



THE RELATIONSHIP OF THE ONLINE REGISTRATION SYSTEM QUALITY AND THE EFFECTIVENESS OF SERVICE TIME WITH PATIENT SATISFACTION

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ABSTRACT

The implementation of an online registration system is one of the efforts made by the Bali Mandara Eye Hospital to reduce the backlog of patients. The problem that often causes a buildup of patients in polyclinics is due to a lack of understanding of registering online. Over the last three years, the service time has the lowest score in the community satisfaction index report at the Bali Mandara Eye Hospital. Purpose: This study aims to analyze the relationship between the quality of the online registration system and the effectiveness of service time, with patient satisfaction at the Bali Mandara Eye Hospital. Methods: This research uses a quantitative research approach using a questionnaire. The sampling technique in this research used cluster random sampling. Data was collected using a questionnaire with the sample participating in answering several questions in this research questionnaire. The sample for this research was patients who visited the Bali Mandara Eye Hospital polyclinic with a total sample of 96 samples. The analytical method used is multiple regression analysis. Results: The online registration system quality variable is in the good category with average value is 2.78. The service time effectiveness variable is in the good category with average value is 2.80. The patient satisfaction variable has a satisfied category with average value is 2.96. The results of the analysis obtained a significance value for the F test, namely $0.001 < 0.05$. These results mean that those two variables have a significant influence together on Patient Satisfaction. The coefficient of determination (R^2) obtained was 0.869. This means that 86.9% of patient satisfaction is influenced by the Online Registration System Quality and Effectiveness of Service Time. Conclusion: The online registration system quality and the effectiveness of service times have a significant influence together on patient satisfaction at the Bali Mandara Eye Hospital.

Keywords: patient satisfaction; the effectiveness of service time; the online registration system quality

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INTRODUCTION

Implementing an online registration system using an application is one of the efforts that has been carried out by the Bali Mandara Eye Hospital, where patients can register at the polyclinic and go to the hospital when they approach the patient's queue number. However, currently only new patients can register online, namely patients who already have a medical record number and patients who have an Android smartphone. According to Soebagyo (2002) the queuing system is one of the important elements that influences quality of service perceived by consumers. Queues are formed because the number of consumers arriving at the service function exceeds the available service capacity. This shows that the service capacity provided is not able to serve the consumers who come. The two main parameters of the queuing model are arrival rate and service rate. Improving service by reducing waiting times is also increasingly important due to the increasing emphasis on quality.

The queuing system is the totality of activities or services provided to input, from when the patient arrives until he or she receives the service. System quality is expected to measure the features inherent in the information system, including the user interface and performance of the system. The indicators used to measure system quality are convenience, efficiency, reliability, flexibility, reliability and completeness.

Time is a valuable thing, so problems with the queuing system in hospitals cause a lot of time to be wasted (Aziz et al., 2015). Service time effectiveness is a measure of the success or failure of a service in serving customers in relation to time. The emergence of demands for time effectiveness in obtaining services is closely related to patient satisfaction. Effectiveness is the achievement of goals. Effectiveness can be measured by comparing the plans that have been determined with the real results that have been realized. However, if the efforts or results of the work and actions taken are not appropriate, causing the goals or expected targets not to be achieved, then it is said to be ineffective (Kharisma, 2017). According to Achmad (2012), indicators of service effectiveness are as follows (1) The number of results that can be produced, meaning that the results are in the form of a quantity or physical form of the organization, can include programs or activities. The results in question can be seen from the comparison (ratio) between input (input) and output (output). (2) The level of satisfaction obtained, meaning that the measure of effectiveness can be quantitative based on numbers in the form of percentages and can be qualitative, namely based on quality. (3) Creative products, which means creating a conducive relationship with the world of work, which can then foster creativity and ability. (4) Intensity to be achieved, meaning having high obedience at an intense level of something.

