



Examining the Impact of AI Chatbot Service Quality Adoption on Customer Loyalty in the Food Service Sector



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ABSTRACT

Objective: AI chatbots are changing how companies interact with customers. AI chatbots leverage natural language processing and artificial intelligence to deliver customers a seamless, personalized, and user-friendly experience, ensuring quick, efficient responses.

Methodology/Technique - Using an AI chatbot as a virtual agent to assist customers can be seen as a tool for companies to provide better customer service. Despite their growing adoption across industries, AI chatbots in Malaysia's food service sector remain relatively underused.

Findings – Moreover, there is limited research on their impact, particularly in restaurant settings. This research aims to examine the impact of chatbot service quality adoption on customer loyalty in the food service sector. This research focuses on service quality attributes such as ease of use, availability, response accuracy, assurance, omnipresence, and human-like empathy. This research would adopt a quantitative research approach, with data collected through a Google Form questionnaire. A total of 185 valid questionnaires were gathered using a purposive sampling technique. The gathered data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS version 4 and the IBM SPSS Statistics software 29.0.

Novelty - The findings reveal that ease of use, availability, accuracy of response, and assurance are significant factors that positively influence customer loyalty. These attributes underscore the importance of service quality in fostering customer loyalty. This research provides valuable insights to support the food service industry in improving customer loyalty and to guide the adoption of AI chatbots.

Type of Paper: Empirical

JEL Classification: Q31, M15, L80.

Keywords: AI Chatbot, Service quality, Customer loyalty

Reference to this paper should be made as follows: Li, H.Y, Thoo, A.C, Chan, Y.Y, Tuan, L.Y. (2026). Examining the Impact of AI Chatbot Service Quality Adoption on Customer Loyalty in the Food Service Sector, *J. Mgt. Mkt. Review*, 11(2), 76 – 98. [https://doi.org/10.35609/jmmr.2026.11.2\(4\)](https://doi.org/10.35609/jmmr.2026.11.2(4))

1.0 Introduction

1.1 Background

In recent years, as science and technology have advanced rapidly, the way customers interact with organizations has changed significantly. In 2022, the global generative AI market is valued at \$1.75 billion and is expected to grow at a compound annual growth rate (CAGR) of 79.9% to reach \$33.03 billion by 2027, highlighting the transformative impact of AI across industries (GlobalData, 2023).

Paper Info: Revised: February 10, 2026

Accepted: June 30, 2026

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About 89% of organizations believe that AI and machine learning are key drivers of increasing revenue, improving operational efficiency, and enhancing customer experience, as well as strengthening customer relationships (Patel, 2024). Global events such as the COVID-19 epidemic accelerated this trend, causing organisations and sectors to adopt digital technology faster (Sesar et al., 2021). For instance, AI technologies assist the food industry by enhancing customer interactions through virtual ordering assistants, such as Wingstop's AI system, which can handle multiple calls, provide recommendations, and support multi-language communication (Owings, 2023). The development of digitalisation allows organisations to provide more flexible, convenient, and customer-centric services, providing new chances for organisations to maintain their advantages in tough competition and keep increasing customer expectations (Sesar et al., 2021).

In today's digital environment, technology has become deeply integrated into our daily lives, and its scope of application is expanding rapidly. As technology continued to advance, people's acceptance and dependence on it increased. Customer acceptance of technology is considered a crucial factor for a company's success in the business world. The global market for AI in manufacturing nearly doubled between 2022 and 2023 (Precedence, 2023), and a study on the impact of generative AI on skilled workers showed that AI increases productivity improvements by approximately 40% during the same period (Razak, 2024). As a result, many companies are seeking to leverage high-tech artificial intelligence technologies to maintain a competitive advantage by providing better service quality and meeting changing market demands (Hsu & Lin, 2023). According to (Aslam et al., 2022) The study stated that companies seek high-tech artificial intelligence (AI) technologies to help organizations meet customers' needs, improve the customer experience, and optimize operational processes. Furthermore, customers are increasingly using and accepting today's technology and are willing to accept the changes that come with it (Rathjens et al., 2025). In 2023, North America's AI in food service market will account for more than 32.0% due to its advanced technological infrastructure and heavy investment in research and development (Grand View Research, 2024). AI assists the food industry by improving product quality, enhancing customer experience, ensuring regulatory compliance, and optimizing operational efficiency (Grand View Research, 2024). As a result, industries are increasingly adopting this trend to leverage technology to provide improved, more efficient services while boosting customer engagement.

Artificial intelligence has a variety of capabilities that can deliver significant improvements in operational efficiency, customer service, and product innovation for organizations across sectors, not only optimizing existing processes but also opening new business opportunities. With rapid advancements in machine intelligence and AI, chatbots have emerged as online customer support tools capable of assisting customers at any time (Hsu & Lin, 2023). According to Quan & Zulkipli (2024), the food service industry in Malaysia is experiencing significant growth, driven by customers' growing demand for convenience and high-quality services. More than 40% of the food service industry has integrated AI tools to monitor external compliance mechanisms, demonstrating a proactive approach to regulatory challenges (Mavani et al., 2022). Thus, most of the food service businesses in the hospitality industry are adopting this advanced technology (Rosman & Putranto, 2023). An AI chatbot is a software application powered by artificial intelligence that provides services via messaging, voice, or SMS, helping businesses enhance customer loyalty and solidify their market presence (Eren, 2021). According to statistics revealed by (Yuen, 2022), almost 40% of online users favor using artificial intelligence chatbots instead of human agents to answer questions. Moreover, the integration of technology into everyday life has quickly made AI chatbots a must-have tool for many businesses, including Malaysian government agencies, due to their ability to provide services consistently and efficiently (Wu et al., 2020). According to AiChat (2020), the study highlighted a significant 816% increase in AI chatbot usage across Malaysian organisations, with increases of 72% to 91% in the number of inquiries managed by AI chatbots, indicating their potential to solve long-standing problems in government services. Currently, government agencies in Malaysia face challenges with delayed response times and high

customer complaint rates, with nearly 3,700 complaints annually regarding service quality (Malaysian Public Complaints Bureau, 2020). As Malaysians increasingly expect 24/7 service, AI chatbots provide a viable solution to improve service performance, citizen engagement, and satisfaction (UNESCO, 2023), while also reducing response time constraints caused by fixed office hours (World Economic Forum, 2021).

Nowadays, digitalization advanced marketing challenges and provided customers with more choices. As structures and technologies continue to change, organizations must continually strive to improve service quality to meet customer needs. This enhancement serves as a fundamental strategy for gaining a competitive edge while significantly influencing customer satisfaction and behavior (Hsu & Lin, 2023). According to (Björkman & Jansson, 2023), the study found that customer relationship management emphasizes improving customer service through the integration of business strategies, digital systems, and technological tools. Moreover, identifying the right CRM strategy is crucial to building strong customer relationships, as this helps businesses increase customer loyalty (M. M. D. Alam et al., 2021) (Björkman & Jansson, 2023). Customer loyalty is viewed as a vital factor in ensuring business success, suggesting that customers will display a positive attitude and show loyalty to different products, activities, and services (Björkman & Jansson, 2023). To build customer loyalty, companies must establish strong relationships with customers and ensure their products and services meet customer needs and deliver value. According to (M. M. D. Alam et al., 2021), the study stated that loyal customers can bring more sustained revenue and long-term success to the organizations, so providing high-quality service is crucial for the business. AI is considered a vital tool for enhancing customer experience and fostering customer loyalty (Prentice et al., 2020).

