



Adoption and impacts of generative artificial intelligence: Theoretical underpinnings and research agenda

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ABSTRACT

Large language models (LLMs) have received considerable interest in the field of natural language processing (NLP) owing to their remarkable ability to generate clear, consistent, and contextually relevant materials. Among the numerous LLMs, ChatGPT (Generative Pre-trained Transformer for Chatbots) is emerging as a prominent prospective tool for developing conversational agents such as chatbots. However, there is a need for a clear conceptual understanding of ChatGPT's potential implications for the industry and its role in marketing. This study explores the adoption of ChatGPT in marketing and examines theories that may influence its adoption by marketers and consumers, as well as its implications for marketers. This study discusses how ChatGPT may allow for more personalized and engaging content, better customer experience, and improved ROI. However, adoption also brings challenges, including ethical considerations and the need for new skill development. This study also discusses future research opportunities for the adoption of ChatGPT and other generative artificial intelligence technologies in marketing. The goal is to provide insights for organizations that consider implementing these technologies, and to contribute to the literature on the adoption of Artificial Intelligence (AI) and the use of Generative AI in marketing.

1. Introduction

As humans began to employ artificial intelligence (AI) in various disciplines, companies pioneered a new paradigm, known as Generative AI. Generative AI focuses on creating new and unique content using training data. This content can be in the form of literature, images, music, or videos. This might even be the plot of a film or an academic paper. Thus, a wide range of applications is possible. For example, one application of generative AI is chatbots. DeepMind, OpenAI, Google, and Meta are among many businesses that have developed chatbots. ChatGPT's popularity has increased ever since OpenAI made the user interfaces of this generative AI accessible to the public. Although these settings are still in their infancy, academic research has begun to concentrate on them, and experts are regularly evaluating their dependability.

ChatGPT is already used in various businesses and has enormous

potential. While some studies have tested ChatGPT's use in the educational sphere for academic writing and to develop instructional materials and virtual tours for students (Wang et al., 2023; Zhai, 2023), others have explored its use in healthcare (Shen et al., 2023), legal writing (Shope, 2023), coding (Avila-Chauvet et al., 2023), cybersecurity (Mijwil & Aljanabi, 2023) and entertainment (Aydin et al., 2023).

The rise of artificial intelligence and the use of language models like ChatGPT have resulted in substantial changes in the marketing industry. ChatGPT has been hailed as a game changer in the industry because of its ability to enable marketers to develop customized content that resonates with their target audience. This can be used to create virtual assistants for customer care, allowing consumers to receive rapid and personalized responses to their problems. They may also be used to develop personalized marketing materials, allowing firms to engage with customers in a unique manner (Aydin et al., 2023). Nevertheless, the adoption of ChatGPT and other AI technologies is not simple, and several theories

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have been proposed to explain why some firms are likely to embrace these technologies.

As the user base of ChatGPT expands, reactions to technology become more pronounced, reflecting broader sentiments about innovation (Dans, 2023). While some claim that ChatGPT is a premier AI chatbot for the general public (Roose, 2022), critics express concerns about the potential negative impacts on its use in the knowledge sector (Krugman, 2022), democratic processes (Cowen, 2022), and ethical considerations associated with its use (Cotton et al., 2023). These dual perspectives highlight the nuanced discourse surrounding ChatGPT's role in industry and society.

This study focuses on explaining the adoption and impact of Generative AI, particularly in the marketing domain. Our research was guided by the following factors. The increasing attention from researchers in this area has amplified the importance of this study. With the adoption of generative AI, including models such as ChatGPT, the implications for marketing strategies have become more pronounced in various industries. By exploring these theoretical underpinnings, this study provides a roadmap for understanding the mechanisms through which generative AI influences marketing practices. Furthermore, the novelty and evolving nature of generative AI technologies necessitate a proactive approach to conceptual exploration. Given the rapid advancements and transformative potential of AI in marketing, this study serves as a catalyst for stimulating further research in this field. Thus, our study is unique as it not only addresses the current knowledge gap pertaining to the theoretical underpinnings related to the adoption of Generative AI but also inspires and guides future empirical studies that can delve deeper into the practical implications and real-world applications of ChatGPT in marketing contexts.

Moreover, in the era of Industry 5.0, which is characterized by the integration of advanced technologies such as Generative AI, understanding the adoption and impact of such innovations is crucial for shaping the future of industries. It is imperative to understand the transformative implications of Generative AI on production processes, workforce dynamics, and overall industrial landscape. Particularly, in the context of marketing, Generative AI, with its ability to create content autonomously, profoundly transforms marketing strategies. It is important to investigate how businesses in the Industry 5.0 era should utilize Generative AI to personalize marketing content, enhance customer engagement, and streamline campaign management. Understanding the nuanced ways in which Generative AI influences consumer behavior, brand perception, and market dynamics is essential for companies to remain competitive in this technologically advanced era.

In this context, our study investigates how ChatGPT-induced shifts in marketing have significant ramifications for marketers. This includes helping marketers develop more tailored and engaging content and enhancing customer experience, customer service, and ROI, among other things. This study also seeks to explore various theories that explain the use and adoption of ChatGPT and other generative AI in marketing. By investigating these theories, we intend to shed light on the factors that drive the adoption of Generative AI in marketing and provide insights for firms contemplating deploying generative AI technologies, such as ChatGPT-enabled chatbots.

Thus, our study aims to answer the following research questions.

- RQ1: How has the adoption of ChatGPT induced changes in the marketing area, and what are the implications of these changes for marketers?
- RQ2: What are the main theories and constructs that influence the adoption of ChatGPT and other generative AI in marketing?

The adoption of Generative AI in Industry 5.0 signifies a paradigm shift towards more autonomous and intelligent systems. Our study explores how businesses incorporate these technologies into their operations and investigates the factors that influence successful integration and potential challenges. As businesses increasingly leverage AI-driven

marketing strategies, this study provides a roadmap for industry professionals, marketers, and policymakers to ensure responsible and effective utilization of Generative AI in the ever-evolving landscape of Industry 5.0. Finally, our study discusses how the use of ChatGPT and other AI technologies in marketing defines future areas of work for researchers.

The remainder of this paper is organized as follows. Section 2 reviews the literature. Section 3 discusses ChatGPT-induced potential changes in marketing, and Section 4 explains the various theories relevant to the adoption of Generative AI. Section 5 is the discussion part that highlights the major contributions of the study, its managerial and policy implications, and limitations. Section 6 presents future research directions, followed by conclusions.

2. Literature review

2.1. Artificial intelligence (AI)

Artificial Intelligence (AI) constitutes a vast domain within the realm of computer science, focusing on enabling computer systems to create intelligent machines capable of thinking, learning, and behaving similarly to humans (Dwivedi et al., 2021; Sarker, 2022). AI has evolved since its inception in the 1950s, and is driven by scientific advancements, increased computing power, and new technologies (Kar et al., 2023). AI involves various techniques, including machine learning, which recognizes patterns and applies conclusions to new data, and deep learning (DL), which uses artificial neural networks to simulate human brain functions such as image recognition (Kar & Kushwaha, 2023; Verma et al., 2021). In addition, natural language processing (NLP) enables computers to understand and interact with human language naturally and is used for tasks such as machine translation and voice assistance (Kar et al., 2023). Computer vision also allows computer systems to analyze and understand images and videos, and recognize faces, objects, and scenes (Dwivedi et al., 2021). Moreover, AI can be defined as the capacity of a system to effectively extract insights from external data and apply acquired knowledge to achieve particular objectives and tasks. These are typically classified into supervised, semi-supervised, and unsupervised algorithms (Haenlein & Kaplan, 2019; Kar, 2016; Kar et al., 2023). AI finds applications in self-driving cars, drones, smart transportation systems, drug development, medical diagnosis, new product development, industrial process improvement, and increased productivity (Dwivedi et al., 2021; Hemmati & Rahmani, 2022; Kar et al., 2023). It also enables companies to develop intelligent robots and responsive entities to enhance productivity (e.g., chatbots) (Sridevi & Suganthi, 2022).

