

THE IMPLEMENTATION OF CHATBOTS AS A STRATEGY TO IMPROVE SERVICES AT STIE EKUITAS STUDENT COOPERATIVE USING WHATSAPP PLATFORMS

Susinah Kuntadi

ABSTRACT

The Covid-19 pandemic is severely impacting every aspect of life, including the world of education. In response to the Covid-19 pandemic, STIE Ekuitas (Ekuitas School of Business) has implemented an e-learning learning system in line with government recommendations to contain the spread of the Covid-19 virus, thus reducing student activities (in this case student collaborative unions) are severely hampered. Kopma (student Cooperative) service for members is suboptimal, especially for the information needs of members and non-members. Learning with e-learning in this pandemic era doesn't mean wasting time, but there are still many tasks that a student needs to complete to become Kopma administrator, and services are hampered. It is Chatbot is a solution that solves service issues for both members and non-members. With a chatbot, anyone who asks a question feels well taken care of as the chatbot responds quickly to all questions. A program that can process input from a chatbot or the results of a reply to a chatbot user and reply to the user. It is expected that the creation of this chatbot will be able to provide necessary information to both kopma members and non-members. The implementation of this chatbot uses Natural Language Processing (NLP) technology with a knowledge base of daily greetings, this chatbot was created using WhatsAuto, besides the results obtained from the validity calculations for 9 items were declared valid using the Pearson validity test where the value $r_{count} > r_{table}$ and for the reliability test of Cronbach's Alpha with a significant value also > 0.05 and Cronbach's alpha value of $0.848 > 0.279$ (r_{table}) then as the basis for the decision above, it can be concluded that the questionnaire or questionnaire implementation of the kopma chatbot is declared reliable or reliable as a tool data collectors in research. Thus, this kopma chatbot can be accepted by kopma members and customers. The targeted outputs in this research are publications in scopus indexed scientific journals, chatbot applications, modules and ppt for basic computing and IoT courses, while the TKT of this research is TKT 2 which is a concept formulation and/or application formulation.

Keywords: Good and Service Tax (GST), public purchasing power, Royal Malaysian Custom Department (RMCD) Chatbot, Student Cooperative, Natural Language Processing, WhatsAuto

INTRODUCTION

The Covid-19 pandemic has greatly impacted the world of education in Indonesia, Indonesia is one of the countries infected with the covid-19 virus which causes very fast transmission in the community, thus limiting the movement of people. The government implements the PPKM system to prevent the spread of the covid-19 virus so that it has an impact on the learning system in Indonesia. Likewise, the learning process is carried out online to reduce the spread of the corona virus. The virus disrupts the activities of people in various countries and forces people around the world to stay at home and break the chain of the spread of the corona virus to prevent the spread of the corona virus from increasing. After that, the economy in various parts of the world also declined due to this virus. (Siahaan, 2020).

This restriction on student attendance causes many student activities to be hampered and even stopped, one of which is the Student Cooperative. KOPMA is a forum for students to learn to cooperate in real terms at the university level. KOPMA does not only carry out economic activities for the welfare of its members, but also as an institution that is functional, idealistic, creative and constructive to be part of producing cooperative cadres who are expected to be the next generation in developing the people's economy, especially cooperatives. KOPMA as an education/cadre-based organization with businesses managed by students and consisting of students has a role to create a campus with an entrepreneurial feel and to produce cadres with entrepreneurial spirit.

According to Agus Muharram, Secretary of the Ministry of Cooperatives and SMEs, in 2018 the number of Student Cooperatives was 562 units, with 110,680 members, active KOPMA reached 359 units, 203 units were not active, while 8 units did RAT. This picture shows that the current condition of student cooperatives needs to make improvements, both from the institutional and business aspects. Furthermore, Teten Masduki, Minister of Cooperatives and SMEs, said that the existence of the Student Cooperative (Kopma) is important in today's digital era. Teten said the Covid-19 pandemic was a momentum for the acceleration of cooperatives and MSMEs towards a digital economy, those who are connected to the digital ecosystem are more resilient in the midst of a pandemic (Kontan.co.id, uploaded 10 November 2021).