Furthermore, humanized technology like AI chatbots can reduce employee errors and reduce unnecessary costs. According to (Azli et al., 2023), the study highlighted that AI chatbots utilize machine learning and natural language processing to interpret user inquiries and are widely applicable across numerous industries. However, chatbots are now gaining tendency in Malaysia (Azli et al., 2023). Companies in various industries, whether it is banking services, education, retail shopping, hospitality, or tourism, acknowledged the benefits of AI chatbots, such as optimizing customer service, enriching customer experience, and simplifying business operations (Tan & Lim, 2023). Therefore, many companies have started using messaging apps, such as chatbots, because they can respond to customer requests and take action based on customer inquiries.

1.2 Problem Statement

1.2.1 Practical Gaps

According to (Malaysia Productivity Corporation, 2023), despite the food service industry returning to growth in Malaysia in 2022 with a productivity increase of 12.9%, it still faces significant challenges in terms of service quality and customer loyalty. In 2023, there were 107,129 food service establishments in Malaysia, the highest record ever, but approximately 90% of customers said they would not return to a restaurant when the service quality is poor and bad (Ramli, 2023). According to a big data analysis conducted by China (Canbaodian, 2020), which investigated more than 1 million negative reviews of 500 catering brands, found key issues related to service quality in the food service industry. The study found that 90% of negative reviews were related to dissatisfaction with service, which often leads consumers to be more critical about other aspects, such as food quality, taste, and environment (Canbaodian, 2020). It is worth noting that heavy food service categories (such as hot pot and barbecue) received a lot of complaints about poor service (Canbaodian, 2020).

Besides, Malaysia ranks second in ASEAN and 23rd globally in AI readiness, demonstrating significant progress at the national level (Poon, 2024). However, only 15% to 20% of companies have actually adopted AI technologies, indicating a large gap in integration and practical application (Malaysiakini, 2022). In

particular, micro, small, and medium enterprises (MSMEs), as the backbone of the Malaysian economy, face challenges such as limited budgets, inadequate digital infrastructure, and a lack of skilled personnel, which limit their effective use of AI technologies, including AI chatbots (Poon, 2024). According to Cisco's "AI Readiness Index," released in November 2023, although 87% of companies are aware of the significant impact AI will have, only 13% of organizations are truly ready to use AI technologies (Xu & J, 2024). This data further shows that Malaysian companies are still at a low level of adoption of technologies such as AI chatbots. It is worth noting that about 99% of companies in Malaysia are SMEs, yet most are not yet ready for AI applications (Xu & J, 2024). This shows that although many companies have recognized the potential benefits of AI technologies, such as AI chatbots, most have not actively adopted them due to insufficient resources and technical capabilities, resulting in low overall usage rates.

1.2.2 Academic Gaps

Previous studies indicate that empirical research on the impact of AI chatbot service quality on customer loyalty remains limited (Q. Chen et al., 2023). While a significant body of literature suggests a positive correlation between customer experience and loyalty, there is a gap in research that directly connects the service quality of chatbots with customer loyalty (Jenneboer et al., 2022). Especially in the food service industry in Malaysia, there are very few studies in this area, and relevant literature is only available in Indonesia (Rosman & Putranto, 2023). In addition, the traditional SERVQUAL framework may not fully reflect the unique characteristics of AI chatbot services (Q. Chen et al., 2023). Most previous studies used the traditional SERVQUAL model to evaluate service quality attributes (Q. Chen et al., 2023) (Jenneboer et al., 2022) (L. Li et al., 2021), but these models appear insufficient for evaluating AI chatbot services. Although (Björkman & Jansson, 2023) The research findings showed that almost all service quality attributes did not exhibit a significant positive relationship with customer loyalty. The six attributes they tested included availability, response accuracy, responsiveness, ease of use, assurance, and empathy. Therefore, this research introduced two less explored service quality attributes, namely human-like empathy and omnipresence, which originated from the research of (Q. Chen et al., 2023). The researchers believed that these two features are important and cannot be ignored in the quality of AI chatbot services, and are closely related to customer loyalty.

Compared with the current literature, another academic gap in this research is the lack of a framework to classify customer loyalty into two categories: attitudinal loyalty and behavioral loyalty. Although some studies have attempted to divide customer loyalty into two dimensions (Siddiqui & Sharma, 2022) (Björkman & Jansson, 2023). It shows that there are still a few studies that explore the specific impact of AI chatbot service quality attributes on the two categories of customer loyalty. However, most existing studies consider customer loyalty as a whole without dividing it (Hsu & Lin, 2023) (Q. Chen et al., 2023) (Rosman & Putranto, 2023) (Jenneboer et al., 2022). This research divided customer loyalty into attitudinal loyalty and behavioral loyalty, thereby filling the gap in existing research. Thus, this research aims to address an academic gap in the food service industry, provide more comprehensive support and empirical evidence, and promote the adoption of AI chatbots.

2.0 Literature Review

2.1 Customer Loyalty

According to contemporary consumption theories, most studies uniformly define customer loyalty as the intention to continue (Hsu & Lin, 2023) (Cheng & Jiang, 2020) (Niu & Mvondo, 2024) and repeat purchase behavior (Y. Chen et al., 2022) (S. Alam, 2020) (Yu, 2021). Several studies define customer loyalty as positive customer commitment (Q. Chen et al., 2023) (Rosman & Putranto, 2023). Furthermore, some

researchers define customer loyalty as fostering a lasting relationship (Hasnain et al., 2023; (Singh & Singh, 2024). According to Hsu and Lin (2023) and Yu (2021), customer loyalty is the tendency to consistently and repeatedly patronize a company's products or services over a long period of time and to recommend the brand to others. In the context of AI chatbot services, the AI chatbot's performance and customers' perceptions of it directly affect customer loyalty to the company (Q. Chen et al., 2023). (Singh & Singh, 2024) found that by effectively using AI chatbot technology, companies can improve customer-perceived efficiency, provide customers with pleasant experiences, and thereby foster lasting customer relationships. Exploring this further, customer loyalty is a complex idea that can be understood through two main categories: attitudinal loyalty and behavioral loyalty (Björkman & Jansson, 2023). According to (Siddiqui & Sharma, 2022), the study stated that focusing on these two categories can lead to more effective customer loyalty strategies. Therefore, in this research, customer loyalty will be classified into two categories, attitudinal loyalty and behavioral loyalty. However, for the purpose of this research, it will treat customer loyalty as a single construct to be examined rather than investigating its dimensions individually, focusing on its overall impact and significance.

