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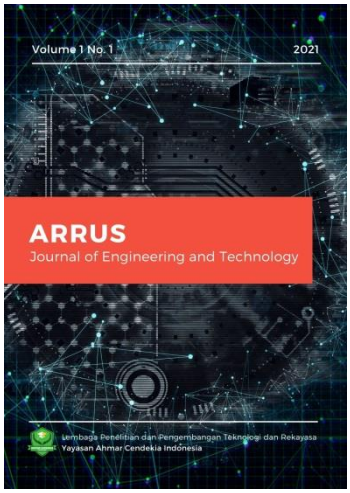

RESEARCH ARTICLE

Enhancing Customer Interaction with Chatbot in Digital Marketing for Traditional Balinese Food Sellers

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Abstract: This research explores the potential of chatbot to enhance interactions between consumers and traditional Balinese food sellers. Besides that, this research promotes Balinese specialties, improves customer experience, and supports local tourism by increasing accessibility to information. Research methods include literature review, surveys, data collection, prototype development, implementation, and result analysis. The Bakul BOT application was developed, and testing involved Black Box Testing for functionality and the System Usability Scale (SUS) for user satisfaction. Test results showed all features worked as expected, with an average SUS score of 83, placing Bakul BOT in grade A, categorized as "Excellent." The Net Promoter Score (NPS) classified the app as a "Promoter," indicating high user satisfaction and recommendation likelihood. Overall, Bakul BOT is user-friendly and well-received, especially regarding its functionality and features.

Keywords: Chatbot, Customer, Digital, Interaction, Marketing

1. INTRODUCTION

In the current digital era, marketing has transformed by utilizing technology to reach target consumers more effectively. Various opinions and reviews spread over the internet allow consumers to evaluate prices, and in some cases, even regulate these prices. The growth of digital technology has resulted in the presence of active consumers and businesses in cyberspace (Silitonga, P. D. ., Tarigan, K. S. B., & Hulu, 2022) which has resulted in companies competing to create interesting content in digital marketing efforts.

Digital marketing Refers to the marketing or promotion strategy of a brand or product that uses digital media to attract consumers quickly. This form of marketing includes the use of websites, mobile devices, social media, search engines, and similar platforms to reach a larger audience. The presence of the internet, which became popular in the 1990s, has made digital marketing increasingly known and widely used (*Digital Marketing Overview: Types, Challenges, and Required Skills*, n.d.). Some common digital marketing techniques include search engine optimization (SEO), online advertising such as Facebook Ads and Google Ads, promotions via print media, television and radio advertising, use of electronic billboards, email marketing, marketing via mobile devices, and various other strategies (*Digital Marketing: Pengertian Dan Strategi Penerapan Bisnis.*, n.d.).

One technology that is increasingly popular in digital marketing strategies is chatbots. Chatbot is a computer application created to communicate with humans through dialogue using natural language. They use artificial intelligence (AI) and natural language processing technology to

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understand questions, requests, or instructions from users, and provide relevant responses (Mayla Humaira As-syiva, 2023). One source states that chatbot applications in business can facilitate customer service work in serving customer transactions and even as a means of marketing new products and services (Mufadhol Mufadhol, Agus Wibowo, 2020). Apart from that, other sources state that chatbots are an effective marketing tool to influence consumer behavior in decision-making (Bakhytzhan Omarov, Abay Tursynbayev, Gulnar Zhakypbekova, 2022) and chatbots can answer questions given by users in real-time (Sudiatmika & Ariantini, 2020).

In the tourism industry, the presence of traditional specialties strengthens tourist attractions, while conversely, the tourism sector also promotes the richness of traditional specialties. According to data provided by the Creative Economy Agency (Bekraf) of the Republic of Indonesia, the culinary subsector contributed 41.4 percent of the total contribution to the creative economy, or the equivalent of 922 trillion in 2017. This figure is the highest compared to other subsectors in Bekraf RI. The Indonesian Minister of Tourism has also identified 10 Culinary Destinations in Indonesia, focusing on three main areas: Bali, Bandung, and Yogyakarta (Kompas.com, 2019).

Traditional Balinese food is one of the significant tourist attractions in Indonesia. Tourists often look for authentic local culinary experiences when visiting Bali. However, sometimes it is difficult for tourists to find traditional Balinese food sellers that suit their preferences and needs. Thus, this research will explore the potential for implementing chatbots in digital marketing strategies to increase customer interaction in searching for and selecting traditional Balinese food sellers.