Consequently, AI systems can be categorized as analytical, human-stimulated, or humanized, contingent on their intelligence type (Dwivedi et al., 2023). Kumar et al. (2019) highlighted in their study that AI offers predictive insights into customer management and brand strategies, advancing developed and developing countries. Kim et al. (2022) also suggested that AI serves various purposes such as enhancing car automation and improving customer service responses, among other applications. AI plays a crucial role in multiple aspects of modern marketing and excels in analyzing customer data swiftly and accurately and identifying shifts, patterns, and emotional changes, empowering marketers to integrate AI insights into their strategies (Dwivedi et al., 2021; Kumar et al., 2019; Verma et al., 2021).

Various AI techniques have been extensively used to enhance the marketing and digital strategies of brands. For instance, big data analysis enables brands to improve customer understanding, enhance experiences, and predict future behavior (Verma et al., 2021). Social network analysis studies user interactions, monitors brand popularity, and assesses satisfaction by employing tools such as Google Analytics, Facebook Insight, and Twitter Analytics (Zhang et al., 2022). In addition, AI techniques can manage social media content, schedule posts, and optimize advertising. Tools such as the buffer, hootsuite, and prout

social simplify content management without deep knowledge of web development (McLachlan, 2023). These tools allow marketers and executives of marketing companies to create and schedule posts, determine optimal timing for publication, and manage advertising campaigns (McLachlan, 2023). For instance, Zendesk is a popular platform offering customer service solutions with features, such as ticket systems, waiting lists, live chats, and analytics (Deutscher Maria, 2023). Moreover, tools such as Social Mention monitor and analyze interactions on social media, keeping track of brand mentions, key terms, and essential topics, helping businesses understand how their audiences engage with their content (Zhang et al., 2022).

2.2. Generative artificial intelligence and its types

Generative Artificial Intelligence (GAI) focuses on training generative models on existing datasets and using these models to create new data that resemble existing data (Kar et al., 2023). GAI leverages generative modeling and advancements in DL to produce various types of data that generative models can create, including images, text, audio, and video (Dwivedi et al., 2023; Verma et al., 2021). Generative models can generate new creative content, improve analytics accuracy, or even create realistic virtual experiences (Kar & Kushwaha, 2023; Votto et al., 2021). Despite the numerous valuable applications of generative modeling, it also has potential risks. One such risk is that generative modeling can be used to create fake or deceptive content (Dwivedi et al., 2021). This content can be used to spread misleading information or to harm a person's reputation.

The existing body of research has recognized two prominent GAI models: the Generative Adversarial Network (GAN) and Generative Pre-trained Transformer (GPT) (Dwivedi et al., 2023; Kar et al., 2023). A GAN is a type of generative artificial intelligence that employs two competing neural models to create new data resembling original and fake data based on authentic data (Lin et al., 2023). GANs have received significant attention in recent years because of their remarkable ability to generate highly realistic and novel data that can be utilized in various applications, such as image and video synthesis and text generation (Kar et al., 2023; Shamsolmoali et al., 2021). GANs consist of two neural models: a generator and discriminator (Ding et al., 2022). The generator aims to produce new data that resembles the original data, whereas the discriminator seeks to differentiate between genuine and fake data. GANs learn through a process called "adversarial competition" (Ding et al., 2022; Shamsolmoali et al., 2021). GANs have been used to craft realistic images that are practically indistinguishable from real images, making them valuable for applications in computer vision, gaming, and virtual reality. In natural language processing GANs have been used to generate coherent and grammatically correct texts (Man & Chahl, 2022), enabling their use in applications such as chatbots and automated writing (Jabbar et al., 2021; Lin et al., 2023).

The second Generative AI (GAI) model type is GPT, which is a pre-trained generative model based on multilayer deep neural networks (Kar et al., 2023). It is designed by training extensive text datasets to understand language and generate new texts based on context (Dwivedi et al., 2023). GPT is distinct because it relies on a single transformer model instead of a second type that uses two models (Dwivedi et al., 2023; Kar et al., 2023). Moreover, GPT was trained on a substantial dataset of texts and codes (Lund & Wang, 2023). One of its key advantages is its ability to create text, translate language, and generate various types of creative content. In recent years, GPT has made remarkable progress in NLP research. ChatGPT, developed by OpenAI, is a large language model (LLM) and one of the most powerful generative models that has gained widespread popularity since its initial release (Dwivedi et al., 2023; Kar et al., 2023). It is based on the architecture of GPT, an AI approach that recognizes language patterns and leverages them to learn how to generate new text and engage in open-ended dialogues with humans (Dwivedi et al., 2023; Lund & Wang, 2023). ChatGPT is trained on a significant portion of the Internet alongside other publicly sourced

data, such as Wikipedia, books, and videos (via transcription) (Dengel et al., 2023). This vast knowledge base enabled students to answer a wide range of questions.

GPT-3, the first version of ChatGPT, was released in November 2022 and has 175 billion parameters (Marr Bernard, 2023). GPT-3 can generate coherent text and provide interactive responses to user queries (Dengel et al., 2023). ChatGPT 4 represents the latest conversational AI model, developed by OpenAI and released in September 2023 (Marr Bernard, 2023). The knowledge base for ChatGPT, both versions 3.5 and 4.0, is up to September 2021 (OpenAI, 2023).

GPT-4 marks advancements in Generative AI (GAI) and shows the potential for replicating text-to-image processing by harnessing Mid-journey's features in industrial automation (Hao Karen, 2023). ChatGPT is a powerful LLM chatbot that can be used in various applications. It is still under development but has learned to perform various tasks, such as providing tailored educational experiences for customer service and creating games and interactive experiences (Dwivedi et al., 2023).

2.3. Use of ChatGPT in marketing

ChatGPT and other AI tools offer invaluable support to marketers (Dengel et al., 2023; Verma et al., 2021). These tools streamline various processes, including ideation, research, and content generation, leading to significant time and effort savings (Lund & Wang, 2023). As multi-modal capabilities continue to develop, ChatGPT is on its way to handle text, images, videos, and the text within them, thereby providing a comprehensive solution for a wide range of marketing needs (Rivas & Zhao, 2023). In the digital marketing context, ChatGPT has extensive applications. It can assist in generating ideas for marketing campaigns, analyzing data patterns, offering insights, predicting trends, and adapting content to match specific tones and styles (Dwivedi et al., 2023; Paul et al., 2023; Verma et al., 2021). Moreover, ChatGPT is a rapid content creation tool that can be employed to craft marketing materials such as social media posts, articles, and emails (Rivas & Zhao, 2023). It is also well suited for data analysis tasks, helping marketers extract valuable insights and providing guidance. Furthermore, ChatGPT aids in identifying core customer segments and provides a deeper understanding of their needs and preferences (Dwivedi et al., 2023; Paul et al., 2023; Verma et al., 2021).

3. ChatGPT induced potential changes in marketing

The use of ChatGPT in marketing has created new opportunities for marketing-related research and innovation. The implications of this development are significant and far-reaching as ChatGPT appears to offer several advantages over traditional marketing techniques. The way businesses measure their marketing campaigns, how consumers engage with brands, and how we think about marketing in the future can all be significantly changed by this new technology. This section discusses the potential changes in marketing that we might see in the near future as ChatGPT is integrated as a technology (for instance, with chatbots) into various marketing efforts and strategies of companies.

3.1. Customer engagement

The adoption of ChatGPT in marketing has significant implications for marketers across various areas of their work. First, ChatGPT may be a potent tool for real-time dialogue with customers, enabling more individualized and responsive customer engagement. Customers can converse with ChatGPT-powered chatbots regarding their preferences, requirements, and problems, while receiving prompt and effective solutions. Additionally, marketers may find ChatGPT useful for learning more about consumer behavior and preferences, so that they can improve customer experience and forge closer bonds with their clients.

Engagement is a multidimensional concept defined by consumers' cognitive, emotional, and behavioral activities (Brodie et al., 2011;

Hollebeek, 2011). In the past, researchers have placed greater emphasis on the behavioral components of engagement while ignoring cognitive and emotional aspects. Luarn et al. (2015) examined consumers' online engagement with Facebook by considering their likes, comments, and shares. However, when assessing consumer engagement using ChatGPT-powered chatbots, it would be interesting to determine whether the behavioral and emotional aspects of online customer brand interaction are equally significant.