In agreement with Teten Masduki on the digital economy, all applications were created to digitally support KOPMA's activities - chatbots. In the current digital business era, chatbots play an important role in running businesses related to services and products that require customer interaction. Chatbots are one of the newest tools in the field of digital services and marketing. Chatbots use artificial intelligence (artificial intelligence) to naturally respond to both questions and customer requests for specific keywords or predefined conditions. Today's advanced technology facilitates the dissemination of information about membership services and product marketing at KOPMA. The chatbot that will be created using the WhatsApp platform which is one of the media used by more than 2 billion people in more than 180 countries (WhatsApp Inc. 2020). Chatbot or chatterbot is a program that is able to process input from users and generate responses which are then sent back to users (Van den Broeck et al., 2019). Chatbots have the ability to handle conversations between machines and humans using a language that is understood by humans (Murad et al., 2020). With the implementation of chatbots on the WhatsApp platform, it is expected to improve service and performance at STIE Ekuitas student cooperatives.

METHOD

1. Research Stages

The stages that will be carried out in this research include: analysis of information needs on the whatsapp platform, editorial collection of general questions about KOPMA, design and implementation of whatsapp chatbot, testing and evaluation, the following are the stages that can be seen in the picture below.

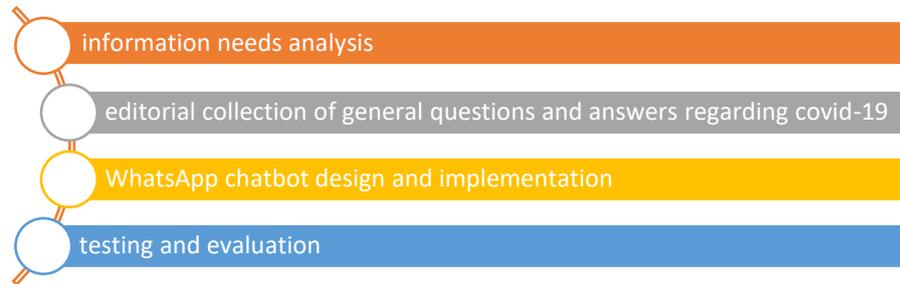


Figure 1 Research Stages

Based on Figure 1, the initial stages of this research start from an analysis of information needs, after this process is complete, it is continued with the stages of collecting general questions and answers about KOPMA STIE Ekuitas, whether it is about the organization or about the products in KOPMA. Furthermore, the design and implementation of whatsapp chatbot is carried out. If this stage has been completed, it will proceed to the testing and evaluation stage, if there are still deficiencies in the system or changes, the design and implementation will be carried out again.

2. Validity Test and Reliability Test

At the testing stage for testing this chatbot, a questionnaire is distributed to find out whether it can be accepted or not by using a validity test and reliability test to measure the questionnaire.

a. Validity test

A quantitative research that uses data collection techniques with questionnaires, then conducting a validity test is a must. The purpose of the validity test in general is to find out whether the questionnaire used is really valid to measure the variables studied. In general, there are two formulas or methods of validity testing, namely the Pearson variable correlation and the correlated item-total correlation. Pearson variable correlation is one of the formulas that can be used to test the validity of the data with the SPSS program. According to Widiyanto (2010: 34-37) the correlation coefficient in the validity test can be done using the Pearson formula with rough numbers as follows:

$$r_{xy} = \frac{N \sum XY - \sum X \sum Y}{\sqrt{N \sum X^2 - (\sum X)^2} \cdot \sqrt{N \sum Y^2 - (\sum Y)^2}}$$

Information :

rx_y : correlation coefficient

x : item score

y : total score

n : the number of subjects

b. Reliability Test

Reliability test with Cronbach's alpha was carried out to determine the level of confidence of the questionnaire used in this study. In general, reliability is defined as something that can be trusted or a condition that can be trusted. Reliability test serves to determine the level of consistency of a questionnaire used by pins, so that the questionnaire can be relied upon to measure research variables, even though this study was carried out repeatedly with the same questionnaire or questionnaire.

