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FACTORS THAT AFFECT USER'S INTEREST IN USING WHATSAPP: EVIDENCE FROM JAKARTA METROPOLITAN AREA

[1]IGNATIUS STEVEN, [2]RIYANTO JAYADI, [3]PRATAMA PUTRA
[1, 2, 3]Information Systems Management Department, BINUS Graduate Program – Master of Information System Management, Bina Nusantara University, Indonesia
E-mail: [1]ignatius.steven001@binus.ac.id, [2]riyanto.jayadi@binus.edu, [3]pratama.putra001@binus.ac.id

ABSTRACT

Many chat applications available in the market, but Whatsapp is currently the most widely used chat application. Meanwhile, many other chat applications failed to attract significant active users. In this study, the factors influencing user interest in using Whatsapp in Jakarta Metropolitan Area are studied. This study is conducted on 400 respondents from the Greater Jakarta area. Based on the research result, system quality, perceived ease of use, trust and trigger are the factors that influence usage. In contrast, information quality and service quality does not affect usage. Besides, it was also found that use affected the variable rewards and the variable rewards also affected re-triggering of the use of the chat application.
Keywords: *chat application, Whatsapp, validity, reliability, Partial Least Square Structural Equation Modeling (PLS)*

1 INTRODUCTION

The Internet has been becoming the main medium to facilitate daily communication, one of which is a chat application. The chat application is a common information technology utilized daily activities for communication in family and workplace. The chat application facilitates sending short messages or can be referred to as direct communication between two or more connected people in a network, for example, the internet [1]. Meanwhile, according to Sutikno [2], a chat application is a facility on the internet used to communicate with fellow online users.

Although, every chat application almost has the same function for sending messages, images or files [3]. However, not all chat applications are the same in terms of popularity. As of July 2020, according to a survey by Statista [4], Whatsapp is the most widely used chat application. Whatsapp popularity worldwide popularity is followed by Facebook Messenger, WeChat, QQ, Telegram, and Snapchat. Some are failed to gain active users. There should be several factors that influence someone to use a popular chat application that others. Some chat applications may have more value to attract users using one chat application than other chat applications [5].

Whatsapp is a chat application platform that can exchange messages without paying a short message service (SMS) fee. Whatsapp has several features such as personal chat, group chat and sending and receiving video and audio files [6]. Whatsapp can be done with an existing contact number, so there is no need to add repeated contacts manually [7].

The Whatsapp application has several advantages compared to other chat applications such as appearance and use that are easy to understand. When sending messages, the quality of service is stable, where this is obtained from reviews given by users through the Playstore. However, some of its users sometimes have problems where this is also obtained from reviews on the Playstore. After sorting out various obstacles that are often faced, including stories that often cannot be seen, video and audio results are out of sync after being sent; there is no notification after updating and growing application storage data.

Based on the problems found and the interviews that have been conducted, several variables were considered influential, including system quality, information quality, service quality, perceived ease of use, trust, triggers for use so that further research is needed to determine whether these variables affect. as well as use of rewards and rewards that are retested against triggers to prove that they can increase the use of chat applications repeatedly.

We choose in Greater Jakarta Area, Indonesia, as the research location. Indonesia is one of a successful emerging countries with a high number of internet users. According to Indonesia Internet Service Providers Association (APJII), Internet user's penetration in Indonesia has reached 171.17

million people from 264.16 million people in 2018. Most users are 15-19 years old later, followed by 20-24 in the second and 25-29 years old in the third [8]. The Greater Jakarta Area area selection because Jakarta is Indonesia's economic center along with its buffer areas, namely Bogor, Depok, Tangerang, and Bekasi. This area has grown into a megapolitan city [26].

2 PREVIOUS RESEARCH AND HYPOTHESIS DEVELOPMENT

Several existing studies conducting similarity studies, Technology Acceptance Model (TAM) have been used to understand Whatsapp popularity [5]. The variables include perceived usefulness, perceived ease of use, and attitude to use. Some other research is based on Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) [9] in Bandung. Several variables that can affect user to use Whatsapp include system quality, information quality, service quality, perceived ease of use, trust, trigger, and use so that it is necessary to do further to know. The variables also affect users in using the application, mainly for the users of Whatsapp chat application.

