

Paper 6

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Android Based Chatbot and Mobile Application for Tour and Travel Company

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Abstract

² Mobile Applications are rapidly growing segment of global mobile market. This paper involves an application for the android base operating system for a travel agent which will conduct booking transactions for train tickets, airline tickets, hotel, theme park, and tour. This application is integrated with a chatbot, an instant messaging applications. Chatbot is a computer program that can communicate with users. The purpose of chatbot is to support and scale business teams in their relations with customers. This chatbot can be placed in Facebook Messenger, telegram and own website, so it gives the potential to reach a bigger audience. Customers do not need to install new applications. The customer just simply adds chatbot as a friend and starts transacting with a conversation, without needing to understand the intended user interface in an application. By using chatbot, the company can also shorten sales transactions. Company can also broadcast information directly to customers easily. In this paper, we first discuss about chatbot and mobile application system design. Finally we will discuss about the system implementation.

Keywords-chatbot; flight; hotel; tour and travel; theme park; tour; train

1. Introduction

Nowadays, the internet and mobile devices have changed how one interacts with others as well as how one interacts with a company [1]. Internet and mobile devices have increased the use of mobile e-commerce (m-commerce), with m-commerce users can perform e-commerce activities using mobile devices [2]. Increased use of internet and smartphones allow companies to interact directly with corporate customers [3].

In line with the development of m-commerce, the use of instant messaging applications is also increasing. Therefore, many companies such as airlines, fashion, and insurance companies provide customer service facilities through instant messaging applications. Through instant messaging applications, companies can conveniently communicate with customers [1]. Chatbot or conversational agent can be used to automate the interaction between the company and the customer via instant messaging applications. Chatbot is a computer program that can communicate with users. Chatbot widely used to facilitate customer service. However, chatbot is currently growing in the commercial direction. Chatbot can respond in the form of text, recommendations, updates, links or buttons to call, moreover customers can also purchase products by selecting from the carousel in the chatbot interface [4][5]. Chatbot can also facilitate the sales process, ordering process, and delivery process [6]. Chatbot is also free from the platform because chatbot uses the infrastructure of the instant messenger app so the application install process is no longer needed [6]. Moreover the use of chatbot is cheaper than using someone else's services to handle customer [1].

Currently, tour and travel companies only rely on websites and telephone or chat to make sales transactions. Website used for sales transaction is not a responsive website, so the customer must be in front of a computer to be able to conduct transactions. Beside the website, transactions must be done by phone or chat, but the company cannot always be ready to be contacted.

Therefore it takes an m-commerce application that is easy to carry so that customers can make reservations transactions wherever and whenever. In addition, it is also required a chatbot integrated with

instant messaging applications so that customers do not need to install new applications. By using chatbot the company can also shorten sales transactions conducted.

2. Review of Literature

2.1. Chatbot

Chatbot or also known as bot or chatterbots or conversational agents is a computer program that can do a conversation with humans via voice or text [7]. Nowadays, the design of chatbot has developed sophisticatedly. Chatbot is even used in some sectors such as education, e-commerce, entertainment, and the public sector. Some chatbots use some sophisticated Natural Language Processing (NLP) systems [8], but there are also chatbots that use easier systems such as searching for keywords from inputs and then generating replies with similar keywords or by searching almost identical word patterns in a database. Chatbot is currently used in virtual assistants like Google Assistant, and is widely used in corporate applications or websites. Chatbot also utilized various instant messaging applications like Facebook Messenger and Telegram.

2.2. Representational State Transfer (REST)

One form of interaction between the user and the Internet is through web application by using a web service that uses the concept of Service Oriented Architecture (SOA). One of the frameworks used in web services is Representational State Transfer or often called REST [9]. A RESTful web service uses Universal Resource Identifiers (URIs) to access existing resources in the web service. Each interaction with a resource is stateless, meaning that each request contains the state or state required to handle the request either inside the URI, query-string parameters, request headers or request body. In addition each response also contains the status or state of the resource either in the body, response codes, or response headers [10].

3. System Design

3.1. Chatbot System Design

The system design of the chatbot application can be seen in Fig. 1. This chatbot application using a MySQL database and connected to a web service that has been provided by the company. In addition, this chatbot runs on Facebook Messenger and using Facebook API to receive and send data to user. The database is used to store data of user login, destination city, airports, stations, airline names, train names, and countries. Web services are used to search, order, and issue transaction.