2.2 Servqual Framework for Chatbot

According to (Meyer-Waarden et al., 2020), this study reflects that there are multiple key tools for measuring service quality in the service literature, such as SERVQUAL, E-SERVQUAL, SERVPERF, and hierarchical models. However, this research adopts the SERVQUAL framework (Parasuraman et al., 1988), which aims to assess customers' perceptions and expectations of service quality and help company managers identify key service quality areas that require improvement. To summarize, early research literature shows that the use of SERVQUAL frameworks is highly relevant within the scope of information systems, particularly AI chatbots (L. Li et al., 2021) (Björkman & Jansson, 2023) (Trivedi, 2019). Therefore, this framework provides useful guidance for constructing AI chatbot attributes for this research and helps determine which attributes may affect customer loyalty.

2.3 AI Chatbot Service Quality Attributes

In exploring the attributes of AI chatbots, several studies help understand how these attributes impact customer loyalty. Most of the studies collectively underscore the importance of various AI chatbot attributes in enhancing customer loyalty, offering a robust framework for future research and practical implementations in the digital business environment (Björkman & Jansson, 2023) (Q. Chen et al., 2023) (L. Li et al., 2021) (Jenneboer et al., 2022). Therefore, this research extends the limited literature on AI chatbot service quality attributes and customer loyalty, thereby providing a deeper understanding of these attributes. This research will delve into the attributes of AI chatbots that the researcher considers most critical for fostering customer loyalty.

One of the service quality attributes chosen for this research is ease of use, a fundamental component of the Technology Acceptance Model (TAM). (Q. Chen et al., 2023) provide a brief definition of AI chatbot assistability, that is, “the AI chatbot is easy to use”. Although it sounds simple, ease of use is a key factor in a chatbot's effectiveness, as customer perception of its ease of use plays a significant role in determining its value. Past research has shown a correlation between customer attitudes toward innovative technology solutions and ease of use (Kuberkar & Singhal, 2020) (Azli et al., 2023) (Pillai & Sivathanu, 2020) and ease of use is considered an important factor in forecasting customer perceptions of chatbot usage (Ukpabi et al., 2019) (M. Li & Wang, 2023).

H1: *There is a significant and positive relationship between the ease of use of AI chatbots and customer loyalty in the food service sector.*

The next service quality attribute of an AI chatbot is its 24/7 availability. According to (Jenneboer et al., 2022), availability is defined as the intelligent chatbot's accessibility at all times and anywhere. (Q. Chen et al., 2023), further divided availability into two attributes: "always available" and "omnipresence", where "always available" means that the chatbot never takes a break, allowing customers to obtain services at any time, regardless of day or night. This consistent availability means customers can get answers and information immediately, increasing overall customer satisfaction with the company or business's services (Björkman & Jansson, 2023).

H2: *There is a significant and positive relationship between the availability of AI chatbots and customer loyalty in the food service sector.*

According to (Q. Chen et al., 2023), which defines chatbot response accuracy as the ability to accurately respond to customer needs. This accuracy ensures smooth communication between customers and chatbots, resulting in efficient information exchange. Besides, (Jenneboer et al., 2022) classified the accuracy attribute of responses as information quality, emphasizing that accurate responses are the basis for maintaining high information quality. This attribute is important as it defines the AI chatbot's capability to accurately comprehend and address customer inquiries (Q. Chen et al., 2023). Therefore, the researcher chose the next attribute, response accuracy, to measure the impact of AI chatbots on customer loyalty.

H3: *There is a significant and positive relationship between the accuracy of response of AI chatbots and customer loyalty in the food service sector.*

As originally introduced in the SERVQUAL framework, assurance refers to "the knowledge and courtesy of employees and their ability to inspire trust and confidence" (Parasuraman et al., 1988). In the context of AI chatbots, assurance is similarly referred to as the AI chatbot's capacity to establish customer trust through informed and polite communication (Gorla et al., 2010). According to (Trivedi, 2019), assurance is crucial to providing good service quality, making it one of the key characteristics of AI chatbots. According to Li et al. (2021), the study also highlighted the importance of assurance, which the researchers noted plays a vital role in ensuring customer satisfaction and continued use of chatbots. Therefore, incorporating assurance as an attribute of an AI chatbot is critical to building and maintaining customer loyalty across various service sectors.

H4: *There is a significant and positive relationship between the assurance of AI chatbots and customer loyalty in the food service sector.*

Omnipresence refers to the ubiquity of AI technology in every aspect of our daily lives and across multiple industries. The omnipresence of AI chatbots means that they are integrated into everyday interactions and are available to a wide range of audiences, spanning sectors such as healthcare, finance, retail, and entertainment (Klee, 2023). AI chatbots, a form of artificial intelligence, embody this omnipresence by becoming a common feature in many services, providing ongoing support and engagement to customers (Gloria, 2023). As chatbots continue to evolve and integrate into more service industries, their omnipresence will remain a key factor in increasing customer satisfaction as well as customer loyalty (Vartika, 2024) (Pamela Bump, 2024).

H5: *There is a significant and positive relationship between the omnipresence of AI chatbots and customer loyalty in the food service sector.*

Human-like empathy in AI chatbots is the ability to attentively understand and respond to customer queries, making customers feel understood and valued. According to (Q. Chen et al., 2023), this study stated that human-like empathy attributes are described as customers' trust that AI chatbots can understand their needs and provide thoughtful and sensitive service. According to (Jhan et al., 2021), the study expresses empathy as crucial for chatbots to interact with customers in a way that mimics human communication, also emphasizing the emotional aspect of interaction rather than the mere exchange of information. According to (Q. Chen et al., 2023), this study responded that improving the service quality of artificial intelligence chatbots through human-like empathy can promote customers' continued purchases, positive attitudes toward the business and recommendations to others, ultimately cultivating customer loyalty. Human-like empathy as part of service quality ensures that customers receive a positive response and experience, thereby increasing customer loyalty.

H6: *There is a significant and positive relationship between the human-like empathy of AI chatbots and customer loyalty in the food service sector.*

2.4 Research Framework

By elaborating this research framework, the relationships among the various factors are clearly demonstrated and abstracted. The independent variables on the left-hand side are ease of use, availability, response accuracy, assurance, omnipresence, and human-like empathy. This research develops a framework to investigate how AI chatbot service quality attributes influence customer loyalty in the food service sector.