Previous research that studied system quality and service quality on the satisfaction of using the Whatsapp application has been carried out with a sample taken, namely students at Bina Nusantara. The study proves that system quality and service quality affect user satisfaction [10]. Besides, there is also research on chatbots conducted using Delone and Mclean models to prove system quality, information quality, service quality, intention to use, and net benefits on customer satisfaction. Previous research also used the TAM model. The study tested the variable perceived usefulness, perceived ease of use, attitude to use, and behavioral intention towards Whatsapp users. The results showed that all tested variables were affected [5]. According to Aditya [11], research using the TAM model was tested on Line application users. In this study, the variable perceived usefulness and perceived ease of use were tested on behavioral intention towards Line application users in Indonesia. It was concluded that the variables tested affected. Positively on behavioral intention. In other studies, testing for the same variables, namely perceived usefulness and perceived ease of use, was carried out in South Africa, where the results obtained were the two influential variables. Still, perceived usefulness was considered to have a more significant influence [6]. Similar research by Wang [12] in Taiwan by testing technology utility variables, perceived number of users, perceived usefulness, perceived ease of use, behavioral intention and the results obtained are all influential variables.

Another study used the UTAUT 2 model. All variables showed a positive result towards instant message users in Bandung. These variables, including performance expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habits [9]. Research-based on the UTAUT model has also been conducted in Singapore. It can be concluded that effort expectancy, peer pressure, behavioral intention affect while facilitating conditions, self-efficacy and computer anxiety did not affect [13]. Research conducted in Taiwan using Multiple-Criteria-Decision-Making (MCDM) model showed that the most influential variables were group networking and easy to use [7].

Based on previous research, several hypotheses were made with the moderating variable Age, which was taken based on Gusti Ayu's research [9] to prove that age has a significant effect on internet usage [14]. It then combined several variables, including system quality and service quality, where previous tests were carried out by Rifqi [10] on Whatsapp users in Bina Nusantara. System quality is the quality of the system processing in an application that can be seen from various aspects such as functionality, reliability, quality, and data integration to measure its technical extent [15]. System Quality is also considered a yardstick where a good quality system must be easy to use to have more value in terms of usefulness and use [16].

Meanwhile, service quality can be defined as the instrument most widely used to attract consumers through one aspect, namely technology [17], which can be seen in two parts: functional quality and technical quality [17]. This is also supported by other research on chatbots using the Delone and Mclean models conducted by Sensuse [18] by examining system quality, service quality, and information quality. Information quality is how a system produces output that includes information needed by users. This time testing will be carried out based on several aspects of information quality; namely, accuracy means that the value stored in the database is following the entity in the real world. Completeness means that information related to applications can be accessed entirely by users [15] and the format presentation of information focuses on results and their usefulness [19]. So that the hypotheses are obtained :

H1: System quality has a significant influence on Use moderated by Age

H2: Information quality has a significant influence on Use moderated by Age
H3: Service quality has a significant influence on Use moderated by Age

According to Mayer [20], trust is the willingness of a party to another party, hoping that the other party is believed to take a significant action regardless of the ability to monitor or control other parties. Trust in the digital context can arise due to the influence of the application provider's environment and abilities [21]. This is the basis for making the trust one use hypothesis, where this was also done in previous tests by Sugara [22]. Then perceived ease of use is seen from the extent to which a person can use it with a minimum of effort [23]. If an application is deemed accessible, it will generate interest for using it [24]. This test was conducted to prove perceived ease of use and perceived usefulness to attitude to use based on the previously tested TAM model [5]. Still, perceived usefulness is not used here because there is service quality so that it becomes the basis of the hypotheses :
H4: Perceived ease of use has a significant influence on Use moderated by Age
H5: Trust has a significant influence on Use moderated by Age

The next variables used were taken from the hook model, namely trigger, action and variable rewards [25]. The trigger means something that becomes the basis for a person to change their habits or do something [26], or it can be called an internal/external trigger to tell the user what so they can continue to the next action. Action means the user takes effort after knowing there is a trigger for something [27]. Then if an action can be done easily, it will form a new habit pattern. And if you have done an action, the user will expect a result known as variable rewards divided into three: the tribe, the hunt, and the self. The tribe is a relationship with other people; the hunt means information obtained and the self, namely the mastery or completion of something done [26]. Nevertheless, in this test, the action was replaced with use because it has the same definition and then obtained hypotheses:
H6: Trigger has a significant influence on Use moderated by Age
H7: Use has a significant influence on Variable Rewards

Besides, in the hook model there is also a variable that is not used, namely investment. This test uses a habit loop where the reward variable is tested again against the trigger [28] to prove the interest in reusing the same application as an investment. Investment is something that is done by users so that they can increase the value of the application. Investment does not always have to be in the form of money, but it can also be like time and invitations to other people to use the application again [25]. Based on these, it becomes the basis of the hypothesis :
H8: Variable Rewards has a significant influence on Trigger