Meanwhile, patient satisfaction is a person's feeling of happiness or disappointment that arises after comparing performance or results with what was expected (Kotler, 2012). Patient expectations play an important role in determining the quality of products, both goods and services, and patient satisfaction will use their expectations as a standard or reference, thus patient expectations are the background to why two organizations in the same business can be perceived differently by their patients (Sunyoto, 2013). There are several indicators of satisfaction, namely indicators of reliability, assurance, tangibles, empathy, and responsiveness (Supriyanto & Wulandari, 2011)

Problems that occur regarding the accumulation of patients in polyclinics occur due to a lack of understanding for registering online. Looking at the results of the community satisfaction index data at the Bali Mandara Eye Hospital, which is quite fluctuating, where in 2019 it showed that the service element of service time was 3.22, in 2020 it shows a service element of service time worth 2.87, in 2021 it shows a service element of service time worth 3.17, and also from these three years the service element of service time is included in the lowest value category. This shows that the service time at the Bali Mandara Eye Hospital is felt to be not effective from the patient perspective so that there is dissatisfaction felt by patients. Therefore, looking at the results of the preliminary study and data on the community satisfaction index at the Bali Mandara Eye Hospital, this research conducted to analyze the relationship of the quality of the online registration system and the effectiveness of service times with patient satisfaction, so the hospital can overcome the queuing problem at the Bali Mandara Eye Hospital and can provide an effective and maximum services to patients. This study aims to analyze the relationship between the quality of the online registration system and the effectiveness of service time, with patient satisfaction at the Bali Mandara Eye Hospital

METHOD

This research uses a quantitative research approach using a questionnaire instrument. This research data collection was carried out in May-June 2022 at the Bali Mandara Eye Hospital. The inclusion criteria for this study were BPJS patients who visited the Bali Mandara Eye Hospital polyclinic, patients who were willing to be respondents aged 17 – 60 years. The sampling technique in this research used cluster random sampling. The number of samples used in this research was determined using the Slovin formula and the minimum sample size was 96 people. The inclusion criteria for this study were BPJS patients who visited the Bali Mandara Eye Hospital polyclinic, patients who were willing to be respondents aged 17 – 60 years. many years. The number of samples used in this research was determined using the Slovin formula and the minimum sample size was 96 people. The independent variables are the quality of online registration and the effectiveness of service time, while the dependent variable is patient satisfaction. The questionnaire consists of 3 questionnaires that describe each variable with a Likert scale that provides options for Strongly Agree (SS), Agree (S), Disagree (TS), Strongly Disagree (STS) according to the respondent's answers. The validity test and instrument reliability test were carried out on 30 people. Then the data was tested using the product moment correlation technique and a correlation score of $(r) \geq 0.361$ was produced, while for the reliability test the Cronbach alpha value was > 0.6 . Data analysis was carried out by analyzing descriptive data and conducting multiple linear regression analysis to determine the relationship between the quality of the online registration system and the effectiveness of service time with patient satisfaction. The data will be tested for classical assumptions first, and if it meets the requirements for a good regression model, it will be continued with multiple linear regression testing.

RESULTS

The characteristics of respondents that filled the questionnaire has been categorized based on gender, age, domicile, and level of education. The distribution of respondents' characteristics at Bali Mandara Eye Hospital is as follows:

Tabel 1.
Karakteristik Responden

Characteristics	Category	f	%
Gender	Male	55	52,79
	Female	41	42,71
	Total	96	100
Age	17-20	12	12,50
	21-40	54	56,25
	41-60	30	31,25
	Total	96	100
Level of Education	Uneducated	4	4,17
	Elementary School	11	11,46
	Junior High School	12	12,50
	Senior High School	31	32,29
	Academy/D3	18	18,75
	D4/Bachelor	17	17,70
	Master	3	3,13
	Doctor	0	0
	Total	96	100

Next, an analysis was carried out of respondents' answers in filling out the questionnaire regarding the variables. The respondent's assessment of the variables in the research requires determining the frequency distribution based on the interval value (Sugiyono, 2018). Meanwhile, determining the interval is carried out using the following formula:

$$\begin{aligned}
 \text{Interval} &= \frac{\text{The highest score} - \text{The lowest score}}{\text{The number of class}} \\
 &= \frac{4-1}{4} \\
 &= 0,75
 \end{aligned}$$

The score given on the Likert scale questionnaire in this study has a maximum value, that is four and a minimum value that is one, so that the range of criteria and categories for assessing respondents' answers can be seen in Table below.

Table 2.

