Chatbots Versus Customer Service Agents: A Comparative Evaluation of Shopee Virtual Assistant's Dimensions and Satisfaction as Perceived by Users

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ABSTRACT

The continuous progress of the economy has propelled the evolution of business transactions, through the emergence and growth of Shopee as an e-commerce platform. Chatbots offer 24/7 availability, allowing customers to access assistance at any time without being restricted by working hours. On the other hand, customer service agents play a crucial role in delivering exceptional customer experiences. In light of this issue, the encompassing factors of service quality (SERVQUAL) model were used as independent variables. These dimensions influence customer satisfaction — a dependent variable. Using a quantitative approach and a descriptive-comparative research design, the study incorporates a sample of 385 respondents who are all users of the e-commerce platform. This highlights the results of higher user ratings for the reliability of Customer Service Agents. In contrast, chatbot interactions received lower ratings for assurance, and showed significant disparities in tangibility. Substantial differences in user satisfaction were observed in terms of empathy, while responsiveness between the Shopee chatbot and Customer Service Agents was generally comparable. With overall user satisfaction, the Shopee chatbot performed significantly lower than interactions with Customer Service Agents. The research also unveils four key challenges in such, encompassing chatbot limitations, response times, problem resolution, and the levels of empathy exhibited by customer service agents which are faced by users when utilizing the Shopee virtual

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assistant. This study contributes valuable insights to the existing literature on E-Commerce customer support, offering implications for optimizing virtual assistants and enhancing user experiences on the Shopee platform.

Keywords: Chatbots, customer satisfaction, customer service agents, Shopee, virtual assistants.

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1. INTRODUCTION

E-commerce has emerged as a pivotal facet of the Internet era, encompassing diverse categories such as beauty, clothing, food and beverage, electronics, medical care, and various other products within the global e-commerce economy (Afridi et al., 2021). This platform offers businesses a convenient and accessible avenue to connect with a broad customer base while providing consumers with the ease of making online purchases (Inamdar & Raut et al., 2020).

The success of e-commerce companies is evident in their continuous and steady growth (Zumstein & Kotowski, 2020). With the rise of online shopping, customer service reflects a 78% success rate as an essential role in enhancing the affluence of e-commerce (Zumstein & Kotowski, 2020). Moreover, the expansion of e-commerce is notably bolstered by the Internet revolution. Between 2014 and 2019, e-commerce experienced a 30% growth, with projections indicating a continued upward trajectory until 2023 (Clement, 2019).

Shopping applications like Shopee, Lazada, and other e-commerce sites have revolutionized the overall shopping experience (Khaw & Teoh, 2023). In the Philippines, Shopee is a commercialized e-commerce platform showing different ranges of products from online sellers. The monthly visits recorded that 73.65 million Filipinos visited Shopee as of the third quarter of 2021, making it the most engaged e-commerce website in the country (Cunan et al., 2022). In recent years, consumers have become accustomed to internet purchasing and the convenient delivery of packages to their doorstep from anywhere in the world, thanks to this platform (Villa & Monzón, 2021).

Aligned with the growing acceptance of e-commerce in the market, practitioners and researchers are delving deeper into its intricacies (Yoo & Jang, 2019). The surge of chatbots has garnered significant attention from many companies, particularly in the realm of customer service (Cui et al., 2017). As per Gartner (2018), over half of companies have already invested in chatbots, and it is anticipated that by 2020, chatbots will be integral to 25% of all customer service operations.

A survey by Oracle, encompassing 800 senior marketers and sales professionals across Europe, the Middle East, and Africa, revealed that 80% of brands either already used or intended to use chatbots to serve customers by 2020 (Brynjolfsson & McAfee, 2017).

In essence, the use of chatbots to enhance customer service has become increasingly more popular. As part of the digital era, these are mostly computer programs designed to simulate human conversations. As highlighted by Zumstein and Hundertmark (2017), Chatbots offer 24/7 availability, providing automatic responses when other customer service options are unavailable (Rieke & Marti, 2018). This integration into e-commerce and e-services presents promising opportunities for enhancing customer service (Misischia et al., 2022).

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In the competitive landscape of e-commerce, where alternatives are just a click away and price comparisons are effortless, delivering exceptional customer service and fostering reciprocal communication on a company's website are crucial for attracting and retaining customers. A widely embraced solution for enhancing customer service is the implementation of a "live chat" interface, enabling real-time online conversations with customer service agents (Mero, 2018). This form of online customer support allows customers to engage with service personnel in the digital realm (McLean, 2019). However, it's important to note that both chatbots and human customer service agents have their limitations. For instance, Chatbots have a tendency to lack data collection and analysis functions, inability to address personalized customer inquiry, and lack of understanding with customer emotion or intent (Bafna, 2021). Contrarily, while customer service agents do allow customers to personalize their inquiries unlike chatbots, their response is not as fast and instant.

