Check for updates

Received: 14 March 2024 | Revised: 2 July 2024 | Accepted: 25 July 2024

DOI: 10.1002/cb.2386

SPECIAL ISSUE ARTICLE

WILEY

Exploring AI technology and consumer behavior in retail interactions

Maria Petrescu[1] | Anjala S. Krishen[2] | John T. Gironda[3] | J. Ricky Fergurson[4]

[1]Embry-Riddle Aeronautical University, Daytona Beach, Florida, USA

[2]Professor and Department Chair, Marketing & International Business, University of Nevada, Las Vegas, USA

[3]Nova Southeastern University, Huizenga College of Business & Entrepreneurship, Fort Lauderdale, Florida, USA

[4]Middle Tennessee State University, Murfreesboro, USA

Correspondence
Anjala S. Krishen, Professor and Department Chair, Marketing & International Business, University of Nevada, Las Vegas, USA.
Email: anjala.krishen@unlv.edu

Abstract

This research systematically reviews artificial intelligence (AI) effects in customer-interfacing retail applications based on an ecosystem value co-creation framework. We conduct a bibliometric and conceptual mapping analysis study, focusing on AI-related implications for consumers' and other stakeholders' well-being, social interaction, and societal welfare. A co-citation network visualization of critical AI journal articles is generated, and a network visualization of AI keyword relationships and clustered topic areas is presented and discussed, along with a conceptual map of the relationships between key concepts and substantive AI themes. In an ecosystem context, the multidisciplinary-based bibliometric and conceptual mapping findings of our analysis reflect the need to focus not only on the positive and negative effects on stakeholder well-being, social interaction, and societal welfare but also on how effects created in one of these levels impact the value created in the other social layers. Furthermore, the interdisciplinary characteristics necessary in effectively implementing and managing AI technologies emphasize the need for collaboration among multiple organizational departments, technology partners, and other members of the business ecosystem. The findings of this research contribute to assessing both the positive and negative effects of AI and allow for its implementation in a way that is helpful to organizations, employees, consumers, and society. This study should also help managers decide which situations are best suited for using AI and which are not.

1 | INTRODUCTION

1.1 | Decoding consumer behavior and AI in retail interactions

Artificial intelligence's (AI's) impact on business revenue is growing, with estimates of a potential contribution of $15.7 trillion from AI to the global economy by 2030 (PWC, 2023). Retail business leaders expect that AI will have its most significant industry impacts in three areas over the next 2 years: (1) customer service and experience, (2) customer intelligence, and (3) inventory management (Brüggemann & Pauwels, 2024; Chaturvedi & Verma, 2023). Studies recommend a greater focus on how AI-based technologies influence productivity and its effects on consumers, organizations, employees, and society in discussing the future of interactive marketing and technology research (Gligor et al., 2021; He & Zhang, 2023; Noble et al., 2022). Researchers note that new technologies, including AI, impact human well-being (both positively and negatively), social interaction, social responsibility, and societal welfare (Noble et al., 2022; Rosenbaum & Russell-Bennett, 2021). Moreover, generative AI transforms customer interactions in retail by enabling more engaging and customized communication, simulating human-like interactions, thereby enhancing the overall shopping experience (Brüggemann & Pauwels, 2024; Mogaji & Jain, 2024).

AI in the customer-interfacing retail journey can include automation, data, and technologies that help deliver highly personalized shopping experiences to consumers, including AI-based chatbots, smart technologies, virtual personal assistants, in-store technologies, and

 © 2024 John Wiley & Sons Ltd.

sensors, as well as machine learning-based algorithms (Butt et al., 2023; Chopra, 2019; Kamoonpuri & Sengar, 2023; Klein & Martinez, 2023). Retail-related applications currently reflect various phases and areas of intervention in the consumer experience, including the management of consumer needs, search engagement with consumers, management of consumer choice, purchase transaction intermediation and touchpoint-based follow-up, and loyalty management strategy (Mogaji & Jain, 2024; Nguyen & Mogaji, 2023; Qi et al., 2024; Spais, 2023).

Researchers are calling for a greater emphasis on interdisciplinary adapted theoretical frameworks focused on consumer and operational perspectives and technology-centric theories related to new technologies (Jain et al., 2022; Mogaji & Jain, 2024; Rosenbaum & Russell-Bennett, 2021). It is essential to emphasize research on AI, analyze human-machine interactions based on human-to-human frameworks, and focus on hybrid intelligence and human enhancement technologies (Cui & van Esch, 2023; Guha et al., 2021; Moore et al., 2022; Söderlund, 2021; Söderlund et al., 2022).

While the business and MIS literature presents insightful and comprehensive studies on AI in business practice and e-commerce (Bawack et al., 2022), a more specific consumer behavior-based focus on AI and hybrid technologies in the customer-interfacing retail journey can provide a further understanding of its potential for social impact (Cui & van Esch, 2023; Noble et al., 2022). Studies highlight the need for more research in various facets of retailing and consumer behavior, including the behavior of AI-assisted shoppers/consumers, consumer neuropsychology using advanced AI models, and the use of AI systems for a variety of retail decisions (Marinova et al., 2017; Roggeveen & Sethuraman, 2020; Shankar et al., 2021). We need to focus on AI from the individual consumer, business, and stakeholder perspectives and a social and societal angle (Jain et al., 2022; Noble et al., 2022; Rosenbaum & Russell-Bennett, 2021) and the strengths and weaknesses of AI as a complement to human decision-making and service provision (Guha et al., 2021; Huang & Rust, 2022; Moore et al., 2022).

This has led some researchers to ponder whether this new technology is worth it and call for exploring its positive and negative effects (Jham et al., 2023; Rana et al., 2022; Valle-Cruz et al., 2023). Given these developments, interest in the role of AI concerning the interaction between a firm and its customers is increasing, and a stream of research related to AI's impact on retailing and marketing has emerged (Belanche et al., 2020; Haenlein & Kaplan, 2019; Kumar et al., 2019; Rai, 2020). We believe that both marketing researchers and practitioners can benefit from clarifying the position of AI in customer values in customer-interfacing retail technologies, formulating a typology of AI retail technologies in the customer-store interface, and drawing theoretical insights on customer-interfacing AI. Doing this will allow for the assessment of both the positive and negative effects of AI and allow for its implementation to be done in a way that is helpful to organizations, employees, consumers, and society.

The present study aims to synthesize the empirical contributions in the academic literature regarding the implications of AI in customer-interfacing retail technologies. This paper focuses on the customer-retailer interaction journey and uses an ecosystem-based value co-creation framework as a lens through which to conduct a bibliometric and conceptual mapping analysis study. The study aims to synthesize the empirical contributions in marketing and MIS literature regarding the consumer behavior implications of AI in retail and specifically in the interactions among the various stakeholders of this ecosystem. This research contributes to the consumer behavior and marketing literature by theoretically organizing and clarifying the role of AI, formulating future research directions, and facilitating new knowledge regarding the modern consumer in a technology-focused retail environment.

2 | CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

2.1 | AI in retail

AI is defined as technologies that can replicate human intelligence, emulate human cognitive tasks, and perform actions based on environmental inputs (Huang & Rust, 2018). Along those lines, AI involves developing machine intelligence with various human-like aptitudes, including reasoning, problem-solving, learning from previous experiences, communicating, perceiving, and acting (Davenport et al., 2020; Grewal et al., 2020; Huang & Rust, 2018, 2022). Studies even focus on an AI definition adapted to service AI, including the configurations of technology that help co-create value in internal and external contexts, including flexible adaptation through the benefits of sensing, earning, decision-making, and actions (Bock et al., 2020; Rubio et al., 2021), as reflected in Table 1.

Additionally, we define *AI-based customer-interfacing technologies in retailing* as retail applications, programs, and machines that intervene in the consumer-retailer interaction, independently or as a complement to the employee interface, in any stage of the customer purchase journey process. AI is especially visible in retail due to its flexible adaptation and ability to learn beyond set algorithms, from AI-enabled shopping bots to embodied robots and new platforms (Bock et al., 2020; Brengman & Willems, 2023; Söderlund, 2021).

We focus our analysis on AI in customer-interfacing retail technologies based on a theoretical framework that includes the customer-retailer interaction and theoretical elements of ecosystems theory (De Keyser and Kunz, 2022; Grewal et al., 2020; Huang & Rust, 2018; Mende et al., 2019; Roggeveen & Sethuraman, 2020). The three types of artificial intelligence incorporated in the framework - (1) mechanical, (2) thinking, and (3) feeling (Huang & Rust, 2018, 2022) reflect the level of intelligence capabilities. The mechanical type of AI incorporates technologies that can perform service tasks with minimal standardization and adaptation capabilities. These technologies can include fast-food ordering and delivery robots, self-service technology, and housekeeping robots. Thinking AI can learn from data and adapt while making some intuitive decisions, and its core is focused on personalization (Huang & Rust, 2018, 2022). Thinking AI incorporates many modern technologies, such as IBM Watson and

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 1 AI definitions and forms.

Study	Definition of AI	Types of AI
Bock et al. (2020)	The configuration of technology to provide value in the internal and external service environments through flexible adaptation enabled by sensing, learning, decision-making and actions	Service AI
Campbell et al. (2020)	Technology that enables machines to learn from experience and perform human-like functions.	AI, ML, deep learning
Davenport et al. (2020)	Marketing and business applications, such as automating business processes, gaining insights from data, or engaging customers and employees.	Based on levels of intelligence, task type, and whether the AI is embedded in a robot
Haenlein and Kaplan (2019)	A system's ability to interpret external data correctly, learn from data, and use learnings to achieve specific goals and tasks through flexible adaptation.	Analytical, human-inspired, and humanised; artificial narrow, general, and super intelligence
Huang and Rust (2018)	Manifested by machines that exhibit aspects of human intelligence.	Mechanical, analytical, intuitive, and empathetic
Huang et al. (2019)	Technologies that mimic (or even surpass) human intelligence.	Mechanical, thinking, feeling
Kumar et al. (2019)	A system's ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation.	
Shankar (2018)	Programs, algorithms, systems or machines that demonstrate intelligence; a set of tools that can enhance the intelligence of a product, service, or solution.	
Syam and Sharma (2018)	Machines mimicking "intelligent human behaviour".	

complex retail recommendation systems, from Amazon recommendations to digital travel agents and airline ticketing. Feeling AI is the most advanced, but it is still developing its relationalization, learning, and adaptation from experience capabilities (Huang & Rust, 2018, 2022). Virtual agents and chatbots like Siri and Alexa represent a basic representation of the potential of this type of AI (Klein & Martinez, 2023).