Questionnaire	Range Criteria	Favorable Statement	Unfavorable Statement
User Satisfaction	1,00 – 1,75	Very Dissatisfied	Very Satisfied
	1,76 – 2,50	Dissatisfied	Satisfied
	2,51 – 3,25	Satisfied	Dissatisfied
	3,26 – 4,00	Very Satisfied	Very Dissatisfied
The Quality Of The Online Registration System; and The Effectiveness Of Service Time	1,00 – 1,75	Very Poor	Very Good
	1,76 – 2,50	Poor	Good
	2,51 – 3,25	Good	Poor
	3,26 – 4,00	Very Good	Very Poor

Online Registration System's Quality

The variable quality of the online registration system is measured using 11 statement items which are described as follows:

Table 3.

Online Registration System's Quality

Statement	Average	Criteria
The online registration system is easy to use	2,75	Good
The online registration system is not easy to learn	2,77	Good
The online registration system is able to guarantee the security of stored data from officer access	2,66	Good
The online registration system has good data backup in case of problems with the computer	2,60	Good
The online registration system has a less attractive appearance	2,80	Good
The online registration system is not convenient to use	2,87	Good
The online registration system has good system reliability so I am comfortable using it	2,96	Good
The online registration system is flexible for use on both smartphones and computers	2,80	Good
The online registration system has good access speed	3,02	Good
It was easy for me to become an expert in using the online registration system	2,83	Good
Using the online registration system is not using a lot of effort	2,55	Good

Table 3 shows that the overall online registration system quality variable is in the good category. This can be seen from the overall average value of the online registration system quality variable, namely 2.78. The statement with the highest average value is the statement "The online registration system has good access speed" which is 3.02. The statement with the lowest average value is the statement "Using the online registration system does not require a lot of effort" which is 2.55.

Service Time Effectiveness

The service time effectiveness variable is measured using 14 statement items with indicators for the number of results produced, level of satisfaction, creative products, and intensity to be achieved, which are described as follows:

Table 4.
Service Time Effectiveness

Statement	Average	Criteria
Waiter complaints are resolved with clear and easy to understand results	3,00	Good
The service provided is fast	2,78	Good
The hospital provides complete service	3,11	Good
The services offered provide satisfaction	3,05	Good
Health workers are less responsive in serving patients	2,84	Good
The quality of service at the polyclinic is very effective/good	2,96	Good
The online registration service is very easy for applicants to understand	2,73	Good
I often use online registration service products	2,36	Good
I find it difficult to access online registration services	2,75	Good
The services provided by the hospital are effective	2,90	Good
The services provided by the hospital are able to create conducive service conditions	2,93	Good
There is information about the certainty of service times	2,68	Good
I feel like I don't understand the information provided in online registration	2,66	Good
I queued for a long time because there was no information about the certainty of service times	2,50	Good

Table 4 shows that the overall service time effectiveness variable is in the good category. This can be seen from the overall average value of the service time effectiveness variable, namely 2.80. The statement with the highest average value is the statement "The hospital provides complete service" which is 3.11. The statement with the lowest average value is the statement "I often use online registration service products" which is 2.36.

Patient Satisfaction

The patient satisfaction variable is measured using 18 statement items with indicators of reliability, responsiveness, direct evidence, assurance and empathy which are described as follows:

Table 5.
Patient Satisfaction

Statement	Average	Criteria
The officers serving at the registration counter are thorough and friendly	3,05	Satisfied
Doctors at the polyclinic examine patients carefully	3,20	Satisfied
The presence of a doctor to serve patients arrives on time (according to schedule)	2,73	Satisfied
Health workers who serve patients are not friendly	2,65	Satisfied
Doctors at the polyclinic always provide fast and responsive service	2,89	Satisfied
When patients need help regarding registration verification at the kiosk (online), officers are quick to help solve the patient's problems	2,80	Satisfied
The services provided in the polyclinic are less responsive	2,87	Satisfied
The queuing area at the polyclinic is clean, neat and comfortable	3,02	Satisfied
The service room at the polyclinic is clean, neat and comfortable	3,11	Satisfied
The quality of the equipment and cleanliness of the tools used by health workers is guaranteed	3,16	Satisfied
The appearance of the serving officers looks neat	3,14	Satisfied