Moreover, in E-commerce apps, particularly Shopee, customers are typically queued meaning they will have to wait their turn before they can make their inquiry to Shopee's customer service agent. There is also a high chance that a customer service agent will ask you to hold the line or keep the app open otherwise the conversation will end, prompting inconvenience to the customer in the case where his conversation is cut, as he will be prompted back in the queue and wait for his turn once again. Lastly, reviews and ratings from Apple's App Store upon downloading Shopee have showcased poor customer service based on customer experience and feedback prompting lack of training of company personnel as a drawback of customer service agents.

On the other hand, while there is success in e-commerce, the outcomes may not meet initial expectations (Yoo & Jang, 2019). Forbes Magazine highlighted factors contributing to startup failures, including a decrease in usage intensity, making e-commerce sustainability a challenge (McCarthy, 2020). Despite the fluctuating success of these platforms, they continue to provide better improvements in terms of virtual assistance.

This study shed light on the dimensions and satisfaction of users to chatbots and customer service agents as virtual assistants of Shopee. By examining their respective strengths and weaknesses, the researchers sought to understand which approach was more suitable for addressing different user needs. This research has delved into various factors such as response time, accuracy, and user satisfaction in assessing the overall performance of chatbots and customer service agents.

2. LITERATURE REVIEW

Chatbots

Viewed as a relatively recent innovation, the application of chatbots has actually existed for quite some time, evolving with various terminologies such as automatic conversation systems, virtual agents, dialogue systems, or chatterbots (Ciechanowski et al., 2019). From around 2016, chatbots have gained recognition as a significant technological trend (Baier et al., 2018). Defined as machine agents, chatbots engage users in natural language conversations (Folstad & Brandtzaeg, 2020). Text-based chatbots are increasingly adopted for customer service purposes (Folstad & Skjuve, 2019) due to their accessibility and user-friendly nature, offering an uncomplicated and cost-effective communication channel for companies to implement (Shevat, 2017).

Following this evolution, they've emerged as a pivotal technological trend (Baier et al., 2018), equipped with natural language capabilities to "converse" with users (Sheehan et al., 2020), delivering comprehensive information about products and services, and even facilitating real-time online orders (Ashfaq et al., 2020). As highlighted by Følstad and

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Brandtzaeg (2017), chatbots possess a more user-friendly and appealing interface compared to static content searches in frequently asked questions (FAQs) lists. They offer users convenient and effective assistance, furnishing more engaging responses that directly address their concerns.

A recent industry report by Gartner (2018) revealed that 31% of customer communication managers have either implemented chatbots or have plans to do so soon. It's projected that by 2025, customer service chatbots could enhance operational efficiency by up to 25%. Defined by Shawar and Atwell (2007) as "software programs interacting with users through natural languages," these chatbots raise questions about delegating service tasks and striking a balance between the efficiency of chatbots and the empathic capacity of humans. This necessitates clear insights into how the choice of service agent (chatbots vs. humans) impacts communication quality and consequently shapes consumer perceptions of the interaction process. Despite frequent miscommunication in human-computer interaction Sheehan et al., (2020); Adam et al. (2021), suggest that users' linguistic skills easily transfer into human-computer communication. However, the perception and quality of interaction might significantly differ from human-to-human interaction.

Folstad et al. (2018) backed this assertion, suggesting users might not entirely trust the guidance offered by chatbots. Adding to this, Folstad and Skjuve (2019) indicated a lack of belief in chatbots' communication abilities to effectively tackle real tasks and service-related issues. Even if chatbots deliver high-quality service to customers and positively impact handling complaints, customer loyalty can still be anticipated (McLean & Osei-Frimpong, 2019). However, Rese et al. (2020) contended that in the realm of online retail, customers exhibit significant reluctance towards employing chatbots across various stages of the customer journey. For instance, only 34% of a global sample felt comfortable receiving proactive personalized recommendations from a chatbot while browsing for products, particularly in the pre-purchase phase (Pega, 2017).

Chung et al.'s (2018) study highlights the immersive and captivating nature of chatbot services in fostering interactions between brands and customer service. The research demonstrates that these digital service assistance tools contribute positively to brand-customer engagement. Moreover, Folstad et al. (2018) emphasized the significance of trusting the brand hosting the chatbot, as these customer service chatbots are typically tailored to assist specific brand customers, and the brand's reputation significantly influences trust levels. Asher (2017) supported this viewpoint, indicating that users perceive chatbot information as reliable, attributing this perception to the chatbot's accuracy in understanding users' needs, underscoring the importance of encouraging chatbot utilization.