In this study, alpha Cornbach's reliability test was carried out with the SPSS program. This reliability test in this case refers to the Alpha value contained in the SPSS output table. As with other statistical tests, the results of Cronbach's alpha reliability test are also guided by the basis for making decisions that have been determined by experts (experts).

RESULTS OF RESEARCH IMPLEMENTATION

1. Needs Analysis

Requirements analysis is a key component in determining the success of an application. Errors in this process can interfere with the application process (Ultimate., 2019). This phase includes observation or interviews to collect all data and features of the system implemented at Kopma Ekuitas using needs analysis. Currently Kopma Ekuitas is still using the service manually, members interact with the management in KOPMA services, whether it's ordering, purchasing or simply asking or disseminating information about KOPMA STIE Ekuitas. Based on these problems, the researcher concludes by defining a needs analysis which is explained by functional and requirements and non-functional requirements in table 1. This is expected

to improve the service quality of KOPMA STIE Ekuitas, increase empathy, and provide guarantees to members and non-members on orders in terms of reactions. members and non-members (customers). This refers to a survey of service quality levels (Alfred Kristianto Ara & Melicia Simangasing, 2017).

Table 1. Needs Analysis

Functional	non-functional
<ol style="list-style-type: none"> 1. Members can ask for requirements to become an administrator through the Chatbot application on WA that has been provided 2. Members can order products through the chatbot application on wa 3. Members can find out about KOPMA STIE Ekuitas information via chatbot 4. Managers can see a list of product orders 5. Management can provide information about KOPMA STIE Ekuitas for 24 hours via Chatbot 6. Managers can provide services for 24 hours with chatbots 7. Managers can change product availability in the chatbot database 	<ol style="list-style-type: none"> 1. Integrated system with WhatsApp and WhatsAuto . applications 2. The system ensures the system is protected 3. The system has a chat interface

2. Editorial Gathering of General Questions and Answers Regarding KOPMA

This stage aims to get editors of general questions and answers about KOPMA both about its organization (member registration, etc.) as well as what products are available at KOPMA and the purchase of their products, as shown in table 2 below:

Table 2. Fragments of the KOPMA STIE Ekuitas Database Table

KEYWORDS	RESPON
Info	Hi! Welcome to the STIE EKUITAS Student Cooperative information service. To find the type of information you need, please type: (*Understanding*, *Vision*, *Mission*, *Principles*, *Structure*, *Benefits*, *Social Media*, *Receipt System*, *Receipt Flow*, *Sales Data*)
Definition	Established on October 12, 2004 with the aim of developing the welfare of members in particular, STIE EKUITAS academic activities and the progress of the business coverage area in general in order to create a just and prosperous society based on Pancasila and based on the principle of kinship.
Visi	Increase student competitiveness and the spirit of cooperative values and entrepreneurship in the student environment based on educational and scientific organizational conditions and strive to realize the organization as a business laboratory among students
Admission System	<p>*CONDITIONAL ACCEPTANCE WAY*</p> <p>The admission path for this type of cooperative management is intended only for new students, with the following individual requirements:</p> <ol style="list-style-type: none"> a. Faith and fear of God Almighty b. Physically and mentally healthy c. Follow the New Student Admission Orientation properly and fully <p>*REGULAR TRACK*</p> <p>This admissions path is intended for students who have studied at the STIE EKUITAS campus for at least two semesters.</p>

3. Design and Implementation of the KOPMA STIE Ekuias Chatbot

3.1 Apps Required to Create Chatbot

To run the Chatbot, the things you will need are:

1. WhatsApp
2. WhatsAuto
3. Google Drive (google spreadsheets)

3.2 Chatbot Creation

Here are the steps that need to be passed in creating a Chatbot:

1. Downloading the WhatsApp app
Download the WhatsApp application for free on Google Playstore then create an account using your phone number. This WhatsApp account will be the medium for the chatbot to be created.
2. Downloading the WhatsAuto app
After downloading the WhatsApp application, we also need to download the WhatsAuto application



Figure 3. WhatsAuto App Display

Download WhatsAuto app for free on Google Playstore.

