Journal of Responsible Technology 21 (2025) 100103

Contents lists available at ScienceDirect

Journal of Responsible Technology

journal homepage: www.sciencedirect.com/journal/journal-of-responsible-technology

Research Article

Exploring ethical frontiers of artificial intelligence in marketing

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ARTICLE INFO

Keywords:
Ethics
Marketing ethics
Artificial intelligence
Ethical concerns
Algorithms
Trust
Ethical AI

ABSTRACT

The pervasiveness of artificial intelligence (AI) in consumers' lives is proliferating. For firms, AI offers the potential to connect, serve, and satisfy consumers with posthuman abilities. However, the adoption and usage of this technology face barriers, with ethical concerns emerging as one of the most significant. Yet, much remains unknown about the ethical concerns. Accordingly, to fill the gap, the current study undertakes a comprehensive and systematic review of 445 publications on AI and marketing ethics, utilizing Scientific Procedures and Rationales for Systematic Literature review protocol to conduct performance analysis (quantitative and qualitative) and science mapping (conceptual and intellectual structures) for literature review and the identification of future research directions. Furthermore, the study conducts thematic and content analysis to uncover the themes, clusters, and theories operating in the field, leading to a conceptual framework that lists antecedents, mediators, moderators, and outcomes of ethics in AI in marketing. The findings of the study present future research directions, providing guidance for practitioners and scholars in the area of ethics in AI in marketing.

1. Introduction

Imagine yourself writing something on your social media handle, and within hours, a company that sells a product you mentioned reaches out to you with precisely what you want. On one hand, you feel relieved about the timely message from these sellers, but on the other hand, you wonder how your social media account understood you so well!

Increasingly, consumers find themselves gripped by such paradoxical feelings about modern technologies. Artificial intelligence (AI) is one such technology that can mimic human-like intelligence (Mariani et al., 2022). AI enables businesses to locate consumers, understand their needs, and study their behaviour. In doing so, AI also helps reduce costs and improves efficiencies in customer service (Wirtz et al., 2018), marketing, and customer management (Lim et al., 2022). Due to these significant benefits, the adoption of AI technologies is on the rise.

AI empowers machines to understand situations with the help of algorithms, which are trained on data to decode patterns and make decisions (Breidbach & Maglio, 2020). In the field of marketing, AI assists in decision-making, which often uncovers consumer behaviour that would otherwise require deep understanding and extensive research. In doing so, the firms can monitor consumer activity remotely, build a database, and recommend products or services to consumers (Lim et al., 2022). This is essential for marketing activities and goes a long way in building long-term relationships with consumers (Fernández-Rovira et al., 2021). At the heart of marketing lies the consumer, and therefore, it is important to understand consumers to provide products and services that fit their requirements(Kotler & Keller, 2016). The customer relations activity undertaken by firms includes what value the consumer seeks and accordingly devises a value proposition. This activity requires understanding consumer behaviour, which requires data. AI applications can enable firms to understand fine-grained data and personalize it for consumers through AI agents, algorithms, blockchain, voice agents, and digital agents (Ameen et al., 2021). These tools and applications are enabled using machine learning and algorithmic decisions. Increases in digital interactions with consumers require speed and a background understanding of consumers, which can be achieved with AI applications and tools (Davenport et al., 2019). However, while the benefits are spoken about, there are ethical issues such as privacy concerns, information imbalance and transparency, data protection, discrimination, and biases pertaining to the AI tools and use of customer-related data (Dwivedi et al., 2021a). Previous research in marketing ethics has emphasized the role of ethics in maintaining consumer trust and

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https://doi.org/10.1016/j.jrt.2024.100103

Available online 18 December 2024

company reputation (Brinkmann, 2002). Similarly, Stahl (2011) highlights the principles of Responsible Research and Innovation (RRI), which emphasizes the importance of ethical foresight and accountability in technology development, that build trust and safeguard an organization's reputation. Thus, it is important to understand what the ethical issues are and how does it affect consumers at large.

Despite the promising benefits of AI in marketing, challenges remain in adoption due to ethical concerns (Dwivedi et al., 2021). To harness the benefits of AI, marketers need to integrate technology with ethics. However, a comprehensive understanding of ethics in AI and its effects on business and consumers is lacking due to a fragmented and rapidly growing body of literature, thereby constraining our understanding of the subject. Previous research in this area has conducted a literature review that is either not systematic or has limited context (Du and Xie, 2021; Murtarelli et al., 2021). Du and Xie, (2021) provide a conceptual foundation for ethics in AI whereas, Murtarelli et al., (2021) delve into the literature on ethical concerns with chatbots. Another conducted by Hermann (2022) provides guiding light for researchers of the subject. Hermann (2022) highlights five ethical principles in the area of AI and Marketing which include; beneficence, non-maleficence, autonomy, justice, and explicability. Building on the groundwork laid by Hermann (2022) the current study aims to deepen insights into the ethical dimensions of AI by conducting a systematic and comprehensive review, providing a conceptual framework, and a list of theories in the research domain. To comprehensively understand the field, it is essential to conduct intellectual structure and performance analysis. To address this gap, this paper aims to systematically and comprehensively synthesize the literature by undertaking a performance analysis and intellectual structure of ethics in AI in the consumer market. Furthermore, the current study provides theories and conceptual frameworks not offered in previous systematic literature reviews.

The systematic review follows the protocol given in SPAR-4-SLR by Paul et al. (2021). Bibliometric analysis is conducted to uncover the intellectual structure and performance analysis (Donthu et al., 2021). Furthermore, the study conducts thematic and content analysis to understand the themes and future research areas. In this way, the paper contributes to a comprehensive understanding of ethics in AI in marketing. The paper aims to answer the following research questions:

RQ1. What are research publication trends for ethics in artificial intelligence for marketing research domain?
RQ2: What are the major themes within the context of ethics in artificial intelligence in marketing research?
RQ3: What are the key antecedents, mediators, moderators, and consequences within the context of ethics in artificial intelligence in marketing research?

By conducting a systematic review and bibliometric analysis, this paper will consolidate previous work and enhance knowledge of ethics in AI in marketing. Additionally, by providing a framework, the study will discern the drivers and outcomes of ethics in AI in marketing. Furthermore, by summarizing a comprehensive review of past literature, the paper will be able to shed light on future research agendas and existing research gaps in this area. The insights from this study will guide scholars and marketers about the ethical issues and implications that will aid in developing AI in marketing that can build trust with consumers, enhance brand reputation, and create more meaningful and responsible interactions. Additionally, incorporating ethics in AI in marketing would enable companies to build long-term relationships with consumers and avoid negative consequences.

2. Theoretical background

2.1. AI in marketing

Conversational AI tools interact with consumers in natural language and serve a dual purpose: executing tasks for the consumer and gathering information (Hu et al., 2021). Conversational AI encourages customers to share personal information for personalized solutions and suggestions (Whang & Im, 2021).

Intelligent advertising employs AI to comprehend consumer profiles and deliver tailored advertisements. It focuses on the right time and is measured through soft metrics like views and comments and consumer commitment by hard metrics such as downloads and purchases. (Rodgers & Nguyen, 2022).

Algorithms are deployed to understand consumer better and recommend products and services based on their likes and dislikes. Algorithmic pricing is another AI tool that assists marketers in offering different prices to consumers at various times, depending on the situation. There are two forms of algorithmic pricing: dynamic and personalized pricing. Dynamic pricing adjusts pricing to take advantage of demand and situations; personalized pricing charges different prices to individual consumers based on their needs and demands (Seele et al., 2021). These AI-based tools have revolutionized how companies approach marketing, enabling firms to understand customers better and create more effective and efficient marketing strategies. Ethical concerns persist within each of these AI tools.

