

# The Application, Potential Benefits and Negative Impacts of ChatGPT in the E-commerce

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**Abstract:** The application of artificial intelligence technology in the field of e-commerce has entered the ChatGPT stage. Compared with traditional artificial intelligence technology, its application forms and levels are more extensive and in-depth, and it has also had a profound impact on the e-commerce business model. By comprehensively analyzing the latest relevant literature and reports, it can be found that compared with traditional artificial intelligence technology, ChatGPT has demonstrated technological leadership and comprehensive functionality in applications in the e-commerce field. Through the analysis of ChatGPT application examples, its feasibility and application potential in the field of e-commerce are verified. From the perspective of e-commerce business processes, the application value and potential benefits of ChatGPT in each link are deeply analyzed. This article also points out the possible negative impacts of ChatGPT's application in the e-commerce field.

**Keywords:** ChatGPT; E-Commerce; Application; ChatGPT Prompt; Potential Benefits; Negative Impacts

## 1. Introduction

E-commerce, as a highly recognized and widely adopted business form, holds immense growth prospects. With the continuous progress and innovation of technology, the potential of artificial intelligence (AI) in the e-commerce field is becoming increasingly prominent. In particular, ChatGPT, with its advanced natural language processing technology, is garnering growing attention and has shown preliminary validation of its application value in the e-commerce domain.

The purpose of this paper is to explore the application of ChatGPT in e-commerce, while also considering its potential benefits and negative impacts. With its natural language understanding and generation capabilities, ChatGPT has the ability to simulate human conversation and provide personalized responses and services [1]. E-commerce offers numerous application scenarios for ChatGPT, including customer demand analysis, customer service, and personalized recommendations.

Like any new technology, the application of ChatGPT also brings forth a series of negative impacts. Issues such as data privacy and security, algorithmic biases and fairness, as well as transparency and interpretability of ChatGPT, need to be taken seriously. Additionally, the consent and control of users are significant risk concerns that require ensuring users are informed and have the authority to make decisions regarding the use of their data and personal information.

The application of ChatGPT in e-commerce, along with its potential benefits and negative impacts, holds significant research value. This paper aims to explore the application of ChatGPT in e-commerce, its potential benefits, and discuss relevant risk factors by comprehensively analyzing the latest academic literature and research findings. The intention is to provide valuable insights for the e-commerce industry and the development of ChatGPT technology.

## 2. Research on the Application of ChatGPT in E-commerce

### 2.1 The Technical Principles and Advantages of ChatGPT

ChatGPT, as a deep learning-based generative conversational model, employs an autoregressive approach to generate subsequent response based on the preceding

context. Specifically, ChatGPT undergoes large-scale pre-training and fine-tuning through instruction-based methods, leveraging the capabilities of large language models (LLMs) to learn semantic representations and statistical properties of language [2]. Unlike traditional retrieval-based AI models, ChatGPT, being a generative model, has the ability to autonomously generate novel responses instead of relying on pre-defined answer repositories for selection. It is the use of autoregressive generation that enables ChatGPT to carefully consider the coherence of the conversational context, resulting in smoother and more natural dialogue content [3]. Therefore, the unique advantage of ChatGPT, the generative conversational model, lies in its application of an autoregressive generation mechanism. This allows it to generate continuous and logically coherent dialogue responses. The specific implementation steps are as follows:

(1) Pre-training: ChatGPT undergoes extensive pre-training using a vast amount of internet text data. Through unsupervised learning, the model learns the statistical properties of language, semantic representations, and contextual dependencies.

(2) Fine-tuning: After pre-training, ChatGPT adapts to specific dialogue generation tasks by undergoing supervised fine-tuning on specific datasets. This process enables the model to generate responses that are relevant to specific domains and tasks.

(3) Autoregressive Generation: ChatGPT employs an autoregressive approach to generate responses, predicting the next word or character based on the previously generated text. This ensures that the generated responses are more coherent and sensible in terms of grammar and semantics.