Based on these hypotheses, Figure 1 shows the constructed research model in this study. The research model is a modification of the DeLeon and McLean IS Success, Technology Acceptance Model, the Hooked Model and the UTAUT. System Quality, Information Quality, Service Quality, Perceived Ease of Use, Trust and Trigger are hypothesized to affect using the chat application and Use affects Variable Reward. There is also a moderating variable that is Age to explain differences in the behavior of various groups of people [29]. Furthermore, Figure 2 shows that the model adopted Loop Habits to hypothesized that Variable Rewards after using Whatsapp can affect Trigger.

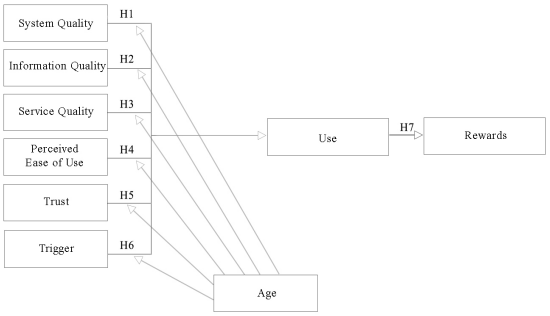

Figure 1: Research Model A

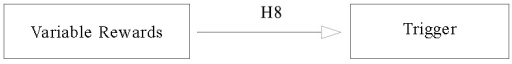

Figure 2: Research Model B

3 METHODOLOGY

After the hypotheseas are constructed, we wrote the quisioner surveys based on indicator measurement presented in Section 3.1. Then, the quiesioner are distributed following the methodology explained in Section 3.2. Section 3.3 and Section 3.4 describe the method and the result of validity test and reability test on the gathered data, respectively. We calculated the data using SmartPLS[30].

3.1 Measurement

This study's analytical method is Partial Least Square Structural Equation Modeling (PLS-SEM). Table 1 shows the indicators used in this study.

Table 1 : Variable and Indicator Measurement

Variable	Initial	Indicator
Age	A1	Respondent Age
System Quality	SQ1	Respond Time
	SQ2	Reliability System
	SQ3	Flexibility System
Information Quality	IQ1	Accuracy System
	IQ2	Relevance
	IQ3	Format for presenting information
Service Quality	SEQ1	Empathy
	SEQ2	Assurance
	SEQ3	Responsive
Perceived Ease of Use	PEU1	Easy to Use
	PEU2	Less effort
	PEU3	Clear
	PEU4	Understandable
Trust	T1	Integrity
	T2	Commitment
	T3	Openness and Honesty
	T4	Reliability
Trigger	TR1	Sign
	TR2	Influence Around
	TR3	Interpersonal Communication
Use	U1	Nature of Use
	U2	The Intended Use
	U3	Frequency of Use
Variable Reward	R1	Information
	R2	Relation
	R3	Self
	R4	Relation

3.2 Data gathering

The number of respondents in this study is 400 respondents, following the minimum sampling number advised by Israel [31]. The data is collected from the results of a questionnaire survey. Random sampling and a Likert measurement scale are used. The questionnaire is distributed using a google form and distributed to users of the Whatsapp chat application in Jakarta Metropolitan Area.

3.3 Validity Test

A study is declared valid if the questionnaire used can meet several tested variable criteria [32]. Table 2 shows the validity test of Average Variance Extracted (AVE) value of each variable. If a variable's AVE value is higher than 0.5, then the variable is valid. Table 2 shows that all AVE values are above 0.5. Meanwhile, on discriminant validity testing, an assessment was carried out by observing the calculations from the cross-loading table and got results value of each item against the construct is greater than the cross-loading value. Table 3 shows that the cross-loading value of each item against the construct.

Table 2 : Average Variance Extracted

Variable	Average Variance Extracted (AVE).
System Quality	0,637
Information Quality	0,673
System Quality	0,670
Perceived Ease of Use	0,826
Trust	0,783
Trigger	0,637
Use	0,693
Variable Rewards	0,677

Table 3 : Cross Loading

Initial	Value
SQ1	0,725
SQ2	0,832
SQ3	0,832
IQ1	0,826
IQ2	0,791
IQ3	0,843
SEQ1	0,842
SEQ2	0,857
SEQ3	0,752
PEU1	0,914
PEU2	0,911
PEU3	0,903
T1	0,895
T2	0,882
T3	0,875
T4	0,888
TR1	0,739
TR2	0,825
TR3	0,826
U1	0,829
U2	0,851
U3	0,828

R1	0,774
R2	0,842
R3	0,846
R4	0,828

3.4 Reliability Test

Testing reliability is done by looking at Cronbach's alpha test results and composite reliability. A variable is reliable if its Cronbach's Alpha and Composite Reliability values are above 0.5. In this study, every variable is reliable as Cronbach's Alpha and Composite Reliability results are above 0.5 (Table 4).

