Automatic Screen Reader Using JITBIT for Sending Message on WhatsApp Messenger

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ARTICLE INFO	ABSTRACT
	The current sales trend uses more online transaction concepts. The use of digitalization in online transactions and marketing is very important for businesses in increasing sales results to the maximum and on target. One way to increase this is by promoting on social media such as WhatsApp. Limited consumer contact makes it difficult for business actors to carry out promotions, so a database of consumer contacts is needed that can be maximized. In addition, problems in the process of sending manual messages can be overcome by using automatic message-sending actions so that promotions can be carried out automatically and quickly. The sending process is assisted by an "IF-THEN" statement and a screen that can recognize color conditions so that the automatic action can be operated on other services. The main objective of this research is to create a service that can accommodate consumer contacts by sharing contacts between business actors and being able to send messages automatically on WhatsApp by utilizing JITBIT. The results of this study prove that using JITBIT can send messages automatically on WhatsApp and can be operated on other services such as web-based applications. The results of the tests that have been carried out show that the accuracy level of JITBIT can send messages 100% with a delivery speed of 12 – 12.39 seconds/message.

1. INTRODUCTION

Hootsuite in its report explains that the level of use of social media in Indonesia is very high, namely almost 9 out of 10 internet users in Indonesia use the internet for social media [1]. The ease of marketing through social media makes business actors prefer to use social media for marketing [2], [3], even though most of them only focus on using social media only for marketing [4]. In addition, social media marketing can also increase sales volume by more than 100% if the information is updated every day and consistently based on surveys that have been conducted [5] [6]. Currently, business actors prefer to use WhatsApp Messenger as their main marketing because it is common for WhatsApp to be used in the community and is adaptable to the social culture of its use in communicating [7][8]. WhatsApp makes it easy for contact information to start a conversation, which also causes business people to use it a lot in carrying out their business activities.

The lack of features that facilitate sales activities on WhatsApp, makes it difficult for business actors to carry out sales and promotion activities that are carried out continuously because basically, the use of WhatsApp is only for communication [9]. However, the current development of WhatsApp has presented a new service called WhatsApp Business that supports sales using WhatsApp. One of the features that has the most impact is sending messages in bulk, but there are still obstacles, namely only recipients who have added the sender's WhatsApp contact can receive the message [10]. Therefore, a program is needed that can replace the activities carried out by business actors for sending messages on WhatsApp so

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that promotions can be carried out more easily. Automated message [11] delivery with computer programs is a solution that can be used to overcome this problem [12]. The program can perform actions on the Keyboard and Mouse automatically and can be run repeatedly. However, this automation still has to be changed when sending different messages, so it is still semi-automatic. Direct use is not a solution for business actors, so they need an additional service to facilitate access to this automation. This automation must be able to detect commands given by the user because the automation cannot receive data that is used as a command signal.
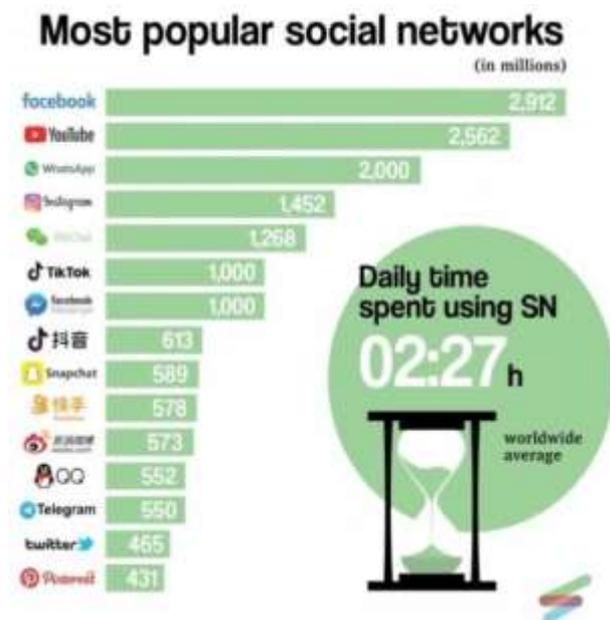

Figure 1. Most popular social media 2022 [13]

The lack of features that facilitate sales activities on WhatsApp makes it difficult for business actors to carry out sales and promotion activities that are carried out continuously because basically, the use of WhatsApp is only for communication [9]. However, the current development of WhatsApp has presented a new service called WhatsApp Business that supports sales using WhatsApp. One of the features that has the most impact is sending messages in bulk, but there are still obstacles, namely only recipients who have added the sender's WhatsApp contact can receive the message [10]. Therefore, a program is needed that can replace the activities carried out by business actors for sending messages on WhatsApp so that promotions can be carried out more easily. Automated message delivery with computer programs is a solution that can be used to overcome this problem. The program can perform actions on the Keyboard and Mouse automatically and can be run repeatedly. However, this automation still has to be changed when sending different messages, so it is still semi-automatic. Direct use is not a solution for business actors, so they need an additional service to facilitate access to this automation. This automation must be able to detect commands given by the user because the automation cannot receive data that is used as a command signal.