2.2 | AI in the interactive customer-retailer ecosystem

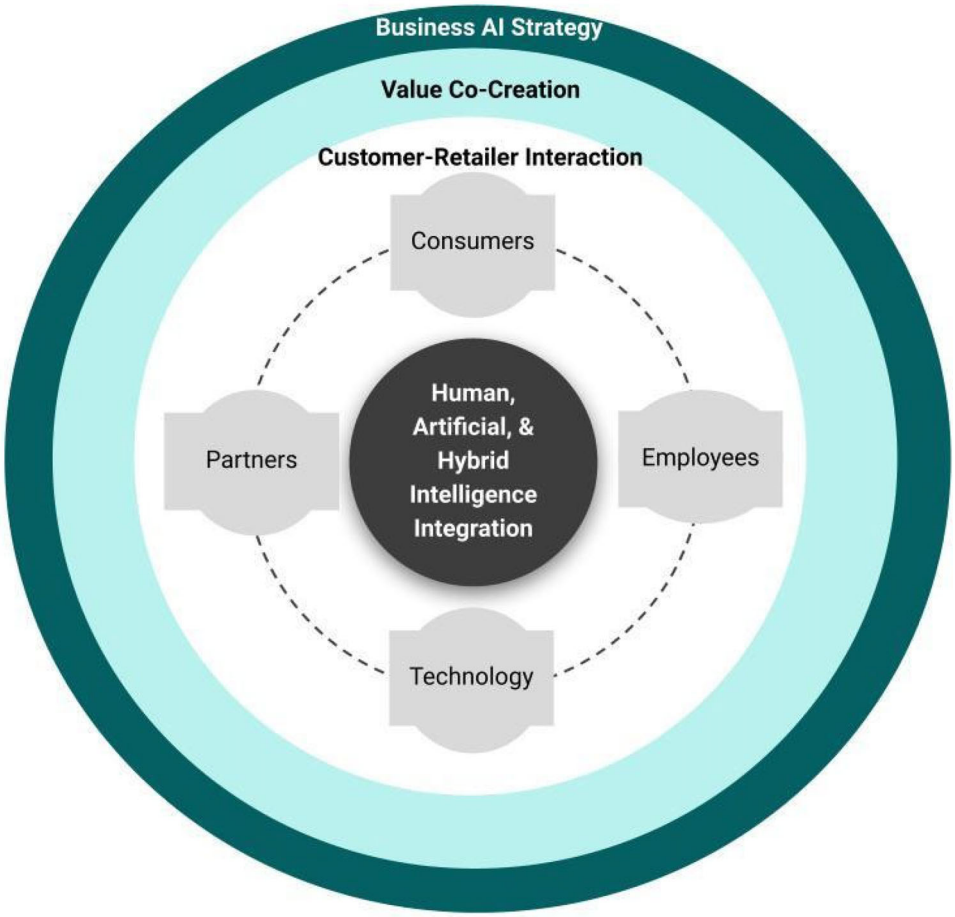
In the context of retail ecosystems, networks capture the dyadic interactions that do not take place in isolation, can be seen at different levels of aggregation (macro, meso, micro), and represent the resource integration process under the circumstances in which it takes place (Vargo 2011; Vargo & Lusch, 2016, 2017). AI can be used to deliver seamless customer experiences across multiple channels through its various technological capabilities for all stakeholders, including applications in personalized engagement marketing, omnichannel retailing, sensory marketing, and multi-channel messaging (Nguyen & Mogaji, 2023). Retail ecosystems include self-contained, self-adjusting systems of resource-integrating actors connected by shared institutional arrangements and mutual value creation through service exchange (He & Zhang, 2023; Vargo & Lusch, 2016). The ecosystem provides a better understanding of consumer behavior in the complex, multidimensional, and dynamic traits of the context in which resource integration and value co-creation take place (Ng & Vargo, 2018; Vargo, 2011; Vargo & Lusch, 2016, 2017; Wieland et al., 2017). Moreover, considering the accelerated levels of automation and the use of artificial agents, it is also essential to consider hybrid combinations of intelligence and the mix of AI, human-artificial intelligence, human decision-making, and rational (as well as creative) decisions in consumer interaction in retail (Cao, 2021; Söderlund, 2021). Since humans have superior potential in empathy, creativity, and intuitive tasks, combining different forms of intelligence is advantageous, especially in retailing and consumer interactions, in improving overall experience and creating long-term relationships (Graef et al., 2021; Jham et al., 2023; Moore et al., 2022). Our ecosystem-based framework is, therefore, represented in Figure 1.

In addition, existing research also discusses AI in relation to consumer, retailer, and employee adoption of customer-interfacing AI-based applications approaching it from the critical stages in the customer purchase journey process (Lemon & Verhoef, 2016; Roggeveen & Sethuraman, 2020). Based on our definition of AI-based customer-interfacing technologies in retailing and research and practice studies, we formulate a typology of customer-interfacing AI-based technology to complement our conceptual framework, as shown in Figure 2. The structure we adopt for the framework in Figure 2 is based on the customer journey stages (Roggeveen & Sethuraman, 2020) and reflects the type of AI discussed by the literature (Huang & Rust, 2018).

In the pre-purchase phase, there are two main aspects in which AI-based technologies can intervene: (1) the management of consumer needs and (2) the process of search engagement with consumers. Examples of these different technologies include chatbots (Chen et al., 2021; Klein & Martinez, 2023; Ruan & Mezei, 2022), recommendation agents like Stitch Fix (Kim et al., 2022), smart retail

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

FIGURE 1 Conceptual model.



technology (Pillai et al., 2020;) and various types of customer service robots (Brengman & Willems, 2023; Grewal et al., 2020), and virtual and robot assistants like Alexa, Siri, and others (Chidambaram et al., 2024; McLean et al., 2021; Söderlund et al., 2022). Their levels of human-like intelligence can differ from one technology to another and even within the same technology type, from the lower-level mechanical category to feeling abilities, as a function of their capacity for personalization, anthropomorphism, and interactivity (Huang & Rust, 2018).

The purchase phase, the most complex stage, incorporates different technologies that can help manage consumer choice and intermediate the purchase transaction in the customer-retailer interface, as shown in Figure 2. In this phase, a significant role is being played by smart retail technology (Pillai et al., 2020) and various types of customer service robots (Qiu et al., 2020). These technologies range from managing the shopping and check-out interface in a personalized and adapted manner based on feeling and thinking AI, to more mechanical, basic AI tools that optimize digital technologies and help with transactional issues. Studies indicate that interactions between consumers, smart technologies, and humanoid service robots are becoming more common in the marketplace. For instance, Best Buy and Lowe's Home Improvement are now testing humanoid service robots in select stores, named Chloe and Lowe-Bot, respectively. Also, Japanese-based firm Softbank is using the humanoid service robot Pepper in its stores and recently received investment funding from Apple (Underwood, 2020). Hence, future research should explore how humanoid robots affect consumers and firms (Kim et al., 2019; Marinova et al., 2017; Mende et al., 2019).

Finally, in the post-purchase phase, AI can help in the customer-retailer interface with various aspects in the follow-up process and the loyalty management strategy. Predictive AI-based tools contribute to improving consumer interactions and engagement, while customer service agents, chatbots, and virtual assistants (Kamoonpuri & Sengar, 2023; Klein & Martinez, 2023; Lou et al., 2022; Qi et al., 2024) can help in the satisfaction management process. Moreover, robotic process automation (RPA) for product returns, auto-ordering appliances, and anticipatory shipping can also contribute to follow-up services and loyalty management in the post-purchase stage of the customer journey (Soni et al., 2020; Wagner, 2021; Weingarten & Spinler, 2021).

Through a systematic, interdisciplinary, bibliometric, and conceptual mapping analysis, we evaluate the following research questions:

RQ1. Which major actors are relevant for AI integration in the customer-interfacing retail ecosystem?

RQ2. Which AI-related operand and operant resources are essential for consumers and the other stakeholders of the retail ecosystem?

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

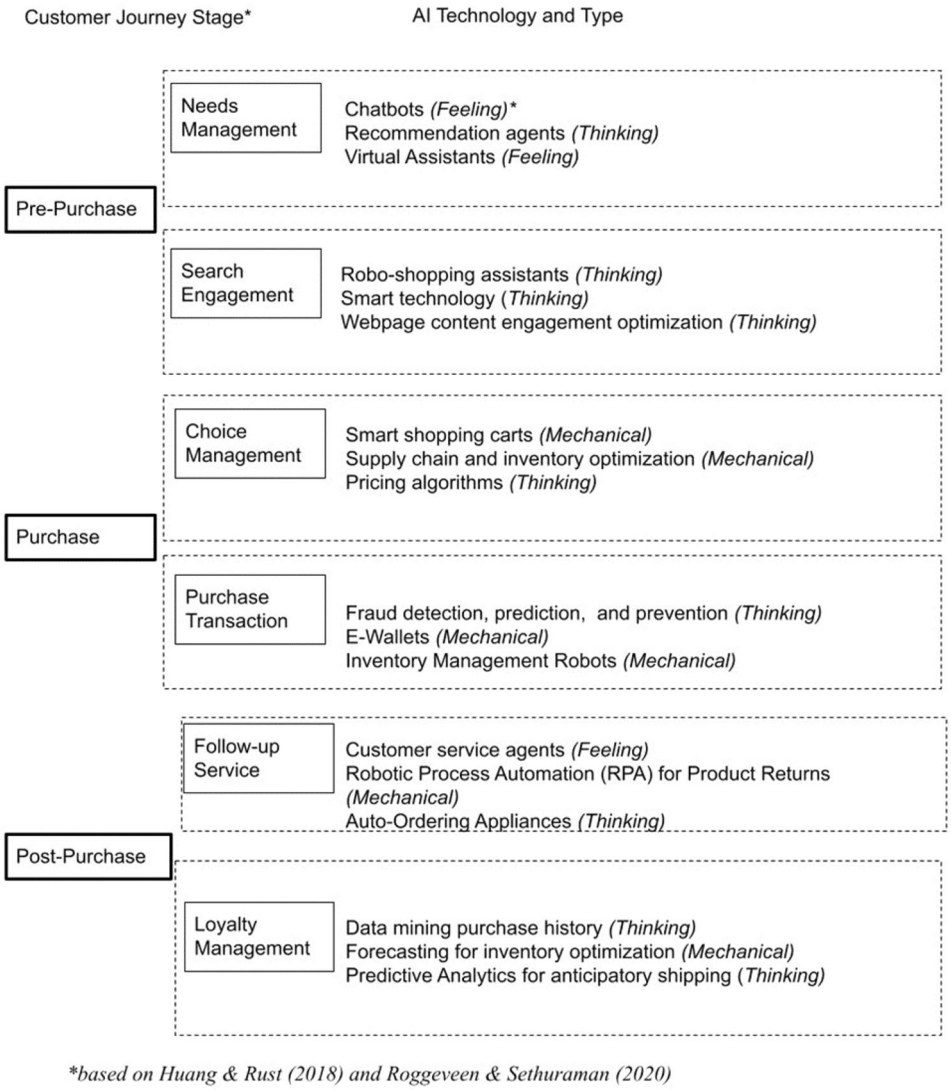


FIGURE 2 Customer journey typology of customer-interfacing AI-based retail technologies.

RQ3. What are the main relevant aspects related to consumers in AI-based interactivity and engagement co-creation in the customer-interfacing retail ecosystem?

3 | METHODOLOGY AND RESULTS

3.1 | Bibliometric analysis process

The first step in performing a comprehensive and generalizable bibliometric study is to find all articles relating to the use of AI in retail. Bibliometric studies allow for the identification of influential topics, authors, citations, and their interrelationships, emphasizing the status of research in a particular field and the performance of researchers, journals, countries, and institutions (Krishen et al., 2021; Sinkovics, 2016). In this context, bibliometric and network analysis software can help researchers visualize large segments of literature to identify significant trends and themes (Donthu et al., 2021; Nicolas et al., 2020). A bibliometric analysis uses bibliographic coupling based on instances when two articles cite a third common article in their references and co-citation, i.e., when two articles are independently cited by one or more articles (Sinkovics, 2016).