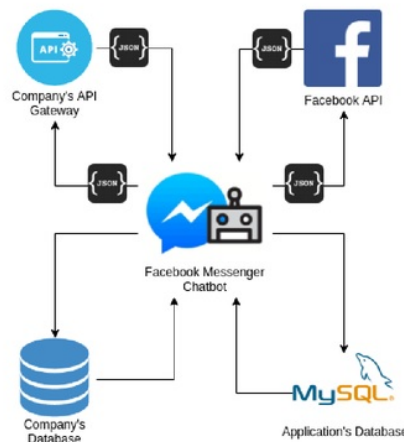


Fig. 1 Chatbot System Design

3.2. Mobile Application System Design

The system design of the mobile application can be seen in Fig. 2. This mobile application using MySQL database and connected to a web service that has been provided by the company. The database is using to store data of user login, destination city, airports, stations, airline names, train names, and countries. Web services are used to search, order, and issue transaction.

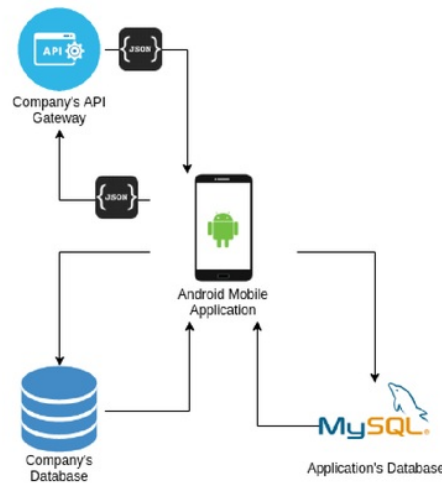


Fig. 2 Mobile Application System Design

4. System Examination

4.1. Chatbot

4.1.1. Login Chatbot

Login in chatbot needs username and password that has been given by the company. Chatbot login form can be seen in Fig. 3. After login, the user will be redirected to the main page of chatbot.

The screenshot shows a web browser window with the address bar containing a URL starting with 'authorize?account_linking_token=ARRhgF5F2iCRE|UHGiBpybROEpij6Q/Rk_nimW_Yk'. The main content area is titled 'Chatbot Authorization'. It features two input fields: 'Username' with the placeholder text 'username' and 'Password' with the placeholder text 'password'. Below the password field is a blue 'Sign In' button.

Fig. 3 Chatbot Login Form

4.1.2. Search Flight or Train in Chatbot

To search flight or train in chatbot, the user need to enter keywords such as the city or airport or station code of origin and destination of the trip sought. In Fig. 4 the user entered the sentence 'surabaya singapore 1 orang'. Because the date of departure data is not inputted then chatbot will ask for it. Users can also filter data to determine the selected trip. Views of search results can also be seen in Fig. 4 and Fig. 5.

