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### Abstract

Customer satisfaction is one of the major concerns today. The COVID-19 epidemic has accelerated the use of robot servers in the hospitality sector in Malaysia grows increasingly as customers are more cautious about the dangers of direct physical contact. The study intends to identify the relationship between customer satisfaction and the implication of service quality on robots within the hospitality industry in Klang Valley. In addition, this study uses quantitative methods by distributing questionnaires to respondents. By using the SERVQUAL model, this study has outlined the five factors affecting the customer's satisfaction which are tangibles, reliability, responsiveness, assurance, and empathy. Based on Krejcie & Morgan's sample size table, 384 respondents required for this study. Quantitative research methods were designed as the target respondents were customers from the Klang Valley area. The Statistical Packages for Social Science (SPSS) software is being utilized in this study to analyze the data obtained. The analysis consists of Pearson Correlation and Spearmen analysis. In line with the study's objective, five main research questions are formed. The distribution of surveys helped this study accomplish its goals. Based on the statistical analysis, all service quality dimensions which are tangibility, reliability, responsiveness, assurance, and empathy of service robots have a significant effect on customer satisfaction in the hospitality industry of Klang Valley. As of that, governments can take this study as a fundamental to encourage and implement more of the service robots in the hospitality industry throughout Malaysia.

Keywords: Customer experience, robot service, quality, hospitality industry

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#### Introduction

The term "hospitality industry" covers a wide range of businesses and products associated with leisure and customer satisfaction. It encompasses a variety of industries that come under this broad category, including restaurants, amusement parks, hotels, motels, resorts, and much more. According to Mordor Intelligence (2019), Malaysia's hospitality industry is well recognized for being a strong economic growth driver, promoting socio-economic development, and creating jobs. They further added that Malaysia's hospitality sector will be worth USD 4 billion in 2019 and is expected to grow at a CAGR of more than 6.5% over the next five years. Crowe (2019) stated that one of the top service industries and a crucial driver of economic growth in Malaysia's economy is the hotel, tourist, and leisure sector. 25.8 million people visited Malaysia in 2018, with the sector contributing 13.3% to the nation's GDP. When starting a business in the hospitality industry, it is of utmost importance for every business leader to know the factors that affect their customer satisfaction. Davras and Caber (2019) define customer satisfaction as the evaluation of a product or service's attributes by the customer. According to various



academic research, service providers and managers must focus on service quality to increase profits and customer satisfaction while also enhancing service delivery to compete in global marketing (Zhou et al., 2021).

In general, the literature on service quality uses one of two conceptualizations. The first comes from the Nordic perspective, which was created by Grönroos (1984). According to Brady and Cronin (2001), functional and technical quality make up the dimensions of service quality globally. The American perspective is the second perspective on service quality that was created by Parasuraman, Zeithaml, and Berry (1988). According to Brady and Cronin (2001), Parasuraman et al. (1988) introduced words to define aspects of service encounters such as reliability, responsiveness, empathy, assurance, and tangibles. As of that, this study has applied the SERVQUAL model proposed by Parasuraman et al. (1988) to study the factors of service quality on robots affecting the customer's satisfaction in the hospitality industry. This is because several current research on quality evaluation have employed the SERVQUAL model (Parasuraman et al., 1988) as their primary theoretical tool to evaluate the quality of services provided by service providers (Prakash, 2018).

Customer satisfaction is a very important aspect of the hospitality industry. Every business needs to give much importance to customer satisfaction as it will create brand loyalty and at the same time increase the business's profits (Zhou et al., 2021). As customer satisfaction plays a very important role in the hospitality industry, it is vital to understand the current issues that are affecting them. This in turn will give a good understanding of the current problem and can take action according to it.