In the initial phase, we downloaded articles from the Web of Science (WoS) using keywords related to AI (AI, artificial intelligence, chatbot, robot, virtual assistant, smart agent, smart product, virtual agent, machine learning) and aspects related to retail (consumer, customer, retail, advertising, marketing, shop, purchase, sales), based on previously used methods and processes (Donthu et al., 2021). The search for articles was carried out to ensure a match from each category of AI and retail, to identify topics related to AI specifically in retail, and to avoid articles approaching AI in business in general. The article search focused on 1993–2023, including journal articles published online before the final assignment to a specific issue. The structure of the data collection process and essential methodological phases are further described in Figure 3.

In the second phase of the search process, we refined the interdisciplinary results to include only articles on AI and retail from disciplines related to our topic: business, information science,

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

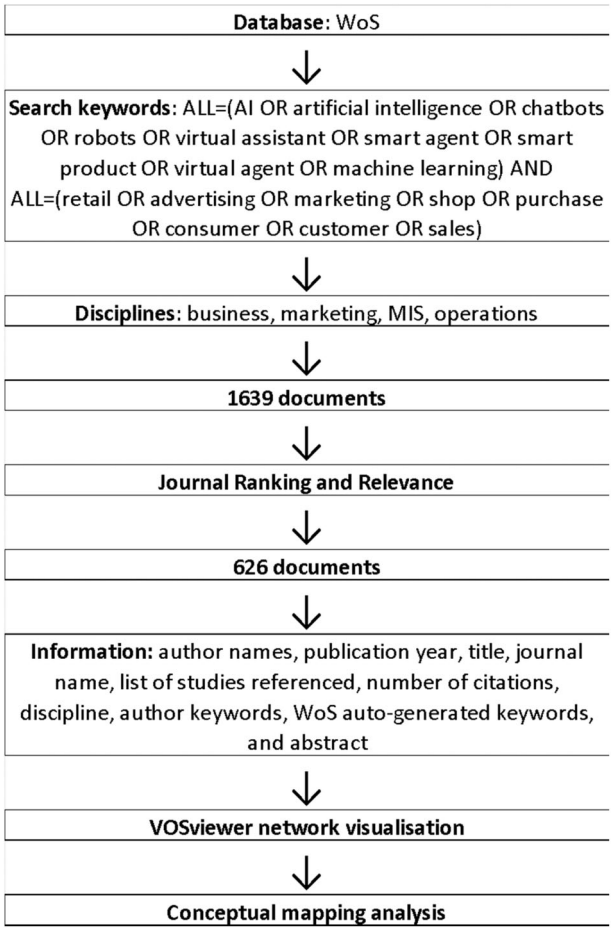


FIGURE 3 Data collection phases.

communication, psychology, and sociology. Significantly, since our focus was specifically on the use of AI in consumer retail interactions, it narrowed down and restricted our search to this area rather than the general applications of AI in business. Overall, 1639 articles were downloaded. The next step was to check for the presence of each journal on established research ranking lists such as ABS and ABDC or inclusion in Q1-3 in the Scimago Journal Rank for information science journals not ranked on business lists. Three researchers also manually checked each article's title and abstract to ensure a lack of error-based inclusion due to algorithmic and keyword bias, which reduced the list of articles to 626 studies. These articles, including sources listed in their references, represent the basis of the bibliometric analysis. The database used for the bibliometric analysis includes all referencing elements of the article, such as author names, publication year, title, journal name, list of studies referenced, number of citations, discipline, WoS auto-generated keywords, and abstract.

3.2 | Data and empirical analysis

We downloaded the bibliographic database file, including the full record for each article, and then analyzed networks and created, visualized, and explored maps regarding citations using VOSviewer. The network visualization of scientific publications in Table 2 is based on the number of citations and co-citations from the respective journals (Nicolas et al., 2020; Sinkovics, 2016). The results reveal that the journals publishing articles on AI and retail issues are grouped as a function of the substantive research domain, practitioner orientation level, and interest in research topics. Table 2 identifies several critical domain areas of analysis, such as consumer behavior, service marketing, operations, and interactive marketing.

Figure 4 and Table 3 present AI-related retailing research citation and co-citation characteristics through the network visualization of author keywords (Nicolas et al., 2020; Sinkovics, 2016). Some essential keywords can appear in multiple clusters as a function of the context in which they are used. Our findings indicate that there are four main technological clusters of research areas for AI-related interactive technologies in the retailing ecosystem: (1) consumer perspective, (2) technical aspects, (3) interactivity and engagement, and (4) AI strategy.

The first research cluster focuses on consumers' perspectives and interactions with AI-driven retail processes, explores theoretical models and frameworks related to customer experience, and examines customers' acceptance and trust in AI technologies. It also investigates the rate and willingness of customers to adopt AI in retail and emphasizes the importance of crafting a positive overall experience for customers. The findings suggest that understanding customer acceptance, trust, and adoption rates can help retailers enhance the customer experience and drive loyalty and sales. The literature emphasizes the need for a seamless integration of AI technologies to enhance customer engagement and satisfaction. Studies highlight that AI can significantly improve the customer journey by offering personalized recommendations and efficient service interactions (Butt et al., 2023; McLean et al., 2021). Trust and perceived value are also essential factors that influence user acceptance and the overall effectiveness of AI in retail and can be considered in the context of negative effects for consumers.

The second group of topics spotlights the technical aspects of AI in the retail industry, including the impact, machine learning techniques, performance metrics, and data management related to AI technologies. This research examines the tangible and intangible effects of AI technologies in the retail sector, and it explores how AI can contribute to sales growth and improve customer satisfaction. Machine learning, a subset of AI, plays a significant role in this research area, emphasizing algorithmic prediction models, particularly recommendation systems, which can enhance the retail experience. Machine learning and deep learning are pivotal in developing AI models that can adapt and improve over time; these technologies enable retailers to offer more personalized and predictive services, enhancing customer satisfaction and operational efficiency (Davenport et al., 2020; Grewal et al., 2020). Evaluating the effectiveness, accuracy, and reliability of AI models and systems in retail settings is essential. This theme focuses on assessing the performance of AI technologies and their impact on retail operations, the utilization and processing of big data, and how AI technologies can leverage

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 2 Journal groups.

Source	Cluster	Total link strength	Documents	Citations	Norm. Citations	Avg. citations
Marketing and consumer behavior						
Electronic commerce research	1	38	8	16	2.25	2.00
European journal of marketing	1	123	16	222	12.56	13.88
International journal of consumer studies	1	30	5	75	2.47	15.00
Journal of business research	1	268	25	760	25.30	30.40
Journal of consumer behaviour	1	34	5	19	1.93	3.80
Journal of marketing	1	96	5	361	31.62	72.20
Journal of retailing and consumer services	1	416	67	1112	64.57	16.60
Journal of the academy of marketing science	1	270	17	1092	56.74	64.24
Marketing intelligence & planning	1	24	5	37	1.73	7.40
Marketing letters	1	60	11	276	7.10	25.09
Marketing science	1	58	6	255	3.55	42.50
Service marketing and management						
Electronic markets	2	191	35	1174	30.29	33.54
European journal of innovation management	2	5	5	21	2.81	4.20
Journal of service management	2	566	42	1976	46.49	47.05
Journal of service research	2	496	18	1988	27.80	110.44
Journal of service theory and practice	2	90	7	212	5.25	30.29
Journal of services marketing	2	187	15	512	14.87	34.13
Service business	2	115	12	91	14.35	7.58
Service industries journal	2	208	16	391	18.84	24.44
Operations and business strategy						
Annals of operations research	3	50	61	764	59.36	12.52
Business horizons	3	71	15	836	15.32	55.73
European journal of operational research	3	25	40	1644	33.17	41.10
Harvard business review	3	24	8	846	9.27	105.75
Industrial marketing management	3	127	35	1119	27.03	31.97
International journal of emerging markets	3	46	5	21	2.13	4.20
Journal of theoretical and applied electronic commerce research	3	40	11	66	3.05	6.00
Interactive marketing and ecommerce						
California management review	4	59	6	481	6.03	80.17
International journal of market research	4	13	5	93	2.65	18.60
International journal of retail & distribution management	4	88	15	134	6.85	8.93
Journal of electronic commerce research	4	10	5	0	0.00	0.00
Journal of interactive marketing	4	104	9	540	10.39	60.00
Journal of research in interactive marketing	4	172	20	325	22.16	16.25
Journal of retailing	4	84	9	949	14.11	105.44
Regional and area topics						
Asia pacific journal of marketing and logistics	5	36	8	32	8.07	4.00
Journal of marketing management	5	48	11	691	7.52	62.82

information and data management to drive retail strategies. This research stream emerged slightly earlier than the other clusters, as the chronology of the articles analyzed indicates that researchers initially focused on understanding the technical intricacies of AI in the retail industry. Exploring the impact and role of machine learning, performance metrics, and data management were among the first steps

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

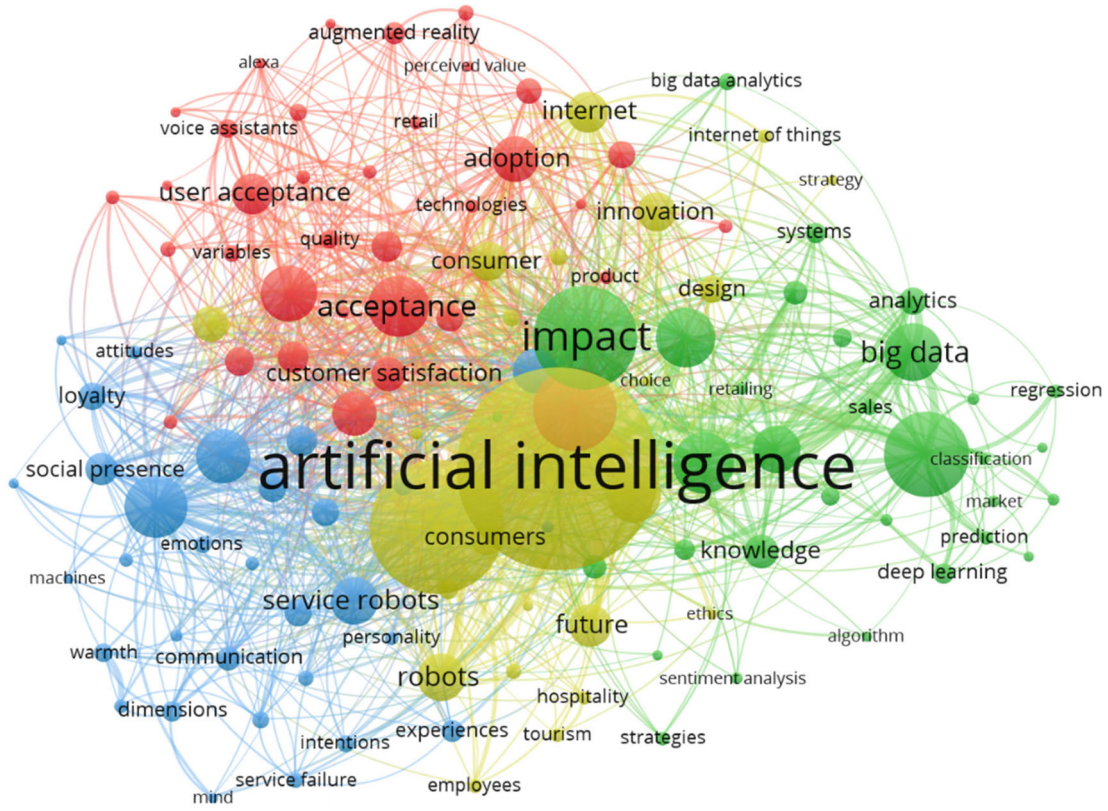


FIGURE 4 Co-citation network visualization.

taken to establish AI in retail. This is a logical starting point, as foundational technologies and methods are typically explored first in any new domain.

