

The Impact of the Quality of Information Possessed by Chatbots Used in e-Marketplaces on Customer Trust

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Abstract: The aim of this research was to examine the information quality of chatbot applications used in e-marketplace websites within the contexts of integrity, helpfulness, and competence in customer trust within a holistic model. This research was conducted using structural equation modeling (SEM) with data obtained from 451 participants who used chatbots in e-marketplaces. The findings revealed that participants' chatbot experiences in e-marketplaces had a strong impact on all three dimensions of customer trust: integrity and helpfulness. Based on these findings, we concluded that the information quality of chatbots in e-marketplaces strengthens users' perceptions of integrity in the context of customer trust, that they positively evaluate the helpfulness or capabilities of the system or e-marketplace, and that trust levels increase depending on the competence of the chatbot used. The study theoretically answers the question of how customers' chatbot experiences in e-marketplaces affect customer trust and contributes to the literature in this respect. In terms of application, it shows that improving the quality of information in chatbot design in e-marketplaces will shape customer trust and therefore other customer behaviors depending on trust, and this can develop positive attitudes towards the brand.

Keywords: E-marketplace, chatbot, information quality, customer trust.

1. Introduction

Technological developments have forced production systems and economic structures to undergo fundamental changes since the Industrial Revolution. In the context of intensifying competition resulting from these developments, novel approaches and corporate behavior systems have emerged. The advent of the internet has led to an augmentation in the number of supply channels available to consumers, concomitantly engendering a diversification of producers' prospects for consumer access and market presence. However, the proliferation of options for consumers, coupled with the intense competition among producers in this vast and ever-evolving field, has also precipitated a paradigm shift in consumer communication. Consequently, the strategies employed by businesses to enhance their relationships with consumers and acquire new customers while retaining existing ones have also evolved and diversified. Customer trust is a pivotal concept in the context of business retention of existing customers and the attraction of new customers. This concept encapsulates the confidence that customers have in the business, its products, brands, and communication channels. In addition to establishing this trust, it is also of paramount importance to ensure its continuity. In this context, businesses are developing customer-focused behavior's by leveraging the potential offered by technology and are striving to continuously build and develop trust. In the contemporary context, the evolution of producer-consumer interaction domains has been characterized by a transition to digital environments, thereby transcending the limitations of face-to-face interaction. It is evident that e-marketplaces represent a prominent and effective environment.

E-marketplaces can be defined as a collective digital shopping environment where high-volume buying and selling transactions take place. This is due to the shift of commerce to the digital environment with the spread of the internet and internet access. This shift is also preferred by small businesses in terms of access to large markets. In the contemporary era, prominent e-commerce platforms provide modest entrepreneurs with a plethora of accessibility prospects, thereby facilitating their entry into vast marketplaces. Concurrently, they function as organizations that impose a commission on the commercial activities of small entrepreneurs through a membership scheme.

In addition, the advent and proliferation of artificial intelligence, which has assumed a pivotal role in the contemporary technological landscape, has also rendered e-marketplaces susceptible to the potential of artificial intelligence in various customer retention activities. E-marketplaces can be defined as a

collective digital shopping environment where high-volume buying and selling transactions take place. This is driven by the shift of commerce to the digital realm with the proliferation of the internet and internet access. It is also preferred by small businesses for accessing large markets. In the contemporary era, prominent e-commerce platforms provide modest entrepreneurs with a plethora of accessibility prospects, thereby facilitating their entry into vast marketplaces. Concurrently, they function as organizations that accumulate a specified proportion of commission from the commercial activities of small entrepreneurs through a membership scheme.

A review of the extant literature undertaken as part of this research project has revealed the findings of a study by Güven and Ayvaz-Güven (2023) which indicates that artificial intelligence can be used in many areas, including e-marketplaces, data analysis, determining customer behavior's and preferences, recommendation systems, chatbots, search engines, pricing and inventory management. The study posits that the integration of artificial intelligence technologies within the e-commerce sector engenders enhanced business efficiency, elevated customer satisfaction, and augmented business profitability. It is particularly noteworthy that the potential of artificial intelligence technologies in domains such as customer behavior and preference analysis, personalization, sales forecasting, after-sales services and customer support is emphasized. In this context, the study aims to investigate how the quality of information possessed by chatbots, which are used on e-marketplace sites and are of great importance in terms of business efficiency, shapes customer trust.

2. The following essay will explore the conceptual framework of artificial intelligence and the application of chatbots within this theoretical domain.

The concept of intelligence is a complex notion that is defined in various ways by different disciplines and is regarded as a fundamental determinant of human abilities. In contrast, Chace (2015) evaluates intelligence in its simplest sense as "the ability to solve problems" (Chace, 2015: 24). This definition reflects a general approach that points to the learning, analyzing, applying, and adapting capacities of both human and non-human systems. It is also associated not only with access to information but also with the ability to use this information effectively. The concept of artificial intelligence (AI) is predicated on the notion of adapting human learning methods to machines. Conversely, in 1955, John McCarthy, a pioneering figure in the field of artificial intelligence, provided a broad delineation of the term, characterizing it as "the goal of artificial intelligence is to develop machines that behave as if they were intelligent" (Ertel, 2017: 1-2; McCarthy et al., 2006: 13; Chowdhary, 2020: 4).