(4) Context Processing: ChatGPT incorporates contextual information by recalling preceding text in order to generate responses. It takes into account the conversation history to better understand and respond to user queries or instructions.

Given the technological advantages demonstrated in the implementation of ChatGPT, its potential applications in the field of e-commerce have become a hot research topic at the intersection of artificial intelligence and e-commerce disciplines. For instance, in the area of intelligent customer

service, ChatGPT is capable of providing instantaneous responses based on user inquiries and specific needs, thereby enhancing the user experience through contextual understanding and personalized replies. Such applications go beyond the scope of traditional AI technologies, highlighting the exceptional adaptability of ChatGPT in the realm of e-commerce.

## 2.2 The Current Research Status of ChatGPT in E-Commerce Applications

The current research on the application of ChatGPT in the field of e-commerce is relatively limited, with existing literature mainly focused on exploring specific application scenarios. Brinkmann et al. (2023) investigated the use of ChatGPT for extracting product information in e-commerce. ChatGPT effectively extracted useful information from product descriptions [4]. By training the ChatGPT model, researchers enabled it to comprehend and parse product descriptions, extracting key product information. This automated information extraction process significantly reduces the need for manual labor and improves the efficiency and accuracy of data processing. The study provides e-commerce companies with a new way to handle a large amount of product information and offers consumers more accurate and comprehensive product information, thereby enhancing the shopping experience and decision-making effectiveness.

Kumar et al. (2023) explored the potential application of ChatGPT in supporting retail managers' decision-making [5]. The text generation and question-answering capabilities of ChatGPT make it a powerful decision support tool for retail managers. Managers can utilize ChatGPT to provide real-time market and competitive intelligence analysis, gaining insights into market trends, consumer demands, and competitor strategies. They can also leverage ChatGPT to predict and simulate sales situations, enabling them to formulate effective sales and marketing strategies. Additionally, ChatGPT can generate personalized recommendations to better meet consumer needs. However, the study also noted potential issues with algorithm biases and strong dependence on training data. Therefore, managers should be aware of the

limitations of ChatGPT and use it cautiously to harness its decision support capabilities.

### 3. The Analysis of ChatGPT Application in E-commerce

#### 3.1 Introduction to ChatGPT Prompt

A ChatGPT prompt refers to the instructions or set of questions provided by the user when interacting with the ChatGPT chatbot model. These prompts are used to guide ChatGPT in generating corresponding answers or responses and can significantly improve the efficiency of obtaining assistance from the chatbot. By utilizing ChatGPT prompts, users can input queries and receive carefully curated response options.

To enhance the output quality of large language models, ChatGPT prompts can be optimized through techniques such as question improvement, alternative formulations, cognitive verification, and refusal handling. The question improvement approach ensures that the large language model always responds with improved suggestions to the user's questions. The alternative formulations technique requires the large language model to propose alternative solutions to specific tasks specified by the user. The cognitive verification method instructs the large language model to automatically provide a set of sub-questions for the user to answer, which are then combined to generate an answer to the main question. The refusal handling approach requires the large language model to automatically rephrase the user's question when it is unable to generate a response.<sup>[6]</sup>

The ChatGPT Prompt Generator, leveraging the Awesome-ChatGPT-Prompt dataset and a pre-trained BART model, helps users generate effective prompts to enhance the output quality of the ChatGPT large language model<sup>[7, 8]</sup>. The generator works by collecting and analyzing a vast amount of prompt data to establish a diverse library of prompt patterns. When a user accesses the ChatGPT Prompt Generator, they are required to provide a question or instruction. The generator then utilizes the pre-trained BART model and the prompt pattern library to generate a customized prompt<sup>[6]</sup>. The ChatGPT Prompt Generator offers users a convenient and efficient way to generate prompts, enabling them to harness the full

potential of large language models and tailor the output to specific needs.