According to the American Customer Satisfaction Index (ACSI®) Travel Study 2021–2022, hotel customers lack satisfaction, car rentals are not performing well, and satisfaction with airlines is going downhill (American Customer Satisfaction Index, 2022). Forrest Morgeson, assistant professor of marketing at Michigan State University and former director of research at the ACSI, claims that many people who went on trips for the first time since the epidemic were disappointed by the poor treatment and failed expectations. Hotels are a good example of this, where both the quality of the amenities and food services fall short of the 70 thresholds for customer satisfaction. Anyone who expected their trip to feel like "normal" pre-pandemic days probably leaving feeling quite disappointed. The desire for travel may be stronger than usual, but it may be time to lower their expectations (Forrest, 2023).

The hotel business is once again the target of dissatisfied customers. With almost half of the top hotel chains reporting ACSI reductions of 4% or more, total guest satisfaction lowers by 2.7% to a score of 71. After increasing by 3% to 78, Marriott overtakes the competition in terms of customer satisfaction. Hilton, who was first last year but fell 4% to an ACSI score of 76, comes in second. IHG drops 5% to 74 while Best Western is constant at 75, barely ahead of it. Hyatt and Choice both receive scores of 73, however, the former improves by 3% while the latter declines by 4%. In contrast, Wyndham maintains its position at number 69, while the vast majority of smaller hotels see a 7% decline to number 65. G6 Hospitality (Motel 6) is at the bottom of the sector, with an ACSI score that fell 15% to 56. In addition, after reaching its highest-ever rating, the airline sector also dropped down to earth as the ACSI score for customer satisfaction dropped 1.3% to 75 (out of 100) (American Customer Satisfaction Index, 2022).

Robots in hospitality are known for their ability to deliver services consistently and efficiently without fatigue. This can significantly enhance customer satisfaction by reducing waiting times for check-ins, food delivery, or room service. In a fast-paced urban area like Klang Valley, where customers may be more time-sensitive, such efficiency is highly valued. Research by Tussyadiah and Park (2018) shows that the automation of services can improve perceived efficiency, which is a key determinant of customer satisfaction in the hospitality sector. Unlike human staff, robots do not have variations in mood or energy levels, meaning they can consistently deliver the same level of service. This consistency can lead to increased customer satisfaction, as guests often expect predictable service standards in hotels and restaurants. According to Ivanov and Webster (2019), robots' ability to maintain consistent quality



without errors is a primary reason why automation is being embraced in the hospitality industry. By incorporating robots into the service operations in hospitality, businesses in Klang Valley can offer more efficient, consistent, and personalized experiences, all of which are critical drivers of customer satisfaction. Hence, the objective of this study is to determine the effect of the service quality of robots on customer satisfaction in the hospitality industry of Klang Valley.

# Literature Review

A service robot is one type of robot that works and behaves like a person and is extremely interactive. These robots can perform tasks that people occasionally are not willing to perform, such as cleaning tasks, some risky jobs, and domestic duties like dishwashing and laundry. Service robots are programmed to carry out all tasks automatically depending on the algorithms they have been instructed on. Service robots are known for their capacity to carry out tasks and make decisions similar to humans. Helping people in a very reasonable way is one of the main goals of service robots (Joseph, 2022). According to Len (2019), the professional service robotics industry is anticipated to grow to \$37 billion by 2021. Businesses desire to automate some activities for the sake of productivity, efficiency, and safety. Safety is a crucial factor because while people concentrate on intellectual activities in unsafe conditions, robots can undertake dangerous duties. Professional service robots can go where it would be dangerous for human personnel to go.

Moreover, businesses that deploy professional service robots have another concern which is increasing efficiency. While logistics robots may deliver a large number of items and lower labor costs, inspection and cleaning robots have extremely little downtime. Professional service robots contribute to productivity in some way, which significantly boosts productivity in their area of expertise. Businesses can justify their investment in professional service robots due to the productivity benefits of these robots (Len, 2019). Millennials value convenience more than earlier generations did, and they don't mind ignoring human contact in favor of quicker, automated encounters. As a result, some stores use robots to do tasks that are typically performed by people. For example, Nestlé has placed a humanoid robot named Pepper in several Japanese department shops to market coffee makers. About 80% of talks are understood by Pepper, which then uses the knowledge it acquires to assist customers (Len, 2019).