Virtue ethics, as explained by Aristotle, is grounded in the notion of telos (purpose) and character development through practical wisdom (phronesis) (Wilburn, 2022). Further, Modern ethical thinkers such as GE Moore contributed to virtue ethics by positioning moral goodness as non-natural property and separating moral from non-moral properties to enhance the understanding of virtue ethics (Moore, 1903). MacIntyre (1929) shifted the focus towards social practices rather than rigid adherence to abstract moral rules. Virtue cannot be separated from the community and the moral fabric of social structure (MacIntyre, 1929). Marketing ethics, a subsection of business ethics, aims to enhance customer trust, satisfaction, and overall well-being by promoting ethical conduct and responsible marketing practices (Blodgett et al., 2001). However, it often draws criticism for unethical conduct in sectors like advertising, personal selling, pricing, marketing research, etc (Vitell & Grove, 2014). Due to its continually evolving nature, researchers often struggle to comprehensively understand the subject (Schlegelmilch & Oeberseder, 2015).

The use of AI in marketing has introduced both the bright and the dark side, presenting some paradoxical challenges, including the personalization-privacy paradox, which requires balancing personalization with consumer privacy concerns. The uncanny valley paradox involves feelings of discomfort arising from non-human characteristics in AI. Lastly, the control paradox entails a loss of consumer autonomy when AI makes decisions based on behalf of consumers.

Ethical issues have arisen regarding the use of AI in marketing. In conversational AI, problems occur with non-disclosure of the AI's identity and gathering consumer data (Gnewuch et al., 2023). Even with disclosure, ethical issues arise when digital agents persuade customers through human-like dialogue, raising questions about authenticity and transparency (Murtarelli et al., 2021). Another aspect that has raised concerns is when the data used for consumer profiling and predictive analysis becomes susceptible to misuse and potential data breaches. Companies may exploit these vulnerabilities, maximizing profits through behavioural biases, deception, and addiction generation. Chatbots, equipped with advanced technological capabilities, collect information beyond immediate requirements, allowing them to build comprehensive customer profiles. This ability creates an information imbalance, referred to as "asymmetrical redistribution of power" in human-machine interactions. This imbalance, especially if data is commoditized and becomes a tradeable commodity (Murtarelli et al., 2021), favours parties with data access, creating an unfavourable situation for consumers (Pavlou et al., 2007). In such scenarios, buyers have limited information about the seller and cannot make fully informed evaluations. The conversational aspect of chatbots, while humanizing them to reduce perceived risks, also grants them the power to influence

consumer views. Two key ethical issues emerge moral hazard and humanizing chatbots. The moral hazard involves the capacity of suppliers to influence customer perceptions due to information asymmetry (Pavlou et al., 2007). Humanizing chatbots may lead consumers to believe they share the same moral values as humans, introducing a potential expectation distortion. Additionally, privacy risks and network security constitute a third ethical concern that needs attention to protect user information and maintain a secure environment (Gnewuch et al., 2023).

Ethical issues pertaining to intelligent advertising are often centred on bias and raise important considerations for business (Rodgers & Nguyen, 2022). Similarly, recent debates around the ethics of dynamic pricing, as explored by scholars, have brought ethical considerations such as price discrimination to the forefront (Seele et al., 2021). It is important to understand the ethical issues in AI in marketing to create an atmosphere of trust in interacting with the consumer.

Previous research has suggested the inclusion of epistemic virtues such as intellectual receptiveness, reflection, and analysis in marketing ethics, indicating their importance (Rawwas et al., 2013). These virtues help identify ethical solutions and discover morally appropriate organizational behaviours.

As discussed, with emerging applications of AI in businesses, responsible research and innovation (RRI) becomes a more sensitive and significant concern for executives and practitioners. RRI framework emphasizes the importance of aligning research initiatives with societal needs and ethical considerations(Declich et al., 2022). According to Von Schomberg (2014), RRI is defined as “the transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view on the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society)”. The most comprehensive definition of RRI is given by Stahl, (2013) which states that “RRI is a higher-level responsibility or meta-responsibility that aims to shape, maintain, develop, coordinate and align existing and novel research and innovation-related processes, actors and responsibilities with a view to ensuring desirable and acceptable research outcomes” Recent researchers are focusing on developing responsible ecosystems through designing AI -enabled services while considering virtues and ethics (Stahl & Wright, 2018). This highlights the necessity of integrating these virtues into the context of AI and marketing to address ethical considerations effectively.

3. Methodology

We conducted a systematic and comprehensive literature review and used systematic and bibliometric analysis. SPAR-4-SLR (Scientific procedures and rationales for systematic literature reviews), developed by Paul et al. (2021), was used as it is more suitable for social science. The framework details systematic procedures to conduct a comprehensive literature review and consists of three stages: assembling, arranging, and assessing. The present study uses bibliometric analysis to conduct performance analysis (documents, sources, and authors) and intellectual structure (themes, theories, and constructs) of the literature on ethics and AI (Donthu et al., 2021). The details of the systematic literature review and bibliometric analysis are enlisted in Fig. 1 and discussed in the following sections.

3.1. Assembling

The assembling stage involves two sub-stages: identification and acquisition. The search was conducted in January 2024, and we deployed the Elsevier Scopus database. Scopus represents a quality and exhaustive database due to the stringent criteria for indexing publications and is therefore preferred over other databases such as Web of Science (Lim et al., 2022). Besides, Scopus presents certain other advantages, such as an effective search mechanism and multiple documents downloaded in one go, making it the preferred database for such kind of review over others (Khanra et al., 2021; Verma & Yadav, 2021). The source type was confined to journal articles and review papers as they represent important sources contributing to the existing literature body (Mariani et al., 2022). Following the recommendation of Paul et al. (2021), other sources such as books and book chapters were excluded from the search as, by nature, these documents are explanatory. Only documents published in the English language were chosen for the review.

The search words were developed through the process of brainstorming by academician experts. The keywords used for the search include "Artificial Intelligence OR "AI" OR "Natural Language Processing" OR "NLP" OR "Generative AI" OR "Large Language Models" OR "ChatGPT" OR "Generative artificial intelligence" OR "LLM," OR "Feeling AI," OR "Emotional AI" OR "Conversational AI" OR "Responsible AI" "Digital assistants" OR "Voice Assistants" OR "Chatbots" OR "agents" OR "recommendation agents" OR "Robots" "Machine learning" OR "algorithm" OR "automation" OR "Smart Technologies" OR "Internet of Things" OR "IoT" AND "Ethic*" OR "Moral*" OR "Virtue*" AND "Consumer*" OR "Customer*" OR "Service" OR "Marketing" OR "Brand". In total, 7582 documents were retrieved at this stage.

3.2. Arranging

Organization and purification are two substages of arranging. In this study, the documents are organized based on Scopus filters. The organizing codes focused on four aspects: language, type of document, type of source, and subject area. Coding helped us categorize and manage the information effectively. For purification, the first filtering was done in the Scopus database by limiting 1) documents only in the English language, 2) documents published as "articles or reviews”, 3) source types as journals, 4) a subject area business management and accounting and 5) the period was chosen from 1994–2024, as the initial result without any time period filter revealed very few articles prior to 1994 that had contributed to the subject area of ethics in AI in marketing. Further, two researchers manually filtered the documents by reading the abstracts and conclusions to check their relevance to the topic. In total, 445 documents were retained for the next stage.