3.2. Customer service

Customer care staff can focus on more difficult tasks using ChatGPT to reduce their workload considerably. This could result in higher productivity and lower business costs. Moreover, ChatGPT can manage numerous conversations simultaneously, necessitating less infrastructure and staff. Companies are actively embracing and endorsing AI's capability to mimic human-like interactions, catering to real-time consumer demands (Yen & Chiang, 2021). Lemonade, a digital insurance provider in the US, has been using ChatGPT to deliver quick and effective client services (Iyoob, 2023). Customer inquiries and claims are handled by chatbots powered by ChatGPT, freeing representatives to work on more difficult tasks. With the help of ChatGPT, Lemonade was able to decrease wait times, increase customer satisfaction, and reduce the efforts of its customer service representatives (Iyoob, 2023).

3.3. Customer experiences

In terms of customer experience, ChatGPT can help marketers provide personalized and customized experiences to customers. Chatbots powered by ChatGPT can process and respond to customer queries in real time, providing an instant response to customers and enhancing the customer experience. Natural language processing is a vital component in the design of consumer experiences using ChatGPT. ChatGPT can deliver a more engaging and human-like experience using natural language processing to comprehend and respond to consumer inquiries. Consequently, the workload of customer support teams may be reduced, allowing them more time to concentrate on complex issues. With the help of a ChatGPT-powered chatbot, KLM Royal Dutch Airlines offers customer service using Facebook Messenger. This ChatGPT-powered chatbot can answer a variety of questions, including queries about flights and the location of customer luggage. The airline has saved a lot of money by implementing the chatbot, while also enhancing customers' experiences (Iyoob, 2023).

Although it has been suggested that marketers may use ChatGPT to improve consumer experience, it is difficult to fully realize the potential of ChatGPT without the relevance, personality, experience, and personal connections that humans can offer. Using ChatGPT to build customer relationships and engagement without any human involvement might damage rather than increase genuine customer relationships (Fares, 2023).

3.4. Content creation

With regard to content creation, marketers may produce content at scale, such as product descriptions, blog pieces, social media updates, and email newsletters, with the aid of ChatGPT.

One of the most significant benefits of adopting ChatGPT-3 for content creation is its capacity to comprehend natural language inputs. Marketers can send specific inquiries or prompts for social media content in the same way that they question a person, rather than utilizing certain keywords or phrases (Aljanabi et al., 2023). For many people, this can make the content creation process simpler and more user friendly.

Small businesses and those with few resources may find this to be very helpful because it enables them to produce content more effectively and efficiently. Social Beat, an Indian digital marketing organization,

uses this technology to create blogs and posts on social media for its clients. The firm can produce high-quality material in a fraction of the time it would require to compose it manually because of ChatGPT's capacity to comprehend and produce human-like language. This not only saves time but also guarantees that the information is accurate and has a high standard (Williams, 2023).

While it has been argued that ChatGPT can support quality control and consistency across all marketing platforms, ensuring that brand messaging is consistent and coherent, concerns have also been raised as to how marketers must analyze and validate the content produced by ChatGPT to guarantee consistency with the brand message and image (Fares, 2023).

Although ChatGPT offers a cutting-edge, human-like response, and can generate content, it is crucial to understand that this generative AI technology can only be described as human-like. Similar to the typical difficulties that chatbots encounter, the degree of human-likeness is crucial for process optimization and content creation (Fares, 2023). Furthermore, relying solely on ChatGPT to produce original content could lead to short- and long-term problems. ChatGPT offers a thorough grasp of human nature but lacks the lived experiences of humans. ChatGPT should be utilized to encourage ideation and enhance current content, while still allowing for human creativity, as over-reliance on technology could limit creative abilities (Fares, 2023).

3.5. Personalisation

Another area where ChatGPT may make a big difference is personalization. ChatGPT can provide advertisers with insights into client preferences and interests by examining customer data and behavior.

ChatGPT may assist marketers in discovering what sort of items or services a consumer is interested in and designing tailored ads that are more likely to resonate with them by analyzing data such as customer demographics, behavior, preferences, and prior purchases. ChatGPT may also assist marketers in personalizing content for social media and email campaigns. Thus, ChatGPT may assist marketers in creating more tailored content that is more likely to be shared and interacted with by their target audience by analyzing customer data and producing insights into what sort of content consumers enjoy.

Furthermore, ChatGPT can help tailor customer experiences by making unique products or service suggestions. ChatGPT can recommend products that are more likely to be of interest to customers based on customer data and past behavior, thereby improving the likelihood of a purchase and delivering a more personalized shopping experience.

3.6. Lead generation

ChatGPT can help streamline the lead generation process by qualifying leads and providing them with relevant information and support.

ChatGPT can be used as a chatbot to interact with visitors on a company's website or social media channels, providing pertinent information and answering inquiries in real-time. Capturing leads through opt-in forms or surveys is one method by which ChatGPT can help marketers create leads. ChatGPT can ask users a series of questions to gather information about their interests and requirements and then use that data to send targeted marketing messages or personalized offers. This could increase the possibility of converting visitors to qualified leads.

ChatGPT can also help marketers with lead generation by employing natural language processing to decipher the intent behind consumer inquiries. ChatGPT determines when a consumer is looking for a specific product or service and presenting it with relevant recommendations or offers. ChatGPT can also analyze consumer behavior and provide insights into the channels or messaging methods that generate the most leads.

This can assist lead generation activities in becoming more successful and efficient, allowing marketers to concentrate on the most promising

customers and improve the overall return on investment in their marketing operations.

3.7. Consumer behavior

Marketers can gain useful insights into customer behavior, preferences, and needs using ChatGPT. They can better understand customer pain points and identify improvement opportunities by looking through the chat logs. ChatGPT can also aid in analyzing consumer conversations and feedback on social media platforms, emails, and chatbots. This can assist companies in better meeting their customers' needs by optimizing their products and services (Iyooob, 2023).

ChatGPT can also help marketers understand consumer behavior by analyzing data and producing insights that can be used to develop effective marketing strategies. ChatGPT can assist marketers in understanding what motivates customers to make a purchase by evaluating customer data, such as demographics, past purchases, behavior, and preferences.

3.8. Ethical considerations and policy implications

Ethical considerations are of paramount importance for the adoption of Generative AI in marketing. Ethical implications include transparency in communication with consumers regarding the use of AI-generated content and potential manipulation of information. Businesses must ensure that ChatGPT usage is consistent with customer expectations and that personal data are protected and not used inappropriately. Moreover, there is a chance that marketing initiatives based on ChatGPT could unintentionally reinforce prejudices and stereotypes, harming marginalized or vulnerable populations because ChatGPT can only be as accurate as the data it is trained on. As a result, businesses need to be aware of the moral ramifications of using ChatGPT in marketing, and take precautions to guarantee that their procedures are transparent and ethical.

ChatGPT-3 identifies various ethical concerns addressed by OpenAI and AI ethicists, emphasizing the issues of manipulation and bias (Kar et al., 2023; Chan, 2023; Bender et al., 2021). A significant concern arises from the societal bias encoded within GPT-3, potentially harming marginalized populations and leading to discriminatory practices and social inequalities (Chan, 2023). These challenges exemplify the darker aspects of AI, including algorithmic bias in ML models and the management of AI bias, encompassing the unintended consequences of AI technologies (Akter et al., 2022; Varsha, 2023). Thus, there is a need to ensure that the algorithms driving Generative AI models are fair and unbiased, and do not perpetuate existing societal prejudices. Stakeholders, including marketers, consumers, and AI developers, must collectively address concerns regarding consent, data protection, and the broader societal impact of AI-generated content.

Regarding policy implications, the use of ChatGPT in marketing may result in revisions of the laws governing data protection and application of artificial intelligence in marketing. To ensure that businesses utilize technology in an ethical and responsible manner, governments and regulatory agencies may need to set standards and best practices for the use of ChatGPT in marketing.

Going ahead, the industry will undoubtedly be significantly impacted by the continuous development and adoption of ChatGPT in marketing. As technology advances, it may become more effective in attracting and converting customers, thus enabling businesses to forge close ties with their target markets.