Research [14] describes a notification system to spread messages or Whatsapp Gateway. The development of this system consists of fingerprint devices, sender engines, information system management, and WhatsApp Gateway applications. The process of storing fingerprint data which is checked by this fingerprint machine will capture the date and time. After that, the sending machine will check the data periodically and send the data to the WhatsApp Gateway application via the API. The verification and authentication process is carried out to validate the mobile number or WhatsApp account before sending the notification. Another use of the WhatsApp API is used as a medium for room monitoring information [15]. In this case, we use the Yowsup Library with Python programming. Yowsup Library requires verification of Short Message Service (SMS) and configuration according to the number provider used. The need for additional APIs to connect with other programs/services because this Yowsup Library does not provide a path for data exchange or storage. Research [16] presents a method for conducting automated surveys using WhatsApp. This method combines the WhatsApp Business API and the Twilio and Google platforms for designing survey flows, sending, and receiving survey messages automatically, and facilitating integrated data processing. The integration of WhatsApp as a communication medium with

IoT devices in the form of a Smart Garage has also been carried out as an effort to optimize the delivery of information [17].

In this research, Jitbit is a solution to overcome automation that can recognize commands from users. Jitbit is capable of performing "IF-THEN" statements which can be used as command signals to the user. One of the "IF-THEN" statements available on Jitbit is an automatic screen reader. The use of screen readers on Jitbit is applied as an intermediary to recognize orders from users so that they can automate sending on WhatsApp. The implementation of automation and screen readers is aimed at managing business actors' contacts and sending messages in large quantities automatically. In addition, the result of this study can measure the level of accuracy and speed of message delivery.

2. METHOD

The methodology in this study is illustrated in Figure 2. Starting with designing the service architecture, the mechanism for collecting and using contacts, the Jitbit flow mechanism, and the Jitbit implementation. The final stage is testing to test the effectiveness of the Jitbit implementation.
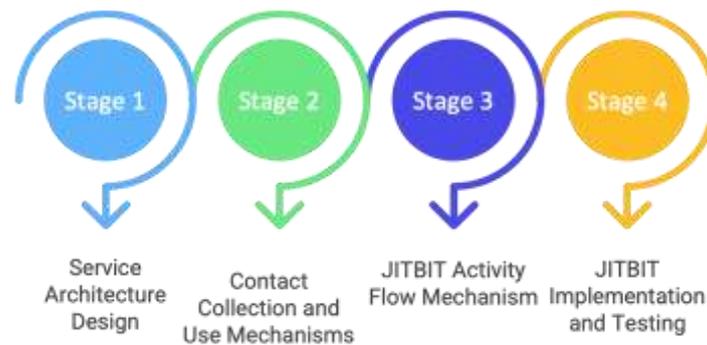

Figure 2. Methodology

2.1 Website / Service Architecture

The architecture in Figure 3 describes the website access by clients, as well as the interaction between the website server and the Jitbit server. Clients can access the website through a connection connected to the internet and access to the Jitbit server is only done through the website server. The Jitbit server receives data from clients through the website server by reading the colors according to the commands provided by the website server, the screen reader method is used for the needs of sending data to the Jitbit server. The website server receives response data from the Jitbit server through direct input automatically on the website page.
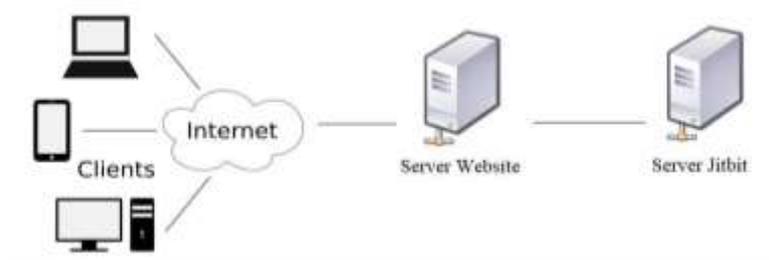