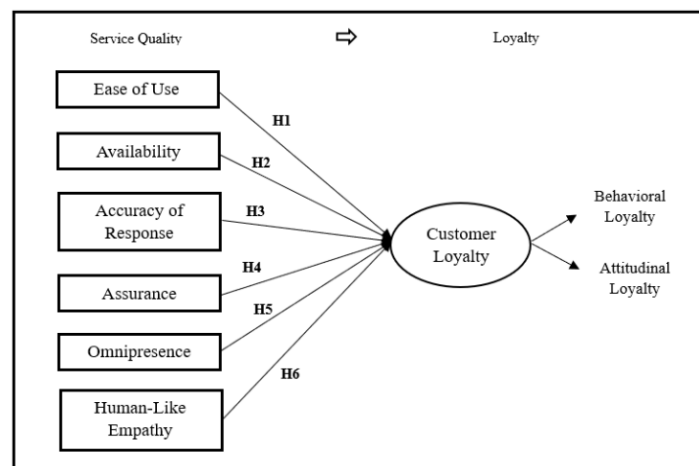


Figure 1: Research Framework Model

3.0 Research Methodology

3.1 Research Design

This research focuses on evaluating and measuring the impact of AI chatbot service quality on customer loyalty to an organization. According to (Asenahabi, 2019), research design is a framework that encompasses a variety of techniques and methods for collecting and analyzing variables in a research question, guiding the research process and linking the research question to appropriate empirical research. This research would

adopt a quantitative research approach. The research design was based on sample information, sample size, and the use of quantitative or mixed methods (Creswell & Poth, 2019), with a focus on articles that included descriptive analysis and up to three statistical methods, regardless of classification, and that were considered intersectional. This research adopted a conclusive research design aimed at providing better information to support conclusions and decision-making. The descriptive research method was chosen for this study because the data provides a structured, nearly exact, and representative explanation of the group. The analysis unit of this research is restricted to individual customers who have experience using an AI chatbot for any food services or transactions. Each customer's responses are treated as independent data points. In this research, to ensure respondents' convenience and maximize their internet usage, the questionnaires were distributed via Google Forms only. Therefore, this research adopted a cross-sectional design.

3.2 Sampling Technique

This research adopted a non-probability sampling technique, specifically judgmental (purposive) sampling. In purposive sampling, the researcher selects respondents based on predefined criteria that are directly related to the research objectives. In this study, the key inclusion criterion was that respondents must have prior experience using AI chatbot services in any food service sector. Purposive sampling was considered the most suitable technique because it ensured that the data were collected only from individuals who could provide relevant information about AI chatbot service quality and customer loyalty. To enforce this criterion, screening questions were placed at the beginning of the questionnaire to confirm whether respondents had used AI chatbots for food services or transactions. Only those who met this condition were allowed to complete the full questionnaire. This procedure increased the relevance and quality of the data for testing the proposed research model.

3.3 Population and Sample

A population is the group of elements collected that contain the details the researcher seeks. This study targets people with prior experience using AI chatbots across any service sector. Furthermore, determining the appropriate sample size for a study requires consideration of multiple factors, such as the nature of the study, statistical requirements, choice of data analysis tools, and practical considerations (Memon et al., 2020). In this research, the minimum sample size can be determined using the Cohen table. Therefore, based on this research with six independent variables: ease of use, availability, accuracy of response, assurance, omnipresence, and human-like empathy, this research's minimum sample size would likely be 48 respondents. Although the original plan was to have a sample size of 48 respondents, the decision was made to raise the sample size to 150 ($n=150$) to enhance the rate of response (Azli et al., 2023). This sample would specifically target customers with experience using AI chatbots across the food service sector, aiming to provide a more robust dataset for analysis and to improve the reliability and validity of the research's findings.

3.4 Research Instrument

For this research, a collection of relevant questionnaires was adapted from previous studies. To ensure the reliability and validity of the research instrument and given that references from earlier studies were modified to fit the needs of this research, the tool was revised based on different constructs from the existing literature. To assess these variables, a questionnaire was developed and distributed via Google Forms. The questionnaire was divided into three sections: Section A to Section C. Section A focuses on collecting demographic details such as gender, age, race, educational level in Malaysia, monthly income, occupation, frequency usage of an AI chatbot, last interaction with an AI chatbot, and multiple-choice question frequency. Section B includes questions on the six service quality attribute independent variables, as shown

in Table 1. In contrast, section C concerns the dependent variable, which is customer loyalty. Both sections B and C were evaluated using a five-point Likert scale. Respondents were requested to indicate their level of agreement or disagreement on a scale of 1 to 5, with "1" indicating strong disagreement and "5" indicating strong agreement.

SECTION	CONTENT
Section A	Demographics Profile
Section B	Independent variables (IV) – Ease of Use, Availability, Accuracy of Response, Assurance, Omnipresence, and Human-Like Empathy
Section C	Dependent variable (DV) - Customer Loyalty

Table 1: Questionnaire sections

4.0 Results and Discussion

This data analysis involved applying Partial Least Squares (PLS-SEM) with SmartPLS (v. 4) and IBM SPSS Statistics 29.0. SmartPLS was used to examine the relationships among the independent variables and the dependent variable in the food service sector.

4.1 Profile of Respondents

The respondents in this study were customers who had experience using AI chatbots across the food service sector. According to the research requirements, the minimum sample size for this research is 48. During the distribution and collection of questionnaires, a total of 188 questionnaires were collected. For those respondents who did not use or follow any AI chatbot in the food service sector, their questionnaires were considered invalid. This study excluded 3 invalid questionnaires, resulting in 185 valid questionnaires and an effective recovery rate of 98.40%. This sample size was sufficient to meet the requirements of empirical analysis and ensure the reliability of the research results. The demographic questions in this study were mainly designed around the background information of the respondents, including key variables, like gender, age, race, educational level in Malaysia, occupation, monthly income, the frequency of using AI chatbots daily, and other demographic variables. The specific demographic distribution is shown in Table 2.

Demographics Profile	Characteristics	Frequency	Percentage %
Gender	Male	91	49.2
	Female	94	50.8
Age	Below 20	41	22.2
	21-30	50	27.0
	31-40	38	20.5
	41-50	46	24.9
	51 and above	10	5.4
Race	Malay	53	28.6
	Chinese	61	33.0
	Indian	46	24.9
	Others	25	13.5
Educational Level in Malaysia	SPM/ MCE and below	43	23.2
	Diploma/ STPM/ STAM/ Foundation/ A-Level/ Matriculation/ IELTS/ IB/ AUSMAT/ ADP/ CIMP/ CPU/ SAM/ SACE	43	23.2
	Bachelor's degree	62	33.5
	Master's degree	29	15.7
	PhD/DBA	8	4.4

Monthly Income	Below RM1500	45	24.3
	RM1501 - RM2500	28	15.1
	RM2501 - RM3500	34	18.4
	RM3501 – RM4500	22	11.9
	RM4501 – RM5500	42	22.7
	RM5501 and above	14	7.6
Occupation	Student	22	11.9
	Private	80	43.2
	Self-employed	26	14.1
	Public sector	54	29.2
	Housewife/ unemployed	3	1.6
How frequently do you use AI chatbots daily?	3 times and below	26	14.1
	4 -6 times	29	15.7
	7 – 9 times	83	44.8
	10 times and above	47	25.4
When did you last interact with AI chatbots?	Last week	110	59.5
	Last month	43	23.2
	Last six months	8	4.4
	Last year	18	9.7
	Over a year ago	6	3.2

Table 2: Summary of Respondents' Demographics

According to Table 2, the distributions are by gender, age, race, education level, occupation, monthly income, frequency of daily use of AI chatbots, and the last time of interaction with AI chatbots. Besides, the statistical results of multiple-choice questions are shown in Table 3. As can be observed, the top three uses of AI chatbots most frequently used by respondents in daily life are food services, electronic commerce, and education. The areas least frequently used by respondents are government services and AI chatbot customer service on social media platforms.