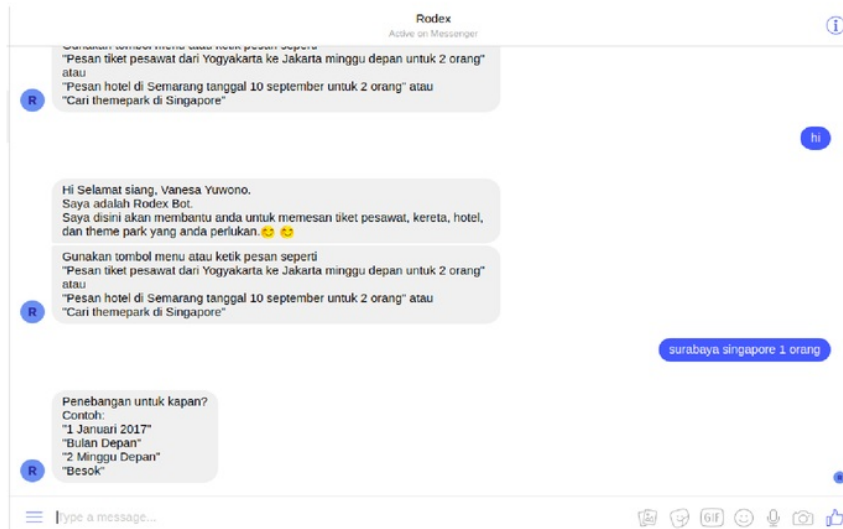


Fig. 4 Form of Search Flight

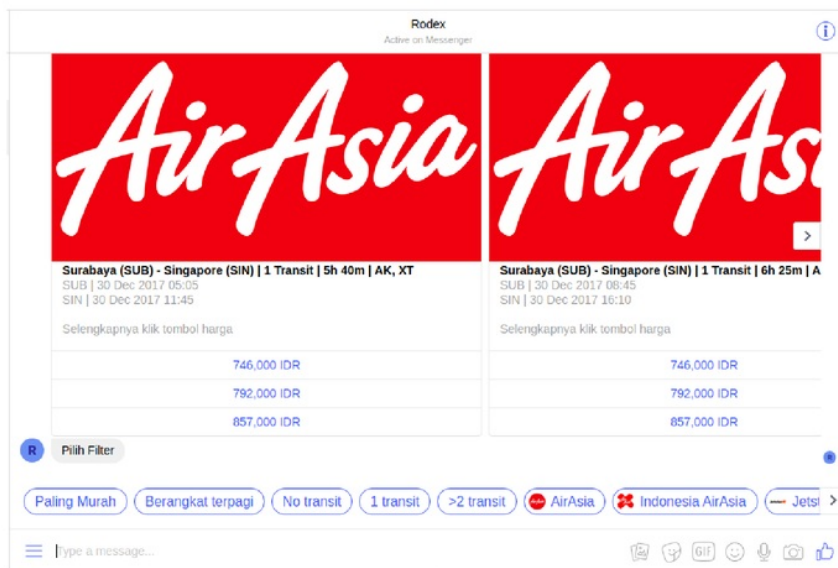


Fig. 5 Result of Search Flight

4.1.3. Book Flight or Train in Chatbot

After searching the flight or train, users can select the desired trip by pressing the price button on the search results view. After that, chatbot will display the details of the trip as shown in Fig. 6. Users can continue the order by pressing the 'yes' button.

After ordering, chatbot will display questions about the booker and all passenger that can be seen in Fig. 6. If all data is filled correctly chatbot will display the ordering result.

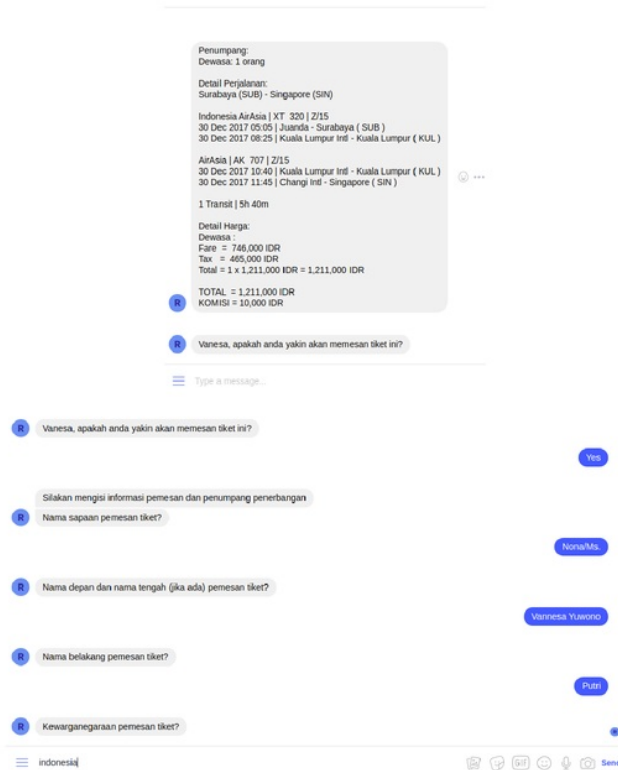


Fig. 6 Flight Detail and Passenger Form

4.1.4. Issue Flight in Chatbot

To issue a flight transaction the user can choose the 'issue flight' menu, then the user will be instructed to fill in the order number of the flight reservation. If the user has sufficient balance to make a payment then chatbot will issue the order as can be seen in Fig. 7.

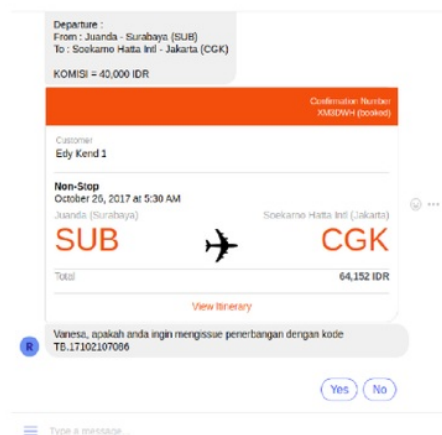


Fig. 7 Issue Flight

4.1.5. Search Hotel or Theme Park in Chatbot

To perform a hotel search, the user can enter keywords such as city or hotel or theme park name sought. If the user input is incomplete or unrecognized then chatbot will ask those data. If the data is complete, chatbot will search the hotel or theme park.

4.1.6. Book Hotel or Theme Park in Chatbot

After searching for hotel or theme park, users can select the desired hotel or theme park by pressing the price button on the search results view. After that, the chatbot will display details of the hotel or theme park. Users can continue ordering by pressing the 'yes' button.

After ordering, chatbot will display questions about the booker and all customer that can be seen in Fig. .6 If all data is filled correctly chatbot will display the ordering result.

4.1.7. Book Tour in Chatbot

To make a tour package reservation, user can choose tour menu, then chatbot will show all tour packages available. Users can choose the tour package by pressing the price button displayed.

After ordering, chatbot will display questions about the booker and all customer that can be seen in Fig. .5 If all data is filled correctly chatbot will display the ordering result.

4.1.8. Search Promo in Chatbot

To view the ongoing promo, the user simply press the promo button contained in the main menu. Then chatbot will display all promos that apply at the time.