Figure 3 .Website / Service Architecture

2.2 Contact Collection and Use Mechanisms

In Figure 4 all contact data is collected in one database that comes from the contact data of each user. The data is obtained by importing through a website that comes from contacts on the mobile device used.
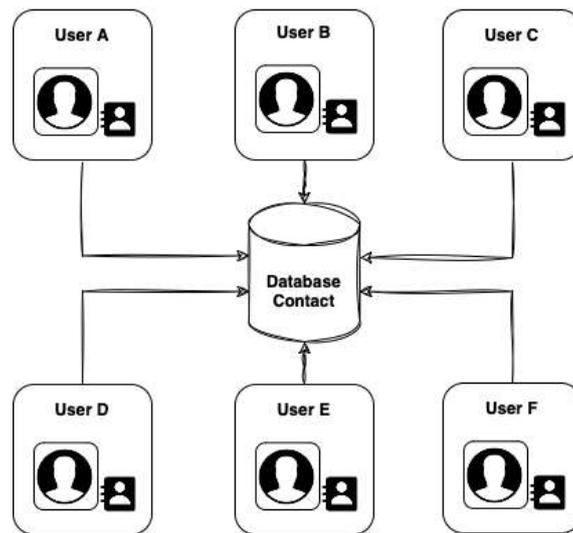
Figure 4. Mechanism of Collection of Contact Data to Database

Import results can be changed in privacy so that some contacts can be restricted by other users. Furthermore, in Figure 5 users can send messages to all contacts with public privacy. This can be done by users who have already imported contact data into the website. Users who do not have contact data with public privacy, cannot use the contact database and cannot send messages.
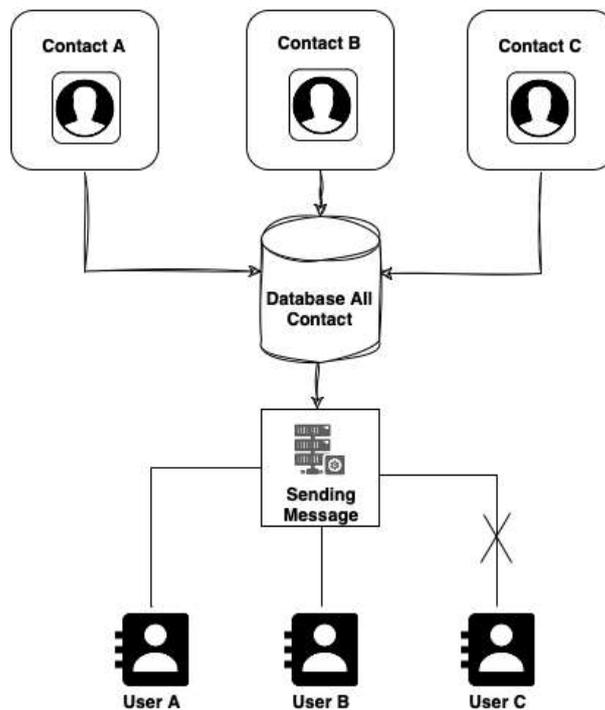