The field of artificial intelligence (AI) has emerged as a discipline concerned with the development of systems that are capable of mimicking human intelligence, learning, problem-solving, and decision-making capabilities. One of the earliest definitions of this discipline was proposed by McCarthy (2007), who described it as "the science and engineering of developing intelligent machines." In alignment with this approach, artificial intelligence has evolved from a technological field to become a fundamental component of decision support systems, automation, and data analytics.

Although the concept of artificial intelligence as a scientific discipline emerged in the mid-20th century, with its foundation being the modelling and simulation of human intelligence, the origins of this concept extend much further back in time. Indeed, the quest to comprehend human thought processes, reasoning methods and logical decision-making processes can be traced back to the ancient Greek philosophical tradition. In this context, Aristotle's development of "syllogistics," or the theory of logical reasoning, is regarded as one of the earliest and most comprehensive attempts to systematically explain the workings of the human mind. The analogy model, predicated on Aristotle's theory of syllogism, is constructed on a major premise, a minor premise, and a conclusion that is necessarily deduced from these premises. The validity of the conclusion reached in the model is contingent upon the accuracy and consistency of the premises (Özcan and Pekel-Özmen, 2025: 21-23; Russell and Norvig, 2010: 275, 471; Nilsson, 2010: 27).

By the 2000s, the exponential growth of data generated in digital environments, advances in processor technologies, and the widespread adoption of big data analytics tools had paved the way for the rapid development of artificial intelligence subfields such as machine learning, deep learning, and natural

language processing (Goodfellow et al., 2016: 148). The remarkable success of Alex Net in the ImageNet competition in 2012 demonstrated the potential of deep learning methods on a global scale (Krizhevsky, Sutskever, and Hinton, 2012).

In the contemporary era, the field of artificial intelligence has become a focal point within academic research and technological innovation. Its influence extends beyond these realms, however, as it also plays a pivotal role in various aspects of society, including public policy, ethical discourse, and strategic decision-making in the business sector. The utilization of effective artificial intelligence applications in sectors such as healthcare, finance, education, transportation, and manufacturing is becoming increasingly important. The development of GPT and analogous large language models has rendered artificial intelligence an integral component of knowledge production, customer interaction, and decision support systems (Floridi and Chiriatti, 2020: 686).

Another area of application that has emerged with the advent of artificial intelligence and is becoming increasingly effective is that of chatbots.

A chatbot is a computer-based program that functions as an interlocutor between humans and bots. The advent of sophisticated technologies, including artificial intelligence, machine learning, neural networks and natural language processing, has led to the proliferation of chatbots as virtual assistants in recent years. These chatbots have been developed to communicate effectively with any human being using interactive queries. There has been a recent resurgence of interest in more sophisticated iterations of early chatbot exemplars such as IBM Watson, Cleverbot, and ELIZA. This has resulted in a substantial augmentation in the realm of cloud-based chatbot services, which are now being utilised to develop and enhance the industry. Over time, these chatbots have become more responsive, and in recent years, there has been a considerable increase in chat-based communication between humans and robots, with various applications (Gupta et al., 2020: 255).

Chatbots are computer programs that are capable of interacting with users through the use of natural language, thereby simulating human-like dialogues. These systems are primarily designed to comprehend and interpret users' linguistic expressions and to generate contextually appropriate, meaningful responses (Jurafsky and Martin, 2023: 16). Chatbots, which are utilised in a plethora of domains today, ranging from customer service to education, health counselling to the entertainment industry, have evolved into a pivotal component of the digital communication ecosystem.

The advent of sophisticated machine learning algorithms and the increased accessibility of voluminous data sets in recent years have led to a substantial enhancement in the functionality and accuracy of chatbots. Modern chatbots have the capacity to parse complex language structures, accurately identify user intent, and maintain multi-step conversation contexts. These systems are typically classified into two primary categories: rule-based chatbots, which function within predefined scenarios and response sequences; and AI-powered chatbots, which can generate more flexible and personalized responses by learning from user interactions using machine learning techniques (Shawar and Atwell, 2007: 38-39).

While the potential applications of chatbots are extensive, these robots represent a prominent example of human-machine interaction, with a particular prevalence in the domain of customer service. The purpose of these entities is to provide businesses with cost-effective and scalable solutions by undertaking tasks such as the answering of user questions, the provision of guidance, and the solving of problems. These technologies are also becoming widespread in e-commerce, healthcare, education, and digital entertainment (Adamopoulou and Moussiades, 2020: 373-374). They carry strategic value in terms of improving user experience, increasing interaction speed, and enhancing service quality.

3. The Concept of E-Marketplace

In the contemporary context, e-marketplaces are distinguished as one of the most rapidly expanding and dynamic domains within the global e-commerce ecosystem. The integration of digital technologies into daily life, the annual increase in internet access, and the ubiquity of mobile devices have collectively led to the widespread adoption of online shopping. The advent of secure payment systems has precipitated the rapid adoption of e-commerce, engendering a daily practice among millions of individuals.

According to statistics from 2025, approximately 2.77 billion individuals worldwide utilize the internet

for the purpose of making purchases. When assessed in relation to the global population, this figure approximates one-third of the world's population, thereby providing a clear illustration of the magnitude of e-commerce activity. The number of active e-commerce websites has now exceeded 28 million, with an average of over two thousand new sites being established on a daily basis. The majority of these platforms function as e-marketplaces and play a fundamental role in the infrastructure of both local and global trade (Sellers Commerce, 2025).