3.3. Assessing

This stage consists of two sub-stages: evaluation and reporting. An inductive approach was adopted for the evaluation sub-stage by deriving an explanation from the patterns observed in the data (Seuring & Müller, 2008). Bibliometric analysis was employed by using tools like Microsoft Excel, Biblioshiny in R (Aria & Cuccurullo, 2017), and VOSviewer (Eck & Waltman, 2011). Descriptive analysis helps depict publication and citation trends (RO1), while science mapping identifies theories (RO2), constructs (RO3), and themes through keyword co-occurrence and bibliographic coupling (RO3) (Donthu et al., 2021). The network of relationships between keywords and documents shows the current knowledge landscape, with nodes and links representing topics and their relationships (Pilkington & Liston-Heyes, 1999). The size of nodes and thickness of links indicate their prominence in the field (Verma & Yadav, 2021). Reporting has been done through tables, figures, and words, as Paul et al. (2021) suggested. Furthermore, the findings of the bibliometric analysis are given in tables and figures, following the recommendations by Donthu et al. (2021).

4. Data analysis

4.1. Performance analysis

Performance analysis studies the influential authors, publications, and journals (Zupic and Čater, 2015) and examines the interactions

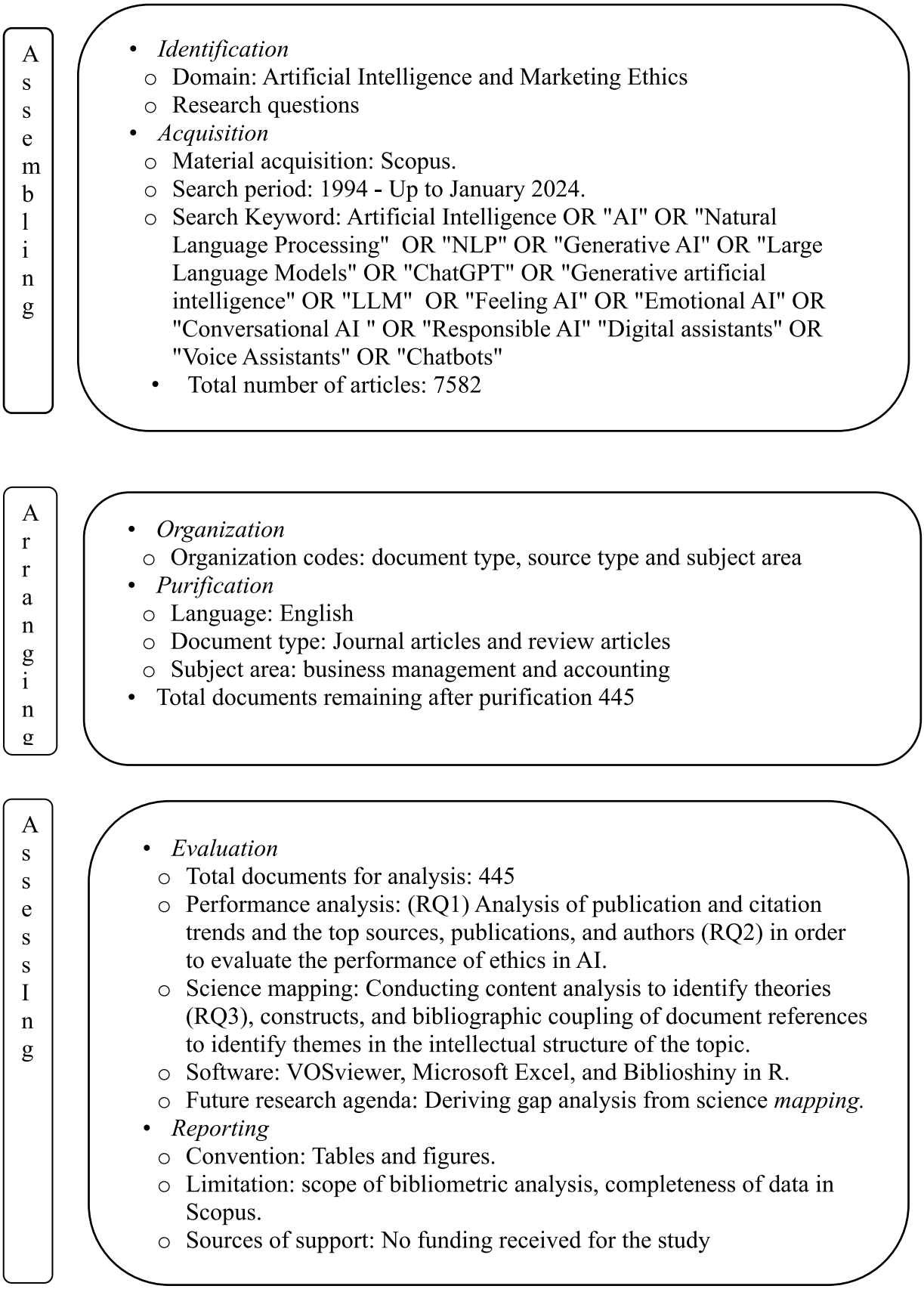

Fig. 1. SPAR-4-SLR.

among the scientific actors to uncover the latent aspects of the research domain (Goodell et al., 2021). Descriptive statistics (Table 1) indicate that 445 publications (TP) have been published in 246 sources since 1994, contributing to the topic of ethical dimensions of AI in marketing. Out of these, 371 articles (83.3 %) have been cited (TCP), with a productivity average of 11.17 publications per year (PAY). The citation trend suggests a sharp increase in the citation of documents from 2018 -2024, accounting for 71.01 % of citations in this period, indicating the growing interest in ethics in AI in marketing (Fig. 2). Panel B indicates that the total citation (TC) is 14,277, with an average citation per publication (TC/TP) of 32.08.

Panel C presents author details and indicates that a total of 1191 authors (including repetition) (NCA) or 1085 excluding repetition (NUA) have contributed to the topic in the subject. Amongst these documents, 107 unique single authors (ASA) have published 112 single-authored publications (SA), and 974 unique co-authors (ACA) have contributed to ethics and AI. The collaboration index (CI) indicates the prevalence of co-authors and co-authored publications wherein each lead author has collaborated with an average of 1.68 co-authors. As per Panel D of Table 1, 30 and 415 are review articles and empirical articles respectively with 27,816 references and 1639 keywords that will be used in science mapping. The 445 articles are used for bibliographic coupling, which helps explore current and prospective relationships among topics.

4.2. Most influential journals, authors, and publications

As per Table 2, the Journal of Business Ethics is the most influential source highlighting the importance of ethics in AI for marketing. It has 34 publications (1638 citations). Followed by the Journal of Service Management, International Journal of Information Management, the Journal of the Academy of Marketing Science, Tourism Management, and the Journal of Business Research; contribution from multi-disciplinary journals highlights the importance of the topic across various research domains.

Most influential publications include research papers authored by Pavlou et al. (2007), Wirtz et al. (2018), Davenport et al. (2019), etc. Pavlou et al. (2007) found that factors like trust, social presence, website informativeness, and product diagnosticity are significant mitigators and help to reduce the perceived uncertainty. Wirtz et al. (2018) highlighted the role of ethics in the service context and provide insights on service robots as a replacement for human employees. Davenport et al. (2019) introduced the uses of AI in marketing and opened up a plethora of research avenues on the ethical dimensions of AI in marketing.

Table 1
Descriptive statistics.