4. Theoretical underpinnings to explain and understand the adoption of ChatGPT and other generative AI

In this section, we discuss various theories that will help us understand the adoption of ChatGPT and other generative AI in the near future. These theories and their constructs can be used by researchers to

develop conceptual and research models while conducting future research on ChatGPT.

4.1. Technology acceptance model (TAM)

Davis first introduced the Technology Acceptance Model (TAM) in 1989 to understand and predict the adoption of new technologies. The model contends that the two main factors influencing the initial adoption of a new technology are perceived usefulness and ease of use.

The extent to which someone thinks that utilizing a specific technology would be beneficial is known as the perceived usefulness. The likelihood that a person will use a given technology increases with the perceived usefulness. Perceived ease of use is the degree to which a person believes that using a specific technology is effortless. People's intention to use a given technology increases with their perception of its simplicity.

To explain perceived usefulness and usage intentions, Venkatesh and Davis (2000) expanded the original TAM model and added the constructs of job relevance, subjective norm, image, output quality, and result demonstrability to TAM2. TAM3 added additional constructs such as perceived enjoyment and computer anxiety to understand the adoption of a new technology.

TAM has been used to examine how new technologies are adopted in a variety of scenarios, including internet banking (Alsajjan & Dennis, 2010), electronic toll collection systems (Gao & Bai, 2014), mobile learning (Tan et al., 2014); mobile commerce (Liébana-Cabanillas et al., 2017), smartwatches (Hong et al., 2017), service robots (Park et al., 2021), voice-based assistants (Pitardi et al., 2021), and autonomous vehicles (Dimitrakopoulos et al., 2021).

The TAM can also be used in the context of ChatGPT to understand potential user behavior drivers and the efficacy of AI chatbot systems. The adoption of ChatGPT is affected by various factors, including perceived ease of use and usefulness. Users are more likely to utilize ChatGPT if they believe that it is a useful tool that is easy to use. However, some consumers can find the technology challenging to use, fail to see its worth, obtain inaccurate findings, or obtain superficial outcomes (Cahan & Treutlein, 2023).

4.2. Unified theory of acceptance and use of technology (UTAUT)

According to the Unified Theory of Acceptance and Use of Technology (UTAUT), four key factors determine the probability of technology adoption: performance expectancy, effort expectancy, social impact, and facilitating conditions (Venkatesh et al., 2003). Performance expectancy relates to the notion that employing technology improves job performance, whereas effort expectancy is the level of ease associated with using technology. While facilitating conditions pertain to the presence of organizational and technological infrastructure to support technology use, social impact refers to the influence of other people's beliefs on technology adoption.

The UTAUT model has been used in various contexts to predict adoption and use. Gao et al. (2015) investigated the factors influencing consumers' desire to adopt wearable technology in healthcare by combining an upgraded version of the UTAUT with other models. Madigan et al. (2017) found hedonic motivation to be the most effective predictor of behavioral intentions to utilize automated road transport systems (ARTS) using UTAUT to evaluate the variables that influence consumers' acceptance of ARTS.

The UTAUT model may be applied to ChatGPT to understand why some users are more likely to accept and adopt the generative AI chatbot than others. In the case of ChatGPT, performance expectancy and effort expectancy are expected to have the greatest influence on a person's decision to use the chatbot because people are likely to believe that the chatbot is simple to use and does not require much effort. The facilitating conditions construct refers to the notion that all prerequisites for using ChatGPT are met. The degree to which an individual is persuaded

by others to utilize a certain technology is referred to as social influence. In the case of ChatGPT, it is possible that users will be motivated to use the chatbot by their friends or family, because they feel that others are using or promoting ChatGPT.

4.3. Theory of task-technology-fit (TTF)

As technology becomes increasingly integrated into our lives, it is important to understand how well it meets our needs. Although the Technology Acceptance Model (TAM) states that information technology must be regarded as useful to be effective, it does not address antecedents other than perceived usefulness and perceived ease of use (Davis et al., 1989). According to Goodhue and Thompson (1995), the most crucial factor in determining a technology's effectiveness is how well it fits the purpose for which it is used.

The Task-Technology Fit (TTF) model, given by Goodhue and Thompson (1995), posits that the effectiveness of technology is determined by how well it fits the purpose for which it is used. Therefore, the fundamental premise of the model is that the value or efficacy of technology is established by the fit between the task requirements and technical components that enable a user to perform the intended activities (Goodhue, 1998; Goodhue et al., 2000). Tasks culminate in all the physical and/or cognitive acts and processes that people perform in certain settings. Technology can be defined as the tools people use to perform or help accomplish their tasks (Ammenwerth et al., 2006; Goodhue & Thompson, 1995).

Therefore, TTF is a measure of how much a technology helps a person carry out their tasks (Howard & Rose, 2018; Yang et al., 2013; Ammenwerth et al., 2006; Goodhue & Thompson, 1995) and it is influenced by the interaction between the characteristics of the task and the functionalities of the technology (Spies et al., 2020). Thus, technology should produce better performance when it fits the task characteristics that it seeks to assist (Goodhue et al., 2000). The TTF model predicts that performance suffers when task demands and technical capabilities are not well-matched.

TTF model has been used along with other models of technology adoption to study adoption of wearable devices (Chang et al., 2016), mobile banking user adoption (Zhou et al., 2010) and adoption of augmented reality technology in education (Faqihi et al., 2021), to mention a few.

Understanding TTF in context of ChatGPT: TTF is a measure of how much technology assists a person in performing their activities. As previously stated, tasks are the sum of all physical and/or cognitive acts and processes carried out by persons in a certain 'context' (Goodhue & Thompson, 1995). On the other hand, ChatGPT has difficulty recognizing context because it relies on a predetermined set of rules to create responses. When a conversation deviates from the established rules, it may result in inconsistencies. Understanding human interactions, particularly conversations, requires a grasp of context. One of the most critical issues in artificial intelligence research today is training computers to recognize and respond correctly to context. Although existing chatbots cannot completely comprehend the context, significant breakthroughs in deep-learning neural networks may eventually enable this. Chatbots can hold genuine human-like conversations if they can effectively read the context.

Furthermore, when it comes to the performance of a technology, if its dependability is low, it will have a negative influence on performance, and as a result, task-technology fit will be poor. This is problematic because ChatGPT may be unreliable and deliver misleading information. For marketers, this may imply that customers become disappointed, harming the brand's reputation (Iyooob, 2023). A potential interpretation of this constraint for marketers is that marketers must ensure that ChatGPT enables the chatbot to be updated to handle more sophisticated consumer inquiries so that the system can deliver accurate replies.

Microsoft used ChatGPT to run a chatbot that provided support for its Azure cloud-computing platform. Although the chatbot was initially

successful in responding to client questions, it quickly became clear that it had trouble with the difficult requests. To address these questions and offer precise and helpful responses, Microsoft must update its chatbot (Iyooob, 2023). Thus, businesses must carefully assess their needs and constraints, take precautions to reduce potential dangers, and ensure successful adoption of ChatGPT. To ensure that ChatGPT continues to add value to both customers and businesses, companies should continuously assess how well they are working and make necessary improvements.

There are various drawbacks to ChatGPT model that can contribute to mistakes in the model's predictions. Although AI language models can generate cohesive content, they cannot provide accurate information. Marketers must analyze and validate the content generated by ChatGPT to uncover potential mistakes and ensure consistency with brand messages and images (Fares, 2023). Furthermore, ChatGPT model does not consider the possibility of human errors in chat interactions. This can lead to mistakes if the chat conversations on which the model is based contain flaws. Consequently, human judgement must be used in any decision-making process, including chatbot prediction.

4.4. Technological, organizational, and environmental (TOE) framework

The TOE framework comprises three core elements: technology (T), organization (O), and environment (E) (Tornatzky and Fleischer, 1990). Technological factors encompass the nature of technology and how potential adopters perceive their superiority over alternative options (Qalati et al., 2022). Organizational factors pertain to the internal context in which technology operates, encompassing aspects such as an organization's size, structure, culture, and available resources (Qalati et al., 2022). Environmental factors involve external pressures such as customer demands for technology adoption in their interactions with businesses for communication, purchasing, or browsing. In essence, the TOE framework offers a comprehensive understanding of the interplay between technological, organizational, and environmental dynamics in shaping businesses' adoption decisions.