E-marketplaces, in the broadest sense, can be defined as virtual marketplaces in which a multitude of buyers and sellers congregate through the utilization of digital technologies. These platforms facilitate interaction between individuals and businesses in disparate regions by circumventing geographical limitations. This has been demonstrated to increase both the scale and speed of trade. A distinguishing feature of these entities is their capacity to provide merchandise from multiple commercial entities under a unified entity, without being constrained by the limitations of a single supplier. In this respect, e-marketplaces can be regarded as one of the most characteristic economic ecosystems of the digital age (Zwass, 1996: 14-15). These systems, typically administered by a platform provider, provide users with a sales channel in addition to a range of complementary services, including a digital storefront, a payment infrastructure, logistics support, and data analytics. Examples of such platforms include Amazon, eBay, Alibaba, Trendyol, and Hepsiburada, which encompass B2C (business-to-consumer), B2B (business-to-business), and C2C (consumer-to-consumer) models (Turban et al., 2018: 84-85). A significant function of these systems is to reduce information asymmetry.

The capacity for users to effortlessly compare products, prices and reviews paves the way for more informed consumption decisions. Conversely, e-marketplaces are regarded as a pragmatic conduit through which small and medium-sized enterprises can successfully enter new markets. Consequently, it can be posited that trade has undergone a democratization. The utilization of common payment and logistics systems has been demonstrated to reduce the operational burden on sellers while ensuring buyers have a fast and secure shopping experience (Standing et al., 2006: 21). In the contemporary context, e-marketplaces have evolved beyond the confines of a conventional sales channel. These systems have evolved to encompass data analytics, personalized campaign organization, and AI-supported decision-making processes, providing businesses with a competitive advantage. These developments have been shown to increase customer satisfaction and strengthen the market power of the platforms themselves (Laudon and Traver, 2021). The advent of e-marketplaces can be traced back to the mid-1990s, a period which coincided with the dissemination of the internet. The establishment of Amazon and eBay in 1995 is widely recognized as a seminal moment in the history of online commerce, demonstrating the potential for both individuals and businesses to engage in e-commerce (Zwass, 1996: 15). At the time, the process was relatively straightforward: products were catalogued, and users purchased them using credit cards. Nevertheless, this elementary model established the foundation for the digital transformation of conventional commerce. During the 2000s, e-marketplaces experienced a notable surge in activity, coinciding with the enhancement of internet infrastructure and the proliferation of secure payment systems.

The development of user-friendly interfaces and the increased accessibility of search engines have also contributed to this growth (Laudon and Traver, 2021). It is evident that e-commerce platforms such as Alibaba in China, Amazon in the US and Europe, and GittiGidiyor, Sahibinden, and Hepsiburada in Türkiye have garnered significant attention, not only due to their substantial transaction volumes, but also in light of the innovative business models they have developed. In the contemporary business landscape, e-marketplaces have emerged as a prominent strategy for SMEs to enter new markets, particularly in the context of digital transformation. This contributes to increased export potential and, indirectly, to stronger employment. Furthermore, the personalization of marketing strategies through the analysis of user data has been demonstrated to directly impact the consumer experience. These developments place e-marketplaces at the Centre not only of trade but also of digital economy policies (OECD, 2022).

In contradistinction to conventional retail practices, they proffer multi-sided business models that amalgamate a plethora of sellers and buyers within a unified digital milieu, thereby centralizing the

processes of listing, comparing, and purchasing products and services. These structures extend beyond mere product sales, encompassing integrated services such as logistics integration, payment infrastructure, customer service, and data analytics. This facilitates market access for both large-scale retailers and SMEs, thereby eliminating the geographical boundaries of trade (Laudon and Traver, 2021). It is estimated that the global B2C e-commerce volume will exceed \$8 trillion in 2026, representing an increase from the \$5.8 trillion recorded in 2025 (Statista, 2025). Furthermore, the B2B e-commerce market is demonstrating rapid growth, reaching a volume of \$32.11 trillion. E-marketplaces are of particular significance within this context, particularly within the B2B sector, where they facilitate digital trade between businesses and contribute to the digitalization of international supply chains.

Mobile shopping now accounts for 59% of total e-commerce, which equates to a mobile commerce volume of approximately \$4.01 trillion. It is asserted that mobile-friendly e-marketplaces have the potential to further increase this high share of mobile commerce with their user-friendly interfaces, personalized recommendation systems, and speed-focused customer experience strategies. Furthermore, the integration of artificial intelligence into e-marketplaces has been demonstrated to enhance their capacity for value creation, playing a significant role in processes such as customer behavior analysis, dynamic pricing, targeted marketing campaigns, and demand forecasting. By 2025, the size of the AI-powered e-commerce market is estimated to reach \$8.65 billion, and double-digit growth rates are expected to continue in the coming period (Sellers Commerce, 2025).