The research that is relevant to this research is research by Enga Prinda Adu et al in 2022. In their research, it was stated that "the chatbot feature makes it easier for people to communicate with the system and is more effective in finding and visiting culinary places in each region" (Enga Prinda Adu, Cokorda Pramartha, 2022). Another research by Farhan Fathur Ramadhan in 2023 stated that "chatbots provide benefits in increasing company operational efficiency by providing responsive and automated services" (Farhan Fathur Ramadhan, Andri Sahata Sitanggang, Julian Chandra Wibawa, 2023). The similarity to previous research is the application of chatbot technology, however, there has not been much research that specifically explores the application of chatbots in the context of marketing traditional specialties in Bali.

Based on the background that has been explained, a problem formulation can be drawn, namely:

1. How to design and develop an effective chatbot to provide recommendations for sellers of traditional Balinese food?
2. How can implementing chatbots in digital marketing strategies increase customer interaction and satisfaction in searching for and selecting traditional Balinese food sellers?

2. Literature Review

2.1. Definition of Chatbot

Chatbot is an artificial intelligence-based application that can interact with users automatically through a conversational interface (A. Ramaditiya, S. Rahmatia, A. Munawar, 2021). With its ability to answer questions, provide information, and offer solutions, chatbots can function as effective virtual assistants (Sebastian, 2021). Chatbots operate by understanding messages received from users, then processing the words conveyed by users, determining and carrying out necessary commands, and finally conveying conclusions to users (Tiara Eka Putri, 2024).

2.2. Definition of Dialogflow

Dialogflow is a platform created by Google for creating chatbots, which process input in the form of text. This platform allows Dialogflow Agents to use machine learning capabilities to

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process input and provide responses according to needs (I. G. Ryoga, I. M. Sukarsa, A. Agung, 2022). Dialogflow can be integrated into web applications, Telegram, Facebook and Line.

2.3. Definition of Blackbox Testing

Black Box testing is known as behavior-based testing, where the tester has no knowledge of the internal structure or logic of the software being tested. Testers only focus on requirements specifications without needing to analyze the code. Black Box Testing is carried out from the end user's perspective (Jampani, R., Talasu, N., & Manjula, 2016).

2.4. Definition of System Usability Scale

System Usability Scale (SUS) is a questionnaire used to assess the extent of success of a system from the user's perspective. Developed by John Brooke in 1986, SUS is still widely used today because it has various advantages. With results presented on a scale of 0 to 100, SUS is easy to apply without requiring complex calculations. In addition, SUS can be used for free and has been proven to be reliable and accurate even with small sample sizes (A. N. Edi Kurniawan, 2022).

3. Research Method and Materials

The first step of this research is a literature study, where the output is a summary of the literature on digital marketing and the use of chatbots. This stage is important to gain a comprehensive understanding of existing theories and practices related to digital marketing and the use of chatbots. The second stage is research planning and design, the output of which is a research proposal and research design, then continues with collecting initial data about digital marketing that produces output, namely data regarding the digital marketing strategy that has been implemented by the seller. The next stage is chatbot prototype development and chatbot implementation on digital platforms. The digital platform used is called BaKul BOT (Bali Kuliner BOT), which was also developed by researchers. After implementing the chatbot on the digital platform, it continued with testing the chatbot on sample users. After that, an evaluation of chatbot performance and user satisfaction was carried out. Chatbot evaluation is carried out using the black box testing method to determine chatbot performance. The System Usability Scale (SUS) is also carried out to determine the chatbot's performance from the user's perspective so that accurate results can be obtained. After carrying out the evaluation, then the researcher analyzes the data and interprets the results. The final step in the research is to prepare a report based on the results of the research evaluation. This final report is written to share research results in the form of a research article.