Demographics Profile	Characteristics	Frequency	Percentage %
For what purpose do you most frequently use AI chatbots in your daily activities? (Choose only ONE)	Electronic Commerce (Examples: Lavada - LazzieChat)	14	7.6
	Banking and Finance (Examples: Maybank's-MAE, CIMB-Eva)	3	1.6
	Travel and Tourism (Examples: Air Asia - AskBo)	11	6.0
	Government Services (Examples: KPDNHEP - Chatbot Sara)	1	0.5
	Education (Examples: ChatGPT)	25	13.5
	Telecommunication Services (Examples: CelcomDigi – AI Sandbox)	10	5.4
	Social media platform (Examples: Instagram, Facebook)	1	0.5
	Food Services (Examples: McDonald's, KFC)	120	64.9

Table 3: Multiple-choice Question Frequency Statistics

4.2 Normality Test

The normality test measures the symmetry of the sample data. According to Sukri & Yusoff (2021), normality tests are crucial for determining whether the data distribution aligns with normality in statistical analysis, especially since most statistical procedures assume that the data meets the normality condition. Skewness measures the symmetry of the data distribution, while kurtosis assesses the degree of distributional concentration (Malá et al., 2021). When the skewness and kurtosis values fall between -1.96 and +1.96, it is considered normality (Sukri & Yusoff, 2021). This research used descriptive statistics to analyze data across seven dimensions: ease of use, availability, accuracy of response, assurance, omnipresence, human-like empathy, and customer loyalty. The normality test results for all the variables shown in Table 4 are

considered a perfect symmetrical and normal distribution, as all the skewness and kurtosis values drop within the perfect range between -1.96 and +1.96. This indicates that research data follows a normal distribution.

Item	N	Minimum	Maximum	Mean	SD	Skewness	Kurtosis
EA1	185	1	5	3.17	1.314	-0.198	-1.039
EA2	185	1	5	3.22	1.216	-0.067	-0.880
EA3	185	1	5	3.16	1.181	0.012	-0.885
EA4	185	1	5	3.21	1.264	-0.149	-0.949
AL1	185	1	5	3.36	1.523	-0.435	-1.270
AL2	185	1	5	2.97	1.083	-0.065	-0.565
AL3	185	1	5	2.86	1.088	-0.087	-0.568
AR1	185	1	5	3.00	1.452	-0.054	-1.393
AR2	185	1	5	3.02	1.168	0.051	-0.702
AR3	185	1	5	3.05	1.155	0.022	-0.701
AR4	185	1	5	3.11	1.217	-0.110	-0.823
AS1	185	1	5	3.11	1.404	-0.085	-1.285
AS2	185	1	5	3.04	1.158	-0.053	-0.667
AS3	185	1	5	3.02	1.147	0.001	-0.551
OM1	185	1	5	3.22	1.417	-0.215	-1.313
OM2	185	1	5	3.12	1.205	-0.081	-0.828
OM3	185	1	5	3.10	1.166	-0.025	-0.644
HLE1	185	1	5	3.98	1.058	-1.210	1.267
HLE2	185	1	5	3.81	1.029	-0.931	0.738
HLE3	185	1	5	3.89	1.034	-0.934	0.680
CL1	185	1	5	3.14	1.445	-0.139	-1.349
CL2	185	1	5	2.91	1.181	-0.051	-0.794
CL3	185	1	5	3.05	1.259	-0.020	-0.981
CL4	185	1	5	3.05	1.153	-0.053	-0.595
CL5	185	1	5	3.05	1.291	0.001	-0.981

Table 4: Result of Normality Test

4.3 Assessment of Measurement Model

4.3.1 Internal Consistency Reliability

To confirm the reliability and trustworthiness of the variable results in this research, a reliability test was conducted. This research used Cronbach's Alpha coefficient to evaluate the reliability of each variable and determine whether it meets the standard. When the Cronbach's Alpha coefficient for a variable is greater than 0.70, it indicates that the variable meets the standard for high reliability. At the same time, the CITC coefficient of each item must be greater than 0.40. Table 5 shows the specific reliability measurement results of each variable in this research. According to Table 5, the Cronbach's Alpha value of the seven variables of ease of use, availability, accuracy of response, assurance, omnipresence, human-like empathy, and customer loyalty are between 0.818 and 0.913, all greater than 0.7, considered satisfactory and internally consistent. In addition, the CITC values for all items exceeded 0.4, indicating that the reliability tests for each variable and its corresponding items meet the standards, with good internal consistency and reliability.

Variable	Item	CITC	Cronbach's Alpha
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Ease of Use	EA1	0.820	0.904
	EA2	0.762	
	EA3	0.791	
	EA4	0.766	
Availability	AL1	0.828	0.837
	AL2	0.658	
	AL3	0.685	
Accuracy of Response	AR1	0.800	0.871
	AR2	0.705	
	AR3	0.719	
	AR4	0.693	
Assurance	AS1	0.734	0.818
	AS2	0.663	
	AS3	0.639	
Omnipresence	OM1	0.759	0.842
	OM2	0.697	
	OM3	0.686	
Human-Like Empathy	HLE1	0.793	0.913
	HLE2	0.840	
	HLE3	0.843	
Customer Loyalty	CL1	0.787	0.887
	CL2	0.709	
	CL3	0.743	
	CL4	0.688	
	CL5	0.721	

Table 5: Result of Reliability Test

4.3.2 Convergent Validity and Discriminant Validity

Validity refers to the accuracy with which research items are measured in quantitative research. According to (Chin & Yao, 2021), the study stated that the key types of validity include Predictive, Concurrent, Content, Criterion-Related, Internal, External, Construct, Face, and Theoretical Validity. Among these, content and construct validity are considered the most important (Sürücü & Maslakci, 2020). Construct validity, which is widely used in research, examines the logical relationships between variables (Sujati & Akhyar, 2020). However, it must be complemented by tests for convergent and discriminant validity to ensure the construct is accurately measured. Convergent validity confirms that variables related to the same construct are consistent, with AVE values greater than 0.5 and the composite reliability (CR) value greater than 0.7 for validity, ensuring the measuring tool reflects the intended construct (Sujati & Akhyar, 2020). This research was analyzed using SmartPLS 4.0 to develop a structural equation model and conducted a convergent validity analysis. The results of the convergent validity test are shown in Table 6.