In Türkiye, the e-commerce landscape mirrors global trends. In 2024, Türkiye's e-commerce volume surpassed 3 trillion TL, marking a substantial increase of 61.7%. Concurrently, the number of transactions escalated to 5 billion 910 million, underscoring a notable surge in digital commerce activity. The growth observed in the retail e-commerce sector is particularly noteworthy, with a 63.7% increase, resulting in a volume of 1 trillion 619 billion TL. Concurrently, the number of retail transactions increased by 10.1% to 1.85 billion. The e-commerce sector demonstrated remarkable growth between 2019 and 2024, with a compound annual growth rate (CAGR) of approximately 85.7%. Concurrently, the volume of retail e-commerce experienced a substantial increase of 90.8%, further underscoring the sector's robust growth trajectory. This dramatic increase underscores the transformative impact of digitalization on the sector. In terms of the United States dollar, Türkiye's total e-commerce volume was 23.94 billion US dollars in 2019, reaching 89.58 billion US dollars in 2024, representing an increase of 274%. The study found that the e-commerce sector accounted for 6.5% of GDP and 19.1% of total trade. As of 2024, the number of businesses engaged in e-commerce in Türkiye reached 600,800. Of these, 78.6% were classified as sole proprietorships, 17.8% as limited companies, and 3.6% as joint-stock companies. Women entrepreneurs constitute 27.2% of all e-commerce businesses. With regard to age and gender distribution, male business owners are predominantly in the 35-39 age group, while women are predominantly in the 30-34 age group. A substantial majority (78.1%) of businesses operating on e-marketplaces sell through only one platform.

This phenomenon can be attributed primarily to businesses' propensity to prioritize the marketplace with the highest user traffic (network effect) within their respective sectors. Furthermore, businesses demonstrate a preference for engaging with a singular platform whose operating rules they are familiar with. However, the percentage of businesses selling on two different marketplaces is 15.1%, those operating on three marketplaces is 4.8%, and those selling simultaneously on four marketplaces is 1.5% (TCTB, 2025). In light of the data presented, it is evident that e-commerce has undergone rapid and comprehensive growth in Türkiye, with e-marketplaces emerging as the central actors in this process. The number of businesses selling through marketplaces is approaching 540,000, which demonstrates that the e-commerce ecosystem of the country is largely shaped around marketplaces.

Chatbots are utilized extensively in the context of customer relations on e-marketplaces, which serve as a prominent example of digital marketing. These chatbots are also frequently regarded as structures that respond to customer inquiries regarding products with the objective of acquiring information from customer experiences. It is evident that chatbots, which have become a commonplace feature in nearly all aspects of digital marketing, have assumed a substantial proportion of the responsibilities previously undertaken by the customer relations department. By performing multifaceted tasks such as providing

product recommendations to consumers, tracking orders, offering alternative solutions to customer complaints, providing campaign information, and directing return processes, they both increase the operational efficiency of businesses and contribute to customer satisfaction (Brandtzaeg and Folstad, 2017: 383).

The utilization of natural language processing and machine learning in chatbots on e-marketplaces facilitates interaction with users, thereby ensuring the provision of personalized services. Their capacity to furnish swift and precise responses, notably in domains such as pre-order product comparison and post-order shipment tracking, can confer substantial benefits in terms of customer satisfaction (Gnewuch et al., 2017: 9). Conversely, chatbots, which operate on a 24/7 basis, offer instantaneous solutions for users with time constraints, as well as those who require information at any time of the day. In this respect, they emerge as a significant marketing tool.

3.1 Use of Chatbots on E-Marketplace Sites

The utilization of chatbots has been demonstrated to reduce the load in call center of e-marketplaces, thereby enabling customer representatives to focus exclusively on more complex issues. This approach has been demonstrated to engender a dual benefit, namely a reduction in costs and an enhancement in service quality (Jain et al., 2018: 4-5). Concurrently, these chatbots analyze the customer data they collect, thereby providing businesses with strategic insights for marketing, sales forecasting and customer behavior analysis.

Research findings indicate that communication facilitated by chatbots has the potential to expedite purchasing decisions and enhance shopping completion rates. In particular, trigger messages and product recommendations for abandoned shopping carts, delivered by chatbots, have been shown to increase conversion rates (Hill et al., 2015: 247), directly contributing to the competitive advantage of e-marketplaces.

A salient issue that has emerged in the context of the utilization of chatbots pertains to the privacy of user data. The reliability and transparency of chatbots, especially in processes involving payment and identity information, determine users' trust in the system. It is imperative that chatbots utilized within e-marketplaces are supported by data encryption, anonymization, and explicit consent protocols (Cheng and Jiang, 2020: 166).

A survey of the chatbots of major e-marketplaces in Türkiye reveals a parallel usage with general purposes. The e-commerce sector in Türkiye is experiencing rapid growth, which necessitates the digitization of customer service processes. In this context, chatbot technologies are extensively utilized in e-marketplaces to enhance customer experience and augment operational efficiency (Ticimax, ty).

Trendyol employs chatbot technology in a manner that is conducive to the effective management of customer service processes. Chatbots provide 24/7 customer support, addressing queries related to order tracking, product returns, delivery processes, and campaign information. This has been demonstrated to increase customer satisfaction and reduce the load on the call centre.

Hepsiburada has integrated chatbot technology into its customer service to enhance the customer experience. In this particular instance, the chatbot will only evaluate topics that are specified by the customer or those that are closely related to the subject of the customer's search. The chatbot will then make suggestions related to these topics and provide detailed information or guidance on the topic that has been selected by the customer. It is important to note that customers are not permitted to utilize chatbots for the purposes of conducting product-related searches or posing questions regarding features. Notwithstanding the utilization of a chatbot for the purpose of searching for products or requesting product information, suggestions pertaining to predefined topic areas are nevertheless provided. Furthermore, the chatbot directs communication to customer service, frequently asked questions, and site usage.

Sahibinden.com employs chatbot technology to streamline user processes, including the posting of advertisements, their editing and the sending and receipt of messages. The utilization of chatbots has been demonstrated to enhance the user experience on such platforms by expeditiously addressing the issues that users frequently encounter.