The Technological, Organizational, and Environmental (TOE) framework is highly relevant in the adoption of ChatGPT, providing a structured approach for understanding the various factors that influence the integration of this generative AI technology into businesses.

In the context of ChatGPT adoption, technological factors encompass the nature of the AI model, its capabilities, and how organizations perceive it compared to other available options. Businesses must evaluate the efficiency, effectiveness, and innovation that ChatGPT brings to customer interactions, content creation, and problem-solving. The technological dimension of the TOE framework helps organizations assess whether ChatGPT aligns with its specific technological needs and goals.

The internal organizational context is crucial when considering the adoption of ChatGPT. This involves examining the size, structure, culture, and available resources of an organization. Factors such as the existing IT infrastructure, the organization's openness to innovation, and the ability to provide necessary training to employees are integral in determining how well ChatGPT can be integrated into daily operations. The organizational dimension of the TOE framework helps assess the readiness and capacity of the organization to seamlessly incorporate ChatGPT.

Environmental factors in the TOE framework include external influences that affect technology adoption. In the case of ChatGPT, these factors could involve customer expectations and demand for personalized and efficient interactions. Additionally, competitive pressures within the industry may drive organizations to adopt ChatGPT to stay ahead. Regulatory considerations and ethical concerns surrounding AI adoption are environmental factors. Evaluating these external dynamics is crucial for understanding how ChatGPT aligns with a broader business ecosystem.

Thus, the TOE framework facilitates a systematic examination of the

technological aspects of ChatGPT, the internal readiness and capabilities of the organization, and the external influences that may shape or impede its adoption.

4.5. Theory of reasoned action (TRA)

Fishbein and Ajzen (1975) proposed the Theory of Reasoned Action (TRA). The theory has its roots in the social psychology setting. It was formulated using three constructs: attitude, subjective norms, and behavioral intention. According to this theory, a person's behavioral intention towards something is dependent on the subjective norms and attitudes of the person towards the thing.

According to this theory, attitudes are the sum of beliefs about a certain behavior, weighed by evaluations of these beliefs. In contrast, subjective norms are people's views that influence behavior because of the weight one gives to each of their points of view. The subjective standards for a certain behavior as well as attitudes towards that behavior influence behavioral intention, which has been shown to predict actual behavior.

TRA is useful for understanding how ChatGPT adoption works. For instance, the intention to use a generative AI chatbot increases if one has a favorable attitude towards it.

4.6. Theory of planned behavior (TPB)

The Theory of Reasoned Action (TRA), first postulated by Fishbein and Ajzen (1975), served as the foundation for the Theory of Planned Behavior (TPB), which was built in 1991. In addition to the conceptions of attitudes and subjective norms that comprise the TRA, the TPB introduced the concept of perceived behavioral control (PBC).

PBC refers to people's perceptions of how easy or difficult it is to carry out a desired behavior. The TPB has responded to the objection-levelled TRA, which is founded on a comparatively static construct of attitude, and cannot be utilized to predict behavioral outcomes. Self-Efficacy Theory (SET), first put forth by Bandura (1977) and derived from Social Cognitive Theory, serves as the conceptual foundation for PBC.

Perri et al. (2020) utilized TPB to research consumers' intentions to use smart grid technology. Their study included a fourth variable related to resistance to change in addition to the three antecedents of intentions listed by Ajzen (1991). TPB helped explain the behavioral intentions assessed in this study.

The notion of planned behavior can be used in the context of ChatGPT. The TPB states that a strong intention to undertake a behavior is predicted when (a) an individual has a favorable attitude towards a behavior (use of ChatGPT), (b) the attitude is compatible with the appropriate subjective standards (for example, the usage is consistent with social norms approved by your parents, friends, teachers, and so on), and (c) the individual senses a high degree of behavioral control (while using ChatGPT).

4.7. Social cognitive theory (SCT)

Social Cognitive Theory (SCT) focuses on the idea of self-efficacy, which is defined as "the assessments of one's ability to carry out the courses of action necessary to deal with potential scenarios" (Bandura and Cervone, 1986). Since it encourages the development of coping mechanisms, the theory contends that self-efficacy is the most significant factor influencing behavioral change. According to Compeau and Higgins (1995), self-efficacy is "the assessment of one's capacity to use technology to carry out a specific job or task."

According to SCT, a user's behavior is influenced by their expectations for the future in terms of both performance-related and personally beneficial outcomes. Self-efficacy influenced the expectations for both outcomes. When it comes to personal result expectations, a person's self-worth and sense of accomplishment are relevant; however,

performance-related expectations are influenced by outcome expectations related to work performance. In line with the SCT, two contradictory factors are thought to affect user behavior. The "affect" element, which measures the extent to which someone enjoys their work, contributes positively. The element "anxiety," on the other hand, which refers to a person's uncomfortable reaction when executing a task like trying to use a computer they are not very familiar with, makes a negative contribution to desired behavior. Many adoption studies have applied this theory in different contexts. This theory may be applied in future research to study the behavior of users in the context of ChatGPT.

4.8. Self determination theory (SDT)

The 1985 publication of Self-Determination and Intrinsic Motivation in Human Behavior by psychologists Edward Deci and Richard Ryan supported the development of the self-determination theory. They created a theory of motivation contending that autonomy, competence and relatedness are the factors often drive people.

Self-determination theory emphasizes internal sources of motivation, including the desire for knowledge or independence (intrinsic motivation). If engaging in an activity causes a person to feel pleasure and brings about satisfaction, that behavior can be categorized as driven by intrinsic motivation (Vallerand, 1997). The degree of pleasure experienced when using a computer is an example of intrinsic motivation (Venkatesh & Davis, 2000; Davis et al., 1992).

According to the self-determination theory, people must feel connected, competent, and autonomous to grow psychologically (Ryan & Deci, 2020). The ability to take meaningful action that will bring about real change is considered autonomy. Competence is necessary for individuals to acquire new skills and become task experts. People are more inclined to take actions that will forward their goals when they believe they possess the skills needed for success. People need to have an attachment and a sense of belonging to connect with others.

Self-determination theory can be used to better understand how new technologies such as ChatGPT are adopted. This theory has been applied to clarify new members' engagement patterns in online groups (Tsai & Pai, 2014). Studies have shown that when people's needs for autonomy, competence, and relatedness, the three components of self-determination, are satisfied, they change their social identities and engage in activities (Tsai & Pai, 2014).

The design of ChatGPT can affect how well the users' fundamental psychological needs are met, which in turn can affect how motivated they are to adopt and use the chatbot. For instance, features that allow users to customize their interactions can improve autonomy, whereas those that provide users with accurate and practical information can improve their competence. In future studies, it would be interesting to examine how users evaluate ChatGPT's capacity to offer hedonic and utilitarian rewards.

4.9. Theory of diffusion of innovations

Diffusion research has its origins in the seminal study by Rogers (1962), often known as the Diffusion of Innovation Theory. The fundamental tenet of the theory is that innovation, time, communication channels, and social systems are factors that have the greatest impact on how quickly a new idea spreads.

The primary participants (adopter categories) were innovators, early adopters, early majority, late majority, and laggards. Marketing practitioners typically employ the diffusion of innovation theory to promote the consumer adoption of novel goods. This theory is frequently used to accelerate consumer acceptance by identifying and engaging influential early adopters.

The following five elements affect how well an invention is adopted: compatibility, complexity, triability (the ability to test or experiment with an innovation before committing to it), and observability (the capacity of the innovation to yield measurable benefits).

In the context of ChatGPT, this theory highlights the importance of explaining the advantages of technology to potential users, and how to leverage social networks to encourage adoption. In addition, ChatGPT's design should be modified to fit the demands and tastes of its users, paying particular attention to innovators and early adopters. This should be done to facilitate early adoption of this new technology.

Table 1 presents information on the various theories affecting the adoption of a technology and its relevance to marketers and consumers in the context of ChatGPT.