Many frequent chatbot users often engage with these platforms for entertainment purposes or to pass the time. Brandtzaeg & Følstad (2017) highlight the noteworthy trend that while chatbots can enhance human interactions, users predominantly share their chatbot experiences on social platforms. Additionally, chatbots are viewed as a means of alleviating isolation and fulfilling the need for social connection. Rietz et al. (2019) note the relatively recent emergence of chatbots, prompting increased research into their acceptance. Conversely, Murtarelli et al., (2020) advocate for future empirical testing focusing on conversational aspects.

With the recent widespread usage of chatbots, their acceptance is becoming a growing focus of research (Rietz et al., 2019), given the significant importance of embracing new technology. According to Fernandes and Oliveira (2020), this stands as a crucial step toward future success. Hence, elucidating the impact of communication quality

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in human-computer interaction becomes imperative to enhance the value derived from chatbot usage (Sheehan et al., 2020).

Customer Service

Customers represent a crucial stakeholder group for any organization, hence prioritizing their satisfaction stands as a primary concern for companies. One effective avenue to foster customer satisfaction is by providing excellent customer service (Nicolescu & Tudorache, 2022). Whether consciously acknowledged or not, the individuals you engage with online don't exclusively consist of other people. In actuality, intelligent agents are increasingly managing customer service chats and commercial social media interactions, with many crafted to emulate human identities and personalities (Radziwili & Benton, 2017).

In the realm of customer service, chatbots occupy a space between self-service on web pages and interactions involving trained personnel. Companies are recognizing the substantial potential of chatbots, increasingly integrating them into messaging services, as highlighted by Rese et al. (2020), projecting them as an integral facet of future customer service. The amalgamation of AI and service robots, like chatbots, is growing in popularity among companies (Huang et al., 2018). These computer programs leverage natural language processing and machine learning to emulate human-to-human communication (Araujo, 2018). While chatbots engage in conversation, it's important to note that on the other end, it's a computer employing AI (Larivière et al., 2017).

Initially designed for basic tasks, chatbots have evolved significantly, now capable of handling more intricate functions such as offering health, financial, or shopping advice (Araujo, 2018). The advancements in AI have led to the emergence of conversational software agents (CAs) like chatbots, often replacing human chat service agents (Adam et al., 2021). For companies to retain a competitive edge and solidify their market position, enhancing the quality of existing services to meet customer demands and foresee their needs is paramount (Chen et al., 2019). Interacting with customer service chatbots might resemble conversing with service personnel, providing users with a more accessible and user-friendly experience than web page interactions (Følstad & Skjuve, 2019). Li et al. (2021) investigated how a chatbot's understanding capability could enhance consumer experiences. Research indicates that chatbots capable of understanding human humor are perceived as more amiable, cooperative, and proficient, providing better solutions and performance compared to those lacking this ability (Shin et al., 2023).

The immediacy of chat services has revolutionized customer service into a mutual dialogue, significantly impacting trust, satisfaction, and intentions to repurchase (Mero, 2018). By 2017, Araujo (2018) noted the creation of over 100,000 chatbots on Facebook Messenger, with consumers increasingly engaging with them through social media and instant messaging platforms. Gartner (2018) predicts that by 2020, 85% of consumer interactions in customer service will occur without human involvement. Despite this, Jacobs et al. (2019), assert consumer hesitancy in adopting chatbots and skepticism regarding their service quality.

Supporting this, Gartner (2018) indicates that more than 85% of organizations plan to deploy AI-based service chatbots for automated customer dialogue. Understanding user perceptions of this evolving technology-mediated communication is emphasized by Larivière et et al. (2017). As AI rapidly transforms customer service, comprehending the most effective ways to implement these technologies becomes crucial to ensure higher perceived service quality and a positive customer experience.

An investigation in Dubai, UAE, using electronic service quality dimensions, found customer service and communication to be pivotal in achieving quality e-service and enhancing online customer satisfaction (Al-Khayyal et al., 2020). Conversely, a study in

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Indonesia concluded that customer service isn't statistically significant concerning overall e-service quality. The research revealed that website design, security/privacy, and order fulfillment outweigh customer service in establishing superior e-service quality (Rita et al., 2019).

These differing outcomes suggest that cultural nuances influence what customers prioritize in e-service quality. They also advocate for creating a more welcoming workplace to improve employee satisfaction (Panetta, 2020) and to cater to digital-native generations entering the workforce (Toader et al., 2020). Consequently, the divergent findings between the two studies underscore Indonesia's culture placing less emphasis on customer service compared to Dubai, UAE.