4.2. Mobile Application

4.2.1. Login User Mobile

Login in the mobile application is done by using the username and password that has been given by the company when the user enroll. The mobile application login form can be seen in Fig. 8. After successful login, the user will be redirected to the main page of the mobile application.

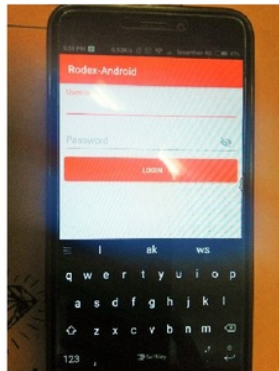


Fig. 8 Mobile Login Form

4.2.2. Mobile Main Menu

Mobile main menu is the start page of the mobile application. The page view can be seen in Fig. 9. There are 8 types of menus that can be selected by the user, such as the flight menu, train menu, hotel menu, theme park menu, tour menu, promo menu, customers menu, and logout menu.

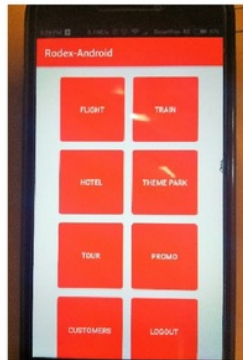


Fig. 9 Mobile Main Menu

4.2.3. Search Flight or Train in Mobile

To perform search flight or train ticket users can select the flight or train menu then press the search / book button. After that users will be guided to the search page form to fill in search data. The search page form can be seen in Fig10. After the user input the data correctly, the user will be taken to the search result page. Search flight result view can be seen in Fig. 10.

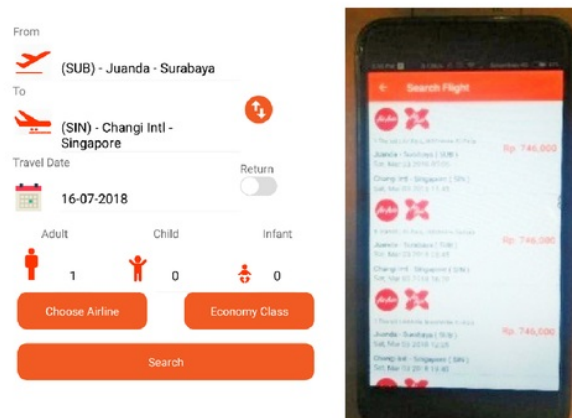


Fig. 10 Search Flight Form and Result

4.2.4. Book Flight or Train in Mobile

After searching the flight or train, the user can choose their desired trip by pressing the list view. Then, they will be redirected to the detail page showing the details of the trip. Detail flight page view can be seen in Fig. 11. To make a reservation the user can press the booking button and fill the booker and passenger data which can be seen in Fig. 11 After all data is filled correctly, user can make a reservation by pressing confirm book button. Then the user will be redirected to the booking page to see the order's result and status.

4.2.5. Issue Flight in Mobile

To issue a flight, user can choose flight menu then issue flight. After that the user will be led to the issue flight form page where the user must enter the order number they want to issue. The issue flight form will show to user all information about the flight booking. User usually use to do re-checking about their booking.

Booker Information

*Title

*First Name:

*Last Name:

*Contact Email:

*Phone:

+62

*Nationality

Do you book for yourself?

Adult Passenger (12 years old and older)

Adult 1

Fig. 11 Passenger Form

4.2.6. Search Hotel or Theme Park in Mobile

To perform search hotel or theme park users can select the hotel or theme park menu then press the search / book button. After that users will be guided to the search page form to fill in search data. The search page form can be seen in Fig10. After the user input the data correctly, the user will be taken to the search result page.

4.2.7. Book Hotel or Theme Park in Mobile

After searching the hotel or theme park, the user can choose their desired hotel or theme park by pressing the list view. Then, they will be redirected to the detail page showing the details of the hotel or theme park. To make a reservation the user can press the booking button and fill the booker and passenger data which can be seen in Fig. 11. After all data is filled correctly, user can make a reservation by pressing confirm book button. Then the user will be redirected to the booking page to see the order's result and status.

4.2.8. Book Tour in Mobile

To make a tour package reservation, user can choose menu tour. After that, the app will display all the tours that can be ordered. To order the tour user simply select the desired tour and fill the booker and customer data which can be seen in Fig. 11. After all data is filled correctly, user can make a reservation by pressing confirm book button. Then the user will be redirected to the booking page to see the order's result and status.

5. Conclusion

From the results of the questionnaire, it can be concluded that:

1. The Android mobile application is responsive on various screen of Android smartphone.
2. All in-app features of Android mobile application and chatbot can be run.
3. Chatbot and mobile application can be used to help the tour and travel company's sales transaction whenever and wherever.

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