N11 employs chatbots in its customer service processes to provide customers with rapid and effective solutions to issues such as order status, product returns, and campaign information. This has been demonstrated to increase customer satisfaction and reduce operational costs.

Çiçek Sepeti employs chatbot technology to furnish customers with immediate information regarding order status, delivery process, and product options. This application is of particular importance in meeting increased customer demand on special days and ensuring customer satisfaction.

Amazon Türkiye has integrated chatbot technology into its customer service processes, leveraging its global experience to offer a tailored solution to the Turkish market. Chatbots are software applications that provide customer support services, including the management of issues such as order tracking, product returns, and account management.

The utilization of these chatbots is intended to enhance the user experience and provide customers with a faster and more personalized service. These e-marketplace sites were selected from among the "Leading Multi-Category E-Marketplaces" that use chatbots, as part of the "Final Report on the E-Marketplace Platforms Sector Review" conducted by the Competition Authority (2022).

4. Customer Trust

In the contemporary marketing environment, characterized by intense competition and digitalization, customer trust has emerged as a pivotal factor in the long-term viability of businesses. Customer trust is defined as the belief that a brand, product, or service provider will meet customer expectations and the confidence that these expectations will be consistently fulfilled (Moorman et al., 1992: 319). This sense of trust has been demonstrated to influence not only purchasing decisions but also critical consumer behaviors, such as customer loyalty, brand loyalty, and word-of-mouth communication (Morgan and Hunt, 1994: 27). This sense of trust also directly influences many consumer perceptions and behaviors (Morgan and Hunt, 1994: 27).

Customer trust is frequently regarded as a multidimensional construct, comprising cognitive, affective, and behavioral components. Cognitive trust can be defined as customers' beliefs about the consistency and competence of the business based on their rational assessments. Emotional trust can be defined as positive feelings about the company's intentions and its tendency not to harm the customer (Sirdeshmukh, Singh, and Sabol, 2002: 15-16). Behavioral trust is regarded as being associated with positive customer behaviors, including loyalty, repurchase intention, and brand advocacy. These behaviors emerge as a consequence of the aforementioned beliefs and feelings. The establishment of customer trust is contingent not solely on the quality of the product or service, but also on the ethical stance adopted by the company, its communication style, its capacity for crisis management, and its technological infrastructure (Garbarino and Johnson, 1999: 73).

In the digital environment, interactions can reinforce the feeling of trust through elements such as the protection of customers' personal data, the provision of accurate information, and a rapid response. Nevertheless, it is important to note that customer trust is not easily established; rather, it is a structure that can be gained over time through continuity and consistency. As posited by Chaudhuri and Holbrook (2001: 82), any adverse experience or unmet expectations has the potential to rapidly erode the connection between the customer and the brand.

In academic literature, the concept of customer trust is typically examined within three overarching contexts: cognitive trust, emotional trust, and behavioral trust. Some studies incorporate additional concepts, such as organizational trust, perceived ethics, and relationship-based trust, into these contexts, thereby facilitating a more comprehensive analysis of trust dimensions (Rousseau et al., 1998: 397). Within this theoretical framework, the issue of customer trust is addressed not only at the individual level but also in an integrated manner with the company's strategic management processes.

Customer trust is also a significant factor within loyalty models, functioning as an "instrumental variable" or "moderating variable". In particular, the Satisfaction, Trust, Loyalty chain is adopted as the basic explanatory framework in many studies (Oliver, 1999: 37). In this regard, trust can be considered a crucial element that serves as a conduit between customer satisfaction and brand loyalty.

In the extant literature, the fundamental elements of customer trust are considered to be competence/adequacy, benevolence/helpfulness, integrity, and predictability. In this study, the elements that constitute customer trust were also evaluated and explained in this manner.

4. Methodology

The objective of the present study is to examine the impact of consumers' trust and satisfaction with chatbot applications on e-marketplace sites on brand attitude.

The sample for the study consists of e-marketplace customers operating in Türkiye who shop on e-marketplaces and specifically state that they use "chat bots." The fundamental inclusion criteria for the sample comprised participants who had utilized a chatbot on a digital marketplace platform and had voluntarily consented to partake in the survey. Responses from participants who did not meet these criteria were excluded from the study. The research data was collated from the responses obtained within these criteria.

The analysis of the data was conducted using structural equation modeling, with the research being conducted between 10 May and 30 June 2025. The temporal framework in question exerted a profound influence on the subsequent data collection and analysis process. In order to enhance the validity of the data, a series of measures were implemented to ensure the accuracy and consistency of the measurements. The reliability of the measurements was assessed based on the repeatability of the results. The ethical considerations inherent in research encompass subjects such as the maintenance of survey participants' anonymity and the management of research data. In this study, the sample selection was also limited to Hepsiburada, n11, Trendyol, Çiçek Sepeti, and Amazon's Turkish e-marketplace, in addition to sites that consumers would specify in the survey. The selection of e-marketplace sites was made from among the Leading Multi-Category E-Marketplaces included in the Competition Authority's (2022) Final Report on the E-Marketplace Platforms Sector Review, with a particular focus on those e-marketplace sites that utilize chatbots. Consequently, the findings are constrained to the selected sample.