Panel A. Publication information Statistic	
Total publications (TP)	445
Total cited publications (TCP)	371
Total sources (TS)	246
Number of active years (NAY)	30
Productivity per active year (PAY)	11.17 %
Panel B. Citation information Results	
Total citations (TC)	14,277
Average citations per publication (TC/TP)	32.08
Panel C. Authorship information	
Number of contributing authors (including repetition) (NCA)	1191
Number of unique authors (excluding repetition) (NUA)	1084
Authors of single-authored publications (ASA)	107
Authors of co-authored articles (ACA)	977
Single-authored publications (SA)	112
Co-authored publications (CA)	1079
Collaboration index (CI = NCA – TP ÷ TP)	1.68
Panel D: Document information	
Review	30
Article (empirical)	415
Keywords	1638
References	27,816

Fig. 2. Publication trend.

Table 2
Most influential sources, authors and publications.

Most Influential Journal	TC	H-index	TP	C/Y
MIS Quarterly	1879	1	1	104.39
Journal of Business Ethics	1638	22	34	52.84
Journal of Service Management	1034	4	6	147.17
International Journal of Information Management	1032	2	2	258.00
Journal of the Academy of Marketing Science	845	3	4	35.21
Tourism Management	452	2	2	16.14
Journal of Business Research	379	1	1	21.06
Most Influential Publications	**Author**	**Year**	**TC**	**C/Y**
Understanding and mitigating uncertainty in online exchange relationships	Pavlou et al.	2007	1879	104.28
Brave new world: service robots in the frontline	Wirtz et al.	2018	924	132.00
How artificial intelligence will change the future of marketing	Davenport et al.	2020	683	136.60
Ethical Implications and Accountability of Algorithms	Martin	2019	218	36.33
Digital transformation: Five recommendations for the digitally conscious firm	Saarikko et al.	2020	154	31.60
How can trust drive forward user acceptance of the technology?	Adnan et al.	2018	146	20.86
Most Influential Authors	**NP**	**TC**	**PY**	**C/Y**
Wirtz	6	1688	2018	214.14
Kunz WH	5	1274	2018	182.00
Kopalle PK	4	153	2021	38.25
Dwivedi Y K	4	1057	2021	264.25

Some of the most influential authors are Wirtz (TC 1688), followed by Kunz (TC 1274), Paluch (TC 1232), and Dwivedi (TC 1057). Amongst these, Wirtz and Kunz worked in the area of service robots. While research in Western countries, such as the United States, United Kingdom, Germany and Sweden, is high, Wirtz (1688), Sharma (TC 16), Zhang (TC 9), and Kim (106) are authors from Eastern countries like Singapore, India, Korea and China, contributing to this area, suggesting that this topic is actively studied in the Eastern region as well.

5. Theoretical lenses

Theories from various fields, presented in Table 3, have contributed to enriching knowledge in ethics and AI, indicating the multidisciplinary nature of the topic. In the Table, theories from psychology include expectancy-value theory and behavioral reasoning theory. The behavioral reasoning theory has been used to understand reasons (for and against) the adoption of AI-enabled robo services. Social exchange theory, social perception theory, social presence theory, principal-agent theory, and actor-network theory have been used in sociology. Notably, principal-agent theory has been used in online transactions and exchanges. It helps to understand the information asymmetry between sellers and buyers in such an environment. This theory helps to explain the reasons for the uncertainty concerns the consumers face and,

Table 3
Theoretical foundations of ethics in AI for marketing.

Theory	Origin
Psychology	
Expectancy-Value Theory	Vroom (1964)
Behavioral Reasoning Theory	Westaby (2005)
Sociology	
Social Exchange Theory	Emerson (1976)
Social Presence Theory	Short et al. (1976)
Agency Theory	Eisenhardt (1989)
Social Perception Theory	Fiske et al. (2007)
Actor-Network Theory (Ant)	Latour (2005)
Marketing	
Value Theory	Schwartz (2012)
Brand Congruency Theory	Aaker (1999); Sirgy and Global (1982)
Information Technology	
Technology Acceptance Model	Davis (1989)
Media Affinity Theory	Perse (1986); Rubin (1981)
Uncanny Valley Theory	Mori et al. (2012)
Coolness Theory	Sundar et al. (2014)
Posthumanism	Nath and Manna (2023)

therefore, could be a prospective lens through which to understand the ethical challenges and uncertainty concerns of consumers in dealing with AI-enabled agents.

Marketing domain theories such as brand congruency theory and value theory have been used to understand the impact of customer brand congruency on user satisfaction with the mediating effects of ethical concerns. Brand congruence theory posits that consumers connect more positively with brands that reflect their self-concept and values (Aaker, 1999). On the other hand, value theory by Schwartz (2012) identifies and categorizes basic human values that are fundamental to understanding individual behaviour and societal interactions. These ten values include self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition, benevolence, and universalism (Schwartz, 2012). The theories in information technology, e.g., the technology acceptance model, media affinity theory, and uncanny valley theory, have been used to understand the intent of adoption and usage. The oldest theory on the list was in 1964 from the psychology area, and the most recent is from 2023 from the information technology area. These theories help in understanding human behavior, consumer preference, factors that are key motivators in the acceptance of technology, and the role of ethical concerns on the part of consumers.

In the future, integrating theories across disciplines can help researchers strengthen a deeper understanding of ethics in AI in marketing. Additionally, theories such as Hunt and Vitell's (1986) model of marketing ethics and service-dominant (S-D) Logic (Vargo & Lusch, 2008) warrant qualitative and quantitative exploration in the area of marketing ethics in AI (Ferrell & Ferrell, 2021).

6. Thematic and content analysis of keyword network analysis

6.1. Thematic clusters (Bibliographic coupling)

Further, we conducted bibliographic coupling as an alternative method to analyze bibliometric data and complement the findings from keyword co-occurrence analysis (Goodell et al., 2021). While keyword co-occurrence analysis relies on keywords, bibliographic coupling examines document references to identify common themes among publications by grouping documents that have similar referencing patterns (Donthu et al., 2021). This helps create themes for the topic (Lim et al., 2022). Table 4 and Fig. 3 for this section are given in Appendix present six clusters derived from bibliographic coupling.

6.1.1. Cluster 1 importance of ethics in modern marketing

This cluster highlights that ethics is a discipline in which virtues of right, wrong, good, and evil are covered. Marketing ethics is a subspecialization of business ethics. It examines the morality of a business (Brinkmann, 2002), which deals with how a company conducts its business and whether morals guide the company and has adopted fair and honest ways to conduct business (Blodgett et al., 2001). Culture influences ethical decision-making in individuals, leading to different behaviours. People from individualistic cultures may prioritise personal interests, and people from collectivist cultures may emphasize group

