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Navigating the Intrusiveness Paradox: A Comprehensive Literature Review on AI Marketing and Consumer Perception

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Abstract
The integration of Artificial Intelligence (AI) in marketing, while enhancing customization and interaction, has escalated concerns about intrusiveness impacting consumer privacy and satisfaction. This systematic literature review utilizes the TCCM framework to dissect the complexities of intrusiveness in AI marketing. Analysing 71 peer-reviewed articles from 1996 to June 2024, this review elucidates how AI's pervasive reach into consumers' private lives shapes perceptions of intrusiveness and impacts consumer behaviour. Our findings reveal that despite robust theoretical underpinnings from psychological reactance to privacy calculus, practical implementations vary significantly, reflecting diverse consumer interactions and technological advancements. The review highlights a critical need to deepen the theoretical frameworks (theory), explore underrepresented consumer-initiated interactions and demographic variances (context), address the intricate web of antecedents and consequences of intrusiveness (characteristics), and advocate for the use of mixed-method approaches to capture nuanced consumer responses (methodology). The paper concludes by presenting a comprehensive research agenda aimed at advancing the understanding of AI marketing's intrusiveness, suggesting that future research should integrate more granular consumer data and adopt innovative AI technologies to refine marketing strategies, thus mitigating the potential intrusiveness experienced by consumers.

Keywords: Intrusiveness, Artificial intelligence, Consumer behavior, Consumer perception, Privacy concern, TCCM Framework

INTRODUCTION
Perceived intrusiveness is a critical factor in AI marketing. As AI-powered technologies increasingly collect and analyze personal data, consumer concerns about privacy and data usage have risen (Akdim and Casaló 2023; Toti and Steils 2024). In everyday interactions, consumers frequently perceive AI-driven marketing technologies, such as voice assistants that suggest products based on overheard conversations, as overly intrusive. This high relevance of marketing content to personal interests may be seen as an invasion of privacy, disrupting cognitive processes and task execution (Kang and Shao 2023; Riedel, Weeks, and Beatson 2024). Understanding how consumers perceive the intrusiveness of AI marketing tactics is essential for marketers to navigate ethical boundaries, maintain consumer trust, and ensure effective marketing campaigns.

Intrusive AI marketing tactics can have significant consequences. Studies have shown that AI-driven marketing communications, particularly those leveraging private data, can be perceived as intrusive, leading to negative consumer attitudes, diminished well-being, and negative feedback (Ghanbarpour, Sahabeh, and Gustafsson 2022; Henkens, Verleye, and Larivière 2021; Dong et al. 2024). This can backfire on companies, resulting in advertising avoidance, negative brand attitudes, and resistance to smart products (Niu, Wang, and Liu 2021; Ghanbarpour, Sahabeh, and Gustafsson 2022; Chang et al. 2023).

The potential negative impacts of AI intrusiveness are increasingly being recognized by scholars. Van den Broeck, Zarouali, and Poels (2019) identify intrusiveness as a critical factor affecting the efficacy of chatbot advertising, while Benlian, Klumpe, and Hinz (2019) note its prevalence in smart products. This highlights the significance of intrusiveness as a major drawback in AI marketing, a theme that is gaining traction in academic research. However, studies on this subject remain fragmented and sparse across advertising and smart products, with its antecedents ranging from cognitive interference and privacy invasion to autonomy restriction, and its consequences equally diverse.

This paper seeks to consolidate the existing research by addressing several key questions:

RQ1: How is intrusiveness defined in the context of AI marketing?
RQ2: What theories, contexts, constructs, and methodologies currently exist?
RQ3: How can future research advance our understanding of intrusiveness in AI marketing?

By exploring these questions, this study aims to deepen the understanding of intrusiveness in AI marketing and to outline potential directions for future research. This effort is crucial for enabling researchers and practitioners to better grasp how intrusiveness influences consumer behavior and to guide the development of strategies that mitigate the adverse effects of AI marketing's intrusiveness. Following this introduction, the paper will present the review methodology, an overview of selected literature, a discussion of relevant theories, contexts, and methodologies, and conclude with proposals for future research along with theoretical and managerial implications.

2. DEFINITION

Overgoor et al. (2019, p. 157) defines marketing AI as "the development of artificial agents that, given the information they have about consumers, competitors, and the focal company, suggest and/or take marketing actions to achieve the best marketing outcome". AI is used to perform a variety of tasks including 1) analyzing complex customer data, market trends, and consumer behavior, 2) performing automated marketing processes and creating intelligent marketing content, and 3) increasing marketing agility and responsiveness to adapt to changing markets and consumers (Kumar, Ashraf, and Nadeem 2022). Common AI marketing practices include AI advertising, recommender systems, voice assistants, chatbots, AR, and more (Chintalapati and Pandey 2022).

Intrusiveness, a well-established concept, has gained new dimensions with the integration of AI in marketing, necessitating a redefined scope for our systematic review. Historically, intrusiveness was identified in the marketing sphere by Ha (1996) as the extent to which advertisements interrupt media content flow. This definition evolved with Li, Edwards, and Lee (2002) describing it as a psychological response that disrupts consumer's cognitive processes. Edwards, Li, and Lee (2002) expanded this by considering intrusiveness as perceptions of advertisement incongruity with personal goals and cognitive disruptions. During the period of traditional media, intrusiveness research was mainly focused on the field of advertising. Moreover, advertising is not intrusive in itself, but only when it interferes with the audience's media goals. With the development of big data and AI, in addition to the use of advertising for marketing, voice assistants, chatbots and AR are gradually being widely used in marketing. These marketing methods involve the use of personal information to deliver interest-related marketing content or involve invasion of privacy, consequently intrusiveness research is gradually expanding into other practices.

In particular, research on intrusiveness has gradually increased in the field of human-computer interaction. In this field, intrusiveness encompasses the perception of privacy breaches, including invasive data collection and retention practices by AI applications (Boeck et al. 2011; Puntoni et al. 2021). Additionally, the emergence of interactive robots has introduced 'relationship intrusiveness', where excessive robot interactions can diminish human connections (Chang et al. 2023).

In psychology, intrusiveness is seen as disrupting the balance between closeness and autonomy (Lavy et al. 2009). In marketing, the disruption of this balance comes from the fact that consumers are forced to explain the sharing of personal data with service providers, and this forced acceptance limits the autonomy of the consumer's decision to share information (Wottrich, van Reijmersdal, and Smit 2018).

Combining these insights across disciplines, we define AI marketing intrusiveness as the psychological perception among consumers that AI marketing encroaches upon their cognitive functions, invades their privacy or relationship, or restricts their autonomy. This definition aims to provide a holistic framework to assess the multifaceted impacts of AI marketing intrusiveness.