4 RESULT AND DISCUSSION

Figure 3, Figure 4 and Table 5 show the results of the hypothesis testing in this study. System Quality has a significant effect on the weight of 0,199. Hypothesis results for Perceived Ease of Use were declared accepted, which is worth 0.138. Also, Trust and Trigger with values 0,108 and 0,460. While all other variables, which were moderated by Age, does not affect.

Variable	Cronbach's Alpha	Composite Reliability
System Quality	0,713	0,840
Information Quality	0,758	0,860
Service Quality	0,756	0,858
Perceived Ease of Use	0,895	0,935
Trust	0,908	0,935
Trigger	0,714	0,840
Use	0,779	0,871
Variable Rewards	0,842	0,894

Table 4 : Reliability Test

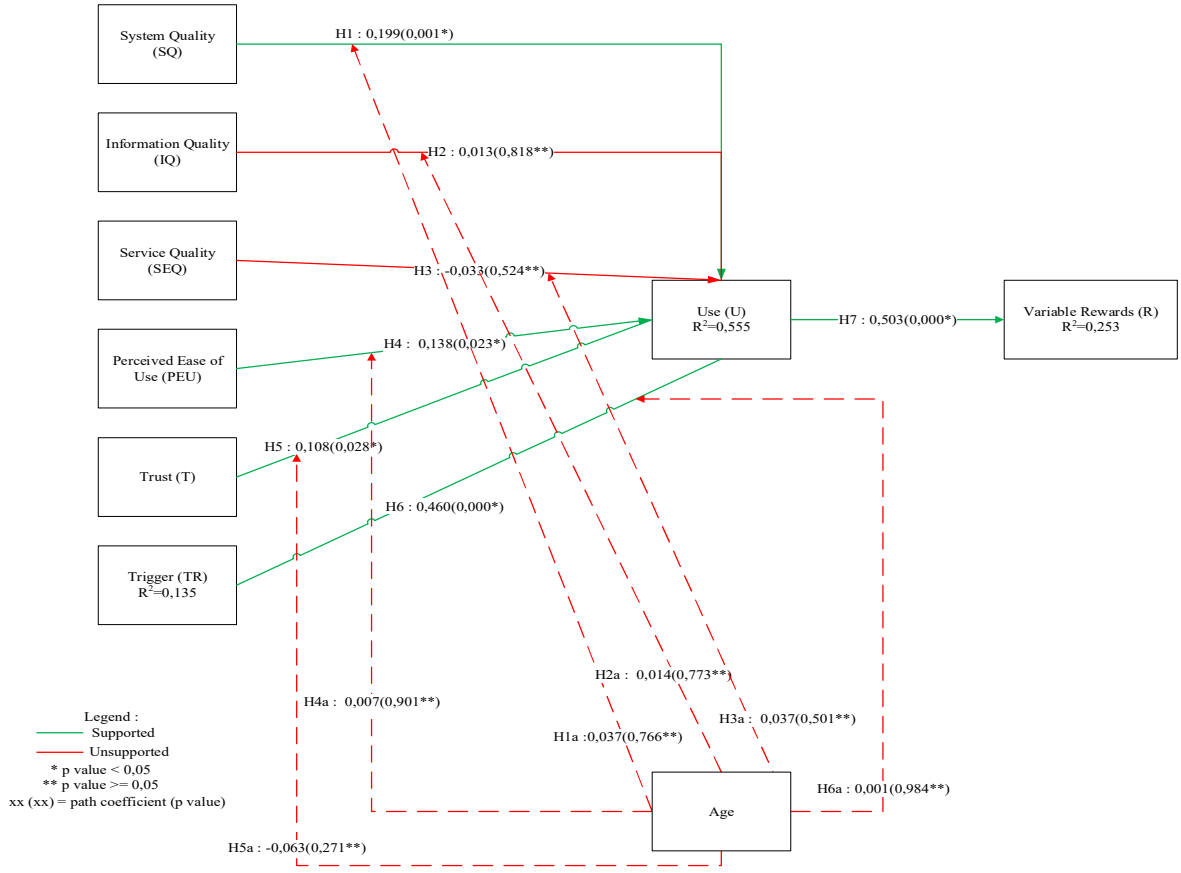

Figure 3 : Result Model A

Figure 4 : Result Model B

Table 5 : Hypthotheses Result

		H	p-value	sig	β	Result
Use (R^2 = 0,555)	System Quality	H1	0,001	*	0,199	Accepted
	System Quality Moderate Age	H1a	0,766	**	0,037	Rejected
	Information Quality	H2	0,818	**	0,013	Rejected
	Information Quality Moderate Age	H2a	0,773	**	0,014	Rejected
	Service Quality	H3	0,524	**	-0,033	Rejected
	Service Quality Moderate Age	H3a	0,501	**	0,037	Rejected
	Perceived Ease of Use	H4	0,023	*	0,138	Accepted
	Perceived Ease of Use Moderate Age	H4a	0,901	**	0,007	Rejected
	Trust	H5	0,028	*	0,108	Accepted
	Trust Moderate Age	H5a	0,271	**	-0,063	Rejected
	Trigger	H6	0,000	*	0,460	Accepted
	Trigger Moderate Age	H6a	0,984	**	0,001	Rejected
Variable Rewards (R^2=0,253)	Use	H7	0,000	*	0,503	Accepted
Trigger (R^2=0,135)	Variable Rewards	H8	0,000	*	0,368	Accepted

p-value < 0,05 (*), p-value >= 0,05 (**)

3.5 Hypothesis Testing & Theoritical Implication

From the research results, Results for Information Quality and Service Quality were rejected, which contradicts previous research [18]. The effect of Use to Variable Rewards has a significant influence on 0,503. This finding confirms the previous study that has been done by Yao[26]. Last, it can be seen in Figure 5 measurements taken are separate but use the same data and got results Variable Rewards loop again into Trigger and proven affected with significant influence 0,368.

It was found that H2 and H3 did not affect, as were the other hypotheses that were moderated by Age. The interviews were also supported, namely that all variables moderated by age have the same views for each age range. Whereas the other hypotheses are that H1 has an effect of 0.199 (0.001*), H4 of 0.138 (0.023*), H5 has an effect of 0.108 (0.208*), H6 has an effect of 0.460 (0.000*), H7 has an effect of 0.503 (0.000*) and H8 of 0.368 (0.000*).