Variable	Item	Outer Loading	CR	AVE
Ease of Use	EA1	0.896	0.904	0.776
	EA2	0.875		
	EA3	0.885		
	EA4	0.868		
Availability	AL1	0.937	0.843	0.763
	AL2	0.825		
	AL3	0.854		
Accuracy of Response	AR1	0.895	0.872	0.723
	AR2	0.826		
	AR3	0.836		

	AR4	0.843		
Assurance	AS1	0.894	0.820	0.736
	AS2	0.848		
	AS3	0.830		
Omnipresence	OM1	0.901	0.845	0.763
	OM2	0.863		
	OM3	0.855		
Human-Like Empathy	HLE1	0.750	0.913	0.789
	HLE2	0.926		
	HLE3	0.973		
Customer Loyalty	CL1	0.871	0.888	0.691
	CL2	0.809		
	CL3	0.847		
	CL4	0.796		
	CL5	0.831		

Table 6: Result of Convergent Validity

According to Table 6, the AVE values of the seven dimensions are all greater than 0.50, and the CR values are all greater than 0.70. Besides, the outer loadings for each item are greater than 0.70, indicating that the convergent validity of this study is qualified and reliable. If convergent validity is qualified, the next step is to test discriminant validity for each variable. Discriminant validity was evaluated using the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio (Petters et al., 2024). Factors are considered to have discriminant validity when the square root of their AVE values is greater than their correlations with other factors (Owan et al., 2022). The discriminant validity test results are shown in Table 7. The table shows that the discriminant validity among the variables in this study is satisfactory and acceptable. Overall, the scale in this research is valid and reliable.

Variable	AL	AR	AS	CL	EA	HLE	OM
Availability	0.873						
Accuracy of Response	0.699	0.850					
Assurance	0.700	0.637	0.858				
Customer Loyalty	0.756	0.664	0.682	0.831			
Ease of Use	0.734	0.612	0.599	0.680	0.881		
Human-Like Empathy	-0.024	-0.076	-0.041	-0.074	-0.082	0.888	
Omnipresence	0.704	0.559	0.507	0.594	0.545	-0.053	0.874

Table 7: Result of Discriminant Validity Test

In addition, this research used the Heterotrait-Monotrait (HTMT) method to further verify the discriminant validity of this research. As shown in Table 8, all HTMT values are less than 0.90. If all Heterotrait-Monotrait (HTMT) values are under the 0.90 threshold, it indicates good discriminant validity (Henseler et al., 2015) (Petters et al., 2024). Therefore, the discriminant validity of this research scale is good and acceptable. In summary, a structural equation model can be constructed from the relationships among variables to test the research hypothesis.

Variable	AL	AR	AS	CL	EA	HLE	OM
Availability							
Accuracy of Response	0.813						
Assurance	0.840	0.751					
Customer Loyalty	0.870	0.746	0.796				

Ease of Use	0.838	0.687	0.694	0.755			
Human-Like Empathy	0.048	0.068	0.053	0.092	0.085		
Omnipresence	0.833	0.651	0.609	0.684	0.622	0.057	

Table 8: Discriminant Validity Test (HTMT)

4.4 Assessment of Structural Model

This evaluation aims to establish a relationship model among latent variables using path coefficients, coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2) as key criteria. According to (Hair & Sarstedt, 2021), assessing a model's explanatory power requires these evaluation metrics. Based on the evaluation metrics, the coefficient of determination (R^2) for customer loyalty is 0.656. This indicates a strong explanatory power. The effect size (f^2) is 0.345, showing a medium-high impact of the latent variables on customer loyalty. Moreover, the predictive relevance (Q^2) is 0.588, confirming the model's predictive accuracy and relevance. These results collectively indicate that the structural model is good and valid, and that it demonstrates a high effect size.

The variance inflation factor (VIF) is used to assess the extent to which the variance of the regression coefficients increases when the independent variables are correlated. When the VIF value is between $1 < VIF < 5$, it shows that there is a moderate degree of correlation between the variables (Shrestha, 2020). Table 9 below shows the VIF values of each measurement variable. The results indicate that the VIF values of all items are between $1 < VIF < 5$, which proves that there is a moderate degree of correlation between the variables, the model is valid, and the hypothesis test demonstrates high reliability.

Item	VIF
EA1	3.091
EA2	2.420
EA3	2.721
EA4	2.489
AL1	3.187
AL2	1.959
AL3	2.157
AR1	2.804
AR2	2.007
AR3	2.146
AR4	2.016
AS1	2.171
AS2	1.827
AS3	1.713
OM1	2.356
OM2	1.977
OM3	1.911
HLE1	2.689
HLE2	3.523
HLE3	3.566
CL1	2.638
CL2	2.054
CL3	2.255
CL4	1.908
CL5	2.141

Table 9: Collinearity Test

Table 10 shows the specific path coefficients for each hypothesised relationship.

Relation	β	T Value	P-Value	2.5%LLCI	97.5%ULCI
Ease of Use $\rightarrow$ Customer Loyalty	0.190	2.419	0.016	0.041	0.349
Availability $\rightarrow$ Customer Loyalty	0.297	3.391	0.001	0.121	0.465
Accuracy of Response $\rightarrow$ Customer Loyalty	0.150	1.999	0.046	0.011	0.302
Assurance $\rightarrow$ Customer Loyalty	0.221	3.032	0.002	0.070	0.363
Omnipresence $\rightarrow$ Customer Loyalty	0.084	1.147	0.252	-0.062	0.225
Human-Like Empathy $\rightarrow$ Customer Loyalty	-0.026	0.485	0.628	-0.110	0.094

Table 10: Path coefficients and hypotheses testing (Structural Model Assessment)

4.5 Summary of Hypotheses

Structural model assessment examines the influence of relationships among variables. The structural model used to test the hypothesis by analyzing the path and showing the causal relationship between latent variables. As shown in Figure 2 below, the structural equation model is constructed based on the relationship hypothesized in this research. If the p-value is less than 0.05, the path is considered to be supported. As shown in Table 11 below, four hypotheses (ease of use, availability, accuracy of response, and assurance) were supported, and the p-value of each path was less than 0.05. However, two hypotheses (omnipresence, human-like empathy) were not supported, and the p-values of the two paths were greater than 0.05.