The third main area incorporates the interactivity and engagement benefits of consumers interacting with AI technologies, with concepts such as anthropomorphism, customer satisfaction, service robots, behavior analysis, and the presence of AI systems in retail settings. This cluster highlights the importance of designing AI and robots with human-like attributes to enhance customer interaction and satisfaction and emphasizes the use of service robots in retail stores and the impact they have on sales. Analyzing both AI system behavior and customer behavior in response to AI interactions is also a key focus. Additionally, the cluster examines the social presence of AI systems and how they influence customer interactions and satisfaction. Overall, there is a growing interest in understanding and optimizing the interactive elements of AI in retail, as evidenced by the recent publication year average of 2021.

The last cluster focuses on AI strategy and provides an overview of various aspects of artificial intelligence in the retail sector, considering general technological advancements, frameworks, and methodologies used in AI, robotics in retail, predictions about the future of AI in retail, and the interactive elements of AI in retail. The cluster highlights the incorporation of human-like attributes in AI and robots to make them more relatable to customers, the importance of customer satisfaction when interacting with AI-driven services, the use of service robots in brick-and-mortar stores, behavior analysis of AI systems and customer behavior, and the social presence of AI systems. The analysis emphasizes harmonizing technology with customer needs to create a seamless and enjoyable retail experience. The literature highlights that AI can revolutionize retail by providing personalized and efficient services; however, ethical considerations, such as data privacy and the impact on employment, are critical (Noble et al., 2022; Rana et al., 2022). The strategic use of AI involves not only technological implementation but also addressing these ethical concerns to ensure sustainable and responsible AI integration (Guha et al., 2021; Huang & Rust, 2022).

The progression of these clusters reflects the evolution of AI technology, starting with understanding and refining the technology itself and then shifting towards its broader applications, user interactions, and strategic implications. The increasing focus on interactivity and engagement signifies the integration of AI into the everyday retail experience and the importance of optimizing these interactions for the end-user.

In further refining the concepts and themes reflected in the bibliometric analysis, we performed lexical co-occurrence content analysis using Leximancer software to explore the semantic relationships of the main themes present in the abstracts of the 626 WoS articles. Analyzing abstracts to generate an overview of the concepts within this given body of literature should be appropriate, considering that the abstract is the key element of the paper and focuses on its essential topics and themes (Sinkovics, 2016; Wilden et al., 2017).

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 3 Topic clusters.

Concept	Link strength	Occurrences	Avg. citations	Avg. norm. Citations
Cluster 1: User perspective				
Acceptance	334	54	39	1.11
Adoption	238	41	32	1.05
Alexa	69	10	5	1.17
Augmented reality	113	20	42	0.93
Brand engagement	60	10	38	1.25
Chatbots	140	26	19	1.40
Conversational agents	87	12	33	2.09
Customer engagement	87	15	12	0.91
Customer journey	61	10	16	0.56
Customer satisfaction	194	30	26	0.98
E-commerce	124	25	37	0.86
Engagement	182	28	20	1.43
Experience	244	40	29	1.01
Human-computer interaction	61	10	36	1.73
Information-technology	144	28	27	1.13
Intention	75	13	13	0.76
Interactivity	94	14	44	1.21
Model	388	74	44	1.24
Moderating role	57	11	16	1.12
Online	141	23	24	1.01
Perceived value	55	10	14	0.91
Price	51	13	20	0.81
Product	78	12	41	1.79
Purchase intention	83	14	20	0.81
Quality	104	17	21	1.15
Retail	63	13	9	1.01
Service	133	25	48	1.30
Service quality	78	12	28	1.23
Technologies	77	13	18	0.59
Technology acceptance	61	10	24	1.23
Technology acceptance model	83	13	37	1.08
Trust	273	49	21	0.95
User acceptance	199	36	31	1.27
Variables	99	15	9	1.50
Voice assistants	113	17	9	1.59
Cluster 2: Technical aspects				
Algorithm	36	10	27	3.35
Algorithms	43	11	78	1.39
Analytics	109	24	27	0.90
Big data	254	51	35	1.09
Big data analytics	51	15	26	0.62
Classification	52	11	23	0.43
Customers	52	10	52	1.15
Decision-making	116	22	36	0.95
Deep learning	75	19	28	0.76

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 3 (Continued)

Concept	Link strength	Occurrences	Avg. citations	Avg. norm. Citations
Impact	462	92	23	0.95
Information	241	52	14	0.93
Knowledge	145	30	36	0.91
Machine learning	244	75	48	0.83
Management	204	43	31	0.97
Market	36	11	27	0.77
Models	61	17	69	1.06
Neural-networks	36	11	88	0.90
Optimization	30	10	8	1.25
Performance	272	54	31	1.12
Prediction	63	12	20	0.56
Regression	41	13	12	0.58
Retailing	52	11	83	0.94
Risk	66	17	43	1.30
Sales	51	14	48	0.70
Selection	45	11	34	2.10
Sentiment analysis	53	11	19	0.71
Services	51	10	26	1.05
Social media	110	21	38	1.11
Strategies	45	12	93	1.12
Systems	96	18	33	1.57
Volatility	24	10	6	0.45
Word-of-mouth	82	18	25	1.05
Cluster 3: Interactivity & engagement				
Antecedents	118	24	16	1.13
Anthropomorphism	322	55	44	1.93
Attitudes	78	13	27	1.86
Behavior	205	39	35	1.12
Chatbot	161	25	44	1.33
Communication	125	21	44	1.75
Competence	74	13	30	1.09
Conversational agent	67	10	27	1.03
Determinants	106	17	43	1.70
Dimensions	101	18	24	1.93
Emotions	94	16	22	0.92
Experiences	103	20	27	1.10
Human-robot interaction	50	11	31	0.94
Intelligence	82	13	34	1.76
Intentions	82	15	60	1.65
Loyalty	147	24	27	1.16
Machines	63	10	6	1.19
Mind	53	10	31	2.21
Perception	85	14	92	1.78
Perceptions	148	27	33	1.44
Personality	68	13	30	1.20
Products	44	11	13	0.30

(Continues)

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 3 (Continued)

Concept	Link strength	Occurrences	Avg. citations	Avg. norm. Citations
Responses	95	16	34	1.45
Satisfaction	263	48	30	1.39
Self	65	12	103	1.64
Service failure	88	14	13	0.69
Service robot	128	24	10	0.63
Service robots	239	42	75	2.17
Social presence	175	29	22	1.83
Social robots	45	10	65	1.71
Warmth	94	17	28	1.04
Cluster 4: AI Strategies				
Artificial intelligence	878	178	44	1.47
Automation	97	15	119	1.43
Choice	54	10	41	0.99
Consumer	209	35	79	1.82
Consumers	143	31	16	0.80
Consumption	86	16	24	1.12
Customer	49	10	19	0.50
Customer experience	203	32	45	1.41
Design	111	25	37	1.17
Employees	70	12	17	0.60
Ethics	50	10	133	1.65
Framework	260	48	46	1.02
Future	200	38	46	1.17
Hospitality	80	12	14	0.94
Innovation	163	35	33	0.76
Internet	191	36	43	1.24
Internet of things	51	12	52	0.82
Perspective	99	18	18	0.76
Privacy	99	15	109	1.72
Robotics	54	10	33	1.17
Robots	224	42	60	1.35
Self-service	82	11	72	1.75
Strategy	34	10	76	1.03
Technology	660	118	55	1.41
Tourism	68	12	13	0.83
Value co-creation	70	14	32	0.83

The analysis aimed to extract the main themes and concept relationships and compare the methodologies used. For this analysis, we separated the abstracts into two main interdisciplinary categories: (1) those from the computer science discipline, including robotics, information technology, and related domains, and (2) those from business and economics, consumer behavior, communication, hospitality, and associated domains as classified by WoS.

Leximancer was chosen as the text mining software with which to analyze the set of abstracts of our 626 articles for the following reasons: (1) when attempting to analyze large sets of abstracts, computer-assisted qualitative data analysis software is preferred, and Leximancer, in particular, is recommended for big datasets, (2) we seek to visualize and extract information as well as concept associations and Leximancer is an appropriate tool for that type of analysis, (3) it is entirely data-driven and uses deep learning to extract a three-level network model of meaning from the data (Petrescu et al., 2022), and (4) Leximancer does not require the input of a manually created dictionary, since a domain-dependent dictionary is automatically developed from the data sets used as input and it provides valid and reliable concept mapping results, reducing the potential for human bias (Shams

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

FIGURE 5 Thematic mapping results.

et al., 2015; Wilden et al., 2017). Leximancer is based on a Bayesian learning algorithm and uses machine learning to derive concepts, themes, and semantic patterns in natural language (Krishen et al., 2014; Krishen et al., 2016). Its algorithm extends the latent Dirichlet allocation (LDA) approach by including two stages of non-linear machine learning to extract strong semantic patterns statistically. It uses a clustering algorithm that supports overlap between clusters, thus choosing the most appropriate number of themes depending on the discovered concepts (Wilden et al., 2017).

Figure 5 depicts the results of the conceptual mapping analysis. The interaction between consumers and retailers can be seen as an ecosystem of interconnected elements. Within this ecosystem, consumers, retailers, and other actors, such as logistics providers and payment processors, interact to create a seamless shopping experience for consumers. An analysis of this ecosystem reveals that several technologies significantly impact the consumer-retailer interaction journey. Augmented reality (AR) is a technology that allows retailers to offer consumers a more immersive shopping experience (Ambika et al., 2023). Voice assistants, such as Amazon Alexa and Google Assistant, are also effective in simplifying online shopping for consumers. Additionally, big data analytics is being employed by retailers to gain a better understanding of their customers and their shopping habits. This information can then be used to personalize each customer's shopping experience and enhance the effectiveness of targeted marketing campaigns.

Furthermore, the analysis indicates that consumers now expect a seamless omnichannel shopping experience across all platforms, devices, and channels and the ability to initiate a shopping journey on one device and complete it on another, as well as the convenience of easily tracking their orders and returns, regardless of the channel used for the initial purchase. The application of ecosystems theory can aid in comprehending the intricate dynamics of the consumer-retailer interaction journey, including a network of interconnected businesses, consumers, and other actors, with each participant contributing to creating value for consumers.