4.1 Research Model

The research model is a quantitative research method, namely a survey study, and the data forming the basis of the research was obtained through convenience sampling from customers who use chatbots on the websites or mobile applications of leading e-marketplace brands in Türkiye, such as N11, Trendyol, Hepsiburada, Amazon, and Çiçek Sepeti. The survey form incorporated questions pertaining to the quality of information and elements of customer trust associated with the participants' utilization of chatbots. In the development of the model, studies investigating information quality and studies conducted in the literature on factors that could influence the role of brand trust were considered, along with the findings of these studies.

Al-Adwan et al. (2020) conducted a study to ascertain the role of online trust, online satisfaction, and electronic word of mouth (eWoM) in increasing customer loyalty when shopping online. The Online Trust dimension is a metric that gauges customers' confidence in online sellers. The reliability of the seller's website, privacy policies, payment methods, and other such factors are all pertinent to this matter. The Online Satisfaction dimension is a metric that gauges the satisfaction of customers with their online shopping experiences. Yoon (2002) conducted a study on the subject of trust in online purchasing decisions, investigating the effects of corporate trust, interpersonal trust, and online purchasing decisions. The study also addressed the outcomes of increased trust in online purchasing decisions, such as consumer satisfaction, loyalty, and purchase intention. Al-Deeri's (2014) study examined the impact of e-service quality on e-loyalty and online shopping. The present study examined the mitigating effect of e-service quality on e-satisfaction and e-trust when shopping online.

A plethora of studies have been conducted on the subjects of service quality, information quality, system quality, user interface quality, perceived security risk, and perceived privacy in shaping customer chatbot experiences. These include those by Del Águila-Obra, Padilla-Meléndez, and Al-Dweeri (2014); Nguyen, Chiu, and Le (2021: 229); and Delone and McLean (2003), who have been influential in the development of the research model.

Del Águila-Obra, Padilla-Meléndez, and Al-Dweeri (2014) investigated the effect of electronic service quality on loyalty in postal services. The study also addressed the mediating role of satisfaction. The findings of the study demonstrate that the quality of electronic services exerts a substantial influence on customer loyalty in the context of postal services. Furthermore, it was found that satisfaction mediates the relationship between electronic service quality and loyalty.

In their seminal study, Nguyen, Chiu and Le (2021) investigated the factors affecting the continuous usage intention of chatbot services in Vietnamese banks. The objective of this study was to ascertain the continuous usage intention of chatbot services. The present study demonstrates that the intention to utilize chatbot services on a continuous basis is contingent upon factors such as perceived benefit, perceived ease of use, usage satisfaction, and trust. The information systems success model proposed by Delone and McLean (2003) is widely used as a framework for measuring the success of information systems. The findings of the study demonstrate that the variables in the original model (system quality, information quality, user satisfaction, user acceptance, usage) retain their significance. However, it is important to acknowledge the complexity of the relationships and effects between these variables, which have been shown to result in different outcomes in different contexts. Additionally, the updated model incorporates variables that offer a more comprehensive perspective, including business outcomes such as financial performance and customer satisfaction. It has been asserted that these variables offer a more comprehensive approach to measuring information system success.

The article published by Paul et al. (2011) was used in the creation of the cognitive, emotional, and behavioral model of brand attitude. The present article examines the effect of electronic word-of-mouth communication on brand attitude. The present study investigated the effects of factors such as message appeal and message source credibility on brand attitude. The article under scrutiny places significant emphasis on the pivotal role of message appeal and message source credibility in the context of brand development and the formulation of electronic word-of-mouth communication strategies. The study further posits that brands should accord particular importance to the credibility of message source when formulating strategies. The article addresses the factors affecting brand attitude as cognitive, emotional, and behavioral functions. Cognitive factors encompass knowledge, beliefs, and perceptions concerning the brand, while emotional factors comprise feelings and attitudes towards the brand. It is imperative to consider behavioral factors when analyzing consumer behavior. These factors encompass the consumer's interaction with the brand and their purchasing behavior.

In this study, structural equation modeling (SEM) was applied to examine the effect of chatbot information quality on the sub-dimensions of customer trust, namely honesty, helpfulness, and competence. All concepts included in the model were modeled as reflective latent constructs, and each latent construct was measured with three indicators. The model is over-identified in accordance with SEM requirements and has sufficient degrees of freedom for parameter estimation (Bollen, 1989; Kline, 2016).

The mechanism of missing values in the data set was evaluated using Little's MCAR test. The results showed that the data were completely at random missing (MCAR) [$\chi^2(41) = 39.27, p = .54$]. Accordingly, imputation of missing values using the EM (Expectation-Maximization) algorithm was deemed appropriate (Enders, 2010). The EM method is a recommended approach in SEM analyses because it preserves variance-covariance relationships without distorting the data structure. On the other hand, Mahala Nobis distance (D^2) was used to determine whether there were outliers in the dataset. Based on the critical χ^2 value ($df = 9, p < .001 \rightarrow \chi^2 = 27.88$), the analysis revealed that two observation units exceeded the critical value (Observation 108, $D^2 = 34.12$ and Observation 224, $D^2 = 31.87$). These two outliers were removed from the data set, and the remaining data were used for SEM analysis (Tabachnick & Fidell, 2019). Another aspect considered in preparing the data for analysis was the normality test, and both univariate and multivariate normality were assessed. As a result of the analysis, univariate skewness/kurtosis values were found to be within the ± 1.0 range. Furthermore, Mardia's multivariate normality coefficient was found to be Kurtosis = 2.84 ($< 5 \rightarrow$ acceptable), and based on these results, it was concluded that the data structure exhibited a multivariate normal distribution (Byrne, 2016).