5. Discussion, implications and limitations

5.1. Findings

The advent of ChatGPT ushered in a transformative era in various facets of marketing, bringing about significant changes in content marketing, lead generation, CRM, customer experience, etc.. This study aims to delve into the multifaceted impact of ChatGPT on the marketing landscape, shedding light on the profound transformations it has introduced and the subsequent consequences for the stakeholders involved.

Our study aimed to understand how the adoption of ChatGPT has induced changes in marketing, and the implications of these changes for marketers. We found that one important aspect is how ChatGPT influences content marketing. By harnessing the power of generative AI, marketers can now access tools that can efficiently craft compelling and contextually relevant content. This not only streamlines the content creation process, but also enhances the overall quality, catering to the evolving preferences of the target audience. ChatGPT has emerged as a game-changer in the realm of lead generation. The ability to engage with potential customers in a personalized and dynamic manner has redefined lead generation strategies. The integration of ChatGPT into Customer Relationship Management (CRM) systems has bolstered its significance in marketing. Automating routine tasks, providing instant responses, and personalizing interactions are just a few ways in which generative AI enhances CRM functionality, helping businesses build stronger and more meaningful relationships with their customer base.

However, amidst the positive transformations, this study addresses a critical concern: the ethical dimensions surrounding ChatGPT. Although technology brings immense benefits to users, there are growing apprehensions within industries and governments regarding its potential for unethical use. This study delves deeply into these ethical considerations and proposes a compelling need to mitigate potential negative consequences.

Furthermore, our study also aimed to lay down theoretical underpinnings for understanding the adoption of ChatGPT and other Generative AI. Understanding theories that elucidate the adoption of generative AI by businesses is crucial for navigating the complex landscape of technological integration. Delving into these theories provides invaluable insights into businesses' decision-making processes, fostering informed strategies for implementation and addressing potential challenges. Our study highlights various theories relevant in this context.

The Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) are prominent theories that explore the factors that influence technology adoption. Applying these frameworks to generative AI adoption allows businesses to assess how employees perceive a technology's utility, user friendliness, and the impact of social factors on its integration.

Moreover, theories such as the diffusion of innovation theory have shed light on the dynamics of how new technologies spread within societies and organizations. Understanding the diffusion process helps businesses anticipate potential challenges related to the adoption of generative AI, such as employee resistance, technological uncertainties, and organizational culture clashes.

The Technology-Organization-Environment (TOE) framework is also crucial for comprehending ChatGPT adoption dynamics. Addressing the

Table 1
Adoption theories and their relevance to marketers and consumers in the context of ChatGPT.

Theory (Author, Year)	Constructs in the Theory	Relevance to Marketers and Consumers in the Context of ChatGPT
Technology Acceptance Model (TAM) (Davis, 1989)	Perceived Usefulness, Perceived Ease of Use, Behavioral Intention, Actual Use	ChatGPT can be more widely adopted if marketers can design it to be perceived as useful and easy to use. For example, by ensuring that the chatbot can understand natural language and provide personalized responses, users are more likely to find it useful and easy to use. Also, the developers could highlight the ease of use of ChatGPT by emphasizing its user-friendly interface and simple commands. Consumers can evaluate the usefulness and ease of use of ChatGPT to decide whether it is suitable for their tasks.
Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003)	Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Behavioral Intention, Actual Use	In the context of ChatGPT, these constructs can help marketers understand the factors that influence users' intention to use the chatbot, such as the perceived performance of the chatbot, the perceived effort required to use it, and the social influence of peers and family members. Additionally, facilitating conditions, such as providing training or technical support, can facilitate adoption.
Theory of Task-Technology-Fit (TTF) (Goodhue & Thompson, 1995)	Perceived task characteristics, perceived technology characteristics, and task-technology fit.	Marketers can leverage the TTF model to identify the most appropriate tasks for ChatGPT and tailor the technology's characteristics to suit the task's requirements. For instance, if ChatGPT is being deployed for customer service, it should be equipped with natural language processing capabilities to understand the customer's inquiries and provide relevant responses. Consumers can evaluate the suitability of ChatGPT for their tasks and adjust their expectations accordingly. Here, they might expect ChatGPT to be more effective in answering factual questions than providing emotional support. Similarly, if the target audience is customers of an e-commerce platform, ChatGPT can be programmed to provide personalized product recommendations based on previous purchase history.

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Table 1 (continued)

Theory (Author, Year)	Constructs in the Theory	Relevance to Marketers and Consumers in the Context of ChatGPT
Technological, Organizational, and Environmental (TOE) Framework (Tornatzky and Fleischer, 1990)	Technological, Organizational, and Environmental Factors	In context of ChatGPT adoption, technological factors encompass the AI model's nature, capabilities, and perceived advantages. Organizations evaluate ChatGPT's efficiency, innovation, and impact on customer interactions. Organizational factors involve examining size, structure, culture, and resources. Existing IT infrastructure, openness to innovation, and employee training determine seamless integration. Environmental factors, including customer expectations and industry competition, impact ChatGPT adoption. Regulatory and ethical considerations fall within these external dynamics, crucial for understanding ChatGPT's alignment with the business ecosystem.
Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1975)	Attitudes, Subjective Norms, Behavioral Intentions, Actual Behavior	Marketers can influence the adoption of ChatGPT by shaping users' attitudes toward the technology and the perceived social norms around its use. For example, by promoting the chatbot as a reliable and convenient source of information, marketers can shape users' attitudes toward the technology.
Theory of Planned Behavior (TPB) (Ajzen, 1991)	Attitudes, Subjective Norms, Perceived Behavioral Control, Behavioral Intentions, Actual Behavior	In the context of ChatGPT adoption, this theory emphasizes the importance of perceived behavioral control. If users feel that they have control over the use of the chatbot and that they are able to interact with it effectively, they are more likely to adopt it.
Social Cognitive Theory (SCT) (Bandura and Cervone, 1986)	Self-efficacy, Observational Learning, Reciprocal Determinism	Marketers can leverage the principles of Social Cognitive Theory to encourage adoption of ChatGPT by showcasing examples of successful interactions with the chatbot and providing feedback that reinforces positive interactions, enhancing users' self-efficacy.
Self-Determination Theory (SDT) (Deci and Ryan 1985)	Autonomy, Competence, Relatedness	For marketers, providing a sense of autonomy and competence to the consumers through ChatGPT can enhance the intrinsic motivation of consumers to use the product. Relatedness can also be fulfilled by ChatGPT by providing a personalized experience to the consumers. For consumers,

Table 1 (continued)

Theory (Author, Year)	Constructs in the Theory	Relevance to Marketers and Consumers in the Context of ChatGPT
Theory of Diffusion of Innovations (Rogers, 1962)	Innovation Characteristics, Communication Channels, Social System, Time	ChatGPT can provide a sense of autonomy and competence by allowing them to interact with a machine without human intervention and providing accurate responses. In the context of ChatGPT, this theory emphasizes the importance of communicating the benefits of the technology to potential users and leveraging social networks to promote adoption. Additionally, the design of ChatGPT should be tailored to the needs and preferences of the target users.

technological, organizational, and environmental dimensions facilitates a nuanced understanding of the complexities involved, helping businesses strategically navigate the adoption of ChatGPT in a manner aligned with their specific needs and the broader business ecosystem. Additionally, we describe the constructs of other theories such as the Theory of Task-Technology-Fit (TTF), Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Social Cognitive Theory (SCT), and Self-Determination Theory (SDT) in the context of the adoption of ChatGPT.

Understanding the theories that explain the adoption of generative AI by the industry is crucial for realizing the full potential of these technologies. By streamlining business operations and optimizing resource allocation to address ethical concerns and societal impacts, these theories offer a comprehensive framework for informed decision making. Industries that embrace the understanding from these theories not only enhance their competitive edge, but also contribute to the responsible and sustainable advancement of generative AI in the broader socioeconomic landscape.