Together, as service robots can interact socially with customers like human employees do, their capacity to satisfy customers' social-emotional and relational requirements is crucial to how customers will react to and see service robots (Wirtz et al., 2018). Tung and Au (2018) looked at online hotel reviews to evaluate how guests interacted with robots and discovered that many reviewers made comments about the physical embodiment and social involvement of service robots. Because of this, a substantial body of prior research on service robotics explains consumer perceptions of service robots based on how much consumers treat robots as people (i.e., anthropomorphism, the psychological tendency to attribute human characteristics, intentions, and emotions to nonhuman objects; Epley, Waytz, & Cacioppo, 2007). Robots with more human-like characteristics, such as face, voice, and movement (like Sophia by Hanson Robotics or Pepper by Softbank Robotics), are seen as being more like people than ones with fewer such characteristics.

A body of literature on hospitality shows how the human likeness of service robots has a favorable influence on consumer intention to adopt service robots. This literature is based on the robotics literature that claims the advantage of anthropomorphism on user engagement (Broadbent, 2017). Customers are more likely to anticipate receiving higher-quality care from service robots that resemble humans (Lin & Mattila, 2021). Zhu and Chang (2019) discovered that when individuals anthropomorphize robot cooks, they anticipate higher-quality meals. Interestingly, it has been discovered that when service robots resemble people, consumers want them to act like humans. For instance, persons who interacted with human-like service robots gave the interaction a higher rating when the robots spoke in human-like ways (Lu, Zhang, & Zhang, 2021). Additionally, customers want service robots to participate in service recovery activities in a manner comparable to that of human staff members (Ho, Tojib, & Tsareko, 2020). Together, the findings suggest that incorporating human-like characteristics into service



robots may increase customer satisfaction in automated service interactions, which is the key lesson for hospitality managers.

On the other hand, a different body of literature on hospitality contends that the human-likeness of service robots has little or minimal consequences, confirming the idea of the uncanny valley (Mori, MacDorman, & Kageki, 2012). Customers frequently believe that human-like service robots lack interpersonal skills when compared to human staff members, even though interpersonal skills are one of the major factors influencing customer satisfaction with service encounters in the hotel sector (Choi et al., 2020). As a result, when a service failure happens, customers are less likely to accept an apology from a service robot than from a human employee (Hu et al., 2021). Additionally, according to certain studies, people find it uncomfortable to deal with service robots because of their human-like looks (Yu, 2020). In other words, managers in the hotel industry should exercise greater caution when installing (very) human-like service robots, especially when handling duties that need regular encounters with consumers.

Service quality is a concept that has aroused considerable interest and debate in the research literature because of the difficulties in both defining it and measuring it with no overall consensus emerging on either (Wisniewski, 2001). Besides, there are many different definitions of what is meant by service quality. The most common definition used to define service quality is the extent to which a service meets customers' needs or expectations (Lewis and Mitchell, 1990; Dotchin and Oakland, 1994; Asubonteng et al., 1996; Wisniewski and Donnelly, 1996). Service quality can also be defined as the difference between customer expectations of service and perceived service. If expectations are greater than performance, then perceived quality is less than satisfactory and the result is customer dissatisfaction (Parasuraman et al., 1985; Lewis and Mitchell, 1990).

According to Lewis and Booms (1983) service quality is a measure of how well the service level delivered matches customer expectations. Delivering quality service means conforming to customer expectations on a consistent basis. Parasuraman et al. (1985, 1988) also shared the opinion with Lewis and Booms (1983) by the statement: 'Service quality perceptions result from a comparison of consumer expectations with actual service performance'. To demonstrate the above statement, Parasuraman et al (1985, 1988) proposed the SERVQUAL scale for measuring the service quality. Cronin et al. (1992) summarized four different measurement models for service quality these are SERVQUAL, SERVPERF, Weighted SERVQUAL, and Weighted SEVPERF. However, SERVPERF was regarded as the best of four models. Furthermore, Martilla et al. (1977) conducted the Importance – Performance Analysis which was considered as another measurement for service quality.