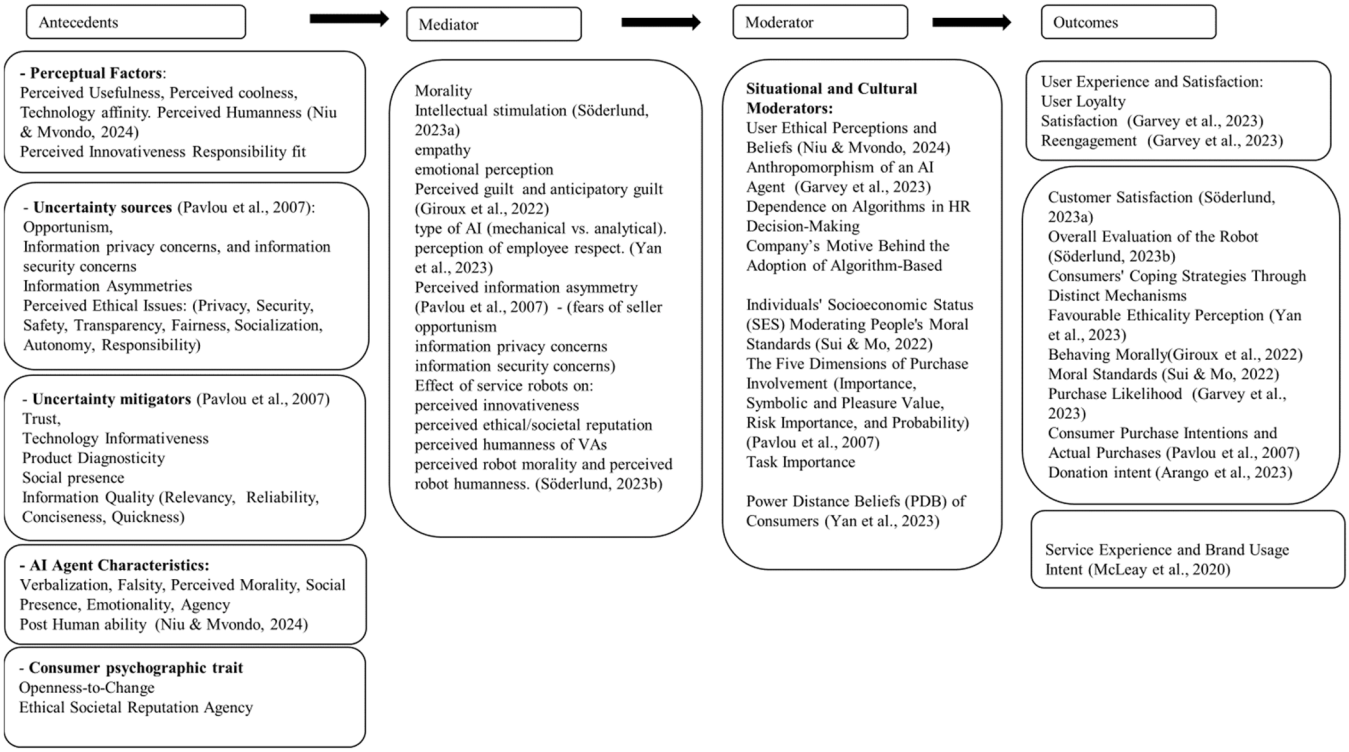

Fig. 3. Conceptual framework.

and organizational interests (Lu et al., 1999). Ethics is crucial for an organization to build and preserve its reputation. Ethical behavior enhances the trust and confidence of stakeholders. It protects the organization from the negative consequences of ethical lapses, such as damage to its reputation, legal liabilities, and potential financial losses. By adhering to ethical standards, companies demonstrate their commitment to integrity, transparency, and accountability, which can ultimately contribute to their long-term success. Companies are urged to establish ethical guidelines or principles to encourage ethical behavior in all business activities (McKinney et al., 2010). Furthermore, when employees are customer-oriented, they resort to less unethical behavior than sales-oriented agents (Howe et al., 1994). Ethical incentives encourage organizations and employees to act ethically (Kurland, 1994). Employees also have their values while they align and comply with organizational values. Thus, ethics operate at multiple interconnected levels: country or society, firm or organization, and individual level. The Hunt and Vittel model (1986) is a popular model that guides marketers for ethical behavior and has been used in contexts such as marketing channel relationships (Vermillion et al., 2002). This model has two types of evaluations: deontological, which deals with right or wrong, and ethical or unethical evaluations, based on norms related to honesty, trust, safety, privacy, and more. Teleological evaluations that look at the consequences for stakeholders involved. Overall, this cluster highlights ethics as important for trust, reputation, and long-term success of business, including in the marketing domain.

6.1.2. Cluster 2: Navigating trust and morality in AI marketing practices

This cluster focuses on trust and morality's role in ethics in AI in marketing.

Przegalinska et al. (2019) and Adnan et al. (2018) have emphasized trust as a critical element of ethics and important in influencing user acceptance of the technology. Przegalinska et al. (2019) have used text mining to uncover transparency, honesty, integrity, control, and benevolence as dimensions of trust in the case of bots. Munoko et al. (2020) found that lack of transparency could affect trust and confidence in AI systems, which is important for users when adopting AI systems. Information sharing and explanations could help overcome transparency issues and build trust. However, sharing information could give rise to privacy issues; hence, these concerns need further attention. Rymarczyk, (2020) and Jones (2018) highlighted that modern technologies such as AI are marked by ethical concerns like privacy issues and cyber security, and Du and Xie, (2021) in their article find that these concerns affect users' trust. Therefore, according to Kopalle et al. (2022), to harness the potential of AI, companies need to address concerns regarding privacy, data sharing, and consumer trust. More research is required to find out how to handle consumer fear, scepticism, and mistrust surrounding AI.

Besides, Giroux et al. (2022) found that the ethical considerations are not limited to the vulnerability of consumers; through three experiments, they have examined that consumers could display lower moral intentions towards technologies instead. Their research emphasizes the humanness of technology that can enhance consumer's ethical behavior. Similar results were found in an experiment by Sui et al. (2022) for smart devices, where they found low moral standards in consumers with low socioeconomic status. These growing ethical concerns in AI are associated with big data and algorithms. Businesses must handle these ethical concerns, and some authors have provided solutions by paying attention to trust (Hentzen et al., 2022), a critical element of ethics in AI. To increase trust, it is necessary to understand the dimensions of trust. Morality is another aspect that emerges as a challenge. Two aspects of morality emerge in this cluster: the company potentially taking advantage of the consumer, and the other is where consumers can behave immorally while interacting with AI. Given the potential solutions AI can provide to society, firms, and individuals, it is essential to address ethical concerns.

6.1.3. Cluster 3: Information asymmetry and ethical dilemmas in digital marketing

Training machines to think like humans is a task that is delegated to AI with the help of algorithms. Training involves using large amounts of customer interaction data. It is an iterative process, often referred to as the AI flywheel effect, that helps improve the algorithm's efficiency over time in the task of understanding and servicing customers (Gurkan & de Véricourt, 2022).

Steinle et al. (2014) and Pavlou et al. (2007) have used principal-agent theory as an example of information imbalances. This information asymmetry, both before and after the transaction between parties, could lead to moral hazard (Steinle et al., 2014). When this information disparity is coupled with hidden action and hidden information and is further combined with predictive analysis, it provides an added advantage to the AI system to understand the patterns of consumer behavior, which could be used for an ulterior motive of taking advantage of the consumer (Murtarelli et al., 2021). Furthermore, along with information asymmetries, other concerns, such as privacy issues and fears of seller opportunism, cause uncertainty about the transaction for the consumers. To mitigate the consumer's information asymmetry and uncertainty concerns, it is important to enhance trust, information transparency, and social presence (Pavlou et al., 2007). Varsha (2023) has addressed the issue related to bias, which stems from input data, and this bias is reflected in the outcome given by AI applications.