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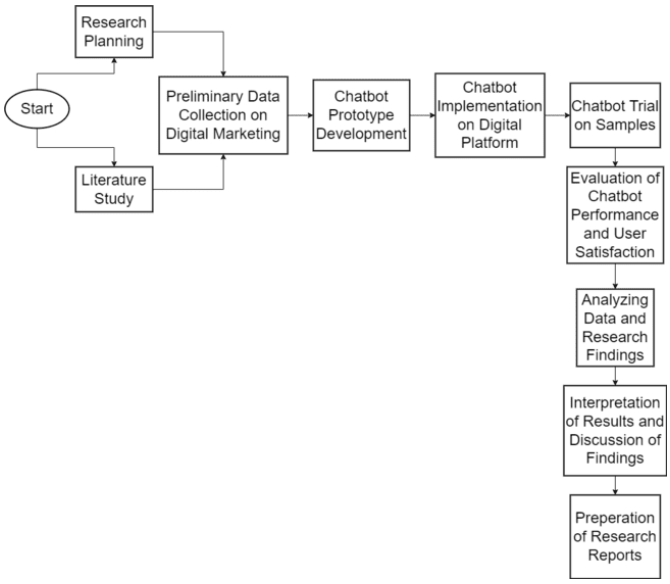

Figure 1: Research Method

4. Results and Discussion

4.1. Initial Data Collection Results

The following are the conclusions from the results of the questionnaire, which was distributed to 30 respondents as consumers of traditional Balinese food:

Recommendations from friends or family are still the main and most satisfying source for consumers looking for traditional Balinese food sellers. Chatbots are almost not used as a source of recommendations, and ignorance about chatbot services is the main reason. In addition, many consumers experience difficulties and feel that the information they receive is not complete enough, so there is a big opportunity for using chatbots by educating consumers about the existence and benefits of this service.

Meanwhile, from the side of sellers of traditional Balinese food, the results obtained are: Traditional Balinese food sellers rely more on Google Maps than social media for digital marketing, with social media use varying and a significant proportion of sellers never using it. No seller has a special team for digital marketing, and sellers themselves rarely update digital content for marketing traditional Balinese food. This happens because of a lack of knowledge or skills in digital marketing and difficulties in creating content. Even if sellers have never heard of chatbots, there is significant interest in learning about and using this technology in their digital marketing strategies.

4.2. Implementation of Digital Platforms

In this step, a previously designed system is created, namely a web-based system. PHP is the programming language used to build this system with MYSQL as the database, and in this step, debugging is also carried out on the system code to find out the results of the coding that has been tried. The following are several screenshots of the implementation digital platform named Bakul BOT.

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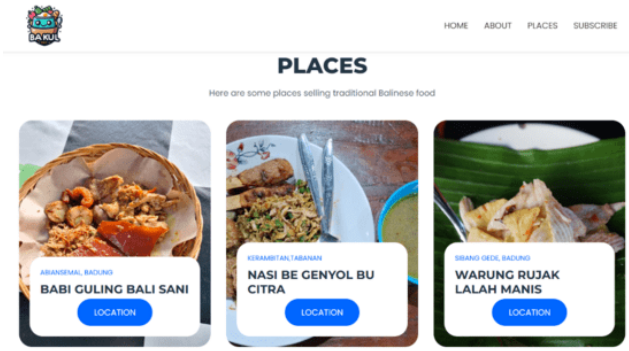

Figure 2: Section Places

The Places section contains several lists of places that sell traditional Balinese food.

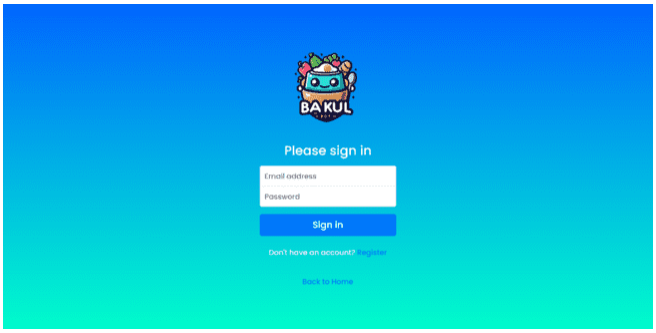

Figure 3: Login Admin Page

The admin login page is a login page where, if the admin successfully logs in, he will be directed to a page for managing places data.

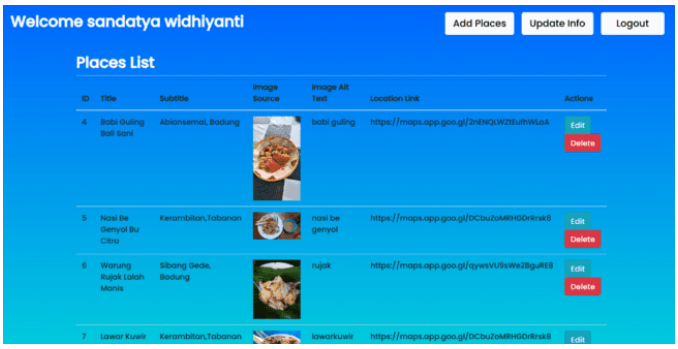

Figure 4: Update Places Page

The update places page is a page used to manage places data displayed in the places section.

