

## **Limits and Opportunities in Adopting Open or Private AI in Services Marketing: A Literature Review**

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### **Abstract:**

In the rapidly evolving services marketing landscape, the role of Artificial Intelligence (AI) has become pivotal in shaping brand identity and customer engagement. Through a systematic literature review, this paper explores the limits and opportunities associated with adopting open and private AI in services marketing. The research identifies the integration of AI in service marketing processes, ethical considerations, and data privacy concerns. The findings contribute to the growing body of research on AI's role in services marketing, offering practical insights for marketers in making informed decisions about AI adoption. Ultimately, this paper presents both the opportunities and challenges of AI in maintaining competitive advantage in an era of social and economic complexity.

**Keywords:** Artificial Intelligence (AI), Services Marketing, Branding, Open AI, Private AI, Customer Experience.

### **1. Introduction**

At an international level, 'Big Tech' companies are competing in the construction of artificial intelligence systems capable of training with increasingly larger quantities of information to be processed through extremely high numbers of parameters. There are already numerous open artificial intelligence systems and among these, for example, there are OpenAI Models with GPT (Generative Pretrained Transformer) models like GPT-2, GPT-3, and GPT-4 (<https://openai.com/api/>), Hugging Face with language models like BERT, GPT-2, and T5 (<https://huggingface.co/>), Google with TensorFlow Hub (<https://www.tensorflow.org/hub>), Meta with Llama (<https://llama.meta.com/>) and others. The current competition between big tech companies is in investments in computing capacity, in the construction of increasingly high-performance models that are increasingly able to be precise and reliable in the solutions provided. The goal is to make artificial intelligence systems reliable sources of knowledge (Cristianini, 2024). At the same time, there is an increasing and growing market of companies that are providing private AI systems with the goal to maintain control over data privacy, security, and customization of information (Babina et al., 2024). Unlike open AI models, private AI systems are built using proprietary technologies and data, often tailored to meet specific business needs and regulatory requirements. Private AI can be a solution when companies need privacy, control on data, compliance with regulations and security. Actually, the main limit is in terms of costs in computing (Alabed et al., 2024).

Artificial Intelligence (AI) is increasingly recognized as a transformative force in enhancing customer experiences and reinforcing brand positioning in service-driven sectors (Rajaguru, 2024). As the service sector becomes more competitive, businesses are increasingly compelled to adopt AI technologies to optimize their operations and marketing strategies. Both open and private AI systems present unique sets of benefits and challenges, requiring careful consideration by businesses. However, significant gaps remain in understanding the broader implications of these AI systems on service marketing (Beverungen et al., 2022). Recent studies have started to explore these gaps, particularly in understanding how open and private AI systems impact services marketing, customer trust, and digital transformation (Maragno et al., 2023). The evolving landscape of digital platforms, including the shift from private platforms to public data spaces, adds another layer of complexity to AI adoption (Beverungen et al., 2022). Additionally, concerns around the ethical challenges and potential negative consequences of AI adoption, particularly in professional services, are becoming more prominent (Trincado-Munoz, 2024). These gaps suggest the following research questions:

- What are the existing gaps in the literature on AI adoption in service marketing?
- What are the limits and opportunities in adopting open and private AI in services marketing?

This paper addresses these questions by first presenting the literature background, followed by the methodology based on a systematic literature review (SLR). The article concludes with an exploration of the findings and outlines future research perspectives, particularly focusing on AI's role in shaping customer trust and organizational decision-making in service marketing.

## **2. Literature Background**

In recent years, the adoption of artificial intelligence (AI) technologies in marketing, particularly in service industries, has become a critical area of research. AI is viewed as a transformative tool that is reshaping the way companies engage with customers and optimize marketing strategies. For instance, Allal-Chérif et al. (2024) highlight how AI-powered virtual influencers outperform human influencers in marketing campaigns, significantly enhancing brand visibility and customer engagement. These virtual influencers represent a shift towards AI-based customer interaction models, which are becoming more common in digital marketing landscapes.