Statement	Average	Criteria
The hospital always provides a sense of security regarding the services provided	3,12	Satisfied
Doctors always carry out examinations politely and in accordance with existing standard operating procedures (SOP).	3,07	Satisfied
Patients feel unsafe when receiving services at the polyclinic	2,86	Satisfied
The service provided at the polyclinic is not good because it looks at a person's level	2,69	Satisfied
The staff at the hospital always serve with a smile and are friendly	2,93	Satisfied
Registration counter staff always serve patients with a smile and in a friendly manner	3,07	Satisfied
The staff at the hospital do not serve patients with a smile and in a friendly manner	2,93	Satisfied

Table 5 shows that the overall patient satisfaction variable has the satisfied category. This can be seen from the overall average value of the patient satisfaction variable, namely 2.96. The statement with the highest average value is the statement "The quality of the completeness of the equipment and cleanliness of the tools used by health workers is guaranteed" which is 3.16. The statement with the lowest average value is the statement "Health workers who serve patients are not friendly" which is 2.65. Then, the linearity test is carried out to determine whether the relationship between the independent variable and the dependent variable is linear or not. Data is said to be linear if the significance value of Deviation from Linearity is >0.05 or 5%.

Table 6.
The relationship online registration system quality and patient satisfaction

Variables	Deviation from Linearity	Information	
	F Count	Sig	
The Quality of the Online Registration System on Patient Satisfaction	343,561	0,000	Linear
Effectiveness of Service Time on Patient Satisfaction	615,752	0,000	Linear

Deviation from Linearity value > 0.05 ($0.000 > 0.05$). These results indicate that the variables of online registration system quality and patient satisfaction have a linear relationship. The normality test is carried out to check whether the research data comes from a population with a normal distribution. Testing techniques to test the normality of a residual are carried out statistically using the Kolmogorov-Smirnov test (Ghozali, 2013). It is said to be normally distributed if the value is ≥ 0.05 .

Table 7.
Kolmogorov-Smirnov value and an Asymp.Sig value

	Unstandardized Residual
N	69
Kolmogorov-Smirnov Z	0,069
Asymp.Sig. (2-tailed)	0,110

The test results shows that the data are normally distributed, this can be seen from the test results which show a Kolmogorov-Smirnov value of 0.069 and an Asymp.Sig value. (2-tailed) of 0.110 which is greater than the alpha value of 0.05 ($\alpha = 5\%$). The heteroscedasticity test aims to test whether in the regression model there is inequality of variance from the residuals of one observation to another. A good regression model is one where heteroscedasticity does not occur. Heteroscedasticity occurs if the significant value is <0.05 , conversely if the significant value is >0.05 it means that heteroscedasticity does not occur.

Table 8.
The relationship online registration system and effectiveness of service time

Variables	t	Sig
(Constant)	4,676	0,000
The Quality of the Online Registration System (X1)	-0,094	0,925
Effectiveness of Service Time (X2)	1,178	0,242

Table 8, it can be said that the model created does not contain symptoms of heteroscedasticity. This can be seen from the test results which show the Sig value. from the variable quality of the online registration system (X1) of 0.925 and effectiveness of service time (X2) of 0.242, where this value is greater than 0.05 so it can be said that there is no influence between the independent variables on the absolute residual.

According to Ghozali (2012), the multicollinearity test aims to test whether a regression model has correlation between independent variables. A good regression model should have no correlation between independent variables. Multicollinearity testing was carried out using the Value Inflation Factor (VIF) test. Where if the VIF value < 10 then multicollinearity does not occur, conversely if the VIF value > 10 then multicollinearity occurs.

Table 9.
The tolerance and VIF values of the online registration system quality and service time effectiveness

Variables	Tolerance	VIF
The Quality of the Online Registration System (X1)	0,191	5,237
Effectiveness of Service Time (X2)	0,191	5,237

Table 9, it can be seen that the tolerance and VIF values of the online registration system quality and service time effectiveness variables show that the tolerance value for each variable is greater than 0.1, namely 0.191 and the VIF value is smaller than 10, namely 5.237. To test the influence of all independent variables together on the dependent variable, an F test is carried out. If the significant value is ≤ 0.05 then it is stated that the independent variable has a simultaneous influence on the dependent variable.

