figure 5. Thematic Maps
Source: Data Processed (2024)

Impact of Artificial Intelligence on Consumer Behavior

Based on the co-occurring network mapping provided in the dataset, the collaboration network among researchers investigating the detrimental impact of AI on consumer behavior can be examined. With the help of the graphs obtained from Rstudio and Biblioshiny, we can find some of the results and facts described in the previous section. Artificial Intelligence (AI) has a significant impact on consumer behavior, as can be seen from the network mapping and cluster analysis results in the study. AI plays an important role in consumer decision-making by providing accurate predictions of customer preferences and behavior, enabling businesses to offer more personalized experiences that can significantly influence purchasing decisions. AI's big data analysis capabilities can help optimize product offerings, control and manage businesses, and conduct marketing promotions, allowing marketers to understand consumer trends, buying habits, and preferences in greater depth. AI-powered automation also frees up human resources for more creative and strategic work, as seen from the focus on automation in the research cluster. However, the increasing use of AI raises concerns about data privacy, transparency, and fairness in AI-driven decisions. Consumers are becoming more aware of how their data is being used and are demanding transparency from companies. Research on the impact of AI on consumer behavior involves various disciplines, such as cognition, psychology, and technology, which demonstrates the dynamic and evolving nature of this

study. Close interdisciplinary collaboration, as demonstrated by the key figures in the research network above, demonstrates the importance of a comprehensive approach to understanding the impact of AI. Overall, AI is changing the way companies interact with consumers through increased productivity, efficiency, and effectiveness, but to achieve optimal results and gain consumer trust, companies must ensure openness, data privacy, and fairness in the use of AI.

Pros and Cons of Applying Artificial Intelligence to Consumer Behavior

This research highlights the many advantages and disadvantages of integrating Artificial Intelligence (AI) into consumer behavior. Enhanced personalization and customization are just two of the many benefits provided by AI. AI also allows organizations to analyze massive amounts of data and make accurate predictions about their customers' behavior and preferences. The customer experience becomes highly customized, thereby increasing loyalty and delight. AI also improves decision-making by optimizing marketing plans, product offerings, and inventory control by providing in-depth data on customer trends and preferences. This allows decision-makers to make better and more educated choices. By automating everything from data analysis to customer service contact, artificial intelligence also dramatically improves productivity and efficiency while freeing up human resources for more strategic and creative work.

Nevertheless, there are a number of difficulties in implementing AI. Consumers' concerns about the use and storage of their personal information are increasing with the widespread collection and analysis of personal data, which raises privacy and data security issues. It is difficult to ensure fairness in AI-driven decisions as AI algorithms have the potential to amplify biases seen in training data, which may result in unfair or discriminatory outcomes. Since AI decision-making systems lack transparency, their opaqueness has the potential to erode customer trust. In addition, automation of jobs previously performed by humans may result in job loss and unemployment, requiring retraining and adaptability of the workforce. Concerns about consent and manipulation in shaping consumer behavior also raise ethical issues, meaning that companies must uphold moral principles and win customer trust. A balance between AI-driven insights and human judgment is needed as over-reliance on technology can limit human innovation and intuition.

Research Potential

Future research directions could focus on ethical implications and bias mitigation, where scientists look for ways to make AI algorithms less biased, guarantee fair results for all demographic groups, investigate ethical frameworks for implementing AI that prioritize consumer consent, privacy, and transparency, and create guidelines for ethical use of AI in marketing and consumer interactions to avoid manipulation and exploitation. Future research should look at the complex and multidimensional effects of AI on consumer behavior, such as how AI affects consumer attitudes, preferences, and actions. The study's conclusions on the value of AI in inventory management, marketing campaigns, and product offerings, as well as how AI can automate processes and free up human resources for more imaginative and strategic work, provide a strong basis for further research. In addition, this article also emphasizes the need for additional studies on the moral implications of AI on consumer behavior, especially the possible use of AI to trick or manipulate consumers. Future research should look at moral issues posed by AI's influence on consumer behavior, such as the importance of fairness, openness, and data privacy in AI-based decision making. AI decision-making processes should be more transparent and understandable to consumers. This can be achieved by developing and testing strategies, examining the effects of AI transparency on consumer acceptance and trust, and investigating tools and techniques to make complex AI models used in consumer behavior analysis easier to interpret.

Managerial Implications

The related research "The Darkside of Artificial Intelligence to Consumer Behavior: Bibliometric Review" offers some important managerial implications for businesses using AI technologies. AI-related practices can be prioritized by implementing bias mitigation strategies and ensuring that AI algorithms are appropriate and unbiased across demographics. Emphasis on consumer consent, transparency, and privacy can help build trust and can be a way to prevent potential exploitation. The development of guidelines and frameworks for the use of AI in marketing can protect consumers and enhance brand reputation. It can focus more on robust data security procedures and transparent data practices to address consumers' growing concerns regarding privacy and security. A transparent and explainable AI model is essential to maintain consumer trust. Therefore, investments in businesses should be made in the decision-making process.

AI technologies in consumer interactions require attention to adapting the workforce to AI-driven changes. Consideration should be given to strategies in retraining employees to adapt to working with AI, ensuring a smooth transition, and minimizing job replacement. This can include training programs and creating new roles that harness the power of AI and human employees. Understanding the psychological and cognitive effects of AI on consumers is also very important. Awareness of potential issues such as trust, anxiety, and dependence on AI systems, and should strive to create AI applications that enhance, not undermine, consumer well-being. A global and cross-cultural perspective is essential for businesses operating in diverse markets. Cross-cultural research can adapt AI applications to different cultural contexts and collaborate internationally to meet diverse consumer needs. Information on regional regulations that affect the use of AI in consumer behavior should also be kept up to date. AI's relationship with other emerging technologies such as augmented reality (AR), virtual reality (VR), and blockchain provides new opportunities for more personalized consumer experiences. There is still much to be done to explore these AI technologies to improve consumer engagement and satisfaction. In addition, by collaborating and working with experts from the fields of psychology, sociology, economics, and computer science, managers can develop more effective and responsible AI strategies. Working with policymakers can help shape regulations that encourage the appropriate and beneficial use of AI. By addressing these managerial implications, companies can harness the power of AI to improve consumer experiences, drive innovation, and maintain ethical standards, ultimately leading to long-term success and sustainability.

CONCLUSION

The conclusion of this study provides important insights into the complex interaction between ai and consumer behavior. from this study, it is known that there is a correlation between the negative impact of ai and consumer behavior. where the presence of ai can have a negative impact and bias if not done wisely and carefully. by mapping collaboration networks and identifying research clusters, this study highlights key focus areas such as the cognitive and psychological impact of ai, the role of demographics, and the ethical implications of ai in the consumer market. the study emphasizes the need for further research in reducing bias in ai algorithms, ensuring transparency, and maintaining data privacy to build consumer trust. the managerial implications are significant, suggesting that businesses should adopt ethical ai practices, invest in more transparent ai models, and prioritize workforce adaptation to ai-driven change. in addition, cross-cultural perspectives and the integration of emerging technologies such as ar and vr offer new avenues to improve consumer experiences. This research suggests interdisciplinary collaboration and proactive engagement with policymakers to foster the

responsible and innovative application of ai, ensuring that businesses can harness the potential of ai while protecting consumer interests and promoting long-term sustainability.

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