Satisfaction

As outlined by Nisar and Prabhakar (2017), achieving an adequate level of overall customer satisfaction is imperative for any business to survive and remain competitive. Customer satisfaction, succinctly defined by Suchánek and Králová (2018), reflects the added value when a product or service aligns with or surpasses a customer's expectations.

Chicu et al. (2019) emphasize consumers' boundless desire for value in their purchases, a sentiment further echoed by Febriyanti et al. (2024), underscoring the need to meet and fulfill their wants and needs consumers. The role of AI chatbots in enhancing customer satisfaction, a cornerstone of customer service performance, has garnered significant attention in research (Ashfaq et al., 2020; Eren, 2021). Studies also reveal the impact of employee communication satisfaction on organizational commitment, ultimately boosting performance and loyalty (Aburayya et al., 2020).

Contrarily, AI chatbots alone struggle to influence customer preference. Interestingly, when AI chatbots collaborate with HFLEs, the impact of AI service quality on customer satisfaction diminishes and even turns negative (Perera et al., 2022). Esa et al. (2016) discovered that exceptional customer service, hospitality, and consistent engagement from an organization significantly contribute to customer satisfaction and subsequently influence customer loyalty within the service industry.

SERVQUAL dimensions that measure the Chatbots and Customer Service Agents as Virtual Assistants

Reliability

At the core of chatbot services lies reliability, which encompasses their capacity to operate consistently and accurately (Li et al., 2021). Although chatbots provide prompt and consistent responses, it's important to recognize the traditional reliability inherent in customer service agents. These agents have long served as the dependable human interface, delivering personalized assistance, understanding intricacies, and resolving intricate issues.

Assurance

Pereira and Díaz (2018) emphasized that quality assurance plays a crucial role in assessing unsophisticated script-based conversational chatbots. Building on this, Lee and Park (2022) found that assurance is a pivotal factor in service quality, influencing both user satisfaction (Ronald & Amelia, 2023) and the intention to use chatbots, particularly in the financial service industry.

Consumers consciously allocated additional resources to manage negative emotions triggered by chatbots. Additionally, trust in chatbots was lower in comparison to trust in customer service agents (Wang et al., 2023). However, contrary to the findings of Wang et al. (2023) which showed lower trust in chatbots compared to humans, Li et al. (2020) developed a chatbot named Jennifer to analyze public information sourced from

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reputable outlets during the COVID-19 outbreak. Their findings indicated that the assurance quality of chatbots can be ensured when information is derived from trustworthy sources. Notably, both responsiveness and assurance aspects have seldom been explored concurrently in the realm of chatbots, particularly for Online Travel Agencies (OTAs), highlighting the significance of this study.

Tangibility

This personalization proves valuable in addressing customers' specific issues (Van den Broeck et al., 2019). Bavaresco et al. (2020) identified personalization as a determinant in a recommendation system aimed at maximizing user satisfaction. Chatbots play a crucial role in customizing assistance through direct chats or messages in e-retailing (Chung et al., 2018). Kraus et al. (2019) asserted that such customization enhances the online customer experience, meeting users' expectations for a highly personalized system from digital assistants. Consequently, the convenience in the customer experience saves time and effort across cognitive, emotional, and physical dimensions during product purchases or service use (Roy et al., 2018).

Empathy

In the realm of chatbots, the expression of sympathy and empathy is preferred over unemotional advice provision (Liu et al., 2019). Incorporating fun into the customer experience enhances value perceptions and intentions for customers to adopt digital tools (Go & Sundar, 2019). Chen et al. (2019) underscore the importance of smooth, accurate, and complete interactions to evoke positive perceptions of understanding and relevant communication. Providing customers with specific, clear, and easily understandable information, along with comprehensive discussions, increases the likelihood of customers feeling valued and comfortable (Go & Sundar, 2019). When chatbots are context-aware during conversations, customers may perceive a personalized interaction (Roy et al., 2018).

However, a study conducted at the University of Toulouse, France stated that empathy does not have any significant effect on the intention of users to reuse Chatbots. Customers prefer Chatbots for its utilitarian value and consider both reliability and usefulness to be more important than empathy (Meyer-Waarden et al., 2020).

Responsiveness

Van den Broeck et al. (2019) emphasize that responsiveness involves a prompt readiness to assist customers by providing immediate and accessible services, ensuring convenience. It is closely tied to the quality and speed of companies in catering to customer interests and determining the quality of customer service and communication. The importance of responsiveness lies in its impact on customer trust, loyalty, satisfaction, and ultimately, product profitability (Ali & Anwar, 2021).