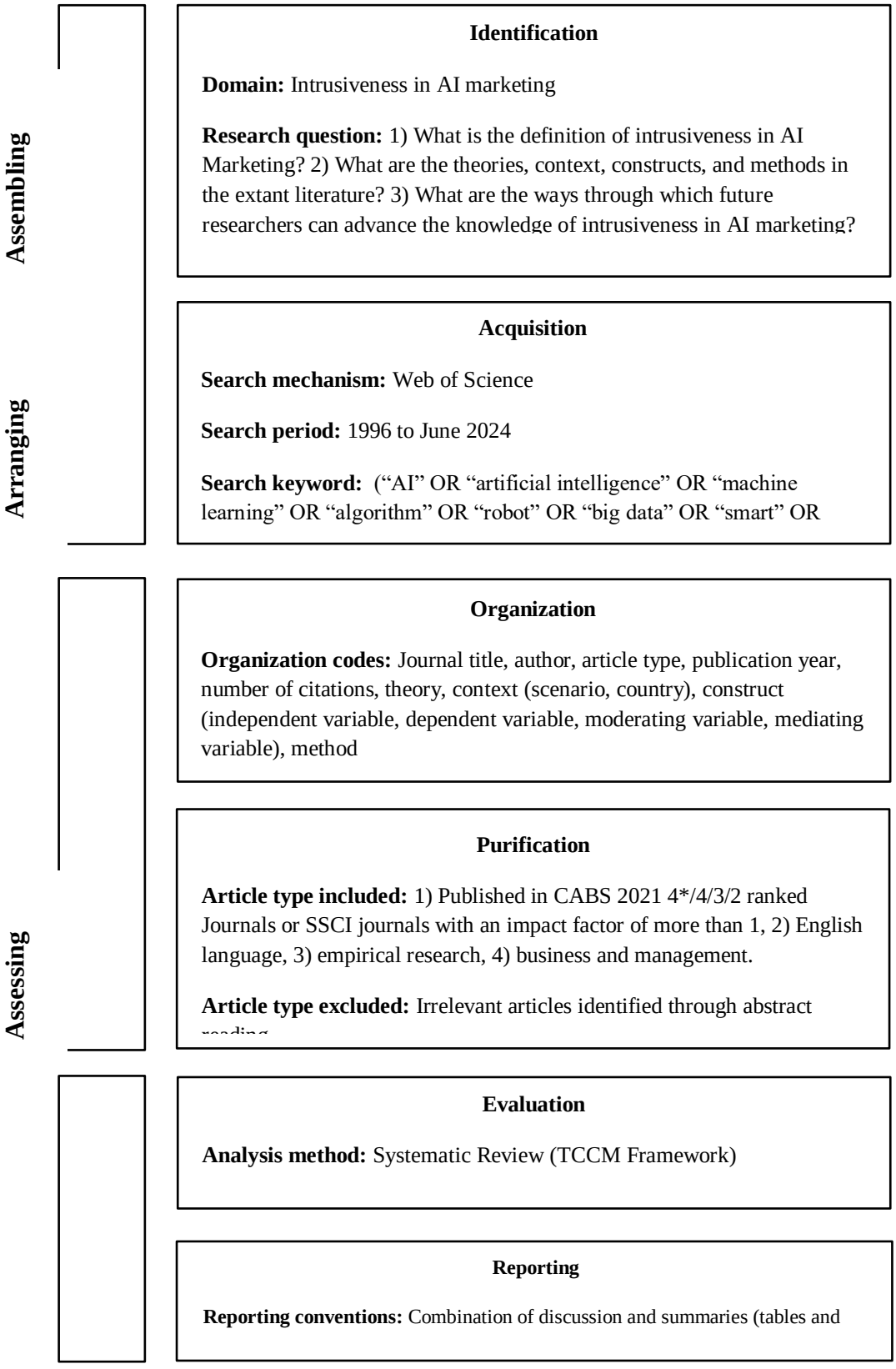
3. REVIEW METHODOLOGY

For an updated overview of existing research on intrusiveness in AI marketing, this review employs the Scientific Procedures and Rationales for Systematic Literature Review (SPAR-4-SLR) protocol (Paul et al. 2021) for searching, selecting, and evaluating publications. Such protocols explain why the review is being done, how it will be done, and how it will be evaluated (Moher et al. 2015). It applies a replicable, scientific and transparent procedure which aims to reduce bias via thorough literature searches (Vrontis and Christofi 2019). Figure 1 illustrates the application of the SPAR-4-SLR framework to our review.

Structured systematic literature reviews adhere to a strict scientific design based on explicit, pre-specified, and reproducible methods (Jebarajakirthy et al. 2021) thereby providing a reliable synthesis of the literature. Paul et al. (2021) recommend structuring a systematic literature review using established frameworks, as these frameworks can help authors to deliver

the highest level of clarity and coverage in their reviews. Among framework-based reviews, we adopted the theories, characteristics, contexts, methodology (TCCM) framework (Paul and Rosado-Serrano 2019). It may assist others in gaining a clear one-stop grasp of the breadth and scope of theories, contexts, characteristics, and methodologies necessary to justify and conduct empirical research, resulting in a greater effect in the field (Paul et al. 2021).

Figure 1. SPAR-4-SLR framework for systematic review (adapted from Paul et al., 2021)



3.1 Assembling

The assembling phase involves collecting peer-reviewed journal articles focused on intrusiveness in AI marketing. We excluded sources like book chapters and conference proceedings to maintain academic rigor (Paul et al. 2021). The search, conducted using the Web of Science database, covered literature from 19961 to June 2024. To ascertain the quality of sources, the 2021 Chartered Association of Business Schools Academic Journal Guide (CABS)—renowned for its comprehensive journal ranking within business studies—was employed (Paul et al. 2021). To encompass a broad spectrum of high-quality research, journals in the Social Sciences Citation Index (SSCI) with an impact factor of more than 1.0 were also included (Sharma 2021). The string used for retrieval is shown in the acquisition section of Figure 1. This approach acknowledges the diverse techniques and terminologies associated with AI, as well as the interchangeable use of terms related to intrusiveness across studies (e.g., Niu, Wang, and Liu 2021).

3.2 Arranging

During the arranging phase, bibliometric data was systematically compiled into an Excel spreadsheet, detailing author(s), journal, citation count, and other relevant metrics. We organized the literature using the TCCM framework.

Articles not adhering to our quality criteria were excluded. A thorough examination of the abstracts of the remaining articles led to the exclusion of those not directly relevant to our research focus, resulting in an initial tally of 82 articles. Subsequently, 13 articles were discarded due to their publication in journals outside our specified criteria. The application of the snowballing technique, involving the examination of forward and backward citations, added an additional 2 articles. Thus, the final sample comprised 71 articles. The filtering rules are detailed in the purification section of Figure 1.

3.3 Assessing

The assessing phase involved a detailed content analysis of the articles in our final sample, summarizing findings using concise tables and figures. We conducted a descriptive analysis to identify publication trends and key articles. Using the TCCM framework, we mapped the theoretical, contextual, characteristic, and methodological dimensions of intrusiveness in AI marketing, providing a comprehensive view of the research landscape and identifying areas for future investigation.

4. Descriptive analysis

This section presents a succinct descriptive analysis of the publications on intrusiveness in AI marketing. We begin by examining publication trends, revealing an increase in research interest particularly in the last five years, which corresponds with the surge in AI applications in marketing (Figure 2). Interestingly, no studies from 2014 met our selection criteria, highlighting the fluctuating research output and changing academic standards over time.