6.1.4. Cluster 4: Implications of marketing ethics in AI

According to Vlačić (2021), marketing AI is the use of artificial agents that involves creating systems that, based on the information they possess about consumers, competitors, and the focal company, suggest and/or execute marketing actions like segmentation, targeting, and positioning, to attain the optimal marketing outcomes. Davenport et al. (2019) have predicted the extensive use of AI in marketing in areas such as sales as an assistant to a salesperson in retail, where they can predict customers' preferences and help match products based on these preferences. Guha et al. (2021) have urged researchers to study the ethical issues and challenges of marketing across cultures. Campbell (2020) has explained that AI used in marketing is enabled with algorithms to perform routine tasks efficiently with clear rules, reducing the need for constant human intervention. Machine learning algorithms are used in content filtering on social networks, and web searches are valuable tools for analysing large datasets, helping companies improve efficiencies for the company. Furthermore, advancing AI technology to generative AI (GenAI) allows the use of the data gathered to personalize further and target messages to consumers at the right time. However, like AI, GenAI uses large amounts of data, and it becomes imperative to understand who will have control when GenAI interacts with customers (Dwivedi et al., 2023). Dwivedi et al. (2021) have expressed that AI can be leveraged to engender customer engagement behavior. The data gathered from social media could help the company understand its customers and improve the experience. However, misuse of this data could be the greatest ethical concern and lead to consumer distrust. As most AI technology depends on data, it is important to understand the governance issues related to the use of data (Fernández-Rovira et al., 2021). Saarikko et al. (2020) recommend that companies collect and use consumer data responsibly. Even after companies have received consent from consumers, the use of data should be strictly for business purposes, and companies should refrain from collecting excessive and unnecessary data. This approach helps maintain trust and ensures ethical data practices.

6.1.5. Cluster 5: Ethical dilemmas in algorithmic decision-making in marketing

In this cluster, Newell et al. (2015) have highlighted that while AI algorithms seem beneficial to consumers and businesses, it is often argued that there are potential drawbacks, especially from society's perspective. Data-driven decision-making, often referred to as

algorithmic decision-making, gathers data from devices that monitor the minutest activities of the users. The data is characterized by 3 Vs-vastness, variety, and velocity. This data aims to be more specific in predicting consumer behavior, enabling companies to target communication and personalize products and offerings more effectively. Ethical issues regarding algorithmic pricing could pose ethical concerns as the data is used to categorize and quote different prices depending on customer conditions and information (Seele et al., 2021). Although AI systems can make decisions based on algorithms, they are not trained to make judgments; hence, it is important to understand these ethical concerns and assign responsibility to firms when developing algorithms (Martin, 2019). Furthermore, algorithms can recommend solutions or products to consumers based on their history. Lee (2020) presents a framework to enhance access to finance (financial inclusion). The author argues that AI in finance should adhere to regulatory objectives such as consumer protection, market integrity, and market safety. While managers feel that AI helps in the digital transformation of financial organizations and helps in financial inclusion, it is important to recognize challenges and risks, such as privacy issues in gathering data. Basukie et al. (2020) conducted semi-structured interviews with four stakeholders of a ride-sharing company in Indonesia to shed light on data governance and management. The study reveals that ethical issues are the main concerns, and the existence of a 'black box' in ride-sharing companies is an immense threat. Breidbach et al. (2020) have used the midrange theory approach to outline thirteen ethical challenges of algorithmic decision-making, which have been classified into antecedents: concealed purpose, coercion, data collection, data quality, multiple data beneficiaries, actions, exploitation, algorithmic decision making, predatory data culture, data sharing, and aftermath.

Overall, the main issues with algorithmic decision-making are lack of reliability, lack of accountability, and lack of human involvement and responsible AI could be used as a means to mitigate bias. Dogru et al. (2023) have suggested that GenAI should consider methods to reduce biases.

6.1.6. Cluster 6: Ethical challenges in AI-driven services marketing

The top articles in the cluster are Wirtz et al. (2018), with 924 citations, followed by Tuomi et al. (2021), McLeay et al. (2021), Belk (2021) and Wirtz et al. (2018). The cluster highlights the ethical challenges for AI-driven service marketing firms. In their papers, authors strongly advocated the role AI would play in service, such as frontline service robots. Service robots are likely to outperform employees as they can provide round-the-clock service and do not have moods despite the fact, they can mimic emotions. However, authors feel that service robots may not become a competitive advantage as, over the years, they will become a rudimentary requirement in service. The authors have proposed a service robot acceptance (sRAM) framework that is built on the technology acceptance model (TAM) (Davis, 1989) to incorporate the social-emotional element and trust and rapport from role theory (Solomon et al., 1985). Moreover, authors have warned about the ethical challenges such as privacy issues, dehumanization, social deprivation, and inequality due to affordability. Lu et al. (2020) have reiterated key ethical issues in the area of service robots, as stated by Wirtz et al. (2018), along with an emphasis on the corporate digital responsibility (CDR) strategy. CDR refers to the use of technology and data in a responsible manner. Additionally, Toumi et al. (2021) have found through qualitative analysis that the growth of AI in the service and hospitality sector has sparked concerns about technology displacing humans. This author has suggested that companies can invest in the skill development of their employees. According to McLeay et al. (2021), robots can play two roles: augmentation by helping human employees and substitution by replacing human employees for routine tasks. Service robots are referred to as frontline service robots and are used in two contexts: one asset builder delivers physical products and service provider in hotels, airlines, restaurants, etc. Although introducing service robots is perceived as innovation, consumers feel that replacing employees with robots could lead to unemployment and hardship and are not likely seen as socially responsible. McLeay et al. (2021) have examined the positive and negative consequences of an online experiment and found that consumers have ethical concerns when substituting employees with robots, but these concerns are weaker in conditions where the robots are augmenting employees. In their article, Cain et al. (2019) highlighted that the use of robots in service can reduce the potential legal burden associated with human employees. However, issues arise about whether robots should be considered legal entities responsible for their actions. Further, the data stored by robots can also raise privacy issues. According to Fusté-Forné et al. (2021), in future, it is important to focus on the idea of "co-creation" to improve service experiences in hospitality and tourism. This involves considering responsibility and inclusiveness and working together on designing and implementing human-robot collaborations. Söderlund et al., (2021) have found that morality significantly influences perceived humanness in virtual agents service delivery and mediates the relationship between morality and customer satisfaction. Hu et al. (2023), through their experiment, found that the "watching eye" effect, the perception of a consumer that he is watched, impacts both genders but is more pronounced in the case of women.

6.2. Conceptual framework for AI and marketing ethics

The science mapping, and bibliographic coupling, help identify major themes in the topic. A content analysis of articles in the field was performed to offer further insight beyond these major themes; this content analysis aims to develop a conceptual framework (Fig. 4) that provides a more detailed understanding of the subject matter by studying the antecedents, mediators, moderators, and outcomes (Lim et al., 2022). To conduct the content analysis, we systematically extracted antecedents, mediators, moderators, and outcomes from empirical articles in the database. This process involved manual extraction and using MS Excel for organization and categorization. We aimed to develop a comprehensive framework that lays the groundwork for further exploration and development in the field. However, we could not include some factors that were not empirically tested. Hence, this framework can be enhanced with new insights and perspectives.

Antecedents are preceding factors or causes that affect outcomes. Antecedents can impact the outcomes through mediators or moderators. In the current area of work, we identified key antecedents categorized as perceptual factors such as Perceived Usefulness, Perceived coolness, Technology affinity (Niu and Mvondo, 2024), Perceived Humanness, Perceived Innovativeness-Responsibility Fit. These factors are positive motivators for consumers to adopt and use the technology. Consumer and AI interactions are marked by spatial and temporal separations similar to online exchanges, and these could give rise to uncertainty for consumers regarding seller quality and/or product or service quality. These raise ethical concerns and are barriers to adoption and technology usage. Uncertainty sources comprise perceived information asymmetry, fears of seller opportunism, information privacy concerns, information security concerns, information asymmetries, and perceived ethical issues (privacy, security, safety, transparency, fairness, socialization, autonomy, responsibility). Pavlou et al. (2007) found that uncertainty mitigators help reduce uncertainty and promote intention to use. In other words, these mitigators reduce ethical concerns and include Trust, Technology Informativeness, Product Diagnosticity, and social presence.