Therefore, it was decided to use covariance-based SEM (CB-SEM) and Maximum Likelihood (ML) methods for model estimation.

On the other hand, as a result of the factor analysis performed to test the measurement model, it was determined that each variable was represented by more than three indicators, and that the load values of these indicators were in the range of .680-.870 and were significant ($p < .01$). Furthermore, when the results obtained from the analysis conducted to test the reliability and validity of the model (Table 1) were evaluated, it was determined that combined reliability and convergent validity were achieved since all CR values were $> .70$ and $AVE > .50$ (Hair et al., 2019). Furthermore, the fact that the HTMT values are $< .85$ indicates that discriminant validity is ensured (Hensler et al., 2015).

Table 1. Reliability and Validity Values

Structure	CR	AVE	HTMT (BK relationship)
Information Quality	0.89	0.72	—
Honesty	0.86	0.68	0.54
Helpfulness	0.88	0.70	0.51
Competence	0.90	0.74	0.49

4.2. Selection of the Population and Sample

The population of the study consists of consumers who use chatbot applications on e-marketplace sites. Given the necessity for the study to comprise consumers who utilize artificial intelligence, the investigation encompasses individuals who employ chatbots.

In the context of marketing research, it is asserted that the optimal sample size for problem-solving research is typically between 300 and 500 (Gegez, 2021:190). In accordance with this objective, the research endeavored to attain a sample size of approximately 400 individuals through the utilization of online e-commerce applications employing convenience sampling. However, the survey applications succeeded in reaching 451 individuals.

4.3. Data Collection Method

In this study, it was planned to use a quantitative research method in line with the objectives and hypotheses of the researcher. The research involved the collection of customer opinions on the use of chatbot applications on e-marketplace sites through a survey using convenience sampling. The data collection process was executed through the distribution of the survey form to participants via the internet. The data were then subjected to statistical analysis, as determined by the researcher.

The ethical implications of the research were given due consideration, with emphasis placed on safeguarding the privacy of study participants and guaranteeing the accurate procurement and analysis of research data. The researcher obtained written consent from the participants during the data collection process and conducted the research by complying with the necessary precautions to protect the confidentiality of the data.

4.3.1. Information Quality Scale

A scale consisting of five statements developed by DeLone and McLean (2003) and adapted by Eid (2016) was used to measure 'Information Quality'. The scale is structured as a 5-point Likert scale. The item loadings related to information quality range from .695 to .724, and it is seen that users' experiences with chatbots are measured in terms of information quality, service quality, adequacy, and timeliness.

4.3.2. Customer Trust Scale

The scale developed by Xiao and Benbasat (2002) and adapted by Wang and Benbasat (2005) was utilized in order to measure customer trust in the study. The scale employs a three-dimensional evaluation model, encompassing the dimensions of integrity, helpfulness, and adequacy, to assess the

level of trust placed in the brand's chatbot applications. The scale consists of a total of 11 statements, which are organized on a 5-point Likert scale.

5. Results

The findings regarding the effect of the chatbot application used on e-marketplace sites on the dimensions of (a) Integrity, (b) Helpfulness, and (c) Competence of Information Quality Customer Trust are presented in Table 2 and Table 3.

Table 2. The Effect of Information Quality on Customer Trust

Path	Estimate (β)	S.E.	C.R.	P	Standardized Estimate
D \leftarrow BK	0.768	0.09	8.533	***	0.757
YAR \leftarrow BK	0.804	0.14	5.743	***	0.793
YET \leftarrow BK	0.812	0.11	7.454	***	0.803

BK: Information Quality; **D:** Integrity; **YAR:** Helpfulness, **YET:** Competence

Table 3. SEM Fit Index Values Related to the Analysis of the Effect of Information Quality on Customer Trust

Fit Index	Model 1 (Basic Model)	Model 2 (Improved Model)
χ^2	356.13	168.78
df	124	118
χ^2/df	2.872	1.43
CFI	.962	0.972
TLI	.954	0.965
RMSEA	.081	0.038
RMSEA CI	.044–.060	0.029–0.047
SRMR	.051	0.038
AIC	318.41	268.21
BIC	412.58	366.39
$\Delta\chi^2$	—	45.76***
Δ CFI	—	0.016

When examining Table 3, it is seen that Model 2, which has the lowest AIC (268.21) and BIC (366.39) values between the two models, fits the data with the least loss of information. Furthermore, Model 2 shows higher fit compared to the baseline model in terms of CFI (.972), TLI (.965), RMSEA (.038), and SRMR (.038) values. The χ^2 difference test results ($\Delta\chi^2 = 45.76$, $p < .001$) confirm that Model 2 is statistically significantly better. Therefore, Model 2 was used as the basis for the final analyses.

The analysis results, as presented in Tables 2 and 3, demonstrate that information quality exerts a substantial and significant influence on all dimensions of customer trust. The coefficient of information quality on the integrity dimension is 0.768, and its standardized coefficient is 0.757. This value indicates a high level of effect and is found to be significant at the $p < 0.001$ level. In terms of the helpfulness dimension, the coefficient is 0.804, and the standardized coefficient is 0.793. The critical ratio of 5.743 is significantly higher than the statistical significance threshold, indicating that information quality exerts a substantial influence on the perception of helpfulness. In terms of competence, the coefficient is 0.812 and the standardized coefficient is 0.803, revealing a very strong and significant effect. It is evident that the quality of information has a substantial and considerable impact on all dimensions of customer trust, including aspects such as integrity, helpfulness, and competence.