#### 3.2 Prompt Generation Strategies Based on ChatGPT Prompt Generator

##### 3.2.1 Confirming user identity

User identity plays a crucial role in prompt generation and usage, as it significantly influences the outcomes generated by ChatGPT. Firstly, user identity reflects the different roles users assume and the distinct needs they have when using ChatGPT, which is a key factor in generating tailored prompts. Users with different identities have varied expectations and objectives concerning the outputs of ChatGPT, and their identity information provides essential context for the generator. Secondly, user identity guides the ChatGPT Prompt Generator to generate prompts specifically relevant to particular domains or roles, enabling the customization of ChatGPT's outputs to fit individual preferences. Specifically, user identity can influence the features of the generated prompts. For instance, an e-commerce seller might require prompts related to product marketing and demand research, while an e-commerce buyer might need prompts related to shopping advice and customer support.

##### 3.2.2 Confirming user intent

After establishing the user's identity, users can optimize the use of prompts by considering the following aspects:

(1) Describing the approach: Clearly describe the domain, topic, requirements, and objectives of the problem to guide the ChatGPT Prompt Generator in generating appropriate outputs. This includes providing keywords or key phrases. In the e-commerce domain, for example, using keywords such as "a specific brand of smartphones", "2023", "online market share", can effectively help the generator understand the problem and generate prompts related to "the online market share of a specific brand of smartphones in 2023". Additionally, users can specify the type of problem or the desired solution to improve the generator's accuracy in generating the expected answers. For example, users can explicitly indicate the need for a certain analysis method, decision support, or solution.

(2). Language organization and wording: Users should express themselves using clear, precise, and specific language, avoiding vague,

ambiguous, or unclear descriptions. To ensure that the ChatGPT Prompt Generator understands the specific requirements of the problem, users can use relevant industry terms, professional terminology, or specific technical terms. For example, in the e-commerce domain, using professional terms such as “traffic”, “sell-through rate”, “customer retention rate”, can be helpful. Additionally, users can employ explicit directive words or phrases, such as “explain”, “analyze”, “compare”, to clarify the desired format of the generated content for the generator. Such language organization and wording help ensure a clear prompt intent and guide the generator to generate accurate and suitable answers.

### 3.3 Analysis of ChatGPT Prompt Application in E-Commerce

In this section, we’ll use the example of purchasing a mobile phone to illustrate the workflow of utilizing ChatGPT Prompt for personalized recommendations and improving customer engagement in the e-commerce context. The specific scenario is outlined in Figure. 1.

(1) Designing the input prompt: To begin, enter the following question in the ChatGPT

dialogue box: “Are you familiar with the various mobile phone specifications and prices available for sale on e-commerce platforms?” This question helps the customer confirm the knowledge scope of ChatGPT and ensures that it can provide relevant information about mobile phone specifications and prices. If ChatGPT doesn’t possess the necessary knowledge, the customer can choose to provide a more specific question, such as “Do you have information about the prices and sales volume of a particular brand of mobile phone on a specific platform?” This allows ChatGPT to better understand and address the customer’s needs. The aforementioned steps set the scene and initial context for the conversation, preparing for the subsequent discussion on buying a mobile phone online. Next, use the ChatGPT Prompt Generator to generate a prompt that includes the confirmation of the customer’s identity, the target of purchase, and the budget range. Through this step, ChatGPT establishes the scenario of the customer purchasing a mobile phone, and the prompt generator generates a prompt based on the customer's buying requirements.