In line with this, AI has become central to the development of Marketing 4.0 frameworks. Mukhopadhyay et al. (2024) argue that AI within an Industry 4.0 context enables companies to leverage digital technologies to personalize customer experiences and enhance operational efficiencies. This aligns with the findings of Gurjar et al. (2024), who review the broad impact of AI on various business industries, identifying both opportunities and challenges, such as ethical concerns and the need for effective integration strategies. The rapid evolution of AI in marketing, especially in terms of personalizing services, has

allowed businesses to optimize customer relationships, improve brand loyalty, and enhance decision-making processes.

However, despite these advancements, there is still a considerable gap in the literature regarding a comprehensive comparison of open AI systems, like GPT models, and private AI systems, which are tailored to the specific needs of organizations. Previous studies have predominantly focused on AI's ability to enhance operational efficiency and improve customer satisfaction but have not delved into the specific distinctions between open and private AI systems in terms of data security, customization, and ethical implications. Sands et al. (2022), for example, emphasize the importance of AI in influencer marketing, yet do not explore how data control differs between open and private systems.

Recent research has begun to examine these nuances. Gursoy et al. (2023) explore current trends in AI and their implications for the hospitality and tourism industry, underscoring the importance of service customization and data privacy. Holz et al. (2024) further expand on this by discussing how AI can eliminate customer experience pain points through smart service solutions. These findings suggest that AI is playing an increasingly important role in shaping customer journeys, although concerns about data security and privacy persist.

In terms of AI adoption, Liana et al. (2023) discuss how AI can predict customer loyalty in mobile payment services, pointing to AI's role in personalizing services based on gender and other demographic factors. This example illustrates how AI can tailor experiences to individual customer needs, but also raises questions about how open AI systems, which rely on publicly available datasets, manage sensitive demographic data. This concern is echoed by Lefkeli et al. (2024), who investigate how sharing information with AI versus humans affects brand trust, finding that AI's involvement, particularly open AI models, can impair brand trust if customers feel exploited.

Moreover, the shift from private digital platforms to public data spaces is gaining momentum. Beverungen et al. (2022) examine how businesses are navigating this shift, highlighting the increased use of open AI systems in marketing, which presents both opportunities and risks. While open AI systems offer scalability and cost-effectiveness, the reliance on public datasets raises concerns about data integrity and the potential for bias. Conversely, private AI systems offer more control over proprietary data, providing enhanced security and customization, but often come with higher costs and limited scalability. Wu et al. (2024) further explore these dynamics, showing that firms that adopt open innovation models during periods of crisis, such as the COVID-19 pandemic, can outperform competitors, suggesting that open AI systems may provide flexibility and adaptability in uncertain times.

While private AI systems provide organizations with better control over data, enhanced security, and greater customization capabilities (Sahoo et al., 2024), the long-term sustainability and ethical implications of both open and private AI systems require further exploration. Kofman (2024), for instance, stresses the need for ethical gatekeeping and transparency in AI-driven decision-making, particularly in scenarios where AI influences customer trust and brand loyalty. Similarly, Lefkeli et al. (2024) emphasize the need for

caution when deploying AI in customer interactions, as consumers may infer a sense of exploitation when their data is processed by AI systems rather than human representatives. These gaps in the literature, particularly concerning the comparison of open versus private AI systems in marketing, are increasingly being acknowledged by scholars. Holz et al. (2024) suggest that private AI systems offer distinct advantages in providing tailored solutions, but the high costs associated with maintaining such systems present challenges, particularly for small and medium-sized enterprises (SMEs). Additionally, the ethical considerations surrounding AI, particularly in terms of data privacy and brand authenticity, have been highlighted by several recent studies (Kofman, 2024; Lefkeli et al., 2024). In summary, while AI's role in marketing is well-documented, particularly in driving innovation and improving customer experiences, the literature still lacks in-depth research comparing open and private AI systems. The implications of data security, customization, scalability, and ethical concerns remain underexplored, suggesting that future research should focus on how businesses can balance these factors while leveraging AI for marketing success.