4.3. Dialogflow Implementation

Chatbot development uses Dialogflow as the framework. Dialogflow is a Google-made platform for creating chatbots, which process input in the form of text. The platform allows Agent Dialogflow to use machine learning capabilities to process inputs and provide responses as needed (I. G. Ryoga, I. M. Sukarsa, A. Agung, 2022). Dialogflow mainly uses AI-based chatbot methods with a focus on Natural Language Processing (NLP). Natural Language Processing (NLP) is a branch of computer science that focuses on understanding the interaction between humans and computers (Budi, 2020). Natural language is the language that humans use to communicate with each other (A. N. Rohman, E. Utami, 2019). Various methods are applied to understand sentences and user intent in context, from identifying text patterns in user messages to more complex artificial intelligence techniques

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in handling human language (A. Y. Chandra, D. Kurniawan, 2020). Once created in Dialogflow, the chatbot will be integrated into Bakul BOT. The following is a display of the chatbot creation process in Dialogflow.

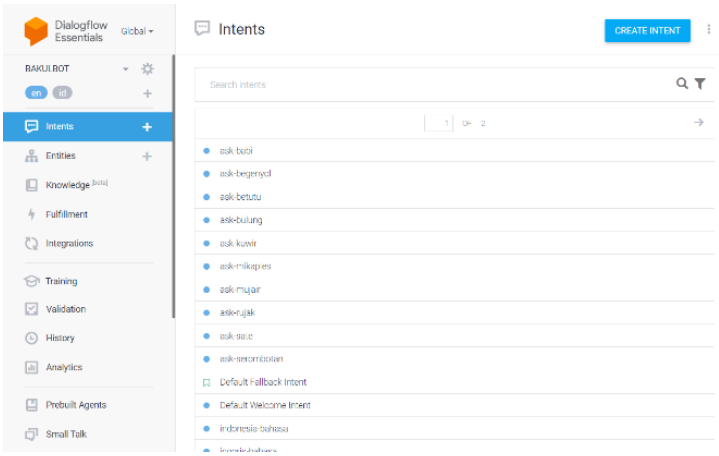

Figure 5: Creating Dialogflow Intents

The image above explains intent in Dialogflow. Intent functions to determine the response or action that the chatbot should take based on user input. The main purpose of intent is to help the system understand the meaning or purpose of the words spoken by the user. Intents enable developers to design richer and more responsive interactive experiences by mapping multiple user intents or objectives.