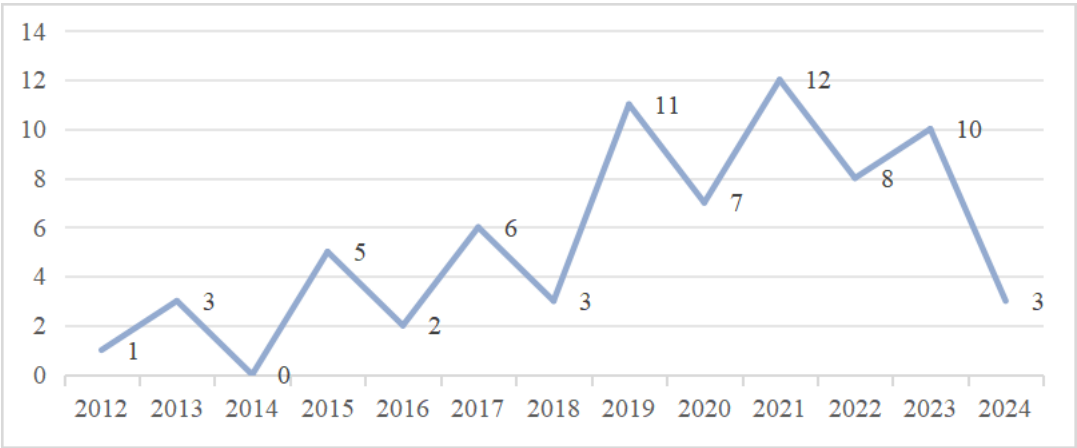


Figure 2. Year-wise distribution of number of articles.

Citation analysis identified the top 10 most cited articles in this field, with notable contributions from the journal Computers in Human Behavior (Table 1).

Table 1. The most influential articles.

[1] Intrusiveness in marketing was originally defined by Ha (1996). Subsequent scholars have acknowledged the pioneering nature of this article in their elaboration of intrusiveness (Ketelaar et al., 2018), so we chose to search articles from 1996 for the review.

Author(s)	Journals	Number of citations
Bleier and Eisenbeiss (2015)	Marketing Science	434
Lin and Kim (2016)	Computers in Human Behavior	389
Mani and Chouk (2017)	Journal of Marketing Management	388
Belanche et al. (2017)	Journal of Interactive Marketing	380
Van Doorn and Hoekstra (2013)	Marketing Letters	367
Papa et al. (2020)	Technological Forecasting and Social Change	331
Jung et al. (2016)	International Journal of Advertising	285
Van den Broeck et al. (2019)	Computers in Human Behavior	278
Goodrich et al. (2015)	Journal of Advertising Research	258
Gutierrez et al. (2019)	Computers in Human Behavior	226

To further understand the dissemination of research on intrusiveness in AI marketing, we analyzed the distribution of publications across various journals. As summarized in Table 2, research articles are spread across 38 journals. We focused on journals that have hosted at least two articles on the topic to identify leading contributors. This analysis provides valuable insights for researchers seeking high-impact journals for future submissions related to intrusiveness in AI marketing.

Table 2. Leading journals in intrusiveness in AI marketing research

Journal Name	Number of articles
Computers in Human Behavior	9
International Journal of Advertising	6
Journal of Business Research	4
Journal of Interactive Marketing	4
Journal of Research in Interactive Marketing	3
Journal of Marketing Management	3
Electronic Commerce Research and Applications	3
Telematics and Informatics	2
Technological Forecasting and Social Change	2
Sustainability	2
Journal of Retailing and Consumer Services	2
Journal of Advertising Research	2
Internet Research	2
Others	27

Our selection criteria were confined to empirical studies, resulting in the categorization of 71 articles based on the methodologies employed (refer to Table 3). Notably, no study relied exclusively on qualitative methods; for instance, articles that utilized content analysis often supplemented their findings with experimental data to enhance the validity of their results (Chang et al. 2023). This observation underscores the prevailing trend toward mixed-method approaches in examining intrusiveness within AI marketing.

Table 3. Article classification.

Type of empirical studies	Number of studies
Quantitative	66
Qualitative	0
Mixed	5

Using VOS viewer software, we performed a bibliometric analysis to explore keyword co-occurrence. The visualization (Figure 3) displays keywords as nodes, with their size indicating frequency and lines showing the strength of co-occurrence. This helps trace the thematic evolution and structure of the field.

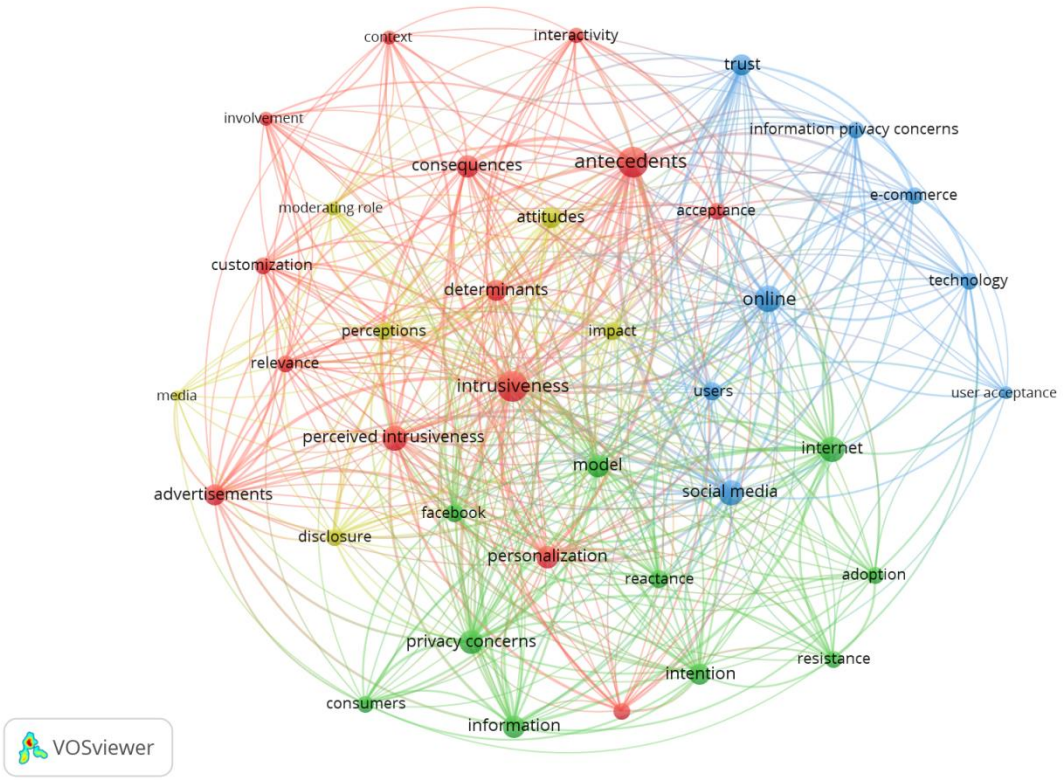


Figure 3. Bibliometric analysis.

5. The TCCM framework

This section applies the Theory-Context-Characteristics-Methodology (TCCM) framework to analyze the literature on intrusiveness in AI marketing, covering theoretical underpinnings, contextual applications, characteristics, and methodological approaches.

5.1 Theory

Research on AI marketing intrusiveness utilizes diverse theoretical frameworks from various disciplines. We focus on theories cited at least twice across our literature corpus, as detailed in Table 4, to highlight significant theoretical contributions.

Table 4. Theories extracted from the literature.