Chatbots that respond quickly, are easily accessible, and available when needed contribute to customer comfort and a sense of value (Roy et al., 2018). This swift responsiveness not only enhances customer satisfaction but also generates enjoyment in interactions with chatbots (Chung et al., 2018). Qutaishat (2018) notes that citizens expect quicker and more effective responses from government institutions through digital channels compared to traditional communication methods.

3. HYPOTHESES

Based on the literature, the following are the hypotheses:

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H1: There is a significant difference between the Reliability of Shopee's Chatbots and Customer Service Agents.
H2: There is a significant difference between the Assurance of Shopee's Chatbots and Customer Service Agents.
H3: There is a significant difference between the Tangibility of Shopee's Chatbots and Customer Service Agents.
H4: There is a significant difference between the Empathy of Shopee's Chatbots and Customer Service Agents.
H5: There is a significant difference between the Responsiveness of Shopee's Chatbots and Customer Service Agents.
H6: There is a significant difference in the users' Satisfaction with Shopee's Virtual Assistants when comparing Chatbots and Customer Service Agents.

4. RESEARCH METHODOLOGY

This research employed a quantative method particularly descriptive-comparative research design to assess the distinctions between chatbots and customer service agents in providing virtual assistance through Shopee. Using purposive sampling, a sample of 385 users of the e-commerce platform responded to the survey. The independent sample T-test was used in analyzing the difference between the dimensions and satisfaction of users to Chatbots and Customer Service Agents as virtual assistants of Shopee from the variables of the SERVQUAL Model. The two subjects were compared from the respondents' point of view and experience and their responses were then analyzed to view the dimensions of one or the other.

5. RESULTS AND DISCUSSION

Table 1. Demographic Characteristics of the Respondents (n = 385)

Demographic	Group	Frequency	Percentage
Sex	Female	204	53.0%
	Male	181	47.0%
Age	18 - 21	157	40.8%
	22 - 25	115	29.9%
	26 - 30	42	10.9%
	31 - 35	27	7.0%
	36 and above	44	11.4%

The gender breakdown was nearly even, with 53% of participants identifying as female and 47% as male. This balance ensures a well-rounded representation and helps prevent gender bias in the study.

The age distribution was diverse. The largest group consisted of individuals aged 18-21 years, making up 40.8% of the sample. Participants aged 22-25 years accounted for 29.9%, showing a strong presence of young adults. Smaller groups included those aged 26-30 years (10.9%), 31-35 years (7%), and 36 years and above (11.4%). This age range diversity allows for a more comprehensive perspective.

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Table 2. Differences in the respondents' evaluations of the Reliability of Shopee's Virtual Assistants when comparing Chatbots and Customer Service agents

Reliability	Chatbot n = 385		CSA n = 385		t-value	df	p-value
	Mean	SD	Mean	SD			
1. The CB/CSA of Shopee is knowledgeable and competent in resolving issues related to orders.	2.93	.734	3.29	.584	-7.495	768	<.001
2. The CB/CSA of Shopee quickly answers and provides accurate information.	2.94	.680	3.16	.601	-4.661	768	<.001
3. The CB/CSA in Shopee consistently follows through on their commitments and promises made during interactions.	2.92	.724	3.15	.632	-4.773	768	<.001
4. The CB/CSA of Shopee is consistent in providing reliable and trustworthy information.	2.95	.752	3.17	.636	-4.398	768	<.001
5. The CB/CSA of Shopee demonstrating a high level of professionalism and reliability in their communication.	3.02	.739	3.23	.629	-4.201	768	<.001
Overall	***2.95***	***.590***	***3.20***	***.456***	***-6.294***	***768***	***<.001***

******* *Interpretation: 1.00 – 1.74 (Strongly Disagree), 1.75 – 2.49 (Disagree), 2.50 -3.24 (Agree),3.25 -4.00 (Strongly Agree)*

Reliability is a fundamental aspect of chatbot services, defined as their ability to perform dependably and accurately (Chung et al., 2018). While chatbots offer quick and consistent responses, it is essential to acknowledge the traditional reliability of customer service agents.

In the context of overall reliability, Chatbot users (M = 2.95, SD = 0.59) reported significantly lower ratings compared to CSA users (M = 3.2, SD = 0.456), t(768) = -6.294, p < .001 supporting (Rieger et al, 2022), that users still expect chatbots to match the reliability of their human counterparts. These results underscore that CSA users indicated higher ratings for the Shopee virtual assistant's reliability across various indicators.