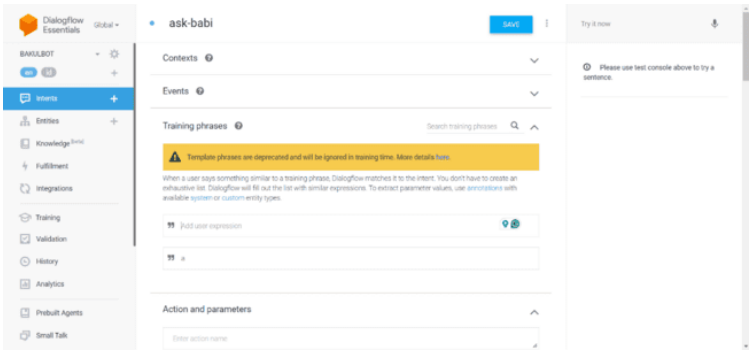

Figure 6: Question-Making Process

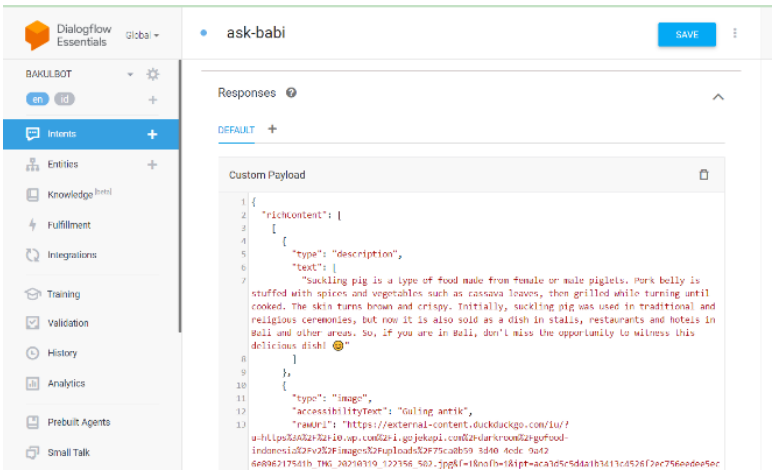

Figure 7: Response Creation

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The image above explains how to create chatbot questions and responses in Dialogflow. Questions are entered manually to train the system to understand various user inputs. Each question will generate a specific response, which is also entered manually. The goal of this process is so that the system can understand questions from users and provide appropriate and accurate responses. The questions and answers to this chatbot are divided into two languages, namely Indonesian and English.

4.4. Chatbot Implementation

The following is a display of the desktop version of the chatbot implemented on the Bakul BOT digital platform.

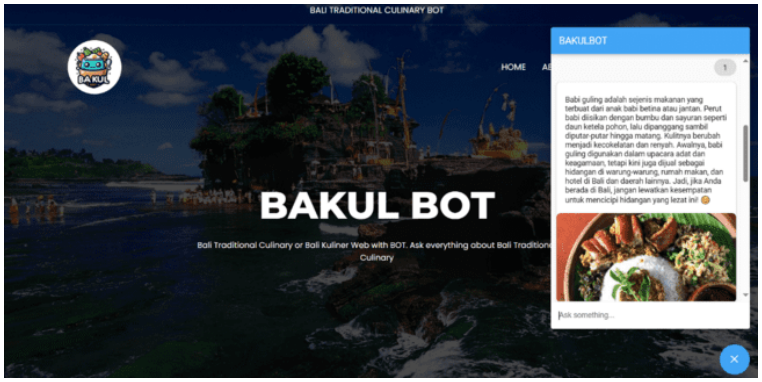

Figure 8: The Implementation of Desktop Version Chatbot

The following is a display of the mobile version of the chatbot implemented on the Bakul BOT digital platform.

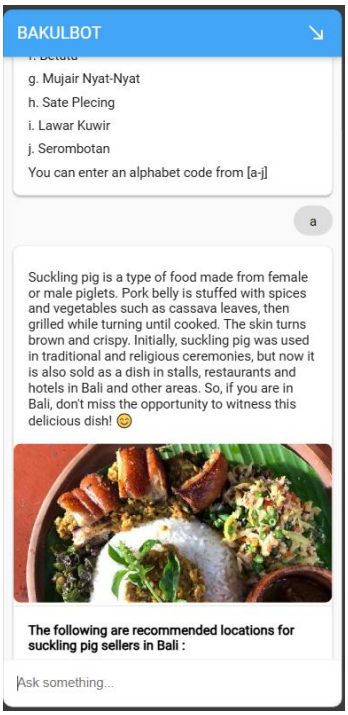

Figure 9: The Implementation of Mobile Version Chatbot

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When the user starts using the chatbot, the chatbot will respond with an opening greeting and a message to choose the language. The user can type in their language choice, whether Indonesian or English. After selecting the language, the chatbot will display a list of traditional Balinese foods, and then the list of foods is selected by entering the food sequence number. After the user enters the food order number, the chatbot will then respond by displaying a description of the food along with the location of the food seller.

4.5. Black Box Testing Results

The following is a functional test plan for the features provided by chatbot.

Table 1: The Result of Blackbox Testing

No	User	Chatbot Respond	Result
1	Opening the Bakul Bot Chatbot	Chatbot Application displays the message "Hello, Welcome to Bakul Bot. Please Select Your Language by Typing it! Choose one : Indonesian/English"	Success
2	Typing one of the languages	The chatbot displays a list of traditional Balinese food menus	Success
3	Enter the number code of traditional Balinese food menus	The chatbot displays a description of the selected food along with recommendation of the food sellers	Success
4	Click on the link of recommendation traditional balines food sellers	Navigate to Google Maps	Success