From an ecosystem perspective, the consumer-retailer interaction journey can be viewed as a value co-creation process, where consumers and retailers collaborate to develop a shopping experience that satisfies the needs of both parties. The analysis highlights several central factors for establishing a successful consumer-retailer ecosystem; trust is dominant, as consumers must feel confident in entrusting their personal and financial information to retailers. Convenience is also vital, as consumers seek a shopping experience that is easy and hassle-free. Additionally, consumers desire good value for their money and a personalized shopping experience catering to their needs and preferences. Our results provide additional information to help answer the three main research questions studied in this paper and reflect the position of AI-related technologies among different business areas and stakeholders of the retail environment, as will be further discussed in the next section.

4 | DISCUSSION

The bibliometric and conceptual mapping analysis results are integrated into the comprehensive framework formulated in Figure 6 and unveil an ecosystem-based view of AI applications and integration, incorporating the critical stakeholders of the ecosystem. The retail ecosystem lens shows actors on both the provider and customer sides are relevant for AI adoption (Ng & Vargo, 2018; Vargo & Lusch, 2016, 2017). The operant resources emphasize AI/ML techniques, while operand resources are data-driven. The interactivity aspects highlight the human-centric, emotional, and social dimensions of engagement with AI (Butt et al., 2023; Chopra, 2019; Kamoonpuri & Sengar, 2023; Rosenbaum & Russell-Bennett, 2021). The findings also incorporate resources and interactions with different technologies, including machine learning, robots, data, and information, with implications for other social levels. The insights come to complement previous research approaching the topic of hybrid intelligence and the augmentative role of AI as a stakeholder in the retail ecosystem (Guha et al., 2021; Huang & Rust, 2022; Jham et al., 2023; Moore et al., 2022).

4.1 | RQ1. Actors in the customer-interfacing retail ecosystem

The significant actors relevant to AI integration in the retail ecosystem appear to be customers/consumers, service providers, technology firms, and employees. The high frequency and relevance concepts relate to understanding customer/consumer perspectives, engagement, experiences, and journeys. Moreover, the retail ecosystems framework considers all value co-creation stakeholders' social interactions (e.g., consumers, employees, and other business partners). It includes technology as an operant resource that integrates human, artificial, and hybrid characteristics (Rubio et al., 2021). Thus,

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

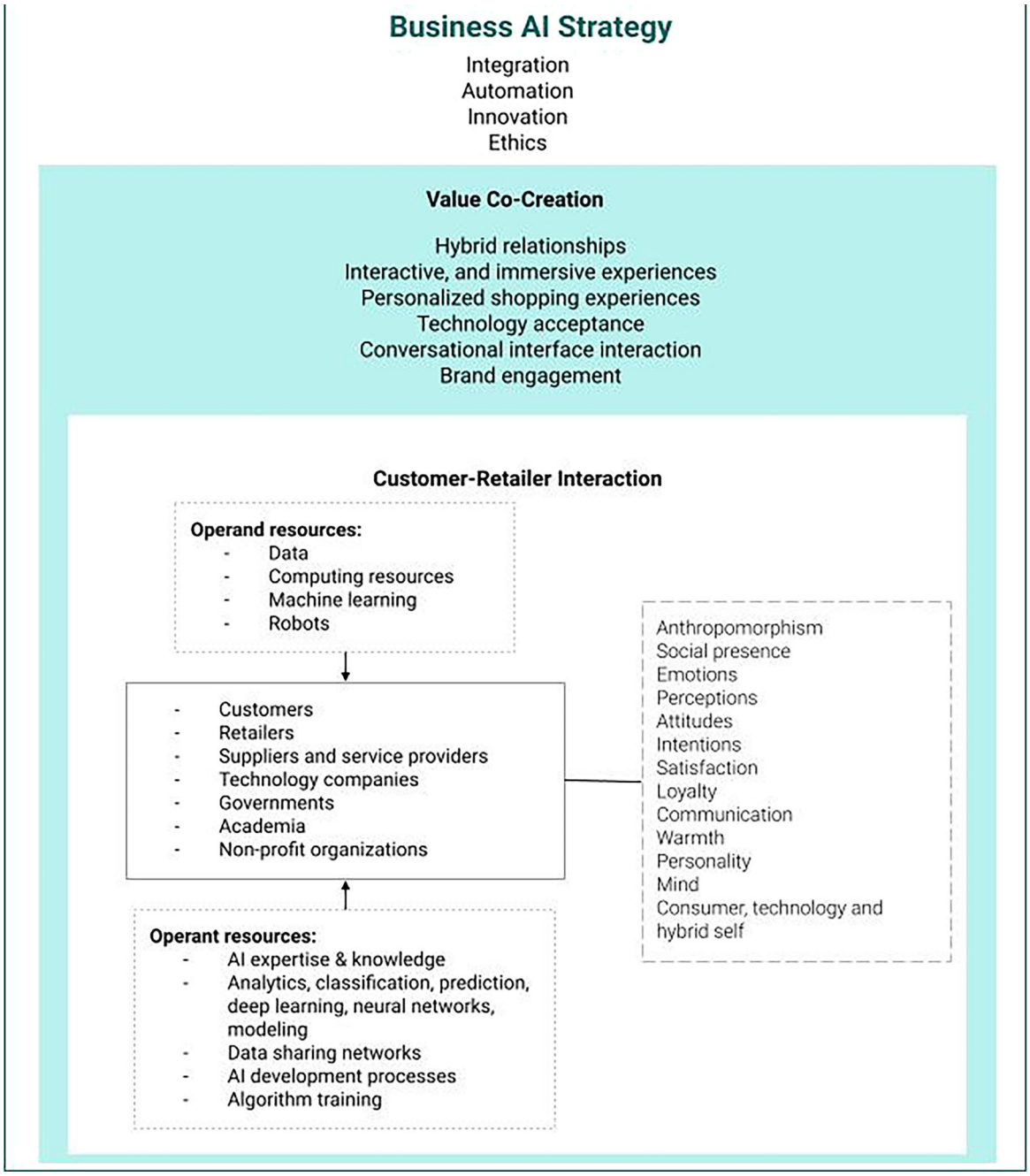


FIGURE 6 AI in the customer-retailer interface ecosystem.

implementing and using AI collaboratively with technology partners and other members of the business ecosystem is critical. The bibliometric analysis of the provided image reveals that several major actors are important for integrating artificial intelligence (AI) in the customer-interfacing retail ecosystem, including retailers, technology companies, customers, governments, academia, and non-profit organizations.

Retailers are considered the primary stakeholders in the customer-interfacing retail ecosystem. They are responsible for incorporating AI into their operations to enhance the customer experience, boost sales, and reduce costs. By utilizing AI technologies, retailers can personalize their offerings and provide convenient services to meet customers' demands (Nguyen & Mogaji, 2023).

Consumers are the ultimate beneficiaries of AI integration in the retail ecosystem. They demand personalized experiences and convenient services, which AI can fulfill. By leveraging AI technologies, retailers can better understand customer preferences, provide personalized recommendations, and improve overall customer satisfaction. Technology companies play a critical role in integrating AI into the retail ecosystem, developing and providing AI solutions specifically tailored for retailers. These solutions enable retailers to implement AI technologies and enhance their overall operations effectively.

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Governments also play a significant role in integrating AI into the retail sector, regulating the use of AI to ensure ethical and responsible practices. Additionally, governments promote the adoption of AI through research and development funding, which further advances the integration of AI in the retail ecosystem. Academia, including universities and research institutions, is at the forefront of AI research and development, developing new AI technologies and applications that retailers can utilize. Their research efforts drive innovation and facilitate the integration of AI in the retail sector. Non-profit organizations are actively involved in raising awareness about the benefits and risks associated with AI, advocating for AI's responsible and ethical use in the retail ecosystem. By promoting awareness and providing guidance, non-profit organizations contribute to the successful integration of AI in the retail sector.

4.2 | RQ2. AI-related operand and operant resources

Regarding the resource question (RQ2), the data highlights AI, algorithms, data analytics, machine learning, and robots as essential operand resources; concepts like "acceptance," "adoption," and "augmented reality" are frequently mentioned, suggesting their relevance. Operant resources such as knowledge and skills required for AI implementation and data for algorithm training are also relevant, interacting with each other to co-create value.

The key AI-related operant resources center around machine learning, algorithms, analytics, classification, prediction, deep learning, neural networks, and modeling. The operand resources relate to the generation and use of big data, information, knowledge, and intelligence; they are tangible resources that stakeholders utilize to generate value, such as inventory, physical stores, and data. On the other hand, operant resources are intangible resources that stakeholders employ to convert operand resources into value, such as knowledge, skills, and processes (Vargo, 2011; Vargo & Lusch, 2016, 2017; Wieland et al., 2017).

In the retail ecosystem, operand resources include data and computing resources. Retailers must collect and store substantial amounts of data, as AI models are trained on this data. Data can be sourced from various channels, including customer transactions, social media (Spais et al., 2024), and physical store sensors, and powerful computing resources are required to train and operate AI models. Operant resources include AI expertise and AI development processes. Retailers need to possess in-house AI expertise or engage external consultants to assist them in integrating AI into their operations. Well-defined AI development processes are necessary for retailers to ensure AI's safe and effective integration into their operations.

AI can personalize and adapt to consumer preferences using automatic machine-driven selections of products, prices, website content, and advertising messages (Brüggemann & Lehmann-Zschunke, 2023; Brüggemann & Olbrich, 2023; Butt et al., 2023; Sivathanu et al., 2023). Therefore, smart AI-based technologies such as chatbots, recommender systems, and robots can substitute and complement frontline employees in delivering customized services, improving both efficiency and effectiveness by learning from customers, employees, and their interactions (Chong et al., 2021; Klein & Martinez, 2023; Marinova et al., 2017; Ruan & Mezei, 2022).

With a focus on retailing and social interaction, AI can take either digital or robotic forms; as humans begin interacting with robots more, there is a need to consider the physical characteristics of robots, including their anthropomorphism levels and the tasks they should perform (Cheng, 2023; Grewal et al., 2020; Kim et al., 2023). A potential negative aspect is that humanized robots can evoke a sense of eeriness (in line with the "uncanny valley" notion) that then prompts more significant compensatory behaviors to cope with the unpleasant sensation (Mende et al., 2019). Consumers favor purchasing status goods and seek social affiliation when interacting with humanoid robots; however, when robots become overly human-like, people experience a feeling of uneasiness (Mende et al., 2019).

4.3 | RQ3. AI-based interactivity and engagement in the customer-interfacing retail ecosystem

In the context of service-dominant logic (SDL) theory, AI can play an essential role in improving the customer experience and creating value. By personalizing the customer experience, AI can cater to individual preferences and needs, increasing customer satisfaction and loyalty. AI can streamline the customer journey, making it easier for customers to find and purchase products and services, improving retailers' sales and revenue, and enhancing customer support by providing more responsive and efficient assistance, further improving customer satisfaction and loyalty (Brüggemann & Pauwels, 2024; Mogaji & Jain, 2024). While the use of AI can improve customer satisfaction and loyalty, recent research has demonstrated that not all aspects of AI are successful in streamlining the customer journey. While self-checkout became prevalent during the COVID-19 pandemic, Nusrat and Huang (2024) demonstrated that not only does regular checkout make customers more loyal to the store as compared to self-checkout but their research highlighted that the sense of entitlement to be served and amount of perceived effort in using self-checkout also impacted customer loyalty. The use of self-checkout has also created unexpected issues for retailers. According to Meyersohn (2024), many companies felt they were relying too much on self-checkout and are now adjusting their self-checkout operations in an effort to reduce losses due to customer errors and theft.