### **3. Methodology**

This systematic literature review (SLR) is based on two primary databases: Elsevier's Scopus and Web of Science (WoS). The extraction of papers from both Scopus and WoS was conducted on August 2024, and the logical organization of this SLR follows the model proposed by Mayring (2004). The first step in the SLR involved defining a set of keywords that could comprehensively capture the scope of AI in service marketing, branding, and the distinctions between open and private AI systems. The selected keywords included "Artificial Intelligence", "AI", "Open AI", "Private AI", "Service Marketing", and "Branding". The use of specific wildcard symbols (e.g., "AI\*") extended the search to cover variations such as "Artificial Intelligence" and "AI-based". As noted in previous studies (Rußmann et al., 2015; Brunelli et al., 2017; Bortolini et al., 2018; Romeo et al., 2018; Büchi et al., 2020; Leong et al., 2020; Mubarak, 2020), the systematic selection of keywords and topics ensures broad coverage of relevant literature in emerging technological fields. The initial search yielded a total of 251 articles from WoS and 172 articles from Scopus. To ensure the relevance of the articles to the fields of business, management, and marketing, thematic filters were applied. Specifically, in Scopus, the filter "Accounting, Business, Management" was used, while in WoS, "Business" filter was applied. Additionally, the search results were restricted to peer-reviewed articles and reviews, written in English, and published in final form.

Subsequent refinements were made using the C-I-M-O framework (Denyer & Tranfield, 2009) to ensure that the selected papers aligned with the focus of this study. The C-I-M-O framework (Context, Intervention, Mechanism, Outcome) was employed to filter the initial pool of studies, excluding papers that did not align with the specific research questions of this review.

The C-I-M-O framework was tailored to this study as follows:

- **Context:** We focused on identifying the environment or sector in which AI technologies are being implemented, specifically targeting service industries. The papers were selected based on whether they discussed the adoption of open AI or private AI systems in service-driven sectors such as hospitality, finance, healthcare, and retail. Additionally, articles were screened for insights into regulatory environments and business sectors where AI adoption was either nascent or well-established.
- **Intervention:** This referred to the strategies and tools used to implement AI technologies in marketing. We sought articles that evaluated the specific interventions companies were using to integrate AI systems—both open and private—into their marketing and branding strategies. Special attention was paid to studies that addressed the limits and opportunities associated with AI adoption, such as the customization potential of private AI or the scalability of open AI.
- **Mechanism:** This element focused on the processes through which AI interventions produce marketing outcomes. Papers were filtered based on their discussion of the mechanisms that link the adoption of AI systems to improvements in customer experience, data security, scalability, and brand positioning. Articles that explored AI-driven decision-making and customer personalization were prioritized, as they provide insight into the processes through which AI generates tangible marketing benefits.
- **Outcome:** The final element of the framework focused on the results achieved by implementing AI systems. We sought to understand the outcomes of using open versus private AI, particularly in terms of marketing performance, brand trust, and customer loyalty. Papers that evaluated both the positive and negative effects of AI adoption in marketing were included, ensuring a balanced view of the technology's impact.

Finally, the abstracts of the remaining papers were reviewed for relevance, and the articles were selected for in-depth analysis based on their direct contributions to the discussions of AI systems in service marketing and branding, as well as the comparative analysis of open vs. private AI systems.

#### 4. Findings

The systematic literature review (SLR) has uncovered several key findings that provide a service marketing perspective on AI adoption. Considering the ongoing and contemporary debates surrounding AI, particularly open and private AI systems, the literature highlights significant opportunities and challenges. The results are categorized into five main themes, as summarized in the following table, where the relevant literature and topics are discussed.