This leads to the acceptance of hypothesis 1, there is a significant difference in respondents' rating of the Shopee virtual assistant's reliability between Chatbot user and CSA user.

Table 3. Differences in the respondents' evaluations of the Assurance of Shopee's Virtual Assistants when comparing Chatbots and Customer Service agents

Assurance	Chatbot n = 385		CSA n = 385		t-value	df	p-value
	Mean	SD	Mean	SD			
1. The CB/CSA of Shopee instills confidence in resolving issues or concerns.	2.88	.720	3.28	.589	-8.434	768	<.001
2. The CB/CSA of Shopee demonstrates a clear understanding of problems.	2.85	.736	3.19	.589	-7.138	732.766	<.001
3. The CB/CSA of Shopee is able to provide accurate and reliable information regarding product/service details.	2.96	.708	3.23	.614	-5.819	768	<.001

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4. The CB/CSA of Shopee gives a sense of trust in the solutions they offer.	2.87	.764	3.16	.646	-5.757	747.126	<.001
5. The CB/CSA of Shopee assures that the concerns are being taken seriously and resolved appropriately.	2.91	.765	3.23	.580	-6.692	715.611	<.001
Overall	***2.89***	***.608***	***3.22***	***.496***	***-8.211***	***738.642***	***<.001***

****** *Interpretation: 1.00 – 1.74 (Strongly Disagree), 1.75 – 2.49 (Disagree), 2.50 -3.24 (Agree),3.25 -4.00 (Strongly Agree)*

When considering overall satisfaction across these assurance-related dimensions, Chatbot users (M = 2.89, SD = 0.608) demonstrated considerably lower satisfaction compared to CSA users (M = 3.22, SD = 0.496), with a robust t-value of -8.211, and a highly significant p-value of less than .001. These findings underscore substantial variations in user satisfaction related to assurance attributes when engaging with the Shopee chatbot as opposed to CSA interactions within the platform.

This suggests that in terms of assurance, Chatbot interactions within the Shopee platform are associated with lower user ratings, as compared to engagements with Customer Service Agents. These findings hold valuable implications for enhancing user experiences and the optimization of the Shopee virtual assistant.

This leads to the acceptance of hypothesis 2, there is a significant difference in respondents' rating of the Shopee virtual assistant's assurance between Chatbot user and CSA user.

Table 4. Differences in the respondents' evaluations of the Tangibility of Shopee's Virtual Assistants when comparing Chatbots and Customer Service agents

Tangibility	Chatbot n = 385		CSA n = 385		t-value	df	p-value
	Mean	SD	Mean	SD			
1. The CB/CSA interface of Shopee appears visually appealing and professional.	2.97	.680	3.21	.579	-5.365	768	<.001
2. The CB/CSA response of Shopee includes visually appealing elements (e.g., images, videos, interactive content).	2.96	.732	3.13	.626	-3.442	768	<.001
3. The CB/CSA interface of Shopee is easy to navigate.	3.14	.6.94	3.23	.624	-1.912	768	0.56
4. The CB/CSA response of Shopee is easy to understand and follow.	3.16	.673	3.29	.620	-2.785	768	.005
5. The visual aspect (font style, font size, color) of CB/CSA in Shopee makes it easier to read and understand.	3.19	.653	3.28	.628	-1.857	768	.064
Overall	***3.08***	***.536***	***3.23***	***.495***	***-3.871***	***768***	***<.001***

****** *Interpretation: 1.00 – 1.74 (Strongly Disagree), 1.75 – 2.49 (Disagree), 2.50 -3.24 (Agree),3.25 -4.00 (Strongly Agree)*

Considering overall ratings across these tangibility-related indicators, Chatbot users (M = 3.08, SD = 0.536) demonstrated significantly lower satisfaction compared to CSA

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users (M = 3.23, SD = 0.495), with a t-value of -3.871 and a highly significant p-value of less than .001.

These results imply that in terms of tangibility, users' ratings with the Shopee chatbot differ significantly from interactions with Customer Service Agents, suggesting variations in the visual and tangibility aspects of user experiences within the Shopee platform. This information can guide improvements in the chatbot's tangibility elements for enhanced user satisfaction.

Thus, these results support hypothesis 3, there is a significant difference in respondents' rating of the Shopee virtual assistant's tangibility between Chatbot user and CSA user.