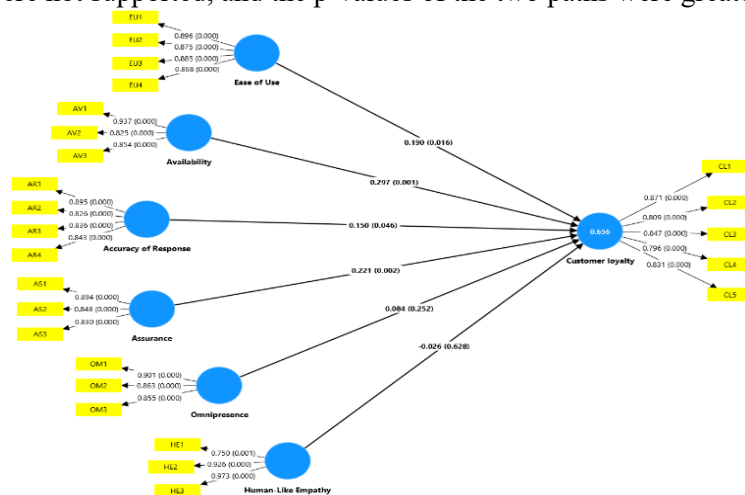


Figure 2: Bootstrapping Result of The Model

Hypothesis	Statement of Hypothesis	Result
H1	There is a significant and positive relationship between the ease of use of AI chatbots and customer loyalty in the food service sector.	Supported
H2	There is a significant and positive relationship between the availability of AI chatbots and customer loyalty in the food service sector.	Supported
H3	There is a significant and positive relationship between the accuracy of response of AI chatbots and customer loyalty in the food service sector.	Supported
H4	There is a significant and positive relationship between the assurance of AI chatbots and customer loyalty in the food service sector.	Supported
H5	There is a significant and positive relationship between the omnipresence of AI chatbots and customer loyalty in the food service sector.	Not Supported
H6	There is a significant, positive relationship between AI chatbots' human-	Not Supported

like empathy and customer loyalty in the food service sector.

Table 11: Summary of Hypotheses

4.6 Discussion on Research Objectives

The findings demonstrate a significant positive relationship between the ease of use of AI chatbots and customer loyalty in the food service industry. The results ($\beta = 0.190$, $T = 2.419$, $p = 0.016$) show that ease of use is positively associated with customer loyalty. The results of this research are consistent with the previous study by (Q. Chen et al., 2023), that is ease of use as an important attribute of service quality, is positively correlated with customer loyalty. According to (Hoo et al., 2023), ease of use has a positive and significant impact on Malaysian consumers' willingness to use chatbots, thereby increasing customer loyalty. Additionally, the findings show that most Malaysian consumers from the private and public sectors believe that when the food service sector adopts an AI chatbot that is easy to use, it can significantly increase customer loyalty. Therefore, H1 is supported.

The findings demonstrate a strong relationship between the availability of AI chatbots and customer loyalty in the food service industry. The results ($\beta=0.297$, $T=3.391$, $P\text{-Value}=0.001$) suggest that the availability of AI chatbots is significantly positively correlated with customer loyalty. The results of this research further extend the view of (Jenneboer et al., 2022) that today's customers have extremely high expectations for the 24/7 availability of organizations. According to (MarketingLancers, 2024) Around 64% of Malaysian consumers expect 24/7 customer service, and an AI chatbot can meet this demand and provide instant responses at any time, thereby fostering customer loyalty. At the same time, the findings show that Malaysian consumers aged 20 to 50 are satisfied with AI chatbots that provide 24/7 availability in the food service industry and can effectively promote long-term customer loyalty. Therefore, H2 is supported.

The findings demonstrate a strong relationship between AI chatbots' response accuracy and customer loyalty in the food service industry. The results ($\beta=0.150$, $T=1.999$, $P\text{-Value}=0.046$) show that the accuracy of AI chatbots' responses is significantly positively correlated with customer loyalty. According to (Q. Chen et al., 2023) The study found that response accuracy, an important attribute of AI chatbot service quality, positively impacts customer loyalty. According to AiChat (2020) and (MarketingLancers, 2024), AI chatbots that answer customers' questions instantly and accurately can improve service efficiency and cultivate customer loyalty in Malaysia. Furthermore, the findings show that consumers from the three main races in Malaysia, Malays, Chinese, and Indians, with a monthly income of RM1,501 - RM5,500, believe that the use of AI chatbots in the food service sector, especially AI chatbots that accurately understand customers' orders, can significantly improve customer loyalty. Therefore, H3 is supported.

The findings demonstrate a strong relationship between AI chatbot assurance and customer loyalty in the food service industry. The results ($\beta=0.221$, $T=3.032$, $P\text{-Value}=0.002$) show that AI chatbot assurance is significantly positively correlated with customer loyalty. The results of this research are consistent with previous studies by (Trivedi, 2019) and (L. Li et al., 2021), who found that assurance has a positive impact on service quality and customer loyalty by increasing customer trust. According to (Hariyanto & Salim, 2024), demonstrating that service quality assurance significantly positively influences customer loyalty in Malaysia, highlighting the importance of trust and confidence in service interactions. At the same time, the findings show that Malaysian consumers with a diploma or higher education level believe that adopting AI chatbots in the food service sector, particularly those that provide knowledgeable and trustworthy responses to food-related inquiries, can significantly enhance customer loyalty. Therefore, H4 is supported.

The findings indicate that there is no significant relationship between the omnipresence of AI chatbots and customer loyalty in the food service industry. The results ($\beta=0.084$, $T=1.147$, $P\text{-Value}=0.252$) show that although the omnipresence of AI chatbots across multiple food service platforms may enhance service accessibility, the relationship with customer loyalty is not significant. According to (Yin et al., 2024) Although ubiquity is considered a basic feature, its positive impact on customer satisfaction has not been verified. Since satisfaction itself does not significantly influence customer loyalty in this context, the role of omnipresence becomes even less significant. At the same time, the findings show that Malaysian consumers, especially young people under 20 years old with SPM level education, regard the omnipresence of AI chatbots as a basic expectation rather than an important driver of customer loyalty. Therefore, H5 is not supported.

The findings demonstrate that there is no significant relationship between AI chatbots' human-like empathy and customer loyalty in the food service industry. The results ($\beta = -0.026$, $t = 0.485$, $P\text{-Value} = 0.628$) show that although human-like empathy improves the quality of interactions with customers, it does not have a significant direct relationship with customer loyalty. According to (Adobe Experience Cloud, 2024), approximately 47% of Malaysian consumers prefer AI-enabled services over human interactions, indicating that consumers value efficiency over human-like empathy. According to (Yeong et al., 2022) Although empathy has a significant impact on customer satisfaction, its direct impact on customer loyalty is not significant. At the same time, the findings show that Malaysian consumers, both male and female, do not consider human-like empathy in AI chatbots under the food service sector to be a key factor in improving customer loyalty. Therefore, H6 is not supported.

5.0 Conclusion

This study explored the factors that influence customer loyalty to the service quality of artificial intelligence chatbots in the food service industry. The research focuses on addressing the problem statement, including the practical and academic gaps, and on meeting the research objectives. Analyzing the attribute factors that affect customer loyalty provides theoretical support for food service companies to help them stand out from the competition. By gaining a deeper understanding of the key factors that drive customer loyalty, companies can provide the right value to their target customers.

This research provides a theoretical basis for the academic field by yielding new empirical findings. The relationship between service quality attribute factors, including ease of use, availability, accuracy of response, assurance, omnipresence, human-like empathy, and customer loyalty, was studied. The study found that four service quality attributes (ease of use, availability, accuracy of response, and assurance) have a significant positive relationship with customer loyalty.