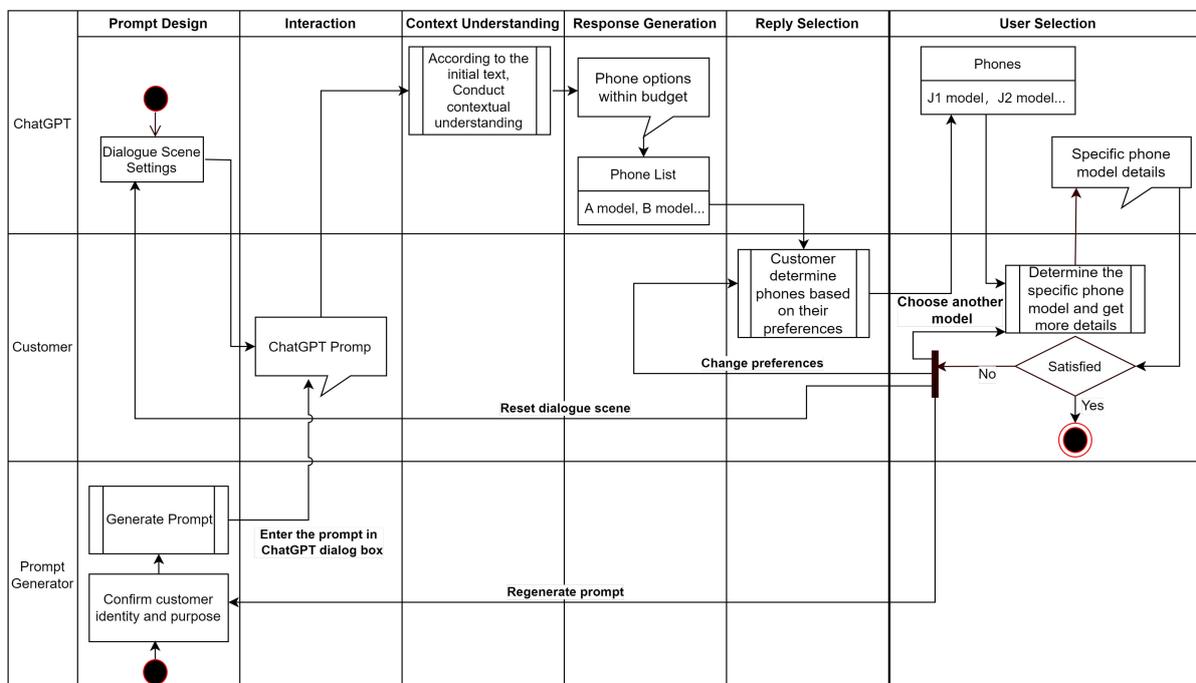


Figure 1. Flow Chart of Online Shopping for Mobile Phones through ChatGPT Prompt

(2) User interaction: The customer copies the prompt generated by the ChatGPT Prompt Generator into the ChatGPT dialogue box,

which has already established the context of online mobile phone shopping. This marks the

beginning of the customer's interaction with ChatGPT.

(3) Context understanding: ChatGPT analyzes the initial context of the online mobile phone shopping scenario to understand the customer's intentions and needs. It takes into account key information mentioned earlier, as well as contextual logic and consistency, focusing on keywords such as "online shopping", "mobile phone", and "budget". Based on this analysis, ChatGPT infers the user's current intent and requirements, attempting to understand the content the user wishes to express and responding accordingly.

(4) Response generation: ChatGPT generates a response based on the input prompt and context, providing a list of mobile phones within the customer's budget for them to choose from. At this stage, ChatGPT begins offering personalized product recommendations to assist the customer in finding the desired products and services. In this particular conversation, ChatGPT replies with four mobile phone options as candidates for the customer to explore further. These phones meet the budget constraints and performance requirements indicated in the customer's prompt.

(5) Reply selection: In the previous stage, ChatGPT has recommended a list of candidate mobile phones to the user. This list provides detailed information about the brands, models, processor and camera configurations, as well as performance aspects of the phones. These detailed recommendations serve as a reference for the customer to choose a suitable phone model from the list and delve further into the selected options. At this stage, the user can gain a more comprehensive understanding of the phones and make a wiser purchase decision.

(6) User selection: During the "reply selection" stage, the user can provide further instructions based on their personal preferences for purchasing a phone, taking into account the information provided. In this example, the customer chooses two options from the four recommended phones for further exploration and comparison. ChatGPT's response creates a curated list of phones to assist the user in making a better selection and decision. If the customer expresses satisfaction after further exploring one of the curated phones, the conversation concludes, and ChatGPT completes its tasks of personalized

recommendations, intelligent customer service, and online marketing.