Theory	Number of articles	Examples
Psychological reactance theory	5	Youn and Shin (2019)
Stimulus-Organism-Response (S-O-R) Model	3	Zhang et al. (2021)
Privacy calculus theory	3	Gutierrez et al. (2019)
Technology Acceptance Model	3	Lin and Kim (2016)
Social exchange theory	3	Miltgen et al. (2019)
Psychological Ownership Theory	2	Niu et al. (2021)
Multiple resource theory	2	Pfiffelmann et al. (2022)
Communication privacy management theory	2	Ghanbarpour et al. (2022)
Other theories (Person-technology fit model; Persuasion knowledge model; Self-construal theory; Social identity theory; Prospect theory; Means-end chain theory; Stress-coping theory; Uses and gratifications theory; Flow theory)	9	Benlian et al. (2020); Lim et al. (2023); Chang et al. (2023); Gerhart and Ogbanufe (2022); Akdim and Casaló (2023); Kang and Shao (2023); Chen et al. (2019); Celebi (2015); Yin et al. (2023)
No guiding theory	39	Van Doorn and Hoekstra (2013); Smink et al. (2020)

5.1.1 Explanatory theories of the antecedents

This subsection explores the theoretical frameworks that elucidate the antecedents of intrusiveness in AI marketing. The antecedents, as identified through these theories, highlight how consumer perceptions of intrusiveness are influenced by psychological, cognitive, and privacy-related factors. Each theory contributes to a deeper understanding of why consumers may find AI marketing strategies intrusive, setting the stage for our detailed discussion of specific frameworks.

Multiple resource theory. Early studies suggested that advertising is intrusive by taking away consumers' attention and thus interfering with their cognitive processes (Li, Edwards, and Lee 2002; Edwards, Li, and Lee 2002). Multi-resource theory can be a good explanation for this phenomenon. Proposed by Wickens (2002), this theory posits that an individual's information processing capabilities are segmented into visual, auditory, cognitive, and reactive components. These undergo a "perception-cognition-response" sequence. If two tasks demand the same kind of mental resources during a processing phase, it can make primary task resources inaccessible (Pfiffelmann, Dens, and Soulez 2019). This theory has mostly been applied to study the impact of AI marketing on consumers' visual resources during the cognitive phase, with auditory resources and the response phase less explored.

Psychological ownership theory. As AI marketing gradually and recklessly encroaches on consumers' Internet space, psychological ownership theory can well explain AI marketing's intrusion into the virtual space. This theory suggests that individuals feel a target or a part of it belongs to them when they invest significant effort (Pierce, Kostova, and Dirks 2003). On social media, such investment can lead to psychological ownership, making AI marketing messages perceived as intrusive when they suddenly appear in these personal spaces (Kelly, Kerr, and Drennan 2010; Niu, Wang, and Liu 2021). To date, the application of this theory has primarily focused on psychological ownership of social media spaces but not real-life spaces where AI marketing might also be perceived as intrusive.

Psychological reactance theory. Many service providers force or do not inform consumers that they are sharing data, which violates consumer autonomy. Psychological reactance theory can explain consumers' negative psychological perceptions of losing their autonomy. This theory suggests that perceived threats to autonomy, such as aggressive or repetitive AI marketing tactics, can induce a psychological reactance in consumers. This reaction is a motivational state aimed at restoring the threatened freedom, leading consumers to view marketing strategies as intrusive (Brehm and Brehm 1981). Studies by McCoy et al. (2017) and Youn and Kim (2019) support this, showing that overly persuasive advertisements can trigger perceptions of restricted freedom, thus enhancing intrusiveness. Although this theory highlights consumer motivation to oppose actions that threaten autonomy, it does not explore why consumers choose specific behaviors to resist intrusiveness.

Communication privacy management theory. Nowadays, many apps are no longer satisfied with accessing information within their own apps and have even started collecting content from other apps. Communication privacy management theory can explain the intrusiveness that arises from crossing the privacy boundary. It posits that when personal information is shared with marketers, it crosses into a privacy boundary shared by both parties (Petronio 2013). If AI marketing utilizes data within this boundary, it is assumed permissible; however, using data outside this boundary, such as third-party browsing history, disrupts this boundary (Petronio 2013). Ghanbarpour, Sahabeh, and Gustafsson (2022) indicated that employing unauthorized private communication data can disrupt the privacy boundary between consumers and marketers, enhancing perceptions of intrusiveness. Future research should investigate how individual and contextual factors influence privacy rules and boundaries, helping firms use AI within these boundaries while minimizing privacy intrusions.

5.1.2 Explanatory theories of the consequences

This subsection delves into the theoretical frameworks that explain the consequences of intrusiveness in AI marketing. Understanding these consequences is crucial as they directly influence consumer behavior and perceptions toward AI-driven marketing practices.

Technology Acceptance Model (TAM). When AI marketing first began to enter consumers' daily lives as a new technology, TAM can explain the impact of intrusiveness on technology attitudes and behaviors from an innovative technology perspective. Grounded in the perceptions of ease of use and usefulness, TAM has been adapted to explore how intrusiveness impacts willingness to adopt AI technologies. Lin and Kim (2016) demonstrated a negative relationship between perceived intrusiveness and both perceived usefulness and consumer attitudes, affecting purchase intentions. Conversely, Bano et al. (2022) highlighted intrusiveness's adverse effects on perceived ease of use. These studies point to a nuanced understanding of intrusiveness's role within TAM, suggesting more detailed examination of its direct impacts on consumer behavior is necessary.

Stimulus-Organism-Response (S-O-R) Model. With the increasingly widespread use of AI marketing, scholars have begun to employ other models to explore more complex responses. The S-O-R model has been effectively applied to understand consumer reactions to AI marketing. Here, the stimulus (S) refers to specific AI attributes like autonomy and personalization (Lucia-Palacios and Perez-Lopez, 2021; Kang and Shao 2023). The organism (O) involves consumers'

perceptions of intrusiveness and the resultant negative emotions (Zhang et al. 2021). The response (R) includes both active (e.g., engagement) and passive (e.g., avoidance) behaviors (Alwreikat and Rjoub 2021; Niu, Wang, and Liu 2021). Zhang et al. (2021) note that perceived intrusiveness typically diminishes positive attitudes towards AI marketing, urging further investigation into active responses.

Many studies now recognize that AI marketing brings benefits and sacrifices, and that the trade-offs between these benefits and sacrifices can influence consumer behavior (Van Doorn and Hoekstra 2013; Youn and Shin 2019). Social exchange theory and privacy computing theory can analyze how consumers weigh the benefits and costs of AI marketing technologies, with intrusiveness often included as a cost factor in studies (Miltgen, Cases, and Russell 2019).

Social exchange theory. This theory posits that the dynamics between consumers and AI marketers resemble a social contract, where personal data is exchanged for benefits like personalized recommendations (Miltgen, Cases, and Russell 2019). When the personalization fails to offset the costs of privacy intrusions, consumers may exhibit negative behaviors (Verhagen et al. 2022). This perspective encourages further exploration into how perceived benefits can be enhanced to mitigate the negative effects of intrusiveness.

Privacy calculus theory. Privacy Calculus Theory considers data privacy as a negotiable commodity, where consumers make rational decisions based on the benefits and costs of disclosing personal information (Becker and Murphy 1988). Studies leveraging this theory, such as those by Krafft, Arden, and Verhoef (2017), Gironda and Korgaonkar (2018), and Gutierrez et al. (2019), have examined how consumers balance the perks of personalization against privacy concerns. Lim, Sung, and Hong (2023) suggested that additional factors, such as individual consumer traits, might significantly influence this benefit-cost analysis, warranting further investigation.

5.2 Context

This section analyzes the scenarios of intrusiveness in AI marketing and the analysis of countries on which the selected studies focus.

5.2.1 Scenarios

Scenarios can be divided into two categories based on whether consumers are actively initiating marketing interaction or passively receiving marketing content (refer to Table 5).

Table 5. Scenarios investigated in the literature on intrusiveness in AI marketing.