4.6. System Usability Scale (SUS) Test Results

In this research, 35 respondents' data will be used, consisting of 30 Balinese people or consumers and 5 traditional Balinese food sellers. The number of 35 respondents is not an obstacle because the SUS method can be applied with a small sample size (Lewis, 2006). System Usability Scale (SUS) is a questionnaire used to assess the extent of success of a system from the user's perspective. Developed by John Brooke in 1986, SUS is still widely used today because it has various advantages. With results presented on a scale of 0 to 100, SUS is easy to apply without requiring complex calculations. In addition, SUS can be used for free and has been proven to be reliable and accurate even with small sample sizes (A. N. Edi Kurniawan, 2022). Here are some forms of assessment in SUS:

- SUS Score Percentile Rank

  Percentile rank compares raw data from the current study with previous research, where a SUS score of 68 is the average. Scores above 68 are considered above average, while those below 68 are below average (Sauro, 2011). The results are graded as follows:
  Grade A: 78.9 – 100 (Excellent)
  Grade B: 72.6 – 78.8 (Good)
  Grade C: 62.7 – 72.5 (Fair)
  Grade D: 51.7 – 62.6 (Poor)
  Grade F: 0 – 51.6 (Very Poor)
  The application's SUS score is categorized based on these grades to determine its usability.

- Acceptability and Adjective Rating
  Acceptability classifies SUS scores into three categories: not acceptable (unusable), marginal (usable but needs improvement), and acceptable (fully functional).
  Adjective rating converts SUS scores into six levels of usability: worst imaginable,

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poor, OK, good, excellent, and best imaginable baik (Bangor, A., P. Kortum, 2008).

- Net Promoter Score (NPS)

  NPS measures user satisfaction and loyalty based on the likelihood of recommending the product (Sauro, 2011):

  Promoters (78.9 – 100): Highly satisfied, likely to recommend.
  Passives (62.7 – 78.8): Satisfied but not loyal, may use the app again.
  Detractors (0 – 62.6): Unsatisfied, likely to discourage others from using the app.

Table 2: System Usability Scale Statement

No.	Statement	1	2	3	4	5
1	I find this application easy to use.					
2	I feel like I can't solve the problem quickly using this app.					
3	I found this app easy to interact with					
4	I feel this application is inconsistent throughout use					
5	I feel this application is very helpful in providing recommendations of traditional Balinese food sellers					
6	I find this application very complicated.					
7	In my opinio, this application will be easy to use by beginners.					
8	I feel that I need to learn a lot of things before I can use this application					
9	I am interested to use this application again.					
10	I will feel like I don't understand after using this application					

The table above displays the results of respondents' answers, which will be calculated based on the following conditions:

a. For odd statements, the respondent's score is reduced by 1.
b. For even statements, the respondent's score is used to subtract the number 5.
c. The scores from each respondent are added up and multiplied by 2.5 to produce a value between 0 and 100.
d. After determining the score of each respondent, the average score can be obtained by adding up all the scores and dividing it by the number of respondents.
e. After getting the average results, the grade of the average can be determined according to several forms of assessment in the SUS (Saputra, 2019).

Table 3: Final Calculated Score

RESPONDENT	SUS STATEMENT										TOTAL (TOTAL X 2,5)
	1	2	3	4	5	6	7	8	9	10	
R1	3	4	3	4	4	4	3	4	4	4	92,5
R2	4	3	4	3	4	4	3	3	4	3	87,5
R3	2	3	3	3	4	4	3	2	3	3	75
R4	4	3	4	3	4	4	3	3	4	3	87,5
R5	4	4	4	4	4	4	4	3	4	4	97,5
R6	3	3	4	3	4	4	4	3	3	3	85
R7	4	1	3	3	4	1	3	1	4	1	62,5
R8	4	4	4	4	4	4	4	4	4	4	100
R9	3	3	1	0	3	3	4	2	4	3	65
R10	2	1	3	3	2	2	2	1	3	3	55
R11	4	4	4	4	4	4	4	4	4	4	100
R12	3	0	4	4	3	4	3	2	4	4	77,5