(7) Dialogue iteration: If the customer is not satisfied with any of the curated phones, the conversation enters the iteration phase. In this phase, the customer can select other phones from the curated list for further exploration, form a new curated list, or reset the online shopping scenario and use the ChatGPT Prompt Generator to generate a new prompt. Through this iterative process, the conversation evolves as the user inputs new prompts, such as adjusting preferences or seeking more information. Depending on the context and user instructions, ChatGPT generates relevant responses, enabling a dynamic and interactive online shopping experience. This iterative approach ensures ongoing interaction with the user, meeting their evolving needs throughout the purchasing process.

### 3.4 ChatGPT Prompt Role Setting for E-Commerce

To solidify the mentioned ChatGPT prompt flow, we can define a role for ChatGPT as an online shopper of mobile phones. The ChatGPT prompt role refers to utilizing specific prompt text to describe the identity and context of the character in conversation, effectively guiding and directing the content of the dialogue. These prompt roles serve as the initial input from the user, providing pivotal information and guidance to ChatGPT in order to generate relevant responses and recommendations.

In the context of e-commerce applications, defining ChatGPT prompt roles plays a crucial role in enhancing the online shopping experience. By designing appropriate prompt roles and related prompts, several aspects can be achieved:

(1) Guiding user intent understanding: The definition of prompt roles helps ChatGPT better comprehend the user's intent and requirements. By specifying the user's identity, the item being purchased, the budget range, and other key information, ChatGPT can accurately interpret the user's purchasing intent and provide more relevant and personalized responses.

(2) Setting the conversation context: Prompt roles define specific scenarios and establish the initial context of the conversation. By

providing key questions, scene descriptions, and contextual constraints, ChatGPT can maintain consistent themes and contexts throughout the dialogue, better understand the user’s input, and generate coherent replies.

(3) Providing personalized recommendations and suggestions: The definition of prompt roles assists ChatGPT in generating personalized product recommendations and suggestions. By guiding users to provide information about brands, models, budget ranges, and other relevant details, ChatGPT can generate tailored responses such as curated lists, price comparisons, and detailed descriptions that align with the user’s needs.

(4) Optimizing user experience and purchase decision-making: Well-designed prompt roles enhance user experience and improve the accuracy of purchase decisions. By clarifying the user’s criteria, understanding their intent and preferences, ChatGPT can provide comprehensive product information, comparative analysis, and purchasing advice. This helps users make informed choices, boosts their confidence, and ultimately increases overall satisfaction with their purchase.

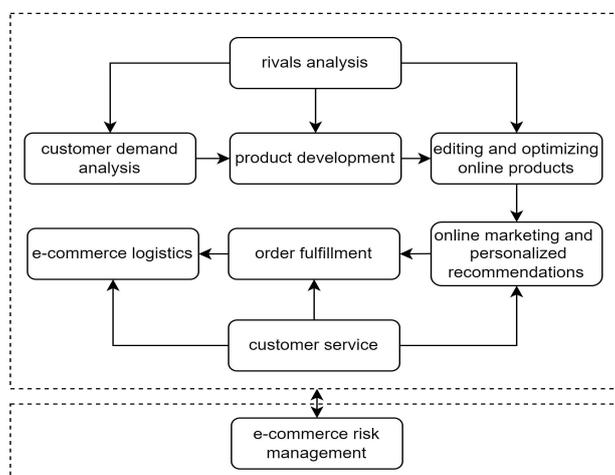
**4. Application Fields and Potential Benefits of ChatGPT in E-Commerce**

E-commerce, as a business activity conducted through internet platforms, can be divided into several stages in its operational process. These stages include customer demand analysis, product development, product content editing and optimization, online marketing, personalized product recommendations,

customer service, order processing, e-commerce logistics, competitor analysis, and e-commerce risk management. These different business stages are interconnected and mutually dependent, forming the complete operation of e-commerce, as shown in Figure.2. Effective coordination among these stages is necessary to achieve the goals of e-commerce. For instance, product development should be based on the analysis of customer demand, while online marketing requires support from product content editing. Additionally, personalized product recommendations rely on user data obtained from customer service. Therefore, a well-connected and smooth workflow within each business stage is essential to promote the collaborative effects of end-to-end e-commerce operations.