Scenarios	Number of articles	Examples
AI advertising	53	Van Doorn and Hoekstra (2013); Bleier and Eisenbeiss (2015); Hamby and Ilyuk (2019); Dong et al. (2023)
Smart products and services	8	Mani and Chouk (2017); Henkens et al. (2021)
AR	4	Smink et al.(2019)
Voice assistants	3	Lucia-Palacios and Perez-Lopez (2021)
Robots	2	Chang et al. (2023)
Chatbots	1	Van den Broeck et al. (2019)

Category 1: passive reacting-AI advertising. Since the 1990s, intrusiveness in advertising has been recognized (Ha 1996). With advancements in AI and big data, AI-driven advertising has become more prevalent, using extensive consumer data for personalized ads, which raises concerns about privacy invasion (Lim, Sung, and Hong 2023). Consumers receiving personalized ads on social media may feel their privacy is invaded as their behaviors are closely monitored (Youn and Shin 2019). Despite the relevance of these ads, consumers might still view them as privacy intrusions (Lee, Kim, and Lee 2022). The collaboration between data-tracking platforms and brands can enhance these perceptions, as consumers see such partnerships as complicit in privacy breaches (Ghanbarpour, Sahabeh, and Gustafsson 2022). Additionally, the repetitive nature of AI ads and humanized ad copies in social contexts are seen as overly intrusive (Alwreikat and Rjoub 2021; Hamby and Ilyuk 2019).

Category 2: Interactive AI Applications. Emerging technologies like voice assistants, chatbots, smart products, and augmented reality (AR) are increasingly integrated into consumer lives (Quach et al. 2022). Issues such as continuous monitoring by voice assistants, their unconscious activation, and targeted advertising contribute to intrusiveness perceptions (Lucia-Palacios and Perez-Lopez 2021; Kang and Shao 2023). Robots can disrupt family dynamics, leading to

what is termed relationship intrusiveness (Benlian, Klumpe, and Hinz 2020; Chang et al. 2023). Intrusive experiences with chatbots arise when they interrupt consumer activities with unsolicited product suggestions, thereby disrupting cognitive processes (Van den Broeck, Zarouali, and Poels 2019). Concerns with smart products generally center on the product itself rather than the provider, unlike AR applications, which raise alarms over potential misuse of personal images and information (Henkens, Verleye, and Larivière 2021; Smink et al. 2019).

In general, research to date has mainly examined passive scenarios, focusing on how attention shifts, data sources, and presentation methods contribute to intrusiveness. However, studies on consumer-initiated interactions with AI are sparse, often limited to issues around privacy. Moreover, comparative research that looks at how different consumer demographics perceive intrusiveness is lacking, indicating a gap in the current literature.

5.2.2 Countries

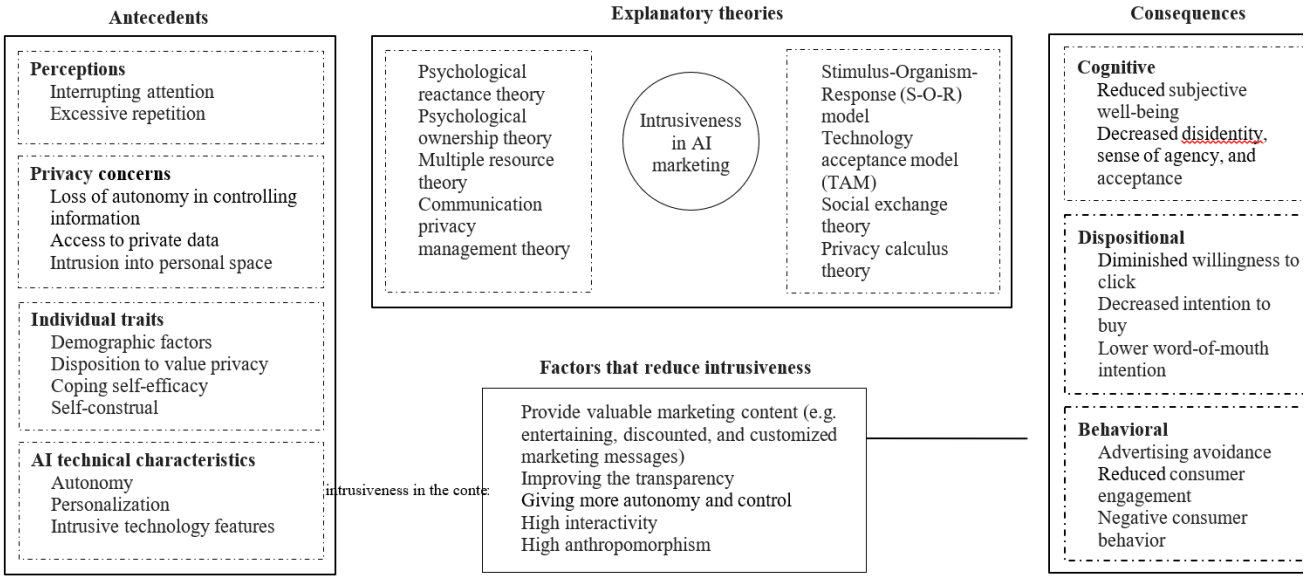
Table 6. Countries investigate in the literature on intrusiveness in AI marketing

Countries	Number of articles	Examples
US	15	Youn and Kim (2019); Lim et al. (2023)
South Korea	5	Lee et al. (2015); Lee et al. (2022)
Netherlands	5	Van Doorn and Hoekstra (2013); Smink et al. (2019)
France	5	Mani and Chouk (2017); Miltgen et al. (2019)
China	4	Niu et al. (2021)
Turkey	2	Varnali et al. (2012)
Pakistan	2	Bano et al. (2022)
Germany	2	Krafft et al. (2017)
India	2	Papa et al. (2020)
UK	1	Ogbanufe and Gerhart (2022)
Spain	1	Belanche et al. (2017)
New Zealand	1	Gazley et al. (2015)
Malaysia	1	Rezaei et al. (2015)
Jordan	1	Alwreikat and Rjoub (2021)
Japan	1	Morimoto (2021)
German	1	Krafft et al. (2017)
Chile	1	McCoy et al. (2017)
Belgium	1	Pfiffelmann et al. (2020)
Multi-country	10	Wiese et al. (2020); Chang et al. (2023)
Not reported	10	Van den Broeck et al. (2019); Zhang et al. (2021)

This section examines the country origin of the samples studied in the literature on intrusiveness in AI marketing (refer to Table 6). Our analysis indicates that the United States has contributed the most to this body of literature, followed by significant contributions from South Korea and the Netherlands. Notably, many studies utilize data collected through social media platforms or mobile devices and do not specify the country of origin. This suggests a shift from emphasizing the geographical location to focusing on heterogeneous consumer groups. For instance, Wiese, Martínez-Climent, and Botella-Carrubi (2020) gathered information from active Facebook users without restricting the data collection to any specific country

5.3 Characteristics

Recent studies have explored the factors contributing to perceptions of intrusiveness in AI marketing from various perspectives, including consumer and AI technical aspects. From the consumer perspective, these factors are categorized into three main branches: perception, privacy concerns, and individual traits. Intrusiveness in AI marketing leads to cognitive, dispositional, and behavioral repercussions, with a clear sequential link among these outcomes. Notably, research has also investigated factors that might attenuate intrusiveness. An integrated framework has been developed, outlining the antecedents, consequences, mitigating factors, and explanatory theories of intrusiveness in AI marketing (refer to Figure 4).