5.2. Managerial and policy implications

5.2.1. Managerial implications

As organizations navigate the integration of Generative AI into marketing strategies, managers face the imperative of understanding how these technologies can reshape traditional workflows. This study provides valuable insights into optimizing marketing operations by harnessing Generative AI for content creation, personalization, and targeted advertising. Managers must deal with the technical aspects of AI implementation and address the organizational culture and skill set required for seamless collaboration between humans and machines. Identification of skill gaps is crucial, leading to the development of strategic training initiatives to upskill the marketing team and foster a workforce capable of leveraging the full potential of Generative AI.

Managers dealing with the adoption of generative AI such as ChatGPT confront ethical considerations. The first and foremost is transparency: managers must communicate clearly when AI systems are in use to avoid misleading customers. Genuine human-like interactions facilitated by ChatGPT require disclosure to maintain trust. Striking the balance between personalized marketing and customer boundaries is crucial. Managers need to instill a culture of ethical marketing practices within the organization, emphasizing the responsible use of generative AI to enhance, rather than compromise, customer trust. Navigating the ethical landscape is essential not only for compliance with regulations

but also for fostering long-term relationships with customers who increasingly value transparency and ethical behavior from the brands they engage with. Addressing bias is also crucial because these systems learn from vast datasets that may inadvertently perpetuate societal prejudice. Managers must actively identify and rectify biases in training data to ensure fair and equitable outcomes and foster inclusivity in AI applications.

Therefore, data privacy has emerged as an important issue. Generative AI often processes sensitive information and requires stringent safeguards to protect user privacy. Managers must implement robust security measures and adhere to data-protection regulations. It is imperative to strike a balance between automation and human involvement. Overreliance on AI can compromise personal touch integration in customer relationships. Ethical management involves careful consideration of societal implications including potential job displacement. Proactive measures such as reskilling initiatives can mitigate the impact of aligning AI adoption with broader societal well-being.

5.2.2. Policy implications

The adoption of generative AI requires policymakers to navigate a complex web of regulatory, societal and ethical considerations. Regulatory frameworks for generative AI must address several key areas. Policymakers must address the challenge of crafting regulations that foster innovation while mitigating the risks associated with AI-driven marketing practices. First, policymakers must mandate the transparency requirements. Another critical aspect is the mitigation of biases. Policymakers should institute regulations that mandate regular audits of generative AI systems to identify and rectify biases in the training data. These regulations can guide the development and deployment of algorithms that prioritize fairness, ensuring that AI applications do not perpetuate or exacerbate societal prejudice inadvertently.

Data privacy regulations have come at the forefront. Policymakers must establish clear guidelines for how user data are handled by generative AI systems. This includes rules for data collection, storage, and usage to protect individual privacy (Kar et al., 2023). Balancing the imperative for data security with the need for innovation is a delicate task that requires nuanced regulatory measures.

The accountability and liability standards must be clearly defined. Policymakers should specify the responsibilities of developers, operators, and users for the use of generative AI. This includes setting guidelines for transparency in algorithmic decision-making processes, and establishing mechanisms for holding entities accountable in cases of AI errors, misuse, or unintended consequences.

Anticipating the societal impact of generative AI is crucial to policymakers. Job displacement owing to automation is a pertinent concern. Policymakers should encourage businesses to invest in reskilling programs to equip their workforce with the skills required in a changing job market. Support mechanisms for workers facing displacement must also be considered to ensure a transition. Accessibility and inclusivity are important societal factors. Policymakers should promote the development and deployment of generative AI systems to accommodate diverse user groups. This involves addressing issues of language bias and cultural sensitivity and ensuring that AI technologies do not inadvertently exclude certain populations.

From an ethical standpoint, policymakers should consider broader implications of generative AI. Ethical guidelines should emphasize the importance of respecting human values, dignity, and rights in the development and deployment of such technologies. It is imperative to ensure that generative AI aligns with the societal norms and values. Policymakers should encourage research on the ethical use of AI, fostering collaboration between academia, industry, and regulatory bodies. This can lead to the development of the best practices and ethical standards that evolve with technology.

5.3. Limitations of the study

This study aims to offer a conceptual grasp of the theoretical foundations and implications of Generative AI in the business realm, focusing on marketing. The conceptual nature of this study is driven by the limited availability of research on the intersection of ChatGPT and marketing. Future investigations could enhance this understanding through systematic literature reviews, grounded theories, and case study approaches, aiming for a more exhaustive exploration. While this study delves into theories and contexts, future research may encompass broader aspects, considering the characteristics and methodologies for a more holistic examination. It is important to note that this study confines its scope to the marketing domain, suggesting the potential for future multidisciplinary research to extend its comprehensive impact across various business landscape dimensions. Additionally, some of the limitations of this study lay down the scope for future research.

One of the limitations of this study is the generalizability of its findings across diverse contexts within the marketing domain. The adoption and impact of ChatGPT may vary significantly, depending on industry-specific nuances, company size, and geographical location. Theoretical frameworks may not apply uniformly to all sectors, and a more nuanced exploration of context-specific variables that influence the adoption and impact of ChatGPT in different marketing landscapes would be useful.

While this study touches upon the theoretical aspects of ChatGPT adoption, potential unintended consequences may not be exhaustively addressed. Future research should consider delving into potential biases and responsible use of customer data in AI-driven marketing strategies. Understanding unintended consequences, such as the risk of perpetuating stereotypes or their impact on consumer behavior, will add depth to research.

While the study may present robust theoretical frameworks, it may fail to address the practical challenges associated with the implementation of ChatGPT in marketing strategies. Practical considerations, such as the cost of implementation, the need for skilled personnel to manage and optimize AI systems, and the potential resistance from marketing teams or customers to AI-driven interactions, are crucial factors influencing actual adoption and impact. A more pragmatic exploration of these challenges, along with potential solutions, would enhance the applicability of the research for practitioners looking to integrate ChatGPT into their marketing efforts.

Establishing causality between ChatGPT adoption and specific marketing outcomes is complex. This study does not address the challenges of attributing changes in marketing performance solely to the adoption of ChatGPT, considering the multifaceted nature of marketing strategies and the influence of various external factors.

6. Future research directions

The application of ChatGPT in marketing is a relatively new topic that has opened up a plethora of options for researchers. Researchers can provide insights into the opportunities and challenges related to the use of ChatGPT in marketing by investigating its potential, which can help guide future studies in this field. Table 2 summarizes the research areas that can be investigated in relation to potential ChatGPT-induced changes in marketing. Each of these domains poses distinct research questions that may shed light on the implications of using ChatGPT in marketing.

The use of AI-enabled chatbots in marketing has grown in popularity in recent years, and researchers are now working on a variety of research problems to gain useful insights into the potential obstacles related to the application of Chat Generative Pre-trained Transformer (ChatGPT)-powered generative AI technology in marketing. By answering research questions related to the use of ChatGPT in marketing, marketers can make better-informed decisions about using ChatGPT in their marketing initiatives. Understanding the effectiveness of ChatGPT in engaging and

Table 2
ChatGPT for Marketing: An Agenda for Future Research.

Focal Research Area	ChatGPT induced potential changes in Marketing	Research Questions
Content Marketing	Automated content creation with ChatGPT - Creation of personalized and relevant content at scale, generation of real-time insights, and improved content creation efficiency	• How does the use of ChatGPT affect the quality and relevance of content marketing? • How can ChatGPT be integrated into existing content marketing workflows to improve efficiency? • How does the use of ChatGPT for content creation affect consumer engagement? • How do consumers respond to personalized marketing content generated by ChatGPT? • What is the role of ChatGPT in omnichannel content marketing? • How can ChatGPT-generated content be optimized for search engines? • What are the ethical implications of using ChatGPT for content creation?
Lead Generation	ChatGPT can improve lead generation through better engagement and data collection - Higher quality leads, faster lead qualification, better customer profiling, improved conversion rates	• How can ChatGPT be used effectively for lead generation? • What are the key factors that influence ChatGPT's ability to reach new audiences? • How can ChatGPT help marketers better qualify and score leads? • What is the impact of ChatGPT on lead quality and conversion rates? • How can ChatGPT be used to generate leads across different channels and platforms? • How does ChatGPT compare to traditional lead generation methods in terms of cost and effectiveness? • How can ChatGPT be used to improve customer profiling and segmentation? • What are the best practices for using ChatGPT in lead nurturing? • How can ChatGPT be used for predictive analytics in marketing?
Customer Relationship Management (CRM)	Improved CRM through ChatGPT - Improved customer retention, Enhanced personalization, Increased customer lifetime value	• How does ChatGPT impact customer relationship management processes? • What is the role of ChatGPT in customer service and support? • How does ChatGPT influence customer satisfaction and loyalty? • How can ChatGPT be integrated with existing customer relationship management tools?