ChatGPT encompasses capabilities in text generation, natural language understanding, and conversational interaction. As a result, ChatGPT can be extensively applied in various aspects of e-commerce, such as customer demand analysis, product development, and customer service, bringing forth substantial potential value.

(1) Customer demand analysis: By leveraging natural language processing and machine learning technologies, ChatGPT has the ability to analyze substantial customer data in order to comprehend their demands. It aids e-commerce enterprises in collecting, organizing, and analyzing customer feedback, purchase histories, and behavioural patterns, thereby providing insights into customer preferences, needs, and trends.



**Figure 2. Main Business Links of E-commerce**

(2) Product development: Within the realm of e-commerce product development, ChatGPT functions by generating creative ideas and providing design assistance based on the results obtained from demand analysis. It offers novel product concepts, features, and design recommendations, thereby furnishing valuable inspiration and guidance for innovation and development within enterprises.

(3) Online product editing and optimization: Online product editing and optimization are crucial steps for enhancing product quality and sales capabilities within e-commerce enterprises. Leveraging its ability to analyze market data and user behaviour, ChatGPT provides recommendations to e-commerce businesses on key elements for optimizing online products, including titles, descriptions, and keywords. ChatGPT can assist e-commerce enterprises in refining product titles and descriptions. An attention-grabbing title that accurately conveys the product's features is essential for capturing user attention, improving search rankings, and click-through rates. By analyzing market data and user behaviour, ChatGPT can offer suggestions on how to enhance product titles based on trending user searches and clicks. These recommendations may include keyword optimization, title refinement, and personalization to enhance product visibility and click-through rates in search results. Product descriptions serve as vital references for users to understand product features and advantages. Through intelligent conversations with ChatGPT, e-commerce enterprises can obtain recommendations on product descriptions to make them more appealing, accurately convey product features, and align with the needs of target users. ChatGPT can provide language optimization, highlight key information, and offer suggestions for descriptive style, thereby improving the quality and appeal of product descriptions.

(4) Online marketing: ChatGPT holds significant potential applications and benefits within the field of e-commerce online marketing. It can analyze market data and user behavior to assist businesses in devising precise marketing strategies. By analyzing user search behaviors, interests, and preferences, ChatGPT can offer recommendations regarding e-commerce keywords and creative business promotions, ultimately improving

click-through rates and conversion rates for paid advertising. Furthermore, it analyzes social media data and generates social promotion content tailored to specific demographics and communities. This helps businesses gain insights into user sentiment, reviews, and opinions, facilitating brand management and reputation management.

(5) Personalized recommendations: In the field of e-commerce, ChatGPT enables precise customer targeting through personalized recommendations. By analyzing user interests, preferences, and behavioral data, it infers preferences and needs to provide each user with personalized product or service recommendations. The implementation of ChatGPT's personalized recommendations relies on intelligent algorithms and natural language processing techniques. It understands and parses user inputs, identifies their needs and preferences, and filters and ranks suitable products based on this information. ChatGPT also continuously improves recommendation results by leveraging user feedback data, thereby enhancing accuracy and personalization.

Personalized recommendations bring forth a range of potential benefits. Firstly, they enhance the user's shopping experience and satisfaction by helping them easily find products that align with their personal preferences. Secondly, personalized recommendations aid in boosting sales volume and revenue. Accurately understanding user needs and preferences increases their interest and willingness to purchase recommended products. Additionally, personalized recommendations can improve user engagement and conversion rates, fostering strong customer relationships and loyalty.