3. Create a database

Sign in to Google Drive using an Email account. The database file will later be saved in the Google Drive folder. Open Google Drive then create a database in Google Sheets, the steps are:

- Go to google drive, click the 'new' menu (+) then click google spreadsheet
- The database is created in a two-column format as below:

4. Setting WhatsAuto

After the database is created, we only need to set WhatsAuto according to our needs and then activate it. Here are the steps to set it up:

4.1. Login

Open the WhatsAuto app

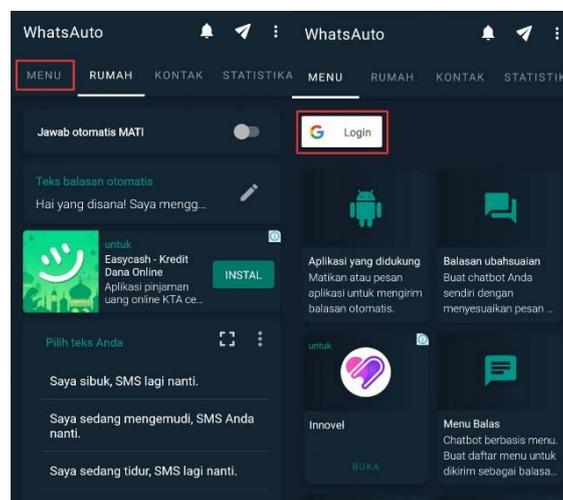


Figure 4. Login process

4.2 Uploading database

After connecting our account to WhatsAuto, the next thing to do is upload the database that we have created in Google Sheets to the WhatsAuto application.

4.3 Enabling Auto Answer

Once the database is uploaded and active, we need to enable auto-response and set up a welcome message for the customer.

4.4 Setting contact settings

Once the database and auto-response are ready, we need to set up contact settings to determine who can access

3.3 Chatbot Usage

Here's how to use the chatbot that was created earlier:

1. Add chatbot numbers to contacts.
2. Start a conversation with the chatbot.



Figure 5. Chatbot conversation

4. Testing and Evaluation

At the testing and evaluation stage, a questionnaire was tested which was distributed to members and 53 respondents who filled out the questionnaire.

Validity test

The validity test used is the Pearson variable correlation with the basis for making the decision on the validity test:

1. If the value of $r_{count} > r_{table}$, then the question item or statement in the questionnaire is significantly correlated with the total score (meaning that the questionnaire item is declared valid).
2. If the value of $r_{count} < r_{table}$, then the question item or statement in the questionnaire is not significantly correlated with the total score (meaning that the questionnaire item is declared invalid)

The results of processing the questionnaire with the Pearson correlations . validity test