Table 10.
The relationship online registration system quality and service time effectiveness

F Count	Sig
307,769	0,000

Table 10, the analysis results show that the F test significance value is $0.000 < 0.05$. These results mean that the variables Online Registration System Quality (X1) and Service Time Effectiveness (X2) have a significant influence together on Patient Satisfaction. The coefficient of determination is used to find out how much variation in the independent variable can explain the overall variation in the dependent variable. The coefficient of determination measures how much influence the independent variables as a whole have on the rise and fall of variations in variable values. If the R² value is closer to one, the stronger or greater the influence of the independent variable will be on the dependent variable (Setiawan, 2015).

Table 11.
the coefficient of determination of patient satisfaction

R	R-Square	Adjusted R-Square
0,932	0,869	0,866

Table 11, it can be seen that the coefficient of determination (R²) obtained is 0.869. This means that 86.9% of patient satisfaction is influenced by the variables Online Registration

System Quality (X1) and Service Time Effectiveness (X2), while the remaining 13.1% of patient satisfaction is influenced by other variables not examined in this research. Partial Test (t Test) then carried out to find out how much influence an independent variable individually has in explaining the dependent variable. The t statistical test can be carried out by looking at the significance value of t for each variable contained in the regression results output using SPSS. If the significance number $t < \alpha$ (0.05) then it can be said that there is a strong influence between the independent variable and the dependent variable, whereas if the significance number $t > \alpha$ (0.05) then it can be said that there is not a strong influence between the independent variable and the dependent variable (Ghozali, 2013).

Table 12.
The Influence of the quality of the online registration system on patient satisfaction

Coefficients					
Unstandardized Coefficients		Standardized Coefficients			
Model	B	Std. Error	Beta	t	Sig.
(Constant)	0,580	0,105	-	5,516	0,000
The Quality of the Online Registration System	0,273	0,085	0,275	3,204	0,002
Effectiveness of Service Time	0,578	0,074	0,676	7,869	0,000
a. Dependent Variable : Patient Satisfaction					

The Influence of the Quality of the Online Registration System on Patient Satisfaction. The results of testing using SPSS for variable X1 (the Quality of Online Registration System) obtained a calculated t value = 3.204 with a significance level of 0.002. By using a significance limit of 0.05, the significance value is smaller than the 5% level. From the results of linear regression and the t test, it shows that the regression coefficient for Online Registration System Quality is positive and significant. From the regression model, it can be explained further, namely that the Online Registration System Quality Variable (X1) has a positive and significant influence on Patient Satisfaction (Y) with a regression value of 0.275 and a calculated t value = 3.204 with a significance level of 0.002. The Effect of Service Time Effectiveness on Patient Satisfaction The test results obtained with SPSS for the variable Thus, the first hypothesis is accepted. From the results of linear regression and the t test, it shows that the regression coefficient for service time effectiveness is positive and significant. From the regression model, it can be explained that the service time effectiveness variable (X2) has a positive and significant influence on patient satisfaction (Y) with a regression value of 0.676 and a calculated t value = 7.869 with a significance level of 0.000.

DISCUSSION

Based on the results of respondents' answers to the online registration system used by the Bali Mandara Eye Hospital, it is known that the online registration system at the Bali Mandara Eye Hospital polyclinic can be said to be good with a score of 2.7 that the online registration system can be done by installing the HiDok application on smartphone, so the registration can be done anywhere and anytime. The Bali Mandara Eye Hospital also has human resources involved in the registration process. The human resources involved at the registration counter are seven people, of which five are tasked with serving patients who want to register, one is tasked with customer service (service at kiosk) and another is for distribution to polyclinics. Based on the number of human resources at the registration counter and phenomena in the field, the employees at the registration counter can serve patients who register online or manually well.

Based on the results of the respondents' answers to the effectiveness of service time, it is known that the effectiveness of service time at the Bali Mandara Eye Hospital polyclinic can be said to be effective and good with a value of 2.80. This can be seen from the results of the description of respondents' answers to the effectiveness of service time, that the officers at the Bali Mandara Eye Hospital polyclinic provide complete service to patients and the quality of service at the polyclinic is very effective. The word effective means successful or something that is done can be achieved well. Effectiveness can be measured by comparing the plans that have been determined with the real results that have been realized. However, if the action taken is inappropriate, causing the goal not to be achieved, then it is said to be ineffective (Kharisma, 2017). Based on the results of interviews with two patients at the Bali Mandara Eye Hospital, the patients said the services provided were in the good and effective category. This can be seen from the comparison between before they received service and after they received service.