# Methods

This study has used descriptive research design to obtain the information. The descriptive research design was based on the quantitative method which was going through with the cross-sectional study. Therefore, it was considered an appropriate and relevant method to obtain the data. Cresswell (2003) mentioned that quantitative research design can be accessed by a large group quickly because it can collect large samples that have more dependable and reliable results. Moreover, using a quantitative research design is less time-consuming than doing a qualitative research design. Other than that, the quantitative research design makes it easy to collect data and analyze data. Besides that, quantitative research design contributes to the greater economy of effort where the questionnaires can be done in the Google form and sent to the respondents to complete the survey. The target respondents of this study were customers of various demography from the Klang Valley area who are involved in the hospitality businesses that use service robots.

According to Krejie & Morgan (1970) stated that a minimum of 384 respondents is sufficient enough when the total population is close to 1 million. The reason this study chose a minimum of 384 respondents as the sample size is that Klang Valley has more than 1,000,000 residents. The purposive sampling method is considered suitable as it helps the selection of a wide variety of Klang Valley hospitality establishments that have integrated robotic services. Through a thoughtful selection of establishments that differ in terms of size, rating, and customer base, this analysis captured a wide range of environments and experiences. Simple random sampling for customers in the Klang Valley introduces a random element to the selection process after maximum variation sampling with hospitality establishments. Each customer of the chosen establishments has an equal chance of being included in the study due to the simple random sampling method used in this research. This randomization improves the findings' external validity and lessens bias. Thus, results from a customer sample that was chosen at random have been applied more broadly to the Klang Valley's customer base.

# **Result and Discussion**

The total number of respondents divided by the total number of respondents in the sample group is the response rate. Online media was used to randomly distribute the questionnaire to customers in the Klang Valley area. The goal of the study was briefly described in the introduction of the questionnaire. The questionnaire started by asking respondents about their demographic information. It then uses a five-point Likert scale, with 1- strongly dissatisfied and 5- strongly satisfied, to evaluate the service quality of robots and customer satisfaction. 315 real and full responses were gathered out of the 403 that were initially distributed, representing 82.03% of the total number of respondents. The response rate is shown in Table 1.

	Table 1. Response Rate							
	Population	Sample Size	The questionnaire	Questionnaire	Percentage			
			was distributed to	received from				
			respondents	respondents				
>	1,000,000	384	403	315	82.03%			

The respondents' backgrounds will be detailed in this part based on their demographic data, which includes gender, age, race, marital status, country, level of education, and job status at the time of the survey. The background information of the respondents was examined using descriptive analysis based on the frequency method and the percentage. All 315 respondents' characteristics are presented in Table 2.

Table 2 shows the frequency and percentage of the respondents based on gender. There are 315 respondents in the survey. 45.4% (148 respondents) of them are female respondents and 51.2% (167 respondents) are male respondents. Based on the data collected, the majority of them fall in the age group between 31 - 40 years old which amounted to 31.9% (104 respondents). The second highest is

the age group between 21 - 30 years old which amounted to 29.4% (96 respondents). The third highest in the age group 41 - 50 years old which amounted to 23.6% (77 respondents). The fourth highest in the age group less than 20 years old which amounted to 6.4% (21 respondents). It follows by the age group between 51 years and above years old which amounted to 5.2% (17 respondents). There are six race groups which are Malay, Chinese, Indian, Indonesian, Iban, and Dusun. Indian respondents comprise the majority of respondents, contributing about 47.9% (156 respondents). The second highest of the group races is Malay and Chinese which amounted to 23.9% each (78 respondents). The Indonesian, Iban, and Dusun race groups are the minority with 0.3% (1 respondent) for each race.