Using SPSS and Smart PLS analyses, this research proposed a theoretical framework to improve customer loyalty in the food service industry. The availability attribute in this study became the most influential predictor, and the beta value of this service quality was the highest ($\beta=0.297$). Therefore, the researchers recommend that major food service industries adopt artificial intelligence chatbots to improve customer loyalty. The study's findings demonstrated that the service quality features of the proposed AI chatbot had a notable impact on enhancing customer loyalty within the food service sector.

Throughout the study, the researcher faced several limitations. First, the sample for this research was primarily drawn from respondents who had experience using AI chatbots in the food service industry, which may introduce selection bias and affect the representativeness of the findings. In addition, all the data was collected through a Google Form survey sent to the intended respondents. This method introduced limitations, including low response rates, challenges in sample selection, and potential issues with internet

availability, which may have affected the diversity and reliability of the collected data. Lastly, the study focused on a specific geographic region within the food service industry, which may limit the applicability of the findings to other industries or regions with different technology adoption rates and customer expectations.

To address the limitations found in this research, two suggestions are made for future research. First, future research should adopt a mixed-methods design, combining quantitative and qualitative methods, such as face-to-face surveys or interviews, to supplement online questionnaires. This approach can help address issues such as low response rates, sample selection challenges, and Internet availability. In addition, the second recommendation for future research is to explore different contexts, such as non-food service industries or regions with varying levels of technological advancement, to help verify and expand the applicability of the research findings across a wider range of settings.

To conclude, this research offers the food service sector valuable insights on adopting AI chatbots to improve service quality and increase customer loyalty. Based on the findings, this research confirms that the key service quality attributes of ease of use, availability, accuracy of response, and assurance have a significant impact on customer loyalty. Therefore, this study encourages food service industry companies to implement effective strategies to adopt AI chatbots to improve service quality and thus increase customer loyalty to the company. Furthermore, this study highlights that the food service industry can adopt AI chatbots to improve service efficiency and remain competitive. Future research can address potential limitations while further investigating the suggestions provided in this study.

Acknowledgement

The authors acknowledge the Fundamental Research Grants Scheme (FRGS), grant number FRGS/1/2024/SS01/UTM/02/4-R.J130000.7829.5F725, funded by the Ministry of Higher Education (MOHE) Malaysia, and part of this research is supported by UTMFR, grant number 23H26, Universiti Teknologi Malaysia.

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Appendix

Appendix 1: Questionnaire Development

Factor	Scholar	Items	Scale Item
QUALIFYING QUESTION			
Do you use or follow any AI chatbot in food service sector?			Yes, please proceed to the next section.
			No, thank you for your time.
SECTION A: DEMOGRAPHIC PROFILE			
Gender			Male
			Female
Age			Below 20
			21-30
			31-40
			41-50
			51 and above
Race			Malay
			Chinese
			Indian
			Others
Educational Level in Malaysia			SPM/ MCE and below
			Diploma/ STPM/ STAM/ Foundation/ A-Level/Matriculation/ IELTS/ IB/ AUSMAT/ ADP/ CIMP/ CPU/ SAM/ SACE
			Bachelor's degree
			Master's degree
			Phd/DBA
Monthly Income			Below RM1500
			RM1501 - RM2500
			RM2501 - RM3500
			RM3501 – RM4500
			RM4501 – RM5500
			RM5501 and above
Occupation			Student
			Private
			Self-employed
			Public sector
			Housewife/ unemployed
How frequently do you use AI chatbots daily?			3 times and below
			4 -6 times
			7 – 9 times
			10 times and above
When did you last interact with AI chatbots?			Last week
			Last month
			Last six months
			Last year
			Over a year ago
For what purpose do you most frequently use AI chatbots in your daily activities?			Electronic Commerce (Examples: Lavada - LazzieChat)
			Banking and Finance (Examples: Maybank's-MAE, CIMB-Eva)
			Travel and Tourism (Examples: Air Asia - AskBo)
			Government Services (Examples: KPDNHEP - Chatbot Sara)
			Education (Examples: ChatGPT)

(Choose only ONE)			Telecommunication Services (Examples: CelcomDigi – AI Sandbox)
			Social media platform (Examples: Instagram, Facebook)
			Food Services (Examples: McDonald's, KFC)
			Other
SECTION B: INDEPENDENT VARIABLES			
EASE OF USE	Chen et al. (2023)	EA 1	“My interaction with the AI chatbot is clear and understandable.”
	Björkman and Jansson (2023)	EA 2	“Interaction with the AI chatbot does not require a lot of my great mental effort.”
	Chen et al. (2023)	EA 3	“Learning to interact with the chatbot is easy, so I do not need expert help to order food.”
	Björkman and Jansson (2023)	EA 4	“The AI chatbot’s ease of use has made the food ordering process more convenient for me.”
AVAILABILITY	Björkman and Jansson (2023)	AL 1	“AI chatbot are available at 7 days x 24 hours compared to human customer agents.”
	Chen et al. (2023)	AL 2	“AI chatbot are always online for food purchasing transactions.”
		AL 3	“I can access the AI chatbot service whenever I need it.”
ACCURACY OF RESPONSE	Björkman and Jansson (2023)	AR 1	“The AI chatbot accurately understands my food order.”
		AR 2	“The AI chatbot provides accurate responses to my food-related queries.”
		AR 3	“The AI chatbot at the restaurant meets my expectations by delivering precise order details.”
	Chen et al. (2023)	AR 4	“The answer of the AI chatbot corresponds to the food order question I asked.”
ASSURANCE	Björkman and Jansson (2023)	AS 1	“I trust AI chatbot to assist me during the food ordering process.”
		AS 2	“I feel safe and assured to interact with AI chatbot during the food purchasing process.”
		AS 3	“AI chatbot service in the restaurant has sufficient knowledge to answer my food ordering questions.”
OMNIPRESENCE	Chen et al. (2023)	OM 1	“I can contact AI chatbot anywhere during the food ordering process.”
		OM 2	“I can use the AI chatbot on multiple devices for food purchasing transactions.”
		OM 3	“Using the AI chatbot to place a food order is convenient, no matter where I am.”
HUMAN-LIKE EMPATHY	Chen et al. (2023)	HLE 1	“I feel that this AI chatbot puts my interests first during the process of making purchasing decisions.”
		HLE 2	“I feel that this AI chatbot is serving me attentively during the food ordering process.”
		HLE 3	“AI chatbot make me feel concerned during my food ordering encounters.”
SECTION C: DEPENDENT VARIABLE			
		ATTITUDINAL LOYALTY	

CUSTOMER LOYALTY	Björkman and Jansson (2023)	CL 1	"I will say positive things about the restaurant that uses chatbots to other people."
		CL 2	"I will recommend the restaurant that use AI chatbot to those who ask for my advice."
		CL 3	"I am committed to the restaurant that uses an AI chatbot."
		BEHAVIORAL LOYALTY	
		CL 4	"I intend to keep choosing the restaurant as my first choice that uses a chatbot in their ordering system."
		CL 5	"I will buy from the restaurant with an AI chatbot next time I order something."