Figure 5. Messaging Mechanism

2.3   Jitbit Activity Flow Mechanism

Figure 6 describes the jitbit flowchart which is a flow of activities carried out as an automatic screen reader.
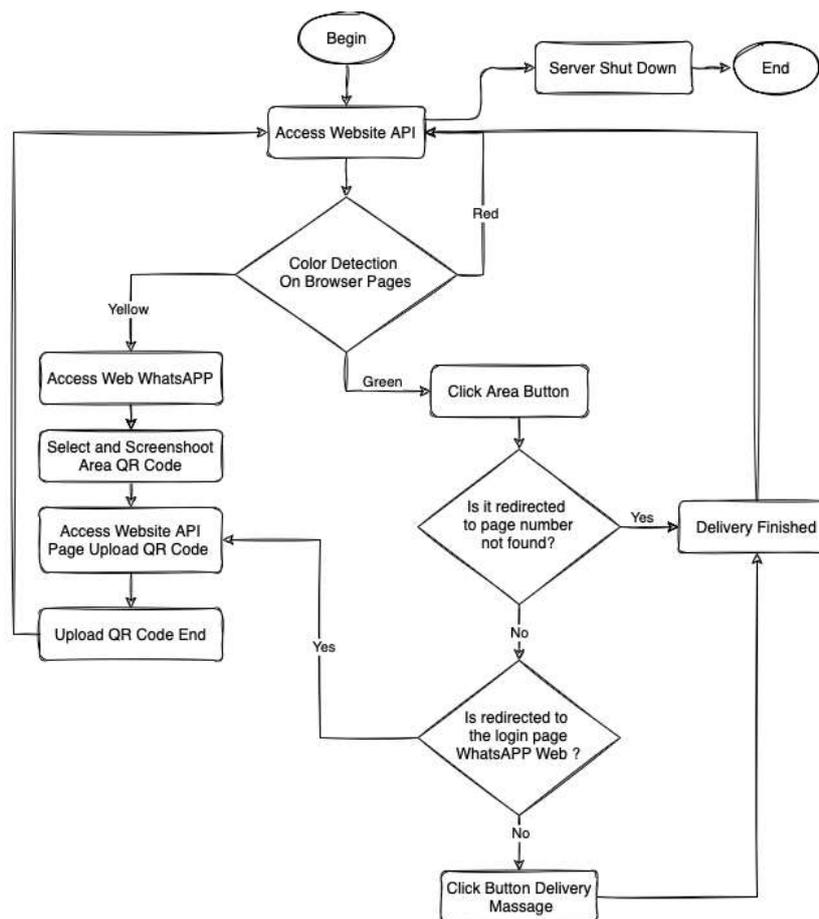
Figure 6. Flowchart Jitbit Macro Recorder

Jitbit flowcharts include:
1. The Jitbit server will access the website with a special page that displays data from users by displaying colors as a command signal that must be carried out by Jitbit.
2. If the color displayed is yellow, it means that on the Jitbit server, the WhatsApp web is still not logged in, therefore Jitbit will take a screenshot of the QR Code area and then upload it to the website so that users can log in on the Jitbit server.
3. If the color displayed is green, Jitbit will send a message by clicking the button on the website page, if it is redirected to the web. WhatsApp page "number not found" then the delivery is complete, will continue if the recipient number is found and the situation is logged in, then Jitbit will do "enter" if it finds the "Send Message" icon.
4. If the color displayed is red, Jitbit will continue to check until the color displayed is yellow or green.

The flow chart in Figure 7 is the flow of users' WhatsApp login activity and responses from the website and Jitbit. This stream includes:

1. Users will be directed to log in first.
2. Perform login status.
3. If the status is not logged in, the website (service) will change the color on the command page to yellow.
4. Jitbit will respond and take a screenshot of the QR code area and then upload it.
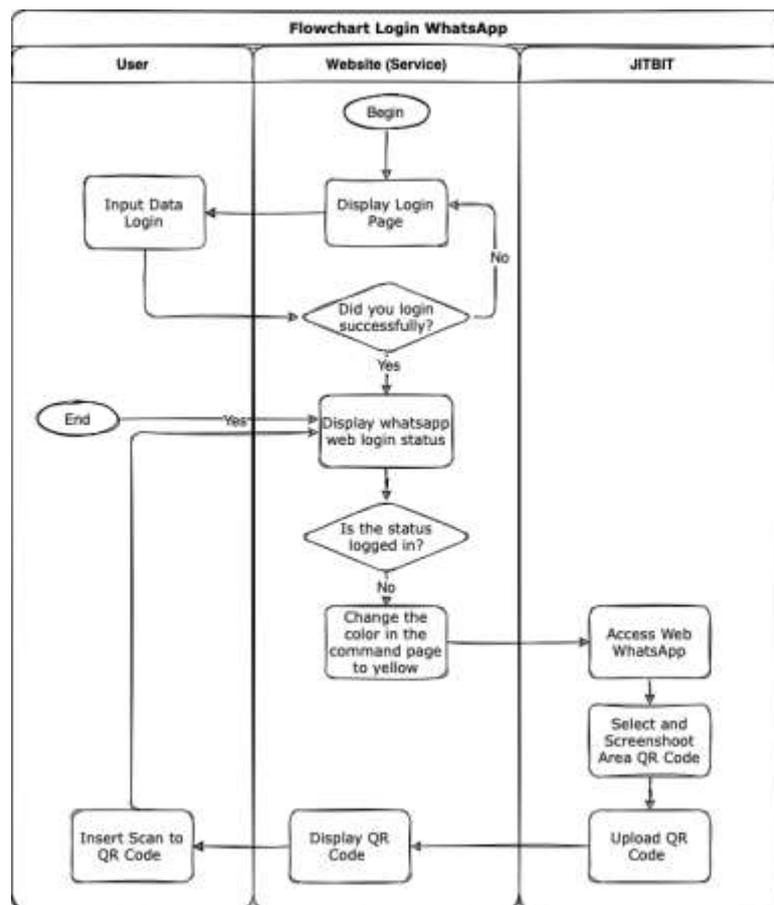5. The user will scan the QR code, and the WhatsApp login is successful.