On the other hand, the highest percentage, which is 55.5%, and the frequency of 181 out of 315 respondents are married. 39.3% (128 respondents) are bachelor's and 1.2% (4 respondents) are divorced. However, 0.6% and the frequency of 2 out of 315 respondents are widowed. Besides, as shown above, the highest percentage is 91.7% and the frequency of 299 out of 315 respondents are Malaysian. Yet only 4.9% and the frequency of 16 out of 315 respondents are non-Malaysian. Then, the majority of the respondents are bachelor's degree holders, with 60.7% (198 respondents). This is followed by diploma respondents with 60 respondents representing 18.4% in this study. Postgraduate holders are ranked third with 36 respondents (11%). The minority of the respondents have a certificate education level which represents 5.5% (18 respondents) and finally, the high school students represent 0.9% with 3 respondents. Finally, in terms of employment, the majority of them fall in the private sector, which amounted to 47.5% (155 respondents). The second highest is the government sector which amounted to 23% (75 respondents). The third highest is the self-employed and students, which amounted to 12% each (39 respondents). The lowest percentage is the unemployed, which amounted to 2.1% (7 respondents).

	Variables	Frequency	Percentage%
Gender	Male	167	51.2
	Female	148	45.4
Age	Less than 20 years	21	6.4
	21-30 years	96	29.4
	31-40 years	104	31.9
	41-50 years	77	23.6
	51 years and above	17	5.2
Race	Malay	78	23.9
	Chinese	78	23.9
	Indian	156	47.9
	Indonesian	1	0.3
	Iban	1	0.3
	Dusun	1	0.3
Marital Status	Married	181	55.5
	Bachelor	128	39.3
	Divorced	4	1.2
	Widowed	2	0.6
Nationality	Malaysian	299	91.7
-	Non-Malaysian	16	4.9
Educational Level	Certificate	18	5.5
	Diploma	60	18.4
	Degree	198	60.7
	Postgraduate	36	11.0
	School Student	3	0.9
Employment	Private	155	47.5
	Government	75	23.0
	Self-Employed	39	12.0
	Unemployed	7	2.1
	Student	39	12.0

Table 2. Demographic Profile



In 1904, Spearman used Pearson's correlation coefficient to determine the degree of unquantifiable relationship between two variables. Since Pearson correlation coefficients can only quantify linear correlations, Spearman correlation performs better in this study than Pearson. Spearman correlation coefficients are only used to measure monotonic relationships. Consequently, a meaningful connection can still exist even in cases when the correlation coefficients are zero. Looking at a scatterplot is sufficient to determine the nature of the relationship because this data will be used later. According to Hauke and Kossowski (2011), the number based on the Spearman connection must not exceed 0.000. Thus, below is the Spearman analysis table.

	<b>Correlation Coefficient</b>	Significant (Two-tailed)	Ν
Customer Satisfaction	1.000	0.000	315
Tangibility	0.665	0.000	315
Reliability	0.807	0.000	315
Responsiveness	0.812	0.000	315
Assurance	0.839	0.000	315
Empathy	0.774	0.000	315

Table 3. Spearman Correlation Analysis

# Discussion

The main objective of this research is to find out the effect of the service quality of robots on customer satisfaction in the hospitality industry of Klang Valley. Based on the research objectives, this study surveyed the service quality of robots on how it affects customer satisfaction among people in the Klang Valley area. From the findings, the analysis for both tangibility of service robots and customer satisfaction indicates a significant relationship. With a sig. Value of 0.000, which is significant at the one percent confidence level (0.000), the results demonstrate that customer satisfaction does have a significant relationship with the tangibility of the service robot. The results do align with the findings of a prior investigation conducted by Tetteh and Boachie (2021); Fang et al., (2021); Rocah et al., (2017); and Ahmad et al., (2019). They found that tangibility had a significant positive influence on customer satisfaction. This indicates that the study's findings do support those of earlier research. First of all, the service robot's design and look might be quite important. Customers' satisfaction may increase if they think the robot is well-designed, aesthetically pleasant, or visually appealing.