Table 5. Differences in the respondents' evaluations of the Empathy of Shopee's Virtual Assistants when comparing Chatbots and Customer Service agents

Empathy	Chatbot n = 385		CSA n = 385		t-value	df	p-value
	Mean	SD	Mean	SD			
1. The CB/CSA of Shopee genuinely listens to concerns and shows empathy towards the situation.	2.83	.759	3.24	.684	-8.065	749.68	<.001
2. The CB/CSA of Shopee understands specific needs and tailor their responses accordingly.	2.84	.737	3.19	.666	-6.925	768	<.001
3. The CB/CSA of Shopee is patient and understanding when addressing queries or issues.	2.96	.704	3.24	.658	-5.660	764.42	<.001
4. The CB/CSA of Shopee creates a sense of value for customers through their empathetic communication.	2.85	.736	3.20	.638	-7.014	768	<.001
5. The CB/CSA of Shopee provides personalized and individualized support based on unique circumstances.	2.89	.743	3.18	.681	-5.612	768	<.001
Overall	***2.87***	***.608***	***3.21***	***.548***	***-8.034***	***768***	***<.001***

**Interpretation: 1.00 – 1.74 (Strongly Disagree), 1.75 – 2.49 (Disagree), 2.50 -3.24 (Agree),3.25 -4.00 (Strongly Agree)*

Considering overall users' ratings across these empathy-related indicators, Chatbot users (M = 2.87, SD = 0.608) demonstrated significantly lower satisfaction compared to CSA users (M = 3.21, SD = 0.548), with a t-value of -8.034 and a highly significant p-value of less than .001.

These results emphasize substantial differences in user satisfaction related to empathy indicators when engaging with the Shopee chatbot as opposed to CSA interactions within the platform. Specifically, chatbot interactions are associated with lower satisfaction in terms of empathy, suggesting potential areas for improvement in the chatbot's empathetic capabilities for enhanced user experiences.

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Thus, these results support hypothesis 4, there is a significant difference in respondents' rating of the Shopee virtual assistant's empathy between Chatbot user and CSA user.

In the context of chatbots, a study by Liu et al (2019) found that the expression of sympathy and empathy is preferred over providing unemotional advice. However, a separate study from the University of Toulouse, France, suggests that empathy doesn't significantly impact users' intention to reuse chatbots ((Meyer-Waarden et al., 2020).

Table 6. Differences in the respondents' evaluations of the Responsiveness of Shopee's Virtual Assistants when comparing Chatbots and Customer Service agents

Responsiveness	Chatbot n = 385		CSA n = 385		t-value	df	p-value
	Mean	SD	Mean	SD			
1. The CB/CSA of Shopee responds promptly to queries or concerns.	3.15	.633	3.08	.683	-1.313	749.68	.190
2. The CB/CSA of Shopee takes immediate action to resolve problems or complaints.	2.95	.698	3.04	.706	-1.745	768	.81
3. The CB/CSA ng Shopee takes ownership of the issues and ensures that they are resolved effectively.	2.94	.713	3.14	.663	-4.029	764.42	<.001
4. The CB/CSA of Shopee is responsive and available whenever assistance is needed.	2.807	.689	3.08	.665	-2.13	768	.831
5. The CB/CSA of Shopee provides timely updates regarding product availability, delivery, or order status.	3.06	.680	3.14	.680	-1.484	768	.138
Overall	***3.03***	***.528***	***3.10***	***.551***	***-1.590***	***768***	***.112***

** Interpretation: 1.00 – 1.74 (Strongly Disagree), 1.75 – 2.49 (Disagree), 2.50 -3.24 (Agree),3.25 -4.00 (Strongly Agree)*

Overall, when considering user satisfaction across these responsiveness-related dimensions, Chatbot users reported similar ratings to CSA users, as no significant difference was found with a t-value of -1.59 and a p-value of 0.112.

These results suggest that, in terms of responsiveness, user satisfaction with the Shopee chatbot is generally on par with interactions with Customer Service Agents. While the chatbot effectively addresses certain aspects of responsiveness, there may be opportunities for improvement in other areas, aiming for a more consistent user experience.

Thus, these results failed to support hypothesis 5, there is no significant difference in respondents' rating of the Shopee virtual assistant's responsiveness between Chatbot user and CSA user.