(6) Customer service: ChatGPT offers efficient and personalized customer service through natural language processing and intelligent conversation techniques. It can answer frequently asked questions, provide technical support and solutions, and assist customers in problem resolution. ChatGPT can also identify emotions and sentiments, offering emotional support and a positive user experience to enhance customer satisfaction and loyalty.

(7) Order fulfilment: ChatGPT can assist businesses in achieving automated processing and tracking of orders. Based on customer needs and inventory information, it can

automatically confirm orders, generate shipping instructions, and provide logistics tracking information. ChatGPT can also offer order-related information queries and post-sales support through intelligent conversations, ensuring accurate order fulfilment and timely communication.

(8) E-commerce logistics: ChatGPT can assist businesses in optimizing e-commerce logistics and delivery processes by analyzing supply chain data and logistics information. It can provide intelligent inventory management suggestions to reduce surplus or out-of-stock situations and optimize delivery routes to improve logistics efficiency and cost control.

(9) Competitor analysis: ChatGPT can help businesses extract attribute information from competitor's e-commerce products and stay informed about their product dynamics. It can analyze competitors' product features, pricing strategies, and more, providing valuable references for developing more competitive strategies.

(10) E-commerce risk management: ChatGPT can be utilized for monitoring and managing e-commerce risks. By analyzing big data and real-time data, it helps businesses identify potential fraud, credit risks, and cybersecurity threats. ChatGPT can aid in automated risk assessment and prediction, assisting businesses in taking appropriate measures to mitigate risks and protect the interests of both the company and its customers.

## 5. The Negative Impacts of ChatGPT Applications in E-Commerce

### 5.1 Privacy and Security Concerns

The privacy and data security of e-commerce transactions are of utmost importance. As ChatGPT interacts with a large volume of user data, measures must be taken to protect user privacy and prevent data breaches. Current research and reports indicate potential risks related to privacy and security in the context of ChatGPT, including:

(1) Data privacy breaches: ChatGPT requires collecting user data during conversational interactions, and unauthorized access or data leaks can compromise user privacy<sup>[9, 10]</sup>.

(2) Model theft: ChatGPT's model is its core technology, and if the model is stolen, it could harm the interests of businesses and users<sup>[11]</sup>.

(3) Membership inference attacks: Hackers can exploit ChatGPT's conversation records to infer user identities and sensitive information, thus violating user privacy<sup>[12]</sup>.

(4) Data reconstruction and attribute inference attacks: Hackers can deceive ChatGPT by reconstructing data and launching attribute inference attacks for fraudulent purposes<sup>[12]</sup>.

### 5.2. Dataset Bias Concerns

The application of ChatGPT in the e-commerce domain may encounter issues related to dataset bias. Dataset bias refers to the situation where the dataset used to train the model does not fully represent a comprehensive and unbiased sample, leading to inaccurate or unfair performance of the model in specific aspects.

There are multiple factors that contribute to dataset bias. Firstly, data sampling bias may result from inadequate representation of specific groups during the data collection process, leading to imbalanced samples<sup>[13]</sup>. For instance, certain ethnic or regional groups may be underrepresented in the dataset while other groups dominate. Secondly, annotation bias can arise from subjectivity on the part of annotators, as their perspectives and preferences might influence the labelling of data<sup>[14]</sup>. This can result in erroneous annotations for certain categories or features, subsequently affecting the model's learning outcomes. Lastly, historical biases also play a significant role in dataset bias. Social biases and inequalities that existed in the past could be reflected in historical data, and models may perpetuate such biases by learning from this data, leading to biased outputs<sup>[13]</sup>.