Figure 7. Flowchart Login

The flow chart in Figure 8 is the flow of message delivery activities from users as well as responses from the website and Jitbit. This stream includes:

1. Users will be directed to log in first.
2. On the home page of the website, the user selects a contact and inputs the message to be sent.
3. The message that has been inputted will be received by the website and displayed on a special page for the Jitbit server.
4. On this Jitbit server special page, Jitbit will repeat to detect the command color.
5. Jitbit will act as sending messages automatically as shown in Figure 5.
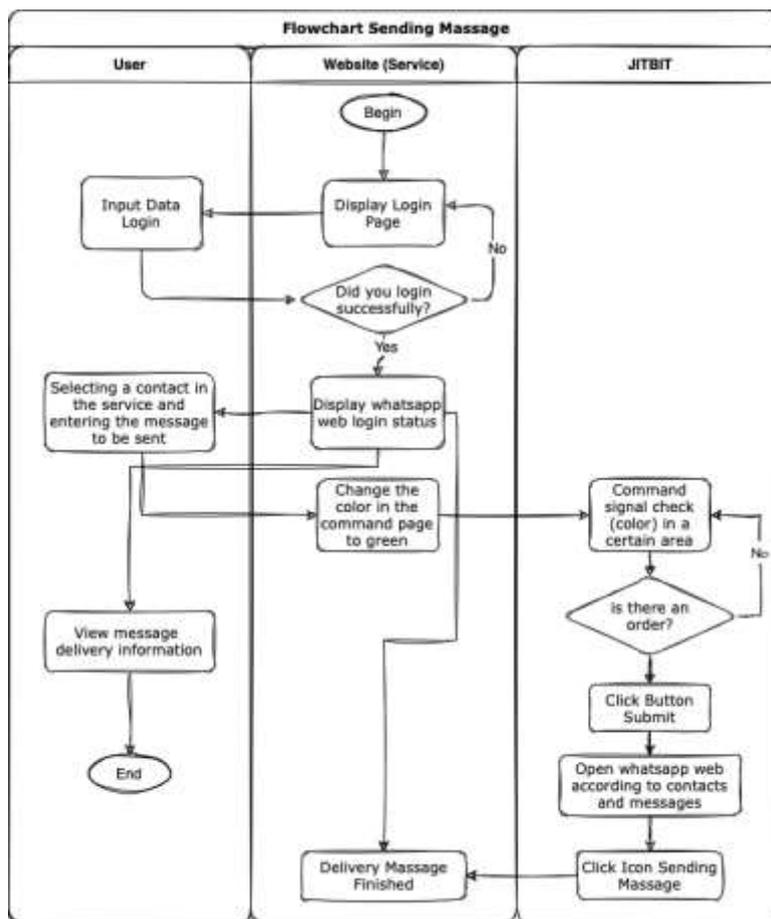
Figure 8. Message Delivery Flowchart

2.4   Jitbit Implementation and Testing

Implementation and testing of the screen reader program for controlling automatic message delivery using Jitbit are done by running the program within a certain period and calculating the accuracy and speed of sending WhatsApp messages. Messaging control screen readers can be done on other services such as websites.