In terms of advantages and disadvantages, AI can function to understand consumer thinking and behavior if applied to benefit all parties and not just public relations (Rubio et al., 2021; Shankar, 2018). In contrast, recent research also postulates that relying too greatly on AI reduces opportunities for individual interaction, thus diminishing collaboration and creativity (Gligor et al., 2021).

In an effective model, AI performs more mechanical and analytical tasks, so intuitive and empathetic skills will become essential for employees directly relating directly with consumers, representing a positive societal impact (Huang & Rust, 2018). Some examples of this

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

could include using robots to physically check inventory in retail stores as well as dispensing medication for pharmacies to improve productivity, safety, inventory management accuracy, and staff satisfaction (Morenza-Cinos et al., 2019). AI can enable retail workers to create more effective processes and focus on humanistic duties in their roles, which will alter their responsibilities rather than eliminate them from the retailing industry (Davenport et al., 2020; Shankar, 2018). Completing these tasks with AI should increase productivity and permit employees to spend more time assisting customers.

Regarding AI and stakeholder interaction, our analyses reveal the possible positive effects of service robots, deep learning, and forecasting technologies for various stakeholders as AI elements are implemented in the ecosystem. Examples include data analytics in delivering personalized services, retailer, and salesperson use of information technology to improve personalized services, salesperson adaptability, and the overall bottom line (Bock et al., 2020; Butt et al., 2023; Hall et al., 2022). Thus, hybrid intelligence should benefit companies, supply partners, and consumers (Jain et al., 2022). AI also presents a source of innovation and a potential opportunity to develop new products, services, and contacts through interactive tools shared by partners in the retail ecosystem and throughout the supply chain (Cao, 2021; Huang & Rust, 2018, 2022; Noble et al., 2022; Sohn et al., 2020).

The main aspects related to AI-based interactivity and engagement include anthropomorphism, social presence, emotions, perceptions, attitudes, intentions, satisfaction, loyalty, communication, and relationships between humans and machines/AI agents. Concepts of warmth, personality, mind, and self in machines also emerge. AI has the potential to revolutionize the retail industry by creating personalized and interactive experiences for customers. One way this can be achieved is by using AI to provide personalized recommendations based on customer data analysis. By analyzing customer preferences and purchasing history, AI algorithms can suggest products and services that are likely to be of interest to individual customers, enhancing their shopping experience. Another application of AI in the retail ecosystem is virtual assistants and chatbots (Klein & Martinez, 2023). These AI-powered tools can provide real-time support and answer customer queries, improving customer service and engagement (Chaturvedi & Verma, 2023). Virtual assistants can also conversationally engage with customers, creating a more interactive and personalized experience. Augmented reality (AR) is another technology that can be leveraged to develop interactive and immersive shopping experiences (Ambika et al., 2023). By overlaying digital information onto the physical environment, AR can enable customers to visualize products in their own space, try on virtual clothing, or explore virtual showrooms (Behl et al., 2024). This enhances customer engagement and provides a unique and interactive shopping experience.

4.4 | Future research

Based on our analysis, we formulate directions for future research on implementing AI-based technologies in the customer-retailer relationship. Table 4 presents these suggestions as organized by primary ecosystem levels and types of technology.

TABLE 4 AI in retail interactions topics.

Technological influences	Artificial intelligence	Hybrid intelligence
Customer-retailer interface	• Automated services from service robots • Development of new products and services • Increased safety	• Personalized service • Salesperson adaptability • Ethical behavior • Data privacy • Information security
Interactivity	• Fast interactions through automated recommender systems • Internet of Things servicing	• Improved interaction through social robots • Higher quality interactions through customization • Ethical responsibility
Business strategy	• Automation • Workplace redefinition	• Product development • Effective use of human skills • Greater social affiliation • Hybrid rights

In the context of AI-based interactive retail technologies, there are still traditional questions related to standard topics, such as how attitudes towards AI in the customer-retailer interface led to behavioral intentions and which are the main factors that influence the introduction of AI technologies in the retailing ecosystem, considering all of the actors involved in the ecosystem. As most previous studies and our analysis focused on consumer attitudes and behavior, it is essential to incorporate these questions in an ecosystem's framework and question aspects related to how consumer attitudes differ from employee attitudes and how these influence the implementation of AI tools in the customer-retailer interface. Moreover, future research could also investigate further areas in which AI assistance could possibly be used to free up additional time for employees allowing them to focus on more humanistic, creative, and empathetic duties in the retail workplace. Also, businesses need to carefully choose the right AI tools and integration, and strike the appropriate equilibrium between AI and humans, to achieve exceptional benefits from AI-enabled customer service (Jain et al., 2022), emphasizing the need for more future research on hybrid intelligence.

Returning to consumers, there are also aspects related to technological characteristics, as well as consumer traits, that need to be clarified, including how much and what type of data consumers are willing to share in the pre-purchase phase for technologies such as recommendation agents and social listening, and which of their technical characteristics have the most significant impact on consumers, as a

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

function of the retail environment. Future research can further investigate the overall retail ecosystem and the differences and similarities encountered between traditional and online retailing using AI in the customer interface.

Continuing a focus on the retailing ecosystem, a research question that needs to be answered in the future is how retailers should communicate about AI technologies with consumers, employees, and other potentially affected stakeholders. Future research also could build on this study to delve into the differences in attitudes and perceptions related to AI in the customer interface based on retail type, and consumer characteristics (including psychographics), as well as a more specific examination of the behavioral intention differences as a function of AI type: mechanical, thinking, and feeling (Huang & Rust, 2018).

Also, there is a need for a more specific inquiry into how the effects of AI's use in the consumer interface impact consumer satisfaction, especially on recommendation and word-of-mouth behavior from consumers. On the same note, future studies can examine the main technological characteristics that influence buyer loyalty and the use of these technologies in increasing customer and employee satisfaction. Finally, while some discussions and analyses have previously investigated the role and implications of AI in retailing, research is also needed to establish how retailers can measure the returns on their technology investments in the customer interface.

5 | CONCLUSIONS

Our bibliometric analysis employed an ecosystem value co-creation framework that unveils implications for stakeholder well-being, social interaction, and societal welfare based on human, hybrid, and artificial intelligence. This interdisciplinary analysis helps aggregate research findings in the marketing and MIS literature about the intertwining effects of the different types of human and technological intelligence in retail. Based on a network visualization of keyword relationships and clustered topic areas and a conceptual map of the relationships between key concepts and substantive themes, we answer our key research questions focused on hybrid and artificial intelligence's impact on the interactive customer-retailer ecosystem. We now synthesize the insights of this comprehensive review focused on the marketing and retailing literature by formulating implications and recommendations for researchers, academics, and practitioners.

5.1 | Research implications

Our analyses generated the network visualization of keyword relationships and clustered topic areas, and the conceptual map of the relationships between key concepts and substantive themes emphasizes the interdisciplinary characteristics of research related to AI-based technologies. Our findings reflect the need for a multidisciplinary view of research on this topic, especially considering the impact of hybrid and AI technologies on various components of the business and societal ecosystem, from stakeholder well-being to social interactions and societal welfare. The theoretical implications suggest that AI can enhance demand forecasting accuracy, improve inventory control, and engage in anticipatory shipping to reduce carbon footprints. The findings also provide insights into the challenges and opportunities of AI in retail, including ethical concerns, security problems, data privacy issues for multiple stakeholders and especially consumers and the need for upskilling and reskilling the workforce (Kunz & Wirtz, 2023).

Moreover, our focus on human, hybrid, and AI technologies also mirrors the need to advance from human-robot interaction to human-robot cooperation and hybrid elements that contribute to augmented AI-based technologies impacting business and social interactions. While previous research discusses some opportunities and challenges regarding the workforce and the development of AI and hybrid technologies, as our conceptual map in Figure 6 shows, there is a need for a greater focus on both positive and negative influences concerning social behavior, social rights, and knowledge management at the intersection of multiple disciplines, including not only marketing and MIS, but also psychology, sociology, and judicial disciplines. Finally, in an ecosystem context, the multidisciplinary-based findings of our bibliometric analysis reflect the need to highlight both the positive and negative effects of these technologies on stakeholder well-being, social interaction, and societal welfare, as well as how effects created in one of these levels impacts the value created in the other social layers.

Also, the interdisciplinary character of AI-based retail technologies emphasizes the opportunity for changes in the academic implementation of this topic within course-related university curriculums. Undergraduate and graduate marketing students can benefit from multidiscipline-based courses and projects that include different types of hybrid and artificial technologies that focus on the various layers of the retail ecosystem. Additionally, doctoral students in marketing and business-related disciplines can derive research and uncover gaps and knowledge opportunities from exposure to related research areas in different disciplines, including more technical aspects from the MIS field and social-behavioral issues drawn from psychology and sociology.

5.2 | Managerial implications

A few key elements could make using AI-related technologies more effective for practitioners. The interdisciplinary characteristics necessary in implementing and managing these technologies emphasize the need for cooperation among multiple organizational departments and business partners in the ecosystem. Moreover, the emphasized human-robot interaction in our conceptual map reflects the need to consider consumer-machine interactions in implementing technologies and the overall implications of hybrid intelligence for all stakeholders, including employees and business partners. Business benefits could also come from noting the effects of critical tools like machine learning, neural networks, smart technologies, and social robots on multiple levels of the ecosystem, including micro (business

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

stakeholders), meso (social interaction with the organization and the market), and macro (societal impact).

Businesses in the retail sector should focus on exploring the development and implementation of AI-based and hybrid technologies, such as robotics, analytics, data mining, forecasting, social AI, and communication, to enhance their performance, processes, and customer value. Retailers can also use machine learning to analyze large sets of information and provide a more personalized service to consumers.

ACKNOWLEDGEMENT

The authors would like to thank the JCB editors and the editors of the special issue, as well as the anonymous reviewers, for their time and dedication in providing timely, constructive comments that helped improve this manuscript.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

Maria Petrescu https://orcid.org/0000-0002-4261-6773
Anjala S. Krishen https://orcid.org/0000-0002-4749-5130
John T. Gironda https://orcid.org/0000-0003-0389-5340
J. Ricky Fergurson https://orcid.org/0000-0001-9609-4993

REFERENCES

Ambika, A., Belk, R., Jain, V., & Krishna, R. (2023). The road to learning "who am I" is digitized: A study on consumer self-discovery through augmented reality tools. *Journal of Consumer Behaviour*, *22*(5), 1112–1127. https://doi.org/10.1002/cb.2185

Bawack, R. E., Wamba, S. F., Carillo, K. D. A., & Akter, S. (2022). Artificial intelligence in e-commerce: A bibliometric study and literature review. *Electronic Markets*, *32*(1), 297–338.