Table 2 (continued)

Focal Research Area	ChatGPT induced potential changes in Marketing	Research Questions
Customer Experiences	Improved customer experiences through improved customer engagement, enhanced customer service, personalised recommendations	• How does ChatGPT improve the customer experience? • How does ChatGPT impact customer journey mapping? • What are the ethical implications of using ChatGPT in customer relationship management? • How can ChatGPT be used to enhance customer experiences across different touchpoints? • How can ChatGPT be used to understand and analyse customer feedback and sentiment? • How can ChatGPT be used to improve the accessibility and inclusivity of customer experiences? • What are the best practices for using ChatGPT to engage customers effectively? • What is the impact of personalized conversations on customer engagement and retention? • How does ChatGPT improve customer engagement compared to traditional marketing methods? • How does ChatGPT impact customer engagement metrics, such as conversion rates and average order value? • How do customers perceive the quality of customer service provided by ChatGPT? • How can ChatGPT be used to improve customer service and issue resolution? • How can ChatGPT be optimized for specific industries and types of queries? • How do companies ensure that ChatGPT is consistent with their brand voice and values? • What is the role of ChatGPT in enhancing customer experiences and loyalty? • How does ChatGPT impact the workload and job satisfaction of customer service agents? • What are the differences in customer perceptions of human vs. ChatGPT chatbots? • How can ChatGPT chatbots be personalized for better customer experience?
	Customer Engagement Improved customer engagement - ChatGPT can provide personalized customer interactions	
	Customer Service Improved customer service with ChatGPT chatbots - Automation of customer service, faster response times, and the ability to handle large volumes of queries simultaneously	

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Table 2 (continued)

Focal Research Area	ChatGPT induced potential changes in Marketing	Research Questions
	Personalisation Increased ability to create personalised content and recommendations	• How can marketers leverage ChatGPT to develop more personalised communication with customers? • How can ChatGPT-based personalisation improve customer engagement and retention? • How can ChatGPT be used to personalise customer experiences across different channels and touchpoints?
Consumer Behavior	More personalized marketing messages using ChatGPT - Personalized communication, improved customer satisfaction, reduced sales cycle	• How does ChatGPT influence consumer behavior and psychology? • What are the cognitive and emotional factors that affect consumer response to ChatGPT? • How do consumers perceive ChatGPT interactions in terms of trust and privacy concerns? • How do customers perceive ChatGPT based marketing messages compared to traditional marketing messages? • How can ChatGPT be used to influence purchase decisions and brand loyalty? • What are the best practices for using ChatGPT to engage with customers? • What are the ethical implications of using ChatGPT to influence consumer behavior?
Policy Implications	ChatGPT raises important policy questions – Increased regulation and oversight, new legal considerations, potential impact on data privacy, security, intellectual property and liability	• How will the use of ChatGPT affect policies for marketing and advertising? • What regulatory frameworks should be implemented to regulate the use of ChatGPT in marketing? • What are the legal implications of using ChatGPT-generated content in marketing? • How can ChatGPT be used to comply with the existing data protection regulations? • How can marketers balance the benefits of ChatGPT with the need to protect consumer privacy and security?
Ethical Considerations and Ownership	ChatGPT raises concerns about the impact of technology on human communication - Increased responsibility and accountability, potential for bias and discrimination, risk of unethical or harmful use, need for transparency and informed consent	• What are the potential ethical implications of using ChatGPT in marketing? • How can organizations use ChatGPT in a way that aligns with their values and avoids ethical conflicts? • What are the risks of biases and discrimination in

Table 2 (continued)

Focal Research Area	ChatGPT induced potential changes in Marketing	Research Questions
		ChatGPT-based marketing? • How can ChatGPT be used to promote diversity and inclusivity in marketing? • How can ChatGPT be used to promote responsible and sustainable marketing practices? • How can marketers ensure the transparency and accountability of ChatGPT-based marketing activities? • How can ethical standards be upheld while using ChatGPT in marketing? • How can organizations manage the ownership of ChatGPT-generated content? • How can organizations ensure that their ChatGPT technology is secure and that data is not stolen or misused?
Comparison with Traditional Marketing	ChatGPT is a new technology that can complement or replace traditional marketing methods - Greater scalability and efficiency, increased personalisation and targeting, real-time data analysis, lower costs, potential for better ROI	• How does ChatGPT compare to traditional marketing methods in terms of costs and effectiveness? • How can ChatGPT be integrated with traditional marketing methods? • How can marketers ensure that ChatGPT-based marketing activities complement and enhance their existing marketing strategies? • What are the situations where ChatGPT is more effective than traditional marketing methods? • How does ChatGPT impact the ROI of marketing campaigns? • How can ChatGPT be used to reduce costs in marketing? • How can ChatGPT be used to optimize conversion rates? • What is the impact of ChatGPT on sales and customer acquisition costs?
Future Developments	ChatGPT is likely to become more advanced and prevalent in marketing – Continued innovation and improvement, integration with other technologies, new use cases and applications	• What are the potential future developments of ChatGPT in marketing? • How can organizations prepare for these developments? • How can ChatGPT be used in emerging channels and platforms, such as voice assistants and integrated with technology like virtual and augmented reality? • What are the potential risks and benefits of increased adoption and scalability of ChatGPT in marketing?

(continued on next page)

Table 2 (continued)

Focal Research Area	ChatGPT induced potential changes in Marketing	Research Questions
		• How can ChatGPT be improved to serve the needs of marketers and consumers better? • What new applications and use cases for ChatGPT in marketing can be explored?

converting customers, for example, can assist marketers in allocating resources more effectively and prioritizing the use of ChatGPT in specific circumstances. Furthermore, recognizing the ethical implications of using ChatGPT in marketing can assist marketers in ensuring that technology is used responsibly and transparently.

Furthermore, the study of ChatGPT’s limitations in terms of linguistic and cultural nuances may assist marketers in developing more nuanced and focused approaches to leverage technology. Similarly, knowledge of how to integrate ChatGPT with other marketing strategies can assist marketers in creating more comprehensive and effective marketing campaigns. Finally, understanding the role of ChatGPT in customer experience management will assist marketers in improving overall customer experience quality and building long-term customer loyalty.

Thus, answering these research questions can provide significant insights into the opportunities and limitations of using ChatGPT in marketing. Marketers can make informed decisions regarding the use of this technology and contribute to a better understanding of its implications for marketing by doing so.

7. Conclusion

ChatGPT has the potential to transform the way we think about marketing. As technology advances, businesses may be able to develop virtual sales assistants that can make real-time individualized recommendations to clients. Consequently, businesses can increase customer retention and boost their sales. Furthermore, when ChatGPT is integrated with other technologies such as augmented reality and virtual reality, it would be feasible to develop even more immersive marketing experiences that blend the real world with the virtual world. Thus, ChatGPT is an excellent tool for marketers.

In conclusion, ChatGPT has great potential as a marketing tool. Companies that leverage this technology have significant advantages over competitors. However, it is important to note that ChatGPT is not a perfect system. Some issues must be addressed, such as the potential of bots to mimic human users. Additionally, some users may find the chat interface confusing or difficult to use. However, these are relatively minor issues that should be addressed in future research. Furthermore, firms must exercise caution to ensure that they use it in an ethical and transparent manner and to ensure the privacy of customers. With these points in mind, ChatGPT has the potential to be a game-changer for the marketing industry.

CRedit authorship contribution statement

Ruchi Gupta: Writing – original draft, Writing – review & editing, Investigation, Formal analysis. **Kiran Nair:** Writing – review & editing. **Mahima Mishra:** Writing – review & editing. **Blend Ibrahim:** Writing – original draft, Investigation. **Seema Bhardwaj:** Writing – review & editing.

Declaration of competing interest

None.

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