3.   RESULTS AND DISCUSSION
3.1   Website Implementation

The results of this study are a website that can send WhatsApp messages using the contacts contained in the database. This website service is divided into 3 based on its use, namely users, admin, and Jitbit. The list page in Figure 8 serves to select send sets, private WhatsApp settings, and login status information. Set send is the user's choice to use private or public WhatsApp. The login status information display contains the login status display, QR Code, API key status as well as login and logout functions. The contact data page in Figure 9 serves to view statistical information on message delivery. Figure 10 describes the Manage User Data Page The manage user data page is used to modify user data.
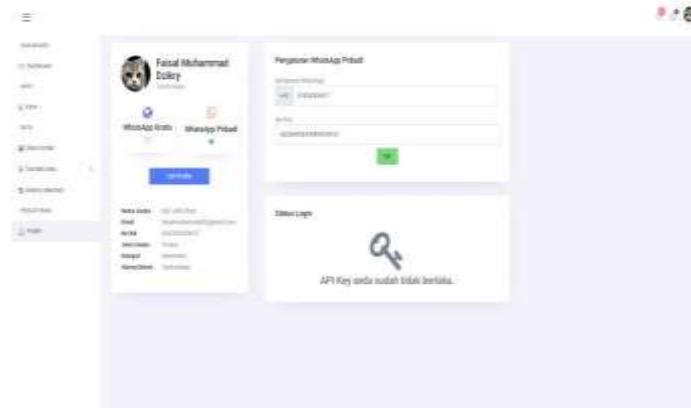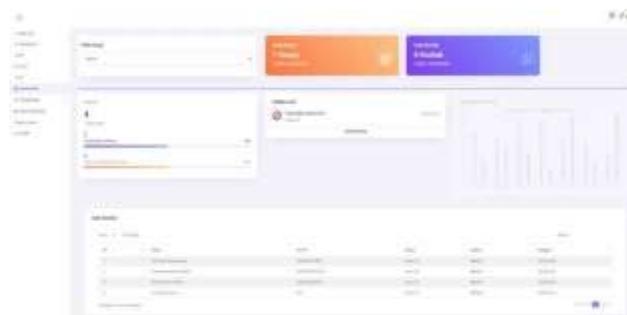
Figure 9 List Page View

Figure 10. Contact Data Page View

The Jitbit page serves to set the process performed on the Jitbit with color as a command signal.

Figure 11. Jitbit Website Page View

The color is displayed and adjusted to the 'login_status' in the database. The data retrieved will be adjusted to the API server, and each server will access the URL with different GET data adjusted to the user's API, so messages and cellphone numbers are retrieved based on the appropriate API. The button is used as a submission form for sending messages, the already and failed button is used to change the login status, the check button only redirects the page to the WhatsApp website and the upload button is used to send a QRCode photo.

3.2 Jitbit Implementation

The Jitbit process is in accordance with the logic in the Jitbit flowchart in Figure 6, this process can be concluded in Figure 12 as follows:
1. If the color is red, then there is no process.
2. If it is yellow, it will check the login status and send a QRCode.
3. If the color is green, it will send a message.
4. If the color is orange, it will check the login status.

Figure 12. Proses Jitbit Macro Recorder

3.3 Testing

The server test results in Table 1 aim to test the effectiveness of using a Jitbit server that is accessed through another server, namely the website. Based on the test results, it can be concluded that the Jitbit server is proven to be optimal and can be run using the website.

Table 1. Jitbit Server Test

Testing	Total	Information
Message Delivery Accuracy	100 times message delivery	All messages sent successfully
Server Access	24 hours / 7 day	Server uptime is 99.99% according to the server provider's information. But the Jitbit program will stop if we stop accessing the server.

Testing the speed of sending messages is done by sending messages with a specified number, calculating the delivery time, and then dividing by the number of messages. Based on the test, the speed of sending messages obtained is 12 – 12.39 seconds/message, the difference in the results in this test is influenced by the limitations of recording messages that do not record up to milliseconds. Based on the results obtained, it can be concluded that the speed of sending messages is 12 seconds/message.

Table 1. Message Sending Speed Test

No.	Amount	Delivery Start Time	Delivery End Time	Delivery Speed
1.	10	2022-06-20 11:22:45	2022-06-20 11:24:45	12 s / message
2.	20	2022-06-20 11:27:33	2022-06-20 11:31:34	12.1 s / message
3.	50	2022-06-20 11:35:02	2022-06-20 11:45:08	12.12 s / message
4.	75	2022-06-20 11:58:20	2022-06-20 12:13:20	12 s / message
5.	100	2022-06-20 11:58:20	2022-06-20 12:34:42	12.39 s / message

The speed of sending messages is influenced by the specifications of the server to run Jitbit because there are color readers and image readers that require processor performance to process them, the higher the specifications used, the faster Jitbit does the process, but it will not affect too much difference in speed.

4. CONCLUSION

This research produces an automatic action and control screen reader on Jitbit which can send messages on WhatsApp automatically. Messages can be sent with contacts stored in each user's contact collection database. Based on the test results, message delivery has an accuracy rate of 100%, i.e. all messages are successfully sent and Jitbit can be accessed at any time. Furthermore, the speed test has been carried out in sending messages and it was found that the Jitbit managed to send 12-12.39 seconds/message.

ACKNOWLEDGEMENTS

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