Behl, A., Nigam, A., & Vrontis, D. (2024). Guest editorial overview: 'Mapping the future of consumer behaviour using disruptive technologies.' *Journal of Consumer Behaviour*, 1854–1858. https://doi.org/10.1002/cb.2309

Belanche, D., Casaló, L. V., Flavián, C., & Schepers, J. (2020). Service robot implementation: A theoretical framework and research agenda. *Service Industries Journal*, *40*(3–4), 203–225. https://doi.org/10.1080/02642069.2019.1672666

Bock, D. E., Wolter, J. S., & Ferrell, O. C. (2020). Artificial intelligence: Disrupting what we know about services. *Journal of Services Marketing*, *34*(3), 317–334.

Brengman, M., & Willems, K. (2023). Robots and AI in retailing and consumer services. *Journal of Retailing and Consumer Services*, *70*, 103177. https://doi.org/10.1016/j.jretconser.2022.103177

Brüggemann, P., & Lehmann-Zschunke, N. (2023). How to reduce termination on freemium platforms – Literature review and empirical analysis. *Journal of Marketing Analytics*, *11*, 707–721. https://doi.org/10.1057/s41270-023-00212-y

Brüggemann, P., & Olbrich, R. (2023). The impact of COVID-19 pandemic restrictions on offline and online grocery shopping: New normal or old habits? *Electronic Commerce Research*, *23*(4), 2051–2072. https://doi.org/10.1007/s10660-022-09658-1

Brüggemann, P., & Pauwels, K. (2024). How attitudes and purchases differ between also-online versus offline-only grocery shoppers in online and offline grocery shopping. *Electronic Commerce Research*. https://doi.org/10.1007/s10660-024-09828-3

Butt, A., Ahmad, H., Ali, F., Muzaffar, A., & Shafique, M. N. (2023). Engaging the customer with augmented reality and employee services to enhance equity and loyalty. *International Journal of Retail and Distribution Management*, *51*(5), 629–652. https://doi.org/10.1108/IJRDM-04-2021-0165

Campbell, C., Sands, S., Ferraro, C., Tsao, H. Y. J., & Mavrommatis, A. (2020). From data to action: How marketers can leverage AI. *Business Horizons*, *63*(2), 227–243.

Cao, L. (2021). Artificial intelligence in retail: Applications and value creation logistics. *International Journal of Retail & Distribution Management*, *49*(7), 958–976.

Chaturvedi, R., & Verma, S. (2023). Opportunities and challenges of AI-driven customer service. In J. N. Sheth, et al. (Eds.), *Artificial intelligence in customer service: The next frontier for personalized engagement* (pp. 33–71). Palgrave Macmillan. https://doi.org/10.1007/978-3-031-33898-4_3

Chen, J. S., Le, T. T. Y., & Florence, D. (2021). Usability and responsiveness of artificial intelligence chatbot on online customer experience in e-retailing. *International Journal of Retail & Distribution Management*, *49*(11), 1512–1531.

Cheng, L. K. (2023). Effects of service robots' anthropomorphism on consumers' attribution toward and forgiveness of service failure. *Journal of Consumer Behaviour*, *22*(1), 67–81.

Chidambaram, V., Rana, N. P., & Parayitam, S. (2024). Antecedents of consumers' online apparel purchase intention through virtual try on technology: A moderated moderated-mediation model. *Journal of Consumer Behaviour*, *23*(1), 107–125. https://doi.org/10.1002/cb.2158

Chong, T., Yu, T., Keeling, D. I., & de Ruyter, K. (2021). AI chatbots on the service's frontline are addressing the challenges and opportunities of the agency. *Journal of Retailing and Consumer Services*, *63*(July), 102735.

Chopra, K. (2019). Indian shopper motivation to use artificial intelligence: Generating Vroom's expectancy theory of motivation using grounded theory approach. *International Journal of Retail & Distribution Management*, *47*(3), 331–347.

Cui, Y., & van Esch, P. (2023). Artificial intelligence in customer service strategy for seamless customer experiences. In J. N. Sheth, et al. (Eds.), *Artificial intelligence in customer service: The next frontier for personalized engagement* (pp. 73–97). Palgrave Macmillan. https://doi.org/10.1007/978-3-031-33898-4_4

Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, *48*(1), 24–42.

De Keyser, A., & Kunz, W. H. (2022). Living and working with service robots: A TCCM analysis and considerations for future research. *Journal of Service Management*, *33*(2), 165–196. https://doi.org/10.1108/JOSM-12-2021-0488

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, *133*(March), 285–296.

Gligor, D. M., Pillai, K. G., & Golgeci, I. (2021). Theorising the dark side of business-to-business relationships in the era of AI, big data, and blockchain. *Journal of Business Research*, *133*, 79–88.

Graef, R., Klier, M., Kluge, K., & Zolitschka, J. F. (2021). Human-machine collaboration in online customer service – A long-term feedback-based approach. *Electronic Markets*, *31*(2), 319–341.

Grewal, D., Hulland, J., Kopalle, P. K., & Karahanna, E. (2020). The future of technology and marketing: A multidisciplinary perspective. *Journal of the Academy of Marketing Science*, *48*(1), 1–8.

Guha, A., Grewal, D., Kopalle, P. K., Haenlein, M., Schneider, M. J., Jung, H., Moustafa, R., Hegde, D. R., & Hawkins, G. (2021). How

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

artificial intelligence will affect the future of retailing. *Journal of Retailing*, *97*(1), 28–41.

Haenlein, M., & Kaplan, A. (2019). A brief history of artificial intelligence: On the past, present, and future of artificial intelligence. *California Management Review*, *61*(4), 5–14.

Hall, K. R., Harrison, D. E., Ajjan, H., & Marshall, G. W. (2022). Understanding salesperson intention to use AI feedback and its influence on business-to-business sales outcomes. *Journal of Business & Industrial Marketing*, *37*(9), 1787–1801.

He, A. Z., & Zhang, Y. (2023). AI-powered touch points in the customer journey: A systematic literature review and research agenda. *Journal of Research in Interactive Marketing*, *17*(4), 620–639.

Huang, M. H., & Rust, R. T. (2018). Artificial intelligence in service. *Journal of Service Research*, *21*(2), 155–172.

Huang, M.-H., Rust, R., & Maksimovic, V. (2019). The feeling economy: Managing in the next generation of artificial intelligence (AI). *California Management Review*, *61*(4), 43–65. https://doi.org/10.1177/0008125619863436

Huang, M. H., & Rust, R. T. (2022). A framework for collaborative artificial intelligence in marketing. *Journal of Retailing*, *98*(2), 209–223.

Jain, V., Shroff, P., Merchant, A., & Bezbaruah, S. (2022). Introducing bi-directional participatory place branding: A theoretical model with multi-stakeholder perspectives. *Journal of Product and Brand Management*, *31*(1), 73–95. https://doi.org/10.1108/JPBM-05-2020-2921

Jham, V., Malhotra, G., & Sehgal, N. (2023). Consumer-brand relationships with AI anthropomorphic assistant: Role of product usage barrier, psychological distance and trust. *International Review of Retail, Distribution and Consumer Research*, *33*(879), 1–17. https://doi.org/10.1080/09593969.2023.2178023

Kamoonpuri, S. Z., & Sengar, A. (2023). Hi, may AI help you? An analysis of the barriers impeding the implementation and use of artificial intelligence-enabled virtual assistants in retail. *Journal of Retailing and Consumer Services*, *72*, 103258. https://doi.org/10.1016/j.jretconser.2023.103258

Kim, D., Hwang, K., Lee, E., & Yoon, Y. (2023). The effect of artificial intelligence (AI) robot characteristics and dialectical thinking on AI robot adoption intention. *Journal of Consumer Behaviour*, *23*, 453–469. https://doi.org/10.1002/cb.2201

Kim, J., Kang, S., & Bae, J. (2022). The effects of customer consumption goals on artificial intelligence driven recommendation agents: Evidence from stitch fix. *International Journal of Advertising*, *41*(6), 997–1016.

Kim, S. Y., Schmitt, B. H., and Thalmann, N. M. (2019). Eliza in the uncanny valley: Anthropomorphizing consumer robots increases their perceived warmth but decreases liking. *Marketing Letters*, *30*, 1–12.

Klein, K., & Martinez, L. F. (2023). The impact of anthropomorphism on customer satisfaction in chatbot commerce: An experimental study in the food sector. *Electronic Commerce Research*, *23*(4), 2789–2825. https://doi.org/10.1007/s10660-022-09562-8

Krishen, A. S., Agarwal, S., & Kachroo, P. (2016). Is having accurate knowledge necessary for implementing safe practices? A consumer folk theories-of-mind perspective on the impact of price. *European Journal of Marketing*, *50*(5–6), 1073–1093.

Krishen, A. S., Dwivedi, Y. K., Bindu, N., & Kumar, K. S. (2021). A broad overview of interactive digital marketing: A bibliometric network analysis. *Journal of Business Research*, *131*, 183–195. https://doi.org/10.1016/j.jbusres.2021.03.061

Krishen, A. S., Raschke, R., Kachroo, P., LaTour, M., & Verma, P. (2014). Promote me or protect us? The framing of policy for collective good. *European Journal of Marketing*, *48*(3/4), 742–760.

Kumar, V., Rajan, B., Venkatesan, R., & Lecinski, J. (2019). Understanding the role of artificial intelligence in personalised engagement marketing. *California Management Review*, *61*(4), 135–155.

Kunz, W. H., & Wirtz, J. (2023). AI in customer service: A service revolution in the making. In J. N. Sheth, et al. (Eds.), *Artificial intelligence in customer service: The next frontier for personalized engagement* (pp. 15–32). Palgrave Macmillan. https://doi.org/10.1007/978-3-031-33898-4_2

Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, *80*(6), 69–96.

Lou, C., Kang, H., & Tse, C. H. (2022). Bots vs. humans: How schema congruity, contingency-based interactivity, and sympathy influence consumer perceptions and patronage intentions. *International Journal of Advertising*, *41*(4), 655–684.

Marinova, D., de Ruyter, K., Huang, M. H., Meuter, M. L., & Challagalla, G. (2017). Getting smart: Learning from technology-empowered frontline interactions. *Journal of Service Research*, *20*(1), 29–42.

McLean, G., Osei-Frimpong, K., & Barhorst, J. (2021). Alexa, do voice assistants influence consumer brand engagement—Examining the role of AI powered voice assistants in influencing consumer brand engagement. *Journal of Business Research*, *124*(November), 312–328.

Mende, M., Scott, M. L., van Doorn, J., & Grewal, D. (2019). Service robots rising : How humanoid robots influence service experiences and elicit compensatory consumer responses. *Journal of Marketing Research*, *56*(4), 535–556.

Meyersohn, N. (2024, January 23). Customers have soured on self-checkout, and a new study says there's proof | CNN business. *CNN* https://www.cnn.com/2024/01/23/business/self-checkout-shopping-stores/index.html

Mogaji, E., & Jain, V. (2024). How generative AI is (will) change consumer behaviour: Postulating the potential impact and implications for research, practice, and policy. *Journal of Consumer Behaviour*, *23*(5), 2379–2389. https://doi.org/10.1002/cb.2345

Moore, S., Bulmer, S., & Elms, J. (2022). The social significance of AI in retail on customer experience and shopping practices. *Journal of Retailing and Consumer Services*, *64*, 102755.