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**Table 1. Main Literature Focus from SLR Process**

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Challenges in General AI Adoption	As AI systems become increasingly embedded in marketing strategies, several ethical concerns arise, particularly in automated decision-making processes that influence customer interactions. Studies addressing privacy management, customer autonomy in selecting company offerings, and algorithm transparency are gaining momentum, especially in sectors where AI plays a crucial role in shaping consumer decisions (e.g., streaming platforms, search engines, e-commerce, and self-driving vehicle management). Ensuring that AI systems follow ethical guidelines and regulatory standards is essential for maintaining consumer trust and safeguarding brand integrity (Qian et al., 2023). In the context of marketing, services, and AI, researchers are investigating the relationship between consumers and service robots, as well as human-machine interactions. Castelo et al. (2023) explore how customer trust and company service offerings can be balanced by AI efficiency. Wang et al. (2024) encourage further studies into AI's impact on consumer trust in the service industry.
Open AI Opportunities in Customer Interaction	Open AI systems, such as ChatGPT, present numerous opportunities when integrated into marketing strategies. These systems are being applied to improve customer engagement, particularly in environments that require rapid responses, such as customer service and chatbot interfaces. Lee and Li (2023) demonstrate that chatbots enhance customer interaction by improving customer identification and loyalty, which subsequently increases purchase intentions. Li and Zhang (2023) further argue that consumers are becoming more comfortable switching from human agents to conversational AI agents, suggesting that open AI systems are increasingly trusted in customer-facing roles. Additionally, Culotta and Mattei (2024) emphasize the potential for open AI systems to drive large-scale personalization in data-heavy industries like retail and e-commerce.
Open AI Challenges	Despite the advantages, open AI systems face challenges related to data management and privacy. Cristianini (2024) identifies one of the primary concerns: the inability of open AI systems to fully explain their data processing flow and the precise origins of the datasets they use. This issue is compounded by the use of publicly available data, which increases the risk of data leakage and manipulation. Mantri & Mishra (2023) discuss the challenges small businesses face when integrating open AI, particularly in balancing cost-effectiveness with maintaining data security. Belk et al. (2023) suggest that while open AI systems are widely adopted, their transparency and ethical considerations require further investigation, particularly when interacting with vulnerable consumer groups. Businesses in regulated industries such as finance, healthcare, and government must be vigilant to avoid non-compliance with data protection laws, as these sectors face significant risks from open AI's use of publicly available data.
Private AI Opportunities in Customizing Value Offerings	While less studied, private AI research is growing, with a focus on greater control over data and personalization. Abou-Foul et al. (2023) highlight that private AI systems enhance servitization by providing companies with a clearer understanding of their data sources and the algorithms used to train AI systems. This transparency allows businesses to customize their AI solutions to better align with their operational needs, supporting more targeted marketing campaigns, increased personalization, and stronger brand loyalty. Blut et al. (2024) also demonstrate how AI-based virtual assistants, when tailored to specific organizational requirements, can significantly enhance customer experiences, making private AI an attractive option for companies seeking differentiation through personalized service offerings.

Private AI Challenges, especially for SMEs	<p>The challenges of private AI, particularly for small and medium-sized enterprises (SMEs), are well-documented. Private AI systems require significant investments in developing or adapting AI models, acquiring data, and training internal staff to manage these systems. Cubric and Li (2024) explore how AI in FinTech SMEs bridges the "Concept-Product" gap but also emphasize the substantial financial resources needed to implement these systems. Mantri &amp; Mishra (2023) note that SMEs often lack the budgets and technical expertise to build and maintain private AI systems, limiting their accessibility. Hermann et al. (2023) further suggest that private AI systems, while highly customizable, may struggle to meet the dynamic demands of fast-moving industries like retail and hospitality, where consumer preferences shift rapidly. As a result, private AI may not be the best fit for companies requiring agility and scalability across multiple touchpoints.</p>
	<p><i>Source: Authors Elaboration</i></p>

### 5. Conclusions, Future Research Perspectives and Implications

This study has classified the existing literature into five key areas, offering a comprehensive view of the opportunities and challenges associated with adopting open and private AI systems in services marketing. Despite the growing body of research on AI, there is still a significant gap in comparative studies that explore the distinct implications of open versus private AI, particularly regarding data security, personalization, scalability, and brand integrity (Mantri and Mishra, 2023; Abou-Foul et al., 2023). This gap is particularly critical given the rapid pace of AI adoption across industries and the growing reliance on both open-source and proprietary AI systems to drive marketing innovation.