Correlations

		x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	total
x1	Pearson Correlation	1	,068	,509**	,596**	,293*	,218	,399**	,053	,250	,080	,535**
	Sig. (2-tailed)		,629	,000	,000	,033	,118	,003	,705	,071	,568	,000
	N	53	53	53	53	53	53	53	53	53	53	53
x2	Pearson Correlation	,068	1	-,058	,154	-,085	-,130	,151	-,220	,025	,049	,094
	Sig. (2-tailed)	,629		,680	,272	,547	,352	,281	,113	,859	,725	,504
	N	53	53	53	53	53	53	53	53	53	53	53
x3	Pearson Correlation	,509**	-,058	1	,805**	,316*	,444**	,525**	,332*	,285*	,239	,702**
	Sig. (2-tailed)	,000	,680		,000	,021	,001	,000	,015	,039	,084	,000
	N	53	53	53	53	53	53	53	53	53	53	53
x4	Pearson Correlation	,596**	,154	,805**	1	,336*	,422**	,664**	,261	,335*	,218	,737**
	Sig. (2-tailed)	,000	,272	,000		,014	,002	,000	,059	,014	,117	,000
	N	53	53	53	53	53	53	53	53	53	53	53
x5	Pearson Correlation	,293*	-,085	,316*	,336*	1	,800**	,515**	,529**	,478**	,242	,716**
	Sig. (2-tailed)	,033	,547	,021	,014		,000	,000	,000	,000	,081	,000
	N	53	53	53	53	53	53	53	53	53	53	53
x6	Pearson Correlation	,218	-,130	,444**	,422**	,800**	1	,568**	,436**	,370**	,237	,701**
	Sig. (2-tailed)	,118	,352	,001	,002	,000		,000	,001	,006	,088	,000
	N	53	53	53	53	53	53	53	53	53	53	53
x7	Pearson Correlation	,399**	,151	,525**	,664**	,515**	,568**	1	,440**	,566**	,412**	,804**
	Sig. (2-tailed)	,003	,281	,000	,000	,000	,000		,001	,000	,002	,000
	N	53	53	53	53	53	53	53	53	53	53	53
x8	Pearson Correlation	,053	-,220	,332*	,261	,529**	,436**	,440**	1	,549**	,527**	,666**
	Sig. (2-tailed)	,705	,113	,015	,059	,000	,001	,001		,000	,000	,000
	N	53	53	53	53	53	53	53	53	53	53	53
x9	Pearson Correlation	,250	,025	,285*	,335*	,478**	,370**	,566**	,549**	1	,506**	,706**
	Sig. (2-tailed)	,071	,859	,039	,014	,000	,006	,000	,000		,000	,000
	N	53	53	53	53	53	53	53	53	53	53	53
x10	Pearson Correlation	,080	,049	,239	,218	,242	,237	,412**	,527**	,506**	1	,593**
	Sig. (2-tailed)	,568	,725	,084	,117	,081	,088	,002	,000	,000		,000
	N	53	53	53	53	53	53	53	53	53	53	53
total	Pearson Correlation	,535**	,094	,702**	,737**	,716**	,701**	,804**	,666**	,706**	,593**	1
	Sig. (2-tailed)	,000	,504	,000	,000	,000	,000	,000	,000	,000	,000	
	N	53	53	53	53	53	53	53	53	53	53	53

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Figure 6. Pearson Correlations . Data Processing Results

To facilitate the assessment, the researcher made a summary of the results of the Pearson correlations as follows:

Table 3. Summary of pearson validity test results

No. Item	R count	R table 5% (50)	Sig.	criteria
1	0,535	0,279	0,000	Valid
2	0,094	0,279	0,604	Not Valid
3	0,702	0,279	0,000	Valid
4	0,737	0,279	0,000	Valid
5	0,716	0,279	0,000	Valid
6	0,701	0,279	0,000	Valid
7	0,804	0,279	0,000	Valid
8	0,666	0,279	0,000	Valid
9	0,706	0,279	0,000	Valid
10	0,593	0,279	0,000	Valid

From the data above, we can output the correlation value between item scores and total scores. We compare this value with the rtable value, the rtable is calculated at a significance of 5% with (n) 50 (the number 50 because the number of respondents is 53 and the closest number is 50), then the rtable is 0.279. Of the 10 items, 9 items were declared valid because the value of rcount > from rtable and for 1 item it was declared invalid because the value of rcount < rtable and the significant value was also > from 0.05. The invalid item is an item that states the appearance of the chatbot is attractive, here all respondents state that the appearance of the kopma chatbot is not attractive. One invalid item will not be included in the reliability calculation.