Morenza-Cinos, M., Casamayor-Pujol, V., & Pous, R. (2019). Stock visibility for retail using an RFID robot. *International Journal of Physical Distribution & Logistics Management*, *49*(10), 1020–1042. https://doi.org/10.1108/IJPDLM-03-2018-0151

Ng, I. C. L., & Vargo, S. L. (2018). Service-dominant (S-D) logic, service ecosystems and institutions: Bridging theory and practice. *Journal of Service Management*, *29*(4), 518–520. https://doi.org/10.1108/JOSM-07-2018-412

Nguyen, N. P., & Mogaji, E. (2023). Artificial intelligence for seamless experience across channels. In J. N. Sheth, et al. (Eds.), *Artificial intelligence in customer service: The next frontier for personalized engagement* (pp. 181–203). Palgrave Macmillan. https://doi.org/10.1007/978-3-031-33898-4_8

Nicolas, C., Valenzuela-Fernández, L., & Merigó, J. M. (2020). Research trends of marketing: A bibliometric study 1990–2017. *Journal of Promotion Management*, *26*(5), 674–703.

Noble, S. M., Mende, M., Grewal, D., & Parasuraman, A. (2022). The fifth industrial revolution: How harmonious human–machine collaboration is triggering a retail and service [R]evolution. *Journal of Retailing*, *98*(2), 199–208.

Nusrat, F., & Huang, Y. (2024). Feeling rewarded and entitled to be served: Understanding the influence of self-versus regular checkout on customer loyalty. *Journal of Business Research*, *170*, 1–13.

Petrescu, M., Krishen, A. S., Kachen, S., & Gironda, J. T. (2022). AI-based innovation in B2B marketing: An interdisciplinary framework incorporating academic and practitioner perspectives. *Industrial Marketing Management*, *103*, 61–72. https://doi.org/10.1016/j.indmarman.2022.03.001

Pillai, R., Sivathanu, B., & Dwivedi, Y. K. (2020). Shopping intention at AI-powered automated retail stores (AIPARS). *Journal of Retailing and Consumer Services*, *57*(March), 102207.

PWC. (2023). Artificial Intelligence Study. https://www.pwc.com/gx/en/issues/data-and-analytics/publications/artificial-intelligence-study.html

Qi, C., Wang, X., & Zhang, H. (2024). Users, AI, or professional designers? The impacts of inspiration stimuli on customers' willingness to

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

participate in user design. *Journal of Consumer Behaviour*, *23*(5), 2291–2302. https://doi.org/10.1002/cb.2338

Qiu, H., Li, M., Shu, B., & Bai, B. (2020). Enhancing hospitality experience with service robots: The mediating role of rapport building. *Journal of Hospitality Marketing & Management*, *29*(3), 247–268.

Rai, A. (2020). Explainable AI: From black box to glass box. *Journal of the Academy of Marketing Science*, *48*(1), 137–141. https://doi.org/10.1007/s11747-019-00710-5

Rana, N. P., Chatterjee, S., Dwivedi, Y. K., & Akter, S. (2022). Understanding dark side of artificial intelligence (AI) integrated business analytics: Assessing firm's operational inefficiency and competitiveness. *European Journal of Information Systems*, *31*(3), 364–387.

Roggeveen, A. L., & Sethuraman, R. (2020). Customer-interfacing retail technologies in 2020 & beyond: An integrative framework and research directions. *Journal of Retailing*, *96*(3), 299–309.

Rosenbaum, M. S., & Russell-Bennett, R. (2021). When service technologies and human experiences intersect. *Journal of Services Marketing*, *35*(3), 261–264.

Ruan, Y., & Mezei, J. (2022). When do AI chatbots lead to higher customer satisfaction than human frontline employees in online shopping assistance? Considering product attribute type. *Journal of Retailing and Consumer Services*, *68*, 103059. https://doi.org/10.1016/j.jretconser.2022.103059

Rubio, N., Villaseñor, N., & Yagüe, M. J. (2021). Value co-creation between consumers and distributors: The moderating effect of relationship characteristics. *International Journal of Retail and Distribution Management*, *49*(7), 1067–1088.

Shams, R., Alpert, F., & Brown, M. (2015). Consumer perceived brand innovativeness: Conceptualisation and operationalization. *European Journal of Marketing*, *49*(9–10), 1589–1615.

Shankar, V. (2018). How artificial intelligence (AI) is reshaping retailing. *Journal of Retailing*, *94*(4), vi–xi.

Shankar, V., Douglass, T., Hennessey, J., Kalyanam, K., Setia, P., Golmohammadi, A., Tirunillai, S., et al. (2021). How technology is changing retail. *Journal of Retailing*, *97*(1), 13–27.

Sinkovics, N. (2016). Enhancing the foundations for theorising through bibliometric mapping. *International Marketing Review*, *33*(3), 327–350.

Sivathanu, B., Pillai, R., & Metri, B. (2023). Customers' online shopping intention by watching AI-based deepfake advertisements. *International Journal of Retail & Distribution Management*, *51*(1), 124–145.

Söderlund, M. (2021). The robot-to-robot service encounter: An examination of the impact of inter-robot warmth. *Journal of Services Marketing*, *35*(9), 15–27.

Söderlund, M., Oikarinen, E. L., & Tan, T. M. (2022). The hard-working virtual agent in the service encounter boosts customer satisfaction. *International Review of Retail, Distribution and Consumer Research*, *32*(4), 388–404.

Sohn, K., Sung, C. E., Koo, G., & Kwon, O. (2020). Artificial intelligence in the fashion industry: Consumer responses to generative adversarial network (GAN) technology. *International Journal of Retail & Distribution Management*, *49*(1), 61–80.

Soni, N., Sharma, E. K., Singh, N., & Kapoor, A. (2020). Artificial intelligence in business: From research and innovation to market deployment. *Procedia Computer Science*, *167*(2019), 2200–2210. https://doi.org/10.1016/j.procs.2020.03.272

Spais, G. (2023). Engaging self-service in a customer service ecosystem. In J. N. Sheth, et al. (Eds.), *Artificial intelligence in customer service: The next frontier for personalized engagement* (pp. 123–154). Palgrave Macmillan. https://doi.org/10.1007/978-3-031-33898-4_6

Spais, G., Jain, V., & Ford, J. (2024). Social media influencers and immersive technologies for dynamic consumer behavior. *Journal of Consumer Behaviour*, *23*(5), 2390–2394. https://doi.org/10.1002/cb.2348

Syam, N., & Sharma, A. (2018). Waiting for a sales renaissance in the fourth industrial revolution: Machine learning and artificial intelligence in sales research and practice. *Industrial Marketing Management*, *69*, 135–146. https://doi.org/10.1016/j.indmarman.2017.12.019

Underwood, C. (2020). *Robots in retail—Examples of real industry applications*.https://emerj.com/ai-sector-overviews/robots-in-retail-examples/.

Valle-Cruz, D., García-Contreras, R., & Gil-Garcia, J. R. (2023). Exploring the negative impacts of artificial intelligence in government: The dark side of intelligent algorithms and cognitive machines. *International Review of Administrative Sciences*, *0*, 353–368. https://doi.org/10.1177/00208523231187051

Vargo, S. L., & Lusch, R. F. (2016). Institutions and axioms: An extension and update of service-dominant logic. *Journal of the Academy of Marketing Science*, *44*(1), 5–23. https://doi.org/10.1007/s11747-015-0456-3

Vargo, S. L., & Lusch, R. F. (2017). Service-dominant logic 2025. *International Journal of Research in Marketing*, *34*(1), 46–67. https://doi.org/10.1016/j.ijresmar.2016.11.001

Wagner, V. (2021). The endless possibilities of robotic process automation. E-commerce. *Times*, retrieved from: https://www.ecommercetimes.com/story/the-endless-possibilities-of-robotic-process-automation-87244.html

Weingarten, J., & Spinler, S. (2021). Shortening delivery times by predicting customers' online purchases: A case study in the fashion industry. *Information Systems Management*, *38*(4), 287–308.

Wieland, H., Hartmann, N. N., & Vargo, S. L. (2017). Business models as service strategy. *Journal of the Academy of Marketing Science*, *45*(6), 925–943. https://doi.org/10.1007/s11747-017-0531-z

Wilden, R., Akaka, M. A., Karpen, I. O., & Hohberger, J. (2017). The evolution and prospects of service-dominant logic: An investigation of past, present, and future research. *Journal of Service Research*, *20*(4), 345–361.

AUTHOR BIOGRAPHIES

Maria Petrescu is an Associate Professor of Marketing and Associate Dean of Innovation at Embry-Riddle Aeronautical University. Her main research areas include Marketing Analytics, Digital Marketing, and Research Methods. Dr. Petrescu has published articles in journals such as *Psychology & Marketing*, *Journal of Marketing Management*, *Journal of Product and Brand Management*, *Journal of Promotion Management*, *Journal of Retailing and Consumer Services*, *Public Management Review*, *Journal of Marketing Analytics*, and *Journal of Internet Commerce*.

Anjala S. Krishen is the Mel Larson Endowed Chair of Marketing, and Professor and Department Chair of Marketing and International Business at University of Nevada, Las Vegas (UNLV). She has a B.S. in Electrical Engineering from Rice University, and a M.S. Marketing, MBA, and Ph.D. from Virginia Polytechnic Institute and State University (Virginia Tech). Anjala held management positions for 13-years before pursuing a doctorate. To date, she has published interdisciplinary research in journals including *Industrial Marketing Management*, *Psychology & Marketing*, *Journal of Services Marketing*, *European Journal of Marketing*, and *Journal of Marketing Education*.

John T. Gironda is an Associate Professor of Marketing at Nova Southeastern University. His teaching and research interests

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

include Marketing Technology, Digital and Social Media Marketing, Branding, and Consumer Privacy Issues. His research has been published in *Psychology & Marketing*, *Journal of Marketing Theory and Practice*, *Journal of Retailing and Consumer Services*, and *Journal of Marketing Management*. He has also presented papers at a number of conferences including the American Marketing Association, Academy of Marketing Science, ISMS Marketing Science Conference, and Society for Marketing Advances.

J. Ricky Fergurson is an Assistant Professor of Marketing at Middle Tennessee State University. His teaching and research interests include Retailing, Sales and Sales Management, Relationship Marketing, and Marketing Strategy. He has published in *Journal of Marketing Channels*, *Journal of Managerial Issues*, and *Journal of Marketing Analytics*. He has also presented at a number of conferences including the Academy of Marketing Science, Society for Marketing Advances, and National Conference in Sales Management.

How to cite this article: Petrescu, M., Krishen, A. S., Gironda, J. T., & Fergurson, J. R. (2024). Exploring AI technology and consumer behavior in retail interactions. *Journal of Consumer Behaviour*, *23*(6), 3132–3151. https://doi.org/10.1002/cb.2386

14791838, 2024, 6, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cb.2386 by University Of Nevada Las Vegas, Wiley Online Library on [21/11/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License