From the findings, the analysis for both reliability of service robots and customer satisfaction indicates a significant relationship. With a sig. Value of 0.000, which is significant at the one percent confidence level (0.000), demonstrates that customer satisfaction has a significant relationship with the reliability of the service robot. The results align with the findings of a prior investigation conducted by Shafiq et al., (2019); Tetteh and Boachie, (2021); Narteh, (2018); Ananda and Devesh, (2018); and Famiyeh et al., (2018). They discovered that reliability dimensions were the most significant estimators of customer satisfaction and loyalty. This indicates that service robots consistently provide services without major faults or mistakes. Consumers value consistency and are more likely to be satisfied when they can rely on robots to do jobs correctly. Moreover, reliable service robots can improve the effectiveness of operations. Businesses can provide services more effectively and increase customer satisfaction when robots operate without major malfunctions.

From the findings, the analysis for both the responsiveness of service robots and customer satisfaction indicates a significant relationship. With a sig. Value of 0.000, which is significant at the one percent confidence level (0.000), demonstrates that customer satisfaction does have a significant relationship with the responsiveness of the service robot. The results do align with the findings of a prior investigation conducted by Tetteh and Boachie, (2021); Ananda and Devesh, (2018); Pale and Usai, (2018); and Ahmad et al., (2019). They found that responsiveness has a large, favorable impact on customer satisfaction. This indicates that the study's findings do support those of earlier research. First of all, customer satisfaction may be enhanced by the service robot's responsiveness in offering prompt help and support. The entire customer experience is improved when the robot responds to requests from



### customers promptly.

From the findings, the analysis for both assurance of service robots and customer satisfaction indicates a significant relationship. With a sig. Value of 0.000, which is significant at the one percent confidence level (0.000), the results demonstrate that customer satisfaction has a significant relationship with the assurance of service robots. The results align with the findings of a prior investigation conducted by Shafiq et al., (2019); Ali et al., (2018); Rocah et al., (2017); Ahmad et al., (2019); and Ezeh et al, (2021). They discovered that assurance dimensions were the most significant estimators of customer satisfaction and loyalty. This indicates that the study's findings support those of earlier research. Customers are satisfied with the entire service experience when they can rely on robots to complete their tasks efficiently and clearly. Moreover, one essential component of assurance is consistent performance. Customer confidence and satisfaction with service robots are expected to increase if they consistently provide high-quality service with little variations. Finally, assurance may also include elements of safety and security. Customers' satisfaction and trust in the technology are positively impacted if they believe that service robots prioritize their safety and follow security standards.

From the findings, the analysis for both empathy of service robots and customer satisfaction indicates a significant relationship. With a sig. Value of 0.000, which is significant at the one percent confidence level (0.000), the results demonstrate that customer satisfaction does have a significant relationship with the empathy of service robots. The results do align with the findings of a prior investigation conducted by Tetteh and Boachie, (2021); Ananda and Devesh, (2018); Pale and Usai, (2018); and Ahmad et al., (2019). They found that responsiveness has a large, favorable impact on customer satisfaction. This indicates that the study's findings do support those of earlier research. The service robot's caring behaviors improve the customer's experience in general. Customers are more satisfied when they receive interactions that recognize and address their emotions.

# Conclusion

In a nutshell, hospitality businesses that are using service robots should take the required steps to understand the impact that would increase customers' satisfaction with their services, as well as to keep their current customers and draw in new ones. Organizations should conduct a review of their services to ensure that they align with the quality standards they set for customers. To encourage consumers to return to their establishments, company owners should consistently meet their needs. This may be achieved by going over each element of service robots that have the potential to affect their customer's satisfaction. After all, it is believed that the results of this study will not only clarify issues or add to the body of knowledge but also most importantly improve the quality of services provided by service robots in the hospitality industry.

The importance of the research is to create awareness among businesses that use service robots to understand the service quality in their business operations. Business owners who use service robots in their business operations have the chance to know their customer's behaviors in perceiving service robots and at the same time can take the necessary actions to improve their business operations. By going through the study's outcome, business owners must stress their service robots on how they function, their problem-solving skills, personalization services, general knowledge, and understanding.