### 5.3 Lack of Transparency

The workings and decision-making processes of ChatGPT may suffer from a lack of transparency, making it difficult to explain why specific answers or recommendations are provided. In the context of e-commerce applications, the "lack of transparency" in ChatGPT can be attributed to data collection, decision processes, and algorithmic black-boxing. Data collection can raise concerns as ChatGPT may collect personal data and information during interactions with users, but users may lack visibility into how this data is being collected, used, and stored. This lack of transparency can trigger privacy concerns

among users. The opacity of the decision-making process means that users cannot understand the specific basis for ChatGPT's generated answers and recommendations, and they cannot interrogate its decision-making process, leading to user skepticism. The algorithmic black-box nature of ChatGPT, with its complex internal workings, leaves users unable to directly understand the fine details of its internal operations.

#### 5.4 Discrimination

The application of ChatGPT in e-commerce can give rise to issues of "discrimination", which can be attributed to data biases, geographical limitations, and language differences. The reasons behind these issues are as follows: Data biases: Training data may be influenced by historical biases and inequalities, causing the model to exhibit biases related to gender, race, and geographical factors when answering user questions. Geographical limitations: In cross-border e-commerce, users hail from different countries and regions. However, if the training data predominantly represents specific regions, the model's answers and recommendations may lack accuracy and comprehensiveness for users from other regions. Language differences: Users from different countries and regions may use different languages and express themselves differently. If the training data doesn't encompass a sufficient diversity of languages and cultures, the model's responses and recommendations may lean towards specific languages and cultures.

#### 5.5 Limited Contextual Understanding

ChatGPT sometimes struggles to accurately comprehend and interpret complex contextual nuances, which can lead to mismatched or confusing responses to user queries. The reasons behind the limited contextual understanding in the application of ChatGPT in e-commerce are primarily attributed to data constraints, context dependency, and a lack of common-sense reasoning. The model's training data typically originates from extensive text corpora, which may not be specifically optimized for the domain of e-commerce, thereby imposing limitations on contextual comprehension within this specific context [3]. E-commerce involves intricate contextual information, such as product details

and user history, and ChatGPT may not fully capture and leverage this contextual information, resulting in overly simplistic or inaccurate responses to user inquiries [15]. Moreover, shopping decisions often require common-sense reasoning, an area where ChatGPT falls short, making it challenging for the model to provide correct answers or accurate recommendations.

#### 5.6 Irrelevant Responses

When ChatGPT is applied in e-commerce, its inability to accurately understand and respond to user queries can significantly impact user satisfaction and potentially lead to business losses. Irrelevant responses can manifest in the following ways: ChatGPT may provide answers that are unrelated to the user's question, rendering users unable to obtain effective solutions. When confronted with sensitive or challenging questions, the model may avoid directly answering, leaving users without the desired information. Additionally, the model may offer ambiguous responses, leaving users uncertain about their meaning or the subsequent steps to take. The underlying causes behind the occurrence of irrelevant responses in the application of ChatGPT in e-commerce lie in the limitations of the training data, difficulties in contextual understanding, and the inherent ambiguity in language. These factors result in the model providing responses that are unrelated or inaccurate in relation to user queries.

#### 5.7 Cost Issues

The application of ChatGPT in e-commerce carries increased costs primarily due to technology and data-related factors. Companies need to allocate financial resources and manpower to develop and maintain ChatGPT applications. Moreover, in order to enhance the accuracy and effectiveness of ChatGPT, a significant amount of data collection and processing is required, further augmenting the costs associated with data acquisition and processing [16].

#### 6. Conclusions

The research achievements of artificial intelligence in the field of e-commerce were summarized in this paper, with a particular focus on the suitability of ChatGPT as an advanced natural language processing

technology in the e-commerce industry. The applicability of ChatGPT prompts in personalized recommendations and customer service was examined in detail, along with the concept, function, generation methods of these prompts in the e-commerce domain. The potential benefits of ChatGPT at various stages of the e-commerce business processes were thoroughly investigated. However, the application of ChatGPT also brought about a series of ethical risks and technical challenges, such as data privacy and security issues, algorithmic bias, and dialogue quality. Therefore, further research is needed to maximize the potential of ChatGPT in e-commerce, considering both the opportunities and challenges it presented.

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