The results of the hypothesis for System Quality were declared accepted because the p-value <0.005, which was 0.001, while the System Quality, which was moderated by Age, was rejected because the p value> 0.005 was 0.766. Previous research conducted by [33] obtained the same results where the System Quality affects the magnitude of the influence of 0.199. It is also supported by short interviews that have been conducted. Namely, the good quality of the system makes people comfortable using Whatsapp.

Hypothesis results for Information Quality were rejected because the p value> 0.005, which was

0.818 and Information Quality, moderated by Age, was also rejected because the p value> 0.005 was 0.773. Based on previous research conducted by Sensuse [18], it was found that Information Quality has an effect, but in this research, the results have no effect. In the interview section, several opinions, such as using Whatsapp can be done by learning by doing instead of looking for the application provider's information.

Service Quality's hypothesis was rejected because the p value> 0.005, which was 0.524 and Service Quality, which was moderated by Age, was also rejected because the p-value was> 0.005, which was 0.501. Based on previous research conducted by Sensuse [18], it was found that Service Quality has an influence. However, in another study conducted by Lin [13], the variable discusses the application provider's services where it does not affect. It is also supported by the results of the interviews obtained, such as users are more likely to see the finished results of applications in the form of System Quality. Still, another opinion is obtained that Service Quality is an essential factor in using Whatsapp.

Hypothesis results for Perceived Ease of Use were declared accepted because the p-value <0.005, which is worth 0.023, while the Perceived Ease of Use, which is moderated by Age, was also rejected because the p value> 0.005, which is worth 0.901. Based on Aulia's research [5], the same results were obtained that the Perceived Ease of Use variable affects. In this study, the Perceived Ease of Use had an effect of 0.023 on Use with the indicators used. It is also supported by the results of the interviews conducted. It can be concluded that most chat application users use them because of the ease of operating them.