Open AI systems offer scalability and cost-effectiveness, but face challenges related to data security, privacy issues, and ethical implications. Private AI systems, on the other hand, offer improved control and customization, but are less scalable and have higher costs. Companies must carefully weigh these trade-offs when deciding what type of AI system to adopt, especially as AI continues to evolve and become more deeply integrated into service marketing processes (Culotta & Mattei, 2024; Lee & Li, 2023).

In any case, assessing the convenience of adopting open or private AI may be useful to analyze and select the real criticality of AI resources in the company and, in particular, it is necessary to understand how much AI should support companies in management decisions and what the actual level of adoption and involvement of AI in strategic or tactical decisions could be. Future research should focus on developing hybrid AI models that combine the scalability of open AI with the security and customization of private AI, allowing companies to leverage the strengths of both systems (Blut et al., 2024). Additionally, exploring the ethical and regulatory implications of AI adoption across industries will be critical as AI technologies continue to evolve and reshape the service marketing landscape. In terms of answering research questions, several gaps emerge from the literature in terms of AI adoption in service marketing. In particular, there is a lack of comprehensive comparative studies that examine the distinct advantages and disadvantages of open versus private AI systems. Most research focuses on the general benefits of AI without investigating the long-

term implications of integrating open or private AI. Scholars such as Culotta and Mattei (2024) have called for more research on how companies can manage the trade-offs between cost, security, and scalability when choosing between these two types of systems. Furthermore, discussions on the ethical and regulatory challenges associated with AI adoption remain insufficient, especially in industries that deal with sensitive customer data (Kofman, 2024).

In light of the contributions selected in the research, it seems that the limits and opportunities in the adoption of open and private AI depend greatly on company size, data management and processing capacity and the human decision-making capacity of managers. The limits must be recognized by companies and commensurate with their size but also with their management needs for the generation of competitive advantage. In any case, it is noted that companies will necessarily have to consider the adoption of AI in management activities and in the design and creation of products and services. Tools based on artificial intelligence are now considered virtual assistants for device users and, in general, for the services offered by companies. For this reason, both at the management and operations level and at the level of products and services offered, AI applications will be an integral part of the basic equipment of companies in every sector. This integration will allow the generation of data and functions that will increase human-technology interaction, generating an increasingly service-centered system of values.

It seems that Open AI presents significant opportunities for rapid scalability and consumer engagement, particularly in industries that rely on automated interactions and broad customer outreach. However, concerns over data privacy, ethical considerations, and the potential for misalignment with brand messaging remain critical challenges (Belk et al., 2023). These issues are particularly relevant for companies operating in highly regulated sectors like healthcare or finance, where the risk of data breaches could lead to significant legal and reputational repercussions (Hu & Min, 2023). On the other hand, private AI offers businesses greater control over their data and the ability to customize their AI solutions to meet specific needs, improving brand integrity and ensuring compliance with industry regulations (Sahoo et al., 2024). However, its high cost and limited scalability make it less accessible to smaller firms or those that need to quickly adapt to changing market demands (Hermann et al., 2023).

In terms of practical implications for management, businesses in the service sector need to invest in AI training for marketing professionals, ensuring that they can navigate the complexities of AI adoption while safeguarding customer trust. Moreover, companies should consider developing frameworks that ensure AI tools align with both brand values and customer expectations. Future research should also focus on exploring hybrid AI models that blend the strengths of open and private AI, along with further investigation into the ethical and regulatory challenges that AI presents as it continues to reshape the marketing landscape.



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