5.3.1 Antecedents

Intrusiveness is often conceptualized as a psychological response to cognitive disruptions within advertising contexts (Li, Edwards, and Lee 2002). Key findings indicate that abrupt shifts in attention and excessive repetitiveness are prominent disruptors (Pfiffelmann, Dens, and Soulez 2019; Alwreikat and Rjoub 2021). Such disruptions may arise from unexpected advertising appearances (Lin and Kim 2016) or from engaging AR features that divert attention from intended tasks (Smink et al. 2019). Over time, repetitive AI advertising tends to shift from being initially engaging to increasingly intrusive as it interrupts cognitive processes repeatedly (Alwreikat and Rjoub 2021).

Concerns about autonomy, unauthorized data access, and personal space encroachment intensify perceptions of intrusiveness, particularly in privacy contexts (Wottrich, van Reijmersdal, and Smit 2018; Ghanbarpour, Sahabeh, and Gustafsson 2022; Niu, Wang, and Liu 2021). Extensive data collection practices by companies for optimizing AI marketing often lead to consumers relinquishing control over their information, thus heightening perceptions of intrusiveness (Bleier and Eisenbeiss 2015; Wottrich, van Reijmersdal, and Smit 2018). The type of information accessed also affects intrusiveness perceptions, with data from private interactions deemed more intrusive than that from public ones (Ghanbarpour, Sahabeh, and Gustafsson 2022). Pfiffelmann, Dens, and Soulez (2020) argues that the factors driving the emergence of intrusiveness have more to do with task and attention interference than with invasion of privacy. In order to more clearly define the concept of intrusiveness, future studies are necessary to elucidate the extent to which each antecedent contributes.

Individual characteristics such as age, gender, privacy valuation, coping self-efficacy, and self-construal also play significant roles in shaping intrusiveness perceptions (Lee, Kim, and Lee 2022; Gironda and Korgaonkar 2018; Lim, Sung, and Hong 2023; Chang et al. 2023). From the technical perspective, AI traits like autonomy, personalization capabilities, and anthropomorphic features can exacerbate these perceptions. For instance, while autonomous AI improves task efficiency, it may also lead to increased monitoring and frequent commercial suggestions (Lucia-Palacios and Perez-Lopez 2021). High levels of personalization might make consumers feel overly monitored, especially when ads for recently searched products appear Lee, Kim, and Lee 2022), and extreme anthropomorphism could potentially lead to discomfort, suggesting an area ripe for further exploration (Rajaobelina et al. 2021; Benlian, Klumpe, and Hinz 2020).

Overall, while extensive research has explored cognitive, privacy, and technical dimensions influencing perceived intrusiveness, the roles of broader organizational and brand dynamics have been less examined. Moreover, existing research ignores the contextual role of platforms, and the perceived intrusiveness of consumers may differ across different types of social media platforms (Pfiffelmann, Dens, and Soulez 2020).

5.3.2 Consequences

The consequences of intrusiveness within AI marketing manifest across three main dimensions: cognitive, dispositional, and behavioral responses.

Cognitive impacts include diminished subjective well-being, decreased disidentity, acceptance and sense of agency, and emerging negative attitudes (Kang and Shao 2023; Gerhart and Ogbanufe 2021; Miltgen, Cases, and Russell 2019; Verhagen et al. 2022). Decreased subjective well-being often stems from the pervasive reach of AI marketing into consumers' daily living spaces, detracting from time spent with family and encroaching on personal space (Kang and Shao 2023; Benlian, Klumpe, and Hinz 2020). Such overreach makes consumers less receptive and disidentity to AI-driven marketing, and impedes the sense of agency (simply a sense of control). (Gerhart and Ogbanufe 2022; Miltgen, Cases, and Russell 2019; Riedel, Weeks, and Beatson 2024). Moreover, heightened intrusiveness can sour consumer perceptions, fostering negative views towards not just the advertising but also the associated brands and brick-and-mortar outlets (Ghanbarpour, Sahabeh, and Gustafsson 2022; Verhagen et al. 2022). However, some studies have also found no significant relationship between intrusiveness and attitudes toward advertising (Jung et al. 2016). This may be due to different levels of economic development, with consumers in emerging markets being more sensitive to intrusiveness (Wiese, Martínez-Climent, and Botella-Carrubi 2020). Future research could also explain this difference in terms of privacy policies, cultural context, and consumer traits.

Dispositional reactions involve declines in behavioral intentions like clicking, purchasing, or engaging in word-of-mouth communication (Bleier and Eisenbeiss 2015; Smink et al. 2020; De Keyzer, Dens, and De Pelsmacker 2022). For example, an intrusive advertisement might initially erode a consumer's positive perception of a brand, which then dampens their purchase intention and discourages participation in word-of-mouth communication (Goodrich, Schiller, and Galletta, 2015). Additionally, by influencing attitudes, intrusiveness can depress click-through rates and deter consumers from participating in word-of-mouth communication (De Keyzer, Dens, and De Pelsmacker 2022).

Behavioral reactions primarily translate into advertising avoidance, diminished consumer engagement, and outright negative behaviors such as severing ties with brands or avoiding further interactions with advertising platforms (Niu, Wang, and Liu 2021; Alwreikat and Rjoub 2021; Bano et al. 2022). Consumers may either passively overlook intrusive content or take proactive measures such as switching off advertisements or disconnecting from the service (Youn and Kim 2019). Increased intrusiveness often leads to a decrease in consumer activities such as sharing or recommending brands, reflecting broader disengagement with smart service systems as they gather, share, and exploit personal data (Henkens, Verleye, and Larivière 2022). Additionally, perceived intrusiveness can trigger resistance behaviors and non-consumption actions, as seen with AI services (Mani and Chouk 2017; Gerhart and Ogbanufe 2022).

It is crucial to recognize that these behavioral shifts are not spontaneous but evolve from preceding cognitive and dispositional reactions. For instance, Bano et al. (2022) observed that intrusiveness in application advertising could significantly tarnish user sentiment toward the app, reducing its utilization. Understanding these cascading effects from cognitive and dispositional reactions to behavioral outcomes is pivotal for marketers aiming to mitigate the negative impacts of AI marketing's intrusiveness.

Although a large quantity of research confirms that intrusiveness has a variety of negative effects, current research does not clarify to which subject consumers actually attribute these negative perceptions. For example, when a voice assistant monitors your conversations and pushes advertising, will you develop more negative attitudes toward the voice assistant or toward the service provider behind it, or the advertising being pushed (Henkens, Verleye, and Larivière 2021). Moreover, negative attitudes stemming from intrusiveness are likely to turn into negative word-of-mouth in social media, subsequently affecting brand equity (Truong and Simmons 2010). However, existing research has not focused on negative impacts on these macro-levels, such as brand equity.

5.3.3 Factors that mitigating intrusiveness

AI marketing can employ several strategies to lessen the perception of intrusiveness by leveraging AI's inherent benefits and features.

Content Delivery. Delivering marketing content with high entertainment value, relevant and customized information, or incentives like vouchers and discounts can significantly alleviate feelings of intrusiveness (Krafft, Arden, and Verhoef 2017; De Keyzer, Dens, and De Pelsmacker 2021; Gutierrez et al. 2019). Despite the effect of these monetary incentives, the effect of intrusiveness on AI marketing acceptance is more significant (Gutierrez et al. 2019). This may stem from the fact that consumers' perceived intrusiveness may disrupt interaction with the content and prevent them from noticing the benefits (Van den Broeck, Zarouali, and Poels 2019). The role of context congruity is still debated, with findings suggesting both reduction and amplification of intrusiveness depending on how closely content aligns with consumer interests (Lee, Kim, and Sundar 2015; Hamby and Ilyuk 2019).