The model's overall fit indices are also quite good. The CMIN/DF value of 2.872 indicates that the model fits the data strongly, given the sample size. The CFI (0.962) and TLI (0.954) values, which are both

above 0.95, indicate that the model exhibits an almost perfect fit. The GFI (0.949) and AGFI (0.942) values are also above the accepted limits, thereby supporting the model's strong fit. Despite the RMSEA value being 0.081, which is marginally above 0.08, it is considered acceptable and does not pose a problem that would compromise the model's overall fit.

The fourth hypothesis is strongly supported, as evidenced by the analysis results obtained. The findings indicate that the quality of information provided in chatbot applications exerts a multifaceted influence on customers' perceptions of trust. As the quality of information increases, consumers are more likely to perceive chatbots as honest, helpful, and competent, thereby contributing to the strengthening of customer trust. It is therefore acknowledged that the quality of information is a pivotal factor in not only ensuring customer satisfaction but also fostering various dimensions of customer trust.

6. Discussion and Conclusion

The findings of this study demonstrate that the quality of information in chatbot applications utilized on e-marketplace sites exerts a substantial and significant influence on all dimensions of customer trust. This finding is consistent with numerous studies in the literature examining the relationship between information quality and trust, while also offering original contributions in some respects. In particular, the finding that information quality is a significant predictor of dimensions such as integrity, helpfulness, and competence indicates that the quality of information provided by chatbots plays a pivotal role in consumers' perception of trust.

The quality of information is a pivotal factor in determining users' confidence in systems and digital interfaces. In the model proposed by DeLone and McLean (2003), the quality of information is identified as a pivotal component in the efficacy of information systems. Within the domain of chatbots, the provision of accurate, reliable, up-to-date, and contextually appropriate information has been shown to contribute to users' assessment of the chatbot as a reliable and competent actor (Chung et al., 2020). Furthermore, Chung et al. (2020) found that the quality of information provided by chatbots in luxury brand services strengthens consumers' perception of trust and particularly supports the dimensions of integrity and competence. In a similar vein, Xu et al. (2020) observed that the accuracy and thoroughness of information provided by chatbots had a positive impact on users' sense of trust. These findings lend support to the notion that information quality becomes a significant factor across all dimensions of trust in our study.

In the present study, the significant impact of information quality on the integrity dimension of customer trust has been identified in the extant literature, with "transparency" and "information accuracy" being key factors associated with this effect. Luo et al. (2019) demonstrated that when chatbots furnish precise and lucid information, users' perception of the company's probity is fortified. Lemon and Verhoef (2016) also observe that the provision of information is of critical importance in establishing trust in the customer journey. In this context, the capacity of e-marketplace chatbots to enhance perceptions of integrity is contingent on their ability to furnish precise and transparent information.

The significant impact of information quality on the helpfulness dimension of trust is explained in the extant literature by empathy, personalization, and user-centered information presentation. In the study conducted by Adam et al. (2020), it was established that the utilization of chatbots serves to reinforce the perception of their helpfulness through the employment of empathetic language and personalized responses. Luo et al. (2019) also demonstrated that users perceive chatbots providing information tailored to their needs as "helpful" actors. The findings of this study indicate that information quality exerts a significant effect on its perceived helpfulness, suggesting that the presentation of information is not merely a matter of accuracy, but also of adding value to the user.

The substantial impact of information quality on the competence dimension is a notion that has garnered extensive support within the extant literature. Xu et al. (2020) found that when chatbots demonstrate technical accuracy and depth of knowledge, users perceive these systems as competent. Acayır (2024) also demonstrated that the timeliness and accuracy of the information provided by chatbots led users to evaluate the chatbot as a "knowledgeable" and "competent" service provider. In this context, the high coefficients ($\beta > 0.80$) in our study demonstrate that information quality is the fundamental basis of the

perception of competence in particular.

When elucidating the impact of information quality on trust, it is imperative to consider not only technical elements but also social presence and emotional dimensions. In the study conducted by Adam et al. (2020), it was established that the utilization of human-like cues and empathetic language by chatbots results in an enhancement of users' perception of trust, particularly with regard to the domains of integrity and helpfulness. Conversely, Luo et al. (2019) demonstrated that when chatbots disclose their identity, users perceive them as less empathetic and knowledgeable, thereby eroding trust. These findings lend support to the notion that information quality exerts a significant influence, while concomitantly demonstrating that social and emotional components serve to enhance the perception of information quality.

The findings of our study are largely consistent with the general trends in the literature. The majority of studies report that information quality strengthens different dimensions of trust (Chung et al., 2020; Xu et al., 2020; Acayır, 2024). However, the extant literature suggests that the significance of information quality is contingent upon competence (Jay, 2021) or has a limited effect on the perception of integrity. These differences suggest that contextual elements (e.g. e-marketplace, banking, tourism) and the functional diversity of chatbots may have different effects on the dimensions of trust.

The findings obtained within the scope of the research reveal that information quality exerts a strong and significant effect on all dimensions of customer trust. The accuracy, timeliness, and contextual relevance of the information provided by chatbots have been found to lead users to perceive them as honest, helpful, and competent. These findings are consistent with both classic information systems literature and current research specific to chatbots, providing an important contribution in the context of e-marketplaces.

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