Additionally, Information quality is an important antecedent, with its dimensions rooted in the Information System Success (ISS) model developed by DeLone and McLean (1992). It refers to how well information fulfils its intended purpose and meets the expectations of its users. The higher the information quality, the higher the trust, influencing satisfaction, loyalty, and usage intent. The information quality dimensions include relevancy, reliability, conciseness, and quickness. Perceived usefulness is from the TAM model and refers to the extent to which individuals believe that using a particular system or technology

would improve or enhance their job performance. Posthuman ability is a fairly new antecedent and refers to the capability of a system to perform better than humans (Niu and Mvondo, 2024). The next category is AI agent characteristics such as verbalization (explainability of AI's method to arrive at a solution or decision), falsity (synthetic content), perceived morality, and humanness.

Mediators are intervening variables that help explain the relationship between antecedents and outcomes. The content analysis revealed that the inferred intentions of the offering agent (Garvey et al., 2023), understandability, morality, and intellectual stimulation (Söderlund, 2023a) are the mediators. Also, empathy, anticipatory guilt, and the perception of employee respect concerning the type of AI used (Yan et al., 2023). In their research, they found that the humanness of AI influences consumers' moral behavior through guilt. In other words, when interacting with a less human-like AI, consumers experienced less guilt while behaving immorally. Additionally, perceived guilt (Giroux et al., 2022), understandability (Söderlund, 2023a), Morality (Söderlund, 2023a), Intellectual stimulation (Söderlund, 2023a), empathy, anticipatory guilt, emotion perception type of AI (mechanical vs analytical), perception of employee respect. (Yan et al., 2023)

Moderators are categorized as situational and cultural moderators such as User Ethical Perceptions and Beliefs (Niu and Mvondo, 2024), Anthropomorphism of an AI Agent (Garvey et al., 2023), Dependence on Algorithms in HR Decision-Making, Company's Motive Behind the Adoption of Algorithm-Based, HR Decision-Making, Individuals' Socio-economic Status (SES) Moderating People's Moral Standards (Sui and Mo, 2022), The Five Dimensions of Purchase Involvement (Importance, Symbolic and Pleasure Value, Risk Importance, and Probability) (Pavlou et al., 2007), Task Importance, Power Distance Beliefs (PDB) of Consumers (Yan et al., 2023)

Outcomes: Outcomes are the consequences that result from antecedents either directly or through mediators and/ or moderators. The content analysis revealed the outcomes, categorized into Consumer Experience and Satisfaction: consumer satisfaction and purchase likelihood (Garvey et al., 2023). Consumer loyalty: Reengagement (Garvey et al., 2023) Customer Satisfaction (Söderlund, 2023a) Overall Evaluation of the Robot (Söderlund, 2023b) Consumers' Coping Strategies Through Distinct Mechanisms. Favorable Ethicality Perception (Yan et al., 2023), Behaving Morally (Giroux et al., 2022), Moral Standards (Sui and Mo, 2022), Consumer Purchase Intentions and Actual Purchases (Pavlou et al., 2007). Donation Intent (Arango et al., 2023), Service Experience and Brand Usage Intent. Employee Attitudes and Behaviour: Employee Resistance, Moral Hazard AI, Adoption of technology (Morosan and Dursun-Cengizci, 2024), Data sharing (Piotrowski, 2023).

7. Key takeaways

Through bibliometric and systematic this study conducts a comprehensive systematic review of 445 documents covering 30 years (1994:2024). Business ethics and marketing ethics are evolving with the use of modern technologies like AI. The paper provides a comprehensive understanding of the ethics of AI in marketing

7.1. Theoretical contributions and implications

`The paper provides a comprehensive understanding of the ethics of AI in marketing. Performance analysis of 445 articles show that interest in this topic is gaining importance, which can be inferred from the publication trend, which has gained momentum in recent years, beginning in 2018. This trend can be attributed to the growth of modern technology, such as the Internet of Things, big data, and machine learning. AI's growth and wide usage in various fields, such as marketing, e-commerce, finance, healthcare, etc., have contributed to the growing interest among research scholars (RQ1).

The current study offers timely and valuable insights into the evolving area of ethics in AI in marketing by conducting science mapping and thematic analysis. The thematic analysis reveals the themes and clusters through keyword co-occurrence and bibliographic coupling (RQ2). Clusters derived from bibliographic coupling help in gaining an understanding of ethics in AI in marketing.

Cluster 1 explains Business ethics are vital for fostering a healthy business environment, protecting consumer interests, and benefiting society (Blodgett et al., 2001). Marketing ethics, a subset of business ethics, oversees product, pricing, promotion, and other marketing aspects impacting consumers and society (Brinkmann, 2002). As modern technologies emerge, it's essential for ethical knowledge to adapt to new dimensions of business (Dwivedi et al., 2023). Classic frameworks such as Hunt & Vitell's model of marketing ethics have not been empirically studied concerning AI in marketing, and this could be an important future research area

Cluster 2 highlights that technology can shape human behavior, and therefore, technology cannot be devoid of ethics as understood previously. The invisibility and ubiquitousness of AI bring comfort and benefits to consumers beyond imagination. AI holds vast potential to tackle human limits and augment their capacities. AI in marketing and customer service is an example of such conditions where hybrid systems are widely used, but ethical issues pose the biggest threat to the collaboration of humans and AI technology (Jones, 2018). Privacy issues, cyber security, and data breaches lead to ethical concerns among consumers (Rymarczyk, 2020).Trust plays a key role in mitigating ethical concerns on the consumer level. Honesty, integrity, transparency, and control are dimensions of trust (Przegalinska et al., 2019). Furthermore, researchers have suggested an ethical dimension needs to be embedded in AI technology. The ethical concerns need attention and a regulatory hand. These issues have been recognized and discussed in the World Economic Forum, Davos 2024 (Daugherty, 2024). Discussions and measures are taking place globally to exploit the potential benefits of AI for the benefit of humankind and society, General Data Protection Regulation, GDPR currently governs privacy and security law initially developed in the European Union and has become a model for most nations (Méndez-Suárez et al., 2023). The European Commission's Ethics Guidelines have suggest seven key requirements for Trustworthy AI and emphasize the importance of ensuring that AI systems are lawful, ethical, and robust (*European Commission*, 2019).

Cluster 3 underscores the importance of data for AI systems to mimic human understanding and enhance personalization, engagement, and loyalty. In certain scenarios, the AI systems and applications depend on the firm's historical data and access data from other sources to provide accurate and targeted personalized solutions. However, leveraging data from sources like social media may create information imbalances, giving companies an unfair advantage. Further, data misuse could lead to overcharging, withholding information, or nudging consumers, raising ethical concerns about information asymmetry. The information asymmetry creates an uncertain environment for consumers. Therefore, companies need systems and practices that can handle information imbalances. Previously, scholars have proposed methods to address information imbalance situations by improving the quality of information (Pavlou et al., 2007). Besides the understandability or explicability of AI, explainable AI could inform consumers about the methods of data use and methods of arriving at a solution or decisions by the AI applications; these are mechanisms to keep consumers informed and allow more transparency in the interaction (Söderlund, 2023a). However, these preliminary discussions require more empirical research to understand the cause and effect of information sharing with consumers. Furthermore, while academia is developing an understanding, regulatory practices are also taking into cognizance the growing role of AI in consumers' daily lives and the ethical issues; therefore, it is important to see this area in light of the evolving regulatory landscape.