Transparency and Control. Enhancing transparency and consumer control over interactions with AI can reduce perceptions of privacy intrusion (Belanche, Flavián, and Pérez-Rueda 2017; Yin, Li, and Zhou 2023). Methods to improve transparency include providing clear guidelines about data collection and usage (Toti and Steils 2024). Offering consumers the ability

to decide on receiving marketing messages, skip advertising, or adjust privacy settings can significantly reduce the sense of intrusiveness by increased sense of control (Gazley, Hunt, and McLaren 2015; Krafft, Arden, and Verhoef 2017).

AI Traits. Traits such as high interactivity and anthropomorphism can buffer against perceptions of intrusiveness. When AI is perceived as interactive and relatable, it is generally seen as less intrusive (Benlian, Klumpe, and Hinz 2020; Zhu and Kanjanamekanant 2021).

These strategies underscore the potential for AI marketing to not only coexist with but enhance consumer experience by carefully navigating the delicate balance between personalization and privacy.

5.4 Methodology

This section delineates the categorization and counting of the methodologies employed in the studies reviewed, as detailed in Table 7. Many of the selected papers utilized more than one method to gather data, reflecting the complexity of studying intrusiveness in AI marketing.

Table 7. Types of data collection methods

Methods	Number of articles	Examples
Survey (online and offline)	36	Mani and Chouk (2017)
Experiment	31	Van den Broeck et al. (2019)
Eye-tracking	2	Pfiffelmann et al. (2020)
Electroencephalograph (EEG)	1	Belanche et al. (2017)
Field study	1	Belanche et al. (2017)
Secondary data	1	Cecere and Rochelandet (2013)
Interview	4	Van Doorn and Hoekstra (2013)
Content analysis	1	Chang et al. (2023)

According to our analysis, 35 of the reviewed studies employed survey methods, both online and offline, as a primary tool for data collection. This was followed by experimental design approaches, which included scenario-based experiments (e.g., Henkens, Verleye, and Larivière 2021) and field experiments (e.g., Varnali, Yilmaz, and Toker 2012). These approaches are pivotal in manipulating and measuring the impact of specific variables on consumer perception of intrusiveness.

Additionally, mixed-method approaches were commonly observed, where surveys and experiments were combined with qualitative techniques such as content analysis and interviews (Chang et al. 2023; Van Doorn and Hoekstra 2013). The integration of qualitative methods provides a richer, more nuanced understanding of consumer perceptions, cognitions, and behaviors, facilitating a deeper exploration of new dimensions and theoretical explanations for intrusiveness in AI marketing.

The diverse array of methodologies underscores the multifaceted nature of research in this area, highlighting the importance of a comprehensive approach to capture the varied aspects of consumer interactions with AI-driven marketing strategies.

6. FUTURE RESEARCH AGENDA

This systematic literature review has unearthed numerous insights that are instrumental for theory development, particularly concerning the relevant antecedents, consequences, and moderators of intrusiveness in the AI marketing context. Based on the insights garnered from our literature synthesis, we outline several theoretical propositions that offer promising directions for future research, as detailed in Table 8 and grounded in the TCCM framework. The summary of proposed directions for future research is provided in Table 8.

Table 8. Directions for future research

TCCM	Future directions
Theories	RQ1. Adopting new theories to explore other factors that may explain intrusiveness in AI marketing.
	RQ2. Consider the different cultural contexts to explain varying degrees of intrusiveness in AI marketing from a cross-cultural perspective.
Context	RQ3. Many application scenarios in AI marketing deserve more attention.
	RQ4.

Characteristics	RQ5. Emphasize the possible impact of firms on intrusiveness in AI marketing.
	RQ6. Examining how the situation of AI marketing communication affects intrusiveness.
	RQ7. Examine the possible impact of consumer-perceived intrusiveness of AI marketing on firm performance.
	RQ8. Reveal the ethical issues that may arise from intrusiveness in AI marketing.
	RQ9. Better understanding the impact of consumer heterogeneity on perceived intrusiveness in AI marketing.
Methods	RQ10. Employ more qualitative methods to fully understand intrusiveness in AI marketing
	RQ11. Use a longitudinal design to better understand the dynamics of intrusiveness in AI marketing over time.

6.1 Theory development

Intrusiveness in AI marketing is a complex and multidirectional construct influenced by various marketing, psychological, and social factors. This suggests the need for a multi-theory approach in future research, as intrusiveness in AI marketing draws on knowledge from multiple disciplines.

Given the broad consumer demographic affected by AI marketing, future studies should consider employing multi-disciplinary theories to delve deeper into the theoretical dynamics underpinning intrusiveness. For instance, the theory of territoriality could elucidate why AI marketing invasions into consumers' daily living spaces prompt defensive behaviors, especially when the territorial value of their personal space is perceived as outweighing the costs of resistance (Brown, Lawrence, and Robinson 2005). Protection motivation theory (Rogers 1975) may provide insights into how consumers perceive the severity of intrusiveness and adopt avoidance behaviors in response to perceived physical, psychological, or social threats.

Dual-process theories (Chaiken and Trope 1999) suggest that increased exposure to a stimulus provides more opportunities for consumers to form counterarguments, particularly relevant when consumers process advertising deeply. This might explain how heightened attention to advertising can lead consumers to question the legitimacy of the use of their private information and feel intruded upon.

6.2 Context

Previous research on intrusiveness in AI marketing has predominantly focused on advertising scenarios. However, recent studies are increasingly exploring broader interactive scenarios, such as smart products and services. Despite this expansion, certain areas remain underexplored. For instance, only one recent study examines the intrusiveness of physical robots (Chang et al. 2023), which are becoming more prevalent in our aging society. The potential intrusiveness brought by care robots, therefore, warrants further investigation. Similarly, while the impact of chatbots on intrusiveness has been noted in e-commerce (Van den Broeck, Zarouali, and Poels 2019), the broader implications of chatbot interactions on consumer purchase intent remain unclear.

Furthermore, our review indicates that regions such as Africa, Southeast Asia, and the Middle East are less studied. With their large populations and extensive use of social media, these regions represent critical areas for understanding how different cultural contexts might influence perceptions of AI marketing intrusiveness (Youn and Shin 2019; Kang and Shao 2023).

6.3 Characteristics

6.3.1 Antecedents

Advertisers should understand where they fail most (Celebi 2015). However, current research is discussing the factors that may lead to intrusiveness separately, and there is a lack of comprehensive analysis of the various factors. Therefore, future research needs to clarify whether the most important cause of intrusiveness comes from attention interruption or privacy invasion, or other factors. Only by tackling the key pain points can the power of AI marketing be better leveraged.

Current research is predominantly anchored in consumer and AI technical perspectives. It is imperative, however, to also consider firm-centric and contextual factors. Research shows that smaller firms, especially those pioneering in data-driven innovations, face greater consumer privacy apprehensions than larger, more established firms (Bleier, Goldfarb, and Tucker 2020). Future studies should thus explore how variables such as firm size, operational longevity, and core operations influence consumers' perceptions of intrusiveness. This is particularly crucial for firms that have been tainted by privacy breaches or scandals, as their AI marketing initiatives may be perceived with heightened sensitivity.