The Trust results were accepted because p-value <0.005, which was 0.028, while the Trust, moderated by Age, was rejected because p-value> 0.005, which was 0.271. Based on previous research on related variables conducted by Mangalani [34] the results show that the Trust variable affects, in this research, Trust has an effect of 0.108. The interviews' results have been conducted, and the results show that Whatsapp is based on user trust.

Hypothesis results for Trigger were accepted because the p-value <0.005, which is worth 0.000, while Trigger, which was moderated by Age, was also rejected because the p value> 0.005, which was 0.984. Besides, based on previous research conducted by Yao [26], it is stated that the Trigger variable affects users to use an application. Also, the results obtained in this study show that the Trigger variable affects 0.460. Based on interviews conducted, the results obtained are that one of the reasons for using Whatsapp is because of an incoming message.

The results of the hypothesis for Use are stated to be accepted because the p-value <0.005 is worth 0.000. Research conducted by Yao [26] also states that the factor that encourages the use of chat applications besides wanting to communicate is knowing the latest things about relationships even though they do not send messages to make this Variable Reward has an essential role in the Use variable. Also, the results obtained in this study show that Variable Rewards has an effect of 0.503 on Use. A short interview also supports it, and the conclusion is that the purpose of using Whatsapp is to interact.

The results of the hypothesis for variable Rewards are accepted because the p-value <0.005 is 0.000. Based on Yao [26] research, it is also found that if the user is happy with the results obtained, it will make it possible to make other triggers. The results obtained in this study show that Variable Rewards has an effect of 0.368. It is supported by a short interview that has been conducted, in which a reply to a message makes users re-open Whatsapp.

3.6 Practical Implication

Chat applications can no longer be avoided in their use every day to help communication, exchanging news [2] or running a business or other things. Chat application service providers must have quality service to users with high standards so that if it is accepted, it will make users feel satisfied with the services provided [35]. An application is divided into two, namely a free application and a paid application [36], and the majority of users will be more interested in open applications. Still, the features that can be used are not limited. However, how do you make a profit? One of the things that can be utilized is an investment in terms of purchasing items in the application, such as stickers, themes, invitations, or influences given to other people to use the services provided [25].

Besides, based on the interviews conducted. Another factor that becomes a consideration in using chat applications is the ease of use, which means that you can do self-learning rather than looking for the guidance information that has been provided. Another thing that still often happens is an error after being done, obtained from reviews on the Playstore. Usually, also a chat application has extensive storage and is a consideration for some users. However, there are no variables that test this to be considered in further investigations in this study. Even though in Indonesia, Whatsapp is in the

first rank [5], we often find other chat applications that aim to maintain a group and look for other chat applications with more flexibility. Nature, such as finding out all existing conversations even though they are not in the group from the start [37] so that this can also be a consideration for developing chat applications.

5 CONCLUSION AND LIMITATION

Based on the analysis results, the findings in this study can be stated that System Quality has a positive effect on Use, Information Quality and Service Quality have no influence on Use. Perceived Ease of Use, Trust and Trigger have a positive impact on Use, Use has a positive effect on Variable Rewards, Variable Rewards has a positive impact on Trigger. Age does not affect a person's view of System Quality, Information Quality, Service Quality, Perceived Ease of Use, Trust and Trigger in using the Whatsapp chat application. The most influential variable on Use is Trigger. This is followed by System Quality, Perceived Ease of Use and Trust. Meanwhile, Use can affect Variable Rewards, and Variable Rewards affects Trigger.

Based on the results obtained, it is stated that system quality has a significant effect on use, so chat application service providers must provide quality service to users with high standards so that if accepted, it will make users feel satisfied with the services offered.

Also, based on interviews conducted and the results obtained. Another factor that is considered in using a chat application is perceived ease of use, meaning that the chat application service provider must think about how to present the appearance and function of the application that is easy to understand and use.

Trust also has a significant effect on use, so that with the results obtained, it is hoped that the company will not misuse the user data obtained and continue to ensure data security and pay more attention to existing systems related to data security to minimize the risk of user data leakage.

Based on the results obtained, the most significant factor in using the chat application in the Jabodetabek area is triggers. With this result, the chat application service provider company must focus on other factors such as reward, which also triggers the emergence of triggers and improves service through other factors as discussed which are considered by someone if you want to use a chat application.

Several limitation and future research are as the following. Most users who filled out the questionnaire were in the age range 18-70, so it felt still lacked because they had not received samples under 18. Several other factors can be hypnotized that can influence the Use of chat application. First, the availability of features such as group video calls or group chats, which can open public access to everyone involved in the group. Then, in terms of the technical application performance such memory usage

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