Cluster 4 The use of AI in marketing helps firms and consumers to connect and execute transactions remotely. However, the key ethical issues in marketing stem from data protection and privacy concerns.

Cluster 5 focuses on algorithmic decision-making, driven by AI algorithms, and its benefits to consumers and businesses while shedding light on significant societal concerns. These algorithms rely on vast and varied data collected from user activities, aiming to predict consumer behavior and target offerings effectively. However, this approach can inadvertently discriminate against consumers whose consumption patterns don't align with the product. Therefore, researchers have suggested that these activities could be regulated with the help of regulatory bodies in some areas, such as finance (Lee, 2020). On the other hand, Mogaji et al. (2022) found that while AI aids digital transformation and financial inclusion, challenges such as privacy issues in data collection must be addressed. Hence, it is unclear whether AI and the algorithms could create disparity or bring in inclusion; more research in these areas could be beneficial in understanding how the use of algorithms could help to engender inclusivity and reduce bias. Some researchers have proposed that bias could be reduced with human monitoring and better-quality data (Martin, 2019). But if bias already existed in human decision-making and they were to control or monitor algorithmic decision-making, how could AI help in ruling out bias and discrimination? If AI has to be employed for societal good, it is imperative to address these key issues.

Cluster 6 focusses on the area of service and the growing importance of AI-powered robots, chatbots, and other such tools to assist consumers (Pitardi et al., 2022). However, ethical issues are one of the barriers to the adoption of AI in service. Robots can replace human employees, which could be seen as causing unemployment and giving rise to ethical concerns (Wirtz et al., 2018). However, this has to be seen in light of labour shortages in certain industries, such as the healthcare and service industries (Tuomi et al., 2021). Ethical concerns stem from data and privacy issues. Previous literature has suggested corporate digital responsibility to ensure data collection and use alignment with ethical principles (Kunz & Wirtz, 2023; Wirtz et al., 2023).

The emerging themes are fertile areas for future research and guide scholars about the field's progression.

The conceptual framework presents a list of antecedents that influence AI technology usage. The paper contributes two-fold to ethics and AI by uncovering themes on Business and marketing ethics, Ethics in AI and the role of trust, information asymmetry, and ethics, AI in marketing, Issues in algorithmic decision-making, and AI in service.

Through content analysis, the study has identified theories from different disciplines, such as psychology, sociology, information technology, and marketing, applied in ethics and AI for RO3. Ethical issues pose a barrier to adopting AI technology; therefore, information technology and psychology theories dominate in understanding consumer perception and intention to adopt AI. As this topic evolves, more theories could be used to understand ethics in AI.

7.2. Managerial implications

The study provides valuable insights for companies. Ethics is well established in building a company's image and reputation. The current study serves as a guiding framework for managers, highlighting key variables involved when consumers choose to adopt technology. Understanding why customers use technology and addressing ethical concerns is crucial for effective interaction with a broad customer base. Since marketing activities are customer-centric, comprehending their motivations and worries aids in designing technology.

The conceptual framework identifies perceptual factors, such as AI agent characteristics, and acknowledges that consumers often have uncertainties leading to ethical concerns. The trust serves as a mitigator for these uncertainties, potentially reducing concerns. Additionally, the level of human likeness in technology influences consumer behavior, with more human-like technology likely resulting in consumers behaving more ethically.

7.3. Future research directions

Accordingly, we list the future research agenda derived from the clusters analysis.

FRQ1: What are the Ethical implications of AI in marketing for consumers and society using the Hunt and Vitell model of marketing ethics?
FRQ2 How can Responsible AI address RRI concerns when employing AI-driven marketing practices?
FRQ3 How can AI systems be designed to balance the benefits of data-driven personalization with the need to mitigate information imbalances and ethical concerns?

FQR 4 Can there be an interdisciplinary collaboration between AI developers, ethicists, practitioners, and scholars to design AI systems that prioritize fairness, transparency, and accountability in decision-making processes?

8. Conclusion

AI-driven marketing has the potential to connect, understand, and interact with customers effectively and efficiently, which proves beneficial for companies and customers. However, alongside the benefits of this technology, the dark side is emerging with ethical issues such as privacy, bias, discrimination, and information asymmetry, which could be harmful to consumers and companies in the long term, bringing about a barrier in harnessing the benefits of AI technology. Therefore, it is imperative to understand the ethical issues and implications. To fill this research gap, the present study has conducted a comprehensive performance analysis that provides structure and development of the research domain of AI and marketing ethics. Science mapping involving conceptual and intellectual structure analyses and cooccurrence and content analyses was employed to uncover the themes. A total of 445 articles published from 1994 to 2024 publications from the Scopus database were considered in this study. Six clusters were derived from bibliographic coupling. Further, content analysis was used to uncover the theories and a conceptual framework comprehensively listing antecedents, mediators, moderators, and outcome variables. The study meticulously analysed emerging themes within the literature, scrutinizing underlying patterns, connections, and implications. Through this process, the study aimed to uncover novel insights and areas warranting further investigation, thereby contributing to advancing knowledge in the field. The findings of this study not only present a holistic view of the existing literature but also outline future research agendas in various aspects dealing with AI and marketing ethics, and offer insights for both scholars and practitioners in marketing.

CRediT authorship contribution statement

Harinder Hari: Writing – original draft, Visualization, Methodology, Investigation, Data curation. **Arun Sharma:** Supervision, Project administration, Conceptualization. **Sanjeev Verma:** Writing – review & editing, Supervision, Project administration, Methodology, Conceptualization. **Rijul Chaturvedi:** Writing – review & editing, Validation, Software, Data curation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix

Table 4
Thematic clustering using bibliographic coupling from.

Cluster 1	Blodgett (2001), Lu (1999), Howe (1994), McKinney (2010), Kurland (1994)
Cluster 2	Adnan (2018), Przegalinska (2019), Munoko et al. (2020), Baldini et al. (2018), Du & Xie (2021)
Cluster 3	Pavlou et al. (2007), Carl (2006), Hofmann (2013), Belk (2021), Murtarelli et al. (2021)
Cluster 4	Davenport et al. (2019), Y.K. Dwivedi et al. (2021), Dwivedi et al. (2023), Saarikko et al. (2020), Vlačić et al. (2021)
Cluster 5	Newell (2015), Martin (2019), Seele (2021), Basukie (2020), Breidbach et al. (2020), Lee (2020)
Cluster 6	Wirtz et al. (2018), Tuomi et al. (2021), McLeay et al. (2021), Belk (2021), Cain (2019)

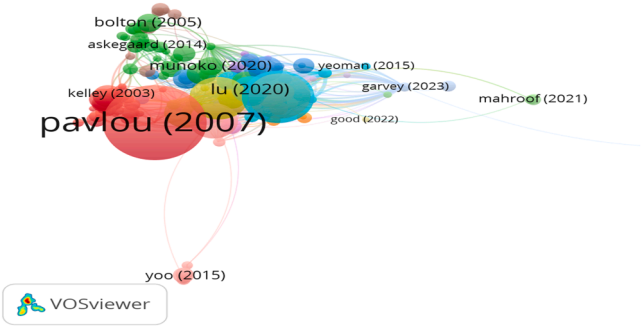

Fig. 4. Bibliographic coupling map.

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