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RESPONDENT	SUS STATEMENT										TOTAL (TOTAL X 2,5)
	1	2	3	4	5	6	7	8	9	10	
R13	4	0	4	4	4	4	4	2	4	4	85
R14	4	4	4	4	4	4	4	4	4	4	100
R15	3	4	3	4	3	4	3	3	3	4	85
R16	4	4	4	4	4	4	4	4	4	4	100
R17	3	1	4	3	4	3	4	3	4	3	80
R18	4	4	4	4	4	3	4	4	4	4	97,5
R19	4	4	4	3	4	4	4	4	4	4	97,5
R20	3	4	4	4	4	4	4	3	4	0	85
R21	4	2	4	3	4	4	3	1	4	3	80
R22	3	3	3	4	3	4	4	3	3	3	82,5
R23	4	2	2	2	3	3	3	3	3	3	70
R24	4	3	4	3	3	3	3	4	4	3	85
R25	4	4	4	4	4	4	4	0	4	4	90
R26	3	3	2	3	4	3	2	3	3	3	72,5
R27	4	3	4	3	2	3	2	3	4	3	77,5
R28	4	3	3	3	3	3	3	2	3	3	75
R29	3	3	4	2	3	3	2	2	3	4	72,5
R30	3	2	3	3	4	4	4	3	3	4	82,5
R31	4	4	4	4	4	4	4	4	4	4	100
R32	4	4	4	4	4	4	4	4	4	4	100
R33	4	3	4	3	4	3	4	0	4	4	82,5
R34	3	0	4	0	3	1	3	1	3	1	47,5
R35	3	3	3	3	3	3	2	3	3	3	72,5
AVERAGE SCORE											83

After testing 35 respondents, it was discovered that the highest score obtained was 100, the lowest score was 47.5, and the score that appeared most often was 100, then obtained an average score of 83. After getting the average score, the next step was to interpret the results of the score calculation. SUS into several forms of SUS assessment:

1. Based on the SUS Score Percentile Rank, a score of 83 gets a grade A, which shows that the application implementation was successful and had very good performance.
2. Based on Acceptability, the SUS Score obtained from this research is 83, which is within the range considered acceptable. This shows that the use of the Bakul BOT application has been accepted by users.
3. Based on the Adjective Rating, the SUS score obtained from this research is 83, which on the Adjectives scale is included in the Excellent category. This shows that the use of the Bakul BOT application is very good, which means this application is suitable for use, and all menus in the application function well.
4. Based on the Net Promoter Score, the SUS score obtained from this research is 83, which when linked to the NPS classification, falls into the Promoter category. This shows that respondents in this study are very likely to recommend the Bakul BOT Application.

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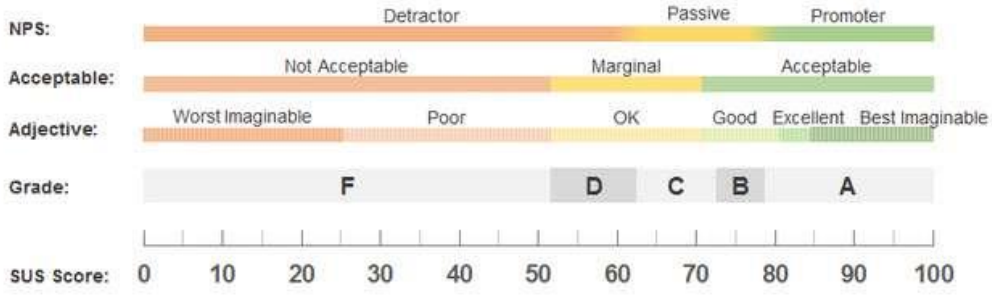

Figure 10: SUS Scores on Various Scale

5. Conclusion

Based on the analysis and implementation that has been carried out, this research has succeeded in developing a chatbot application for recommendations for traditional Balinese food sellers. This application is implemented through the Bakul BOT digital platform using the Dialogflow framework. The results of this research show that this chatbot can help consumers of traditional Balinese food in looking for recommendations for sellers of traditional Balinese food, including a brief description of the food and the location of the seller. Based on Blackbox testing, the results obtained were that all functions and features in the Bakul BOT application could run according to user expectations. Then, the System Usability Scale test results from 35 respondents' data showed an average score of 83. Based on the SUS Score Percentile Rank table, shows that this application is at grade A, which indicates the score is above average and classified as good. In the Adjectives Rating, the use of the Bakul BOT application according to respondents is included in the Excellent category. Based on acceptability, respondents can generally accept this application. On Net Promoter Score (NPS), this app is in the Promoter classification, which means respondents are most likely to recommend this app to their peers. Therefore, it can be concluded that the Bakul BOT application is easy to use and well-received by users, especially regarding its functionality and features.

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