Business owners should stress the service quality factors of robots to enhance customer satisfaction. This includes the service robot's mannerisms, knowledge, trustworthiness, and much more. From a bigger picture, the governments of Malaysia can take the necessary steps to improve these elements of service robots to enhance customer satisfaction in the hospitality industry. Perhaps, governments can have a strategic alliance with foreign companies to share knowledge. They can study how to improve the technical parts of a service robot so that business owners in the hospitality industry can purchase high-end service robot to be used in their business.

Although there are several limitations to the current study, they guide future research. This study has



several limitations, which will be discussed along with suggestions for more research or studies. First of all, the lack of prior study on this subject made it challenging to compare and relate the findings to those of other studies, particularly those conducted in Malaysia. Furthermore, the distribution of the questionnaire and the sample area are limited to customers from the Klang Valley area. The limited sample size of respondents might lead to sampling errors since it could not accurately reflect the population of customers from the hospitality industries that use service robots. As a result, the research's findings cannot adequately reflect the views of all users in the nation's other states. The researchers should expand the sample region to include customers from other Malaysian states to obtain very accurate study results. Finally, the quantitative approach is the sole focus of this study. Thus, further information was needed to make sense of unclear circumstances. This is due to the opinions from various viewpoints are absent in this research and the data cannot be interpreted by the researcher based on people's individual opinions.

As robotics develops further, the complex nature of human-robot interaction in service-oriented environments must be understood. Although previous studies have investigated the connection between robot service quality and customer satisfaction, further in-depth understanding of the particular elements impacting this relationship is still required. It is suggested that future researchers take into account the following recommendations. First of all, to obtain more accurate user input and prevent any bias, future researchers should distribute the questionnaire to consumers from other Malaysian states, like Johor, Melaka, Pahang, and others. Subsequently, researchers in the future can do both qualitative and quantitative studies to find additional information in difficult situations. Thus, the interview session approach may be used by future researchers to obtain data as well. The interviewer can get a variety of viewpoints and ideas and respondent participation can rise. Also, there is less chance that respondents would misinterpret questions because the interviewer may clarify the guidelines for the subject matter.

Next, researchers may investigate the integration of emotional intelligence capabilities in service robots and evaluate the influence of these functionalities on customer satisfaction. The development and application of empathetic qualities in robots might be the subject of future research. Programming robots to identify and react to human emotions, including satisfaction, frustration, or worry, in a way that shows empathy and understanding might be one way to achieve this. They may also evaluate how effectively robots interpret customers' emotional states. This could involve interpreting verbal and nonverbal signals using sensors, face recognition software, or natural language processing to enable robots to precisely determine the emotional states of their customers.

After that, researchers in the future can look at how user experience (UX) design influences the way individuals perceive service quality. They can evaluate how design components like feedback systems, user-friendliness, and interface aesthetics affect the level of customer satisfaction with robotic services. Researchers can investigate how user perceptions are influenced by the robot's interface's visual design and aesthetics. This includes assessing the robot's general appearance and feel, the information displayed on screens or displays, and the inclusion of design features that match the service environment. They might also look at how simple it is for customers to communicate with robots. This requires studying the human-robot interface's general accessibility, the ease of use of voice commands or gestures, and the control mechanisms' intuitiveness. They need to evaluate how these elements support a smooth and user-friendly experience.

Next, it is a complicated and multifaceted field of study to determine how cultural factors affect customers' views of the quality of services provided by robots. Researchers in the future can carry out user studies across a range of cultural groups to obtain firsthand knowledge of how people from various cultural backgrounds view and engage with service robots. Rich data about different cultures and preferences may be obtained using qualitative research approaches such as observations and interviews. Researchers may also explore how people's cultural origins influence their expectations when it comes to using robots for service. When it comes to service contacts, different cultures may have different conventions, communication methods, and expectations. For example, informality may be valued in



certain cultures while formality may be preferred in others.

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### **Conflict of Interest**

The authors declare no conflict of interest.

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