Based on the analysis results in Table 12, a significance value of 0.002 is obtained, less than 0.05 ($0.005 < 0.05$), with a regression coefficient value of 0.273. These results mean that there is an influence of the quality of the online registration system on patient satisfaction at the Bali Mandara Eye Hospital polyclinic. This also shows that the better the quality of the online registration system at the Bali Mandara Eye Hospital, the better the level of patient satisfaction at the Bali Mandara Eye Hospital. According to Subagyo et al (2000) a queuing system is a collection of customers, waiters (counters) as well as rules that regulate customer arrival and processing queue service problems. Meanwhile, according to Elyanovianti (2021), the quality of the online registration system is influenced by the aspects of comfort of access, ease of use and security of the system, where the patient registration process is carried out online before the patient comes to receive service, waiting to be served, if the service is not provided immediately and if they have been waiting. to get service then leave the system after completing the service. These results are in line with research conducted by Idayanti (2020), which states that the queuing system (queuing time at registration) influences patient satisfaction. This is because the tendency for a fast-waiting time for registration will make patients satisfied with the service, and conversely a long waiting time for registration will make patients dissatisfied with the service.

These results are also in line with research conducted by Bancin et al (2018), stating that based on partial test results to determine the influence of service time variables on patient satisfaction with BPJS users, a sig value of $0.008 < 0.05$ was obtained, this shows that there is a significant influence between service time variables and patient satisfaction with BPJS users at the Aceh Singkil Regional General Hospital inpatient installation. This research is also supported by Datuan, et al (2018), stating that the results of statistical tests using the chi-square test obtained a value of $p = 0.048$ because the value of $p < 0.05$ means that timeliness has a significant effect on patient satisfaction of BPJS participants. This is because respondents feel satisfied with the hospital staff with the timely service they receive in the administration, laboratory and pharmacy departments. Based on the analysis results in Table 11, the F test significance value is $0.000 < 0.05$. And the coefficient of determination (R^2) value obtained was 0.869.

This means that 86.9% of patient satisfaction is influenced by the variables Online Registration System Quality (X1) and Service Time Effectiveness (X2), while the remaining 13.1% of patient satisfaction is influenced by other variables not examined in this research. These results mean that the variables Online Registration System Quality (X1) and effectiveness of service time (X2) have a significant influence together on patient satisfaction.

This shows that the better the queuing system and effectiveness of service time at the Bali Mandara Eye Hospital, the better the level of patient satisfaction at the Bali Mandara Eye Hospital. These results are in line with research conducted by Purba (2021), stating that the queuing system has a significant effect on the effectiveness of waiter time, based on t-count calculations of $18.284 > t\text{-table } 1.985$ and a significant $0.000 < 0.05$, which means that the queuing system has significant influence on the effectiveness of service time at Bank Sumut Medan branch. Dedi Maulana, et al (2019) stated that there is an influence between the waiting time for registration and examination on patient satisfaction. From the results of this research, it was found that respondents had a long waiting time at the counter, namely more than 30 minutes, but it depended on the number of patients who came to the Macini Sombala Community Health Center. Eka Sartika Bancin, et al (2018) stated that there is a significant influence between service time variables on patient satisfaction. This indirectly states that the queuing system and the effectiveness of service time influence patient satisfaction.

CONCLUSION

Based on the research results and discussion, it can be concluded that the overall quality of the online registration system is in the good category (2.78), the overall effectiveness of service time is in the good category (2.80) and overall patient satisfaction is in the satisfied category (2.96). There is an influence of the quality of the online registration system and the effectiveness of service time on patient satisfaction at the Bali Mandara Eye Hospital polyclinic, where the significance value of the F test was obtained, namely $0.000 < 0.05$. These results mean that the variables quality of the online registration system (X1) and effectiveness of service time (X2) have a significant influence together on patient satisfaction. This shows that the better the quality of the online registration system and the effectiveness of the service time at the Bali Mandara Eye Hospital, the better the level of patient satisfaction at the Bali Mandara Eye Hospital. It is hoped that the Bali Mandara Eye Hospital can carry out socialization and simulations regarding online registration while patients are queuing in order to provide understanding and transition patients to switch to Kios-K services.

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