Reliability Test

In this study, alpha Cronbach's reliability test was carried out with the SPSS program. This reliability test in this case refers to the Alpha value contained in the SPSS output table. As with other statistical tests, the results of Cronbach's alpha reliability test are also guided by the basis for making decisions that have been determined by experts (experts).

Basis of decision in Cronbach's Alpha Reliability Test

According to V. Wiratna Sujarweni (2014: 193) explains that the reliability test can be carried out together on all items or questions in the research questionnaire (questionnaire).

The basis for decision making in the reliability test are as follows:

1. If Cronbach's Alpha value > 0.60 then the questionnaire or questionnaire is declared reliable or consistent.
2. Meanwhile, if the value of Cronbach's Alpha < 0.60 then the questionnaire or questionnaire is declared unreliable or inconsistent.

The results of the Cronbach's alpha reliability test results are as follows:

The first output table case processing summary

Case Processing Summary

		N	%
Cases	Valid	53	100,0
	Excluded ^a	0	,0
	Total	53	100,0

a. Listwise deletion based on all variables in the procedure.

Figure 7. Case Processing Summary

The output table above provides information on the number of samples or respondents (N) analyzed with the SPSS program, namely N as many as 53 responses. Because there is no empty data (in the sense that all respondents' answers are filled in) then the valid number is 100%.

The second output table is reliability statistics

Reliability Statistics

Cronbach's Alpha	N of Items
,848	9

Figure 8. Reliability Statistics

From the output table above, it is known that there are N of items (number of items) there are 9 items with a Cronbach's Alpha value of 0.848. Because the Cronbach's Alpha value is 0.848 > 0.60, then as the basis for decision making in the reliability test above, it can be concluded that the 9 or all questionnaire items for the implementation of the Kopma chatbot are reliable or consistent.

The third output table item-total statistics

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Correlation	Item-Total	Cronbach's Alpha if Item Deleted
x3	33,55	6,137	,602		,828
x4	33,49	6,485	,643		,826
x5	33,38	6,201	,633		,824
x6	33,47	6,292	,626		,825
x7	33,58	6,786	,748		,826
x8	33,32	6,107	,574		,831
x9	33,51	6,293	,607		,827
x10	33,26	6,390	,436		,849
x1	33,42	6,786	,397		,848

Figure 9. Item-Total Statistics

The output table above provides an overview of the statistical values for the 9 items in the questionnaire. Notice in the column "Cronbach's Alpha if Item Deleted" in this table it is known that the Cronbach's Alpha value for the nine item questions is > 0.60, it can be concluded that the 9 items of the questionnaire are reliable.

Additional information on Cronbach's alpha reliability test with spss

According to Joko Widiyanto (2010: 43) explains that the basis for decision making in reliability testing is as follows:

1. If the value of Cronbach's alpha > rtable then the questionnaire is declared reliable

2. If the value of Cronbach's alpha < rtable, the questionnaire is declared unreliable.

Based on the output of "reliability statistics" above, it is known that the value of Cronbach's alpha is 0.848. This value will then be compared with the rtable value with N = 50, looking for the distribution of the rtable value at a significance of 5%, then the rtable value of 0.279 is obtained. Because the value of Cronbach's alpha is $0.848 > 0.279$ (rtable), then as the basis for the decision above, it can be concluded that the questionnaire or questionnaire implementation of the Kopma chatbot is declared reliable or reliable as a data collection tool in the study.

CONCLUSION

The chatbot is useful for making interaction among Kopma to the member or non-member for selling the products. A program that can process input from a chatbot or the results of a reply to a chatbot user and reply to the user. It is expected that the creation of this chatbot will be able to provide necessary information to both kopma members and non-members. The implementation of this chatbot uses Natural Language Processing (NLP) technology with a knowledge base of daily greetings. The chatbot is able to increase the selling of Kopma in Pandemic-19 era.

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Susinah Kuntadi
Sekolah Tinggi Ilmu Ekonomi Ekuitas
Email: susikuntadi@gmail.com