The context in which marketing communications occur can significantly affect the allocation of consumer cognitive resources, trust, and coping strategies (Pfiffelmann, Dens, and Soulez 2019; Miltgen, Cases, and Russell 2019; Chen, Tran, and Nguyen 2019). Even the channel through which marketing messages are delivered can influence perceptions of intrusiveness (Dong et al. 2024). There is a pronounced need for research that scrutinizes how these situational factors shape consumers' perceptions of intrusiveness in the AI marketing landscape. Moreover, while much attention has been given to online platforms like apps and social media, there is a substantial gap in knowledge regarding the implications of offline AI marketing.

By focusing on both firm and situational variables, researchers can uncover insights into how the providers of AI marketing and the contexts in which they operate sculpt consumer perceptions. Such understanding will equip marketers with the necessary insights to develop AI marketing strategies that are less invasive and more acceptable to consumers.

6.3.2 Consequences

AI Technologies are no longer tools sitting on a desk; instead, they infiltrate our daily lives in the most personal and pervasive ways. As a result, the consumer self-concept when encounter these new marketing strategy may have important implications for consumption behaviors (Gerhart and Ogbanufe 2022). Future research could specifically explore the intrusiveness concept to help gain more perspective on its role in AI technology disidentity, self-construal, and consumer behaviors.

Contemporary research has largely focused on the individual-level repercussions of intrusiveness in AI marketing, often overlooking the potential macro-level effects. Future research should explore the broader consequences through both corporate and ethical lenses. Beyond assessing consumer reactions, it is critical to understand how intrusiveness in AI marketing impacts firm-level outcomes, such as sales turnover, growth trajectories, and brand equity. While current studies highlight AI's role in enhancing firm performance (Mishra, Ewing, and Cooper 2022), the negative ramifications of AI marketing's intrusiveness on operational and financial performance are yet to be thoroughly examined. Empirical studies could reveal how intrusive marketing practices may recalibrate a firm's standing in the market matrix.

As firms increasingly deploy agile technologies like voice assistants and chatbots, the pervasive intrusiveness inherent in AI marketing ignites ethical debates. Intrusiveness, with its potential to breach privacy, might inadvertently heighten consumer anxiety (Benlian, Klumpe, and Hinz 2020), diminishing their subjective well-being (Kang and Shao 2023). Additionally, AI-driven algorithms on social media that curate hyper-customized content could inadvertently entrench consumer biases, potentially amplifying extreme viewpoints (UN News 2021). These ethical concerns, if ignored, could foster brand aversion (Alvarez, Brick, and Fournier 2021). The ethical dimensions of AI marketing's intrusiveness necessitate a thorough exploration to guide the development of ethically-aligned AI applications.

6.3.3 The moderating role of individual traits

Individual traits provide another critical avenue for research. Beyond commonly studied variables like intrusiveness sensitivity and privacy valuation (Gironda and Korgaonkar 2018; Chang et al. 2023), traits such as Machiavellianism, which often leads individuals to prioritize self-interest (Gunnthorsdottir, McCabe, and Smith 2002), could influence resistance to intrusive marketing. Additionally, social value orientations could impact data-sharing behaviors, with pro-social individuals likely less inclined to share data with third parties compared to pro-self individuals (Demmers, Weihrauch, and Mattison Thompson 2021). Investigating how these traits moderate reactions to AI marketing could offer deeper insights into consumer behavior.

It is worth noting that many studies have argued that AI marketing is a double-edged sword: it helps to increase purchase intentions, but inevitably generates perceived intrusiveness that negatively impacts purchase intentions (Van Doorn and Hoekstra 2013; Smink et al. 2020). Therefore, in the future, there is a need to continue to find ways to mitigate intrusiveness or to tailor marketing content with varying degrees of intrusiveness to leverage the positive impact of AI marketing.

6.4 Methods

While the majority of existing studies have employed quantitative methods, only a handful have utilized qualitative approaches. Implementing qualitative methods can provide greater flexibility and deeper insights into consumers' perceptions of intrusiveness. The survey responses are reliant on self-reported answers, which could contain bias. There are substantial opportunities to explore intrusiveness through innovative approaches like facial recognition and virtual ethnography. Furthermore, longitudinal studies could be invaluable in examining how perceptions of intrusiveness evolve over time in response to AI marketing engagement (Kang and Shao 2023).

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CONCLUSION

Intrusiveness seems to accompany AI marketing. AI marketing can be well-oriented to target consumers' interests to capture their attention, but invasion of privacy and interruption of pre-existing cognitive processes are inevitably intrusive. The existence of this paradox has left academics and practitioners scrambling to elucidate the origins of intrusiveness and seek solutions. This paper first redefines intrusiveness within the context of AI marketing, then outlines the methodologies used, and provides an overview of the current state of research in this domain. We have offered a detailed examination of the theories, contexts, characteristics, and methods relevant to AI marketing intrusiveness. Furthermore, we have identified research gaps and suggested future research directions. This review is expected to make important contributions to both the field and practitioners.

7.1 Theoretical contributions

Our study enhances the scholarly understanding of intrusiveness in AI marketing through a comprehensive bibliometric and systematic review. We have synthesized knowledge from multiple disciplines to provide an updated definition of intrusiveness, specifically tailored to the nuances of AI marketing. The paper delineates the various mechanisms through which AI marketing induces intrusiveness, integrating insights to comprehensively map out these pathways. We categorize and critique different AI marketing scenarios, identifying both under-researched areas and those necessitating further empirical scrutiny. The research also presents an in-depth examination of the cognitive, privacy, individual traits, and technological drivers of intrusiveness, alongside the corresponding consumer responses - cognitive, attitudinal, and behavioral. Additionally, we highlight the application of emerging research methods, such as eye-tracking, to measure consumer behavior more accurately and advocate for the broader adoption of qualitative methods to capture nuanced consumer perceptions. By framing future research within the TCCM framework, we propose expansive and structured directions for advancing the domain's knowledge frontier.

7.2 Managerial implications

AI has revolutionized firm-consumer interactions and marketing strategies, making the intrusiveness it can cause increasingly subtle. Though AI marketing are becoming pervasive, there is a growing wave of individuals who reject or resist it. Taking a balanced and responsible approach when implementing AI marketing, taking into account the advantages and drawbacks, is crucial to the practical implications of AI marketing. First, this review would be highly valuable in helping advertisers to formulate AI-driven strategy that will avoid causing significant intrusiveness to diminish the perceived utility of AI marketing or negative attitudes toward the brands. Second, our review highlights that intrusiveness can lead to negative impacts, but that this can be mitigated by affording some level of incentives and control to the consumer. In an effort to continue to reach consumers, advertisers and firms should look to restructure how they communicate with consumers online. Keep in the mind that the most important thing is to provide valuable content, make it more informative, entertaining, relevant, etc. And the improvement of certain AI traits, such as interactivity and anthropomorphism can reduce this negative perception. Due to the ubiquitous means of information collection, marketers need to emphasize the ability to allow consumers to easily turn off the function of information collection, especially during moments that are particularly prone to intrusion (e.g. private conversations). Third, for governments and policymakers, there is a need to focus on the significant implications of the intrusiveness generated by AI marketing. Our review highlights the intrusiveness associated with AI that can negatively affect consumer tendencies and behaviors. Governments should regularly assess the security concerns of AI marketing technologies to prevent privacy security and business ethics from being compromised.

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