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Table 7. Differences in the respondents' satisfaction with Shopee's Virtual Assistants when comparing Chatbots and Customer Service agents

Satisfaction	Chatbot n = 385		CSA n = 385		t-value	df	p-value
	Mean	SD	Mean	SD			
1. I enjoy using CB/CSA when I have concerns on Shopee.	3.02	.720	3.22	.668	-3.843	768	<.001
2. I find CB/CSA on Shopee to be effective in resolving my issues.	2.98	.729	3.09	.670	-2.162	768	.031
3. The CB/CSA on Shopee enhances my overall shopping experience.	2.94	.697	3.11	.667	-3.328	768	<.001
4. I would recommend using Shopee's CB/CSA to other Shopee users.	3.06	.712	3.17	.664	-2.094	768	.037
5. Considering my recent interactions, Shopee's CB/CSA met my expectations for customer support.	3.01	.736	3.13	.667	-2.395	768	.017
6. I am satisfied with my overall Shopee's CB/CSA experience.	2.99	.667	3.18	.643	-3.961	766.925	<.001
Overall	***3.00***	***.375***	***3.15***	***.401***	***-5.230***	***764.578***	***<.001***

✻ *Interpretation: 1.00 – 1.74 (Very dissatisfied), 1.75 – 2.49 (Dissatisfied), 2.50 -3.24 (Satisfied),3.25 -4.00 (Very satisfied).*

Considering overall satisfaction across these dimensions, Chatbot users (M = 3.00, SD = 0.375) demonstrated significantly lower satisfaction compared to CSA users (M = 3.15, SD = 0.401), with a t-value of -5.23, and a highly significant p-value of less than .001.

These results indicate that, in terms of overall user satisfaction, the performance of Shopee's chatbots was significantly lower when compared to interactions with Customer Service Agents. There appears to be room for improvement in enhancing user satisfaction with the chatbot, considering various aspects of satisfaction. **This leads to the acceptance of hypothesis 6, there is a significant difference in the users' satisfaction with Shopee's Virtual Assistants when comparing Chatbots and Customer Service agents.**

6. SUMMARY OF RESULTS

One of the central objectives of this research was to compare chatbots and customer service agents as Shopee's virtual assistants through SERVQUAL. Additionally, when viewed as virtual assistants engaging directly with customers, the study's emphasis on the significance of user satisfaction in the context of virtual assistants aligns with the discovered association of both chatbots and customer service agents with customer satisfaction. Upon comparing, the findings reveal a compelling insight into user preferences.

- Among the key outcomes, this research reveals that customer service agents outshine chatbots in several crucial dimensions of service quality.

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- The respondents were more satisfied with their interaction with the platform's Customer Service Agents than they were with their Chatbots.
- Respondents found chatbots useful for simple queries, indicating that their effectiveness may vary depending on the complexity of the issue. Interestingly, the removal of the customer-to-seller relationship, which can only be established through real-time chats, was perceived as a drawback by some users. This finding suggests that users place a high value on personalized interactions with sellers, which chatbots may not adequately replicate.
- Users expressed mixed views on response times. Some acknowledged that customer service agents might take longer to respond, attributing this delay to a high volume of customer inquiries.
- Conversely, other users appreciated the quality of solutions provided by customer service agents, even if the response times were slower. The need for prompt responses was emphasized by some users, indicating a desire for more immediate assistance. These differing perspectives suggest that users have varying expectations regarding response times and prioritize speed and solution quality.
- Several users commended the effectiveness of the solutions provided by customer service agents in addressing their concerns. They reported having a positive overall experience when issues with their orders were successfully resolved.
- Online consumers believe that an interaction with Chatbots can lead to a negative impact on their quality of life and they typically expect the worst when engaging with the virtual assistant.

7. CONCLUSION

Based on the results of the study, the following can be inferred:

- The findings underscore the virtual assistant's strengths in terms of reliability, assurance, tangibility, empathy, and overall responsiveness when handled by CSAs.
- While CSA users perceived the virtual assistant as more reliable and assured, improvements are suggested to enhance tangibility and empathy. Importantly, the study reveals the need for strategic enhancements to ensure a more steadfast user experience with the Shopee Virtual Assistant.
- There is a potential difference in the "satisfaction" dimension when it comes to the user satisfaction of those who are engaged with Chatbots and Customer Service Agents on Shopee.
- Chatbot users expressed lower satisfaction on multiple dimensions, indicating overall lower satisfaction levels for chatbot users compared to CSA users across the surveyed statements.

8. MANAGERIAL IMPLICATIONS

In light of these findings, Shopee must address four key challenges faced by users of their virtual assistant. This includes improving chatbot limitation, streamlining response times, standardizing the efficacy of customer service agents in problem resolution, and ensuring consistent empathy and professionalism in customer service. To address these challenges, Shopee must invest in enhancing the accuracy and capabilities of their chatbots, possibly through improved natural language processing and machine learning algorithms. Additionally, measures should be taken to streamline response times and manage high inquiry volumes more effectively, ensuring users receive quicker assistance. The variation

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in the problem resolution and its essence to customer service quality indicates the need for better training and standardization for customer service agents to consistently resolve user concerns and provide empathetic, professional assistance.

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