

Analysis of Academic and Administration Information Systems Using Servqual and Kano Methods

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Abstract—Academic and Administrative Information System (SIKAdm) is an online-based information system service for students of Hangtuah University Pekanbaru. With the development of information systems in the academic field, we must also test information systems, there are several problems that users feel that the quality of service of the Academic Information System (SIKAdm) has not run effectively and efficiently, such as, there are often delays when filling in KRS, color contrast in the system is too disturbing to the user's eyes, there is no edit menu on the student profile, and finally there is no complaint lyanan menu or C3 servicedesk menu. This research was conducted using the ServQual method and the Kano method. The ServQual Method can be said to be a method used to measure the quality of service attributes of a dimension, while the Kano Method can be interpreted as a model built to understand how well their product or service meets the needs of users. This data collection process is by conducting interviews and distributing questionnaires of 98 respondents using the Simple Random Sampling technique. The data was obtained using IBM SPSS 26 and calculated the GAP value using Microsoft Excel. The results of this study The highest gap value was in the Assurance variable, with a GAP value of -4.54. While the lowest gap value is in the Responsiveness variable of -2.51.

Keywords: SIKAdm; ServQual; Methode, Kano Methode; Simple Random Sampling; IBM SPSS 26

1. INTRODUCTION

Academic and Administrative Information System (SIKAdm) is an online-based information system service for students of Hangtuah University Pekanbaru which serves as a means to fill in information on Study Plan Cards (KRS), Study Result Cards (KHS), Lecture Schedules that are being followed, Balance Sheets per semester and personal biodata. Previously, the system in HangTuah stikes was called SISFO (SISTem InFORMasi) which was implemented in 2008, then changed its name to the Academic and Administrative Information System (SIKAdm) in 2018 and currently has 4399 users as academic and administrative services, which are intended for students, lecturers and other employees in accessing information related to academic records during the lecture process.

With the development of information systems in the academic field, we must also test information systems, so that we know whether the development is as expected, this study aims to examine how the quality of the Academic and Administrative Information System (SIKAdm) services of Hang Tuah University Pekanbaru, Hang Tuah University Pekanbaru is the best health science college in Riau that is in great demand [1].

The advantage of academic information systems in general is that it facilitates the ability of a university to help or support the achievement of goals and facilitates the integration of people into it. The use of SIKAdm has not fully met the needs of students and other users. [2] SIKAdm users are often dissatisfied because of usage restrictions, incomplete available functions or complicated usage processes that make users feel lazy to access SIKAdm.

There are several problems that users feel, the first problem felt by SIKAdm users is that the data is out of sync when students want to input KRS at the beginning of the semester the data is often constrained due to delays that result in errors between students and academic lecturers, therefore students have to replenish KRS that have been inputted before. The second problem, for the choice of color contrast felt by users is the SIKAdm display which is too conspicuous so that it interferes with the eyes and the appearance is less attractive, making students rarely access the SIKAdm [3].

The third problem, is that there is no edit menu for students' personal profiles on the SIKAdm service and also when students want to change the password on SIKAdm must contact BAAK and ICT to change it, thus making students troublesome if something goes wrong with the SIKAdm password. The fourth problem, in the SIKAdm application for now there is no complaint service menu for SIKAdm users when there are difficulties in running the SIKAdm system such as the ServiceDesk C3 menu and there are also several other menus that are not yet available in SIKAdm. The problems described above are supported by the results of pre-survey using questionnaires with sampling techniques, namely random sampling techniques [4].

There are several problems and improvements need to be made to SIKAdm services to create a service system that is transparent, timely, in quantity and on quality. So based on the background described by the researcher, This study use the Servqual and Kano methods. Servqual Method How to measure the quality service attributes from a dimension there are 5 variables, namely: reliability, assurance, tangibles, empathy, responsiveness [5]. A canoe model can be interpreted as a model built to understand how well their product or service meets the needs of the user. The canoe method is grouped into 6 dimensions of the user's desire category and can affect user satisfaction. namely:

(Kano, 1984): Must-be Requirements (MBR), One-dimensional Requirements (ODR), Attractive Requirements (AR), Indifferent (I)[6].

Some of the previous studies that became a reference for researchers as a reference to analyze the level of system user satisfaction, namely: research conducted by Muhammad Rizki in 2021 at the ACADEMIC FST UIN SUSKA Riau. The results of this study in the form of an average score of satisfaction levels 20 obtained Service attributes with 5 aspects of service quality do not meet User satisfaction with FST students can be seen from the satisfaction score to the five dimensions small from one ($Q < 1$) [7]. Furthermore, Medyantiwi Rahmawita's research in 2021, at the FKIP of Riau University. The results of this study show that users are not satisfied with the system applied, this can be seen in the form The TESQ value obtained was (-0.62), giving a negative result. This means that the service's currently offered by the Academic Portal are scoped. to be unsatisfactory and the results of respondent data processing obtained a CSI value of 0.89 (89 %) then the CSI value is on the criteria of 0.81-1.00 [8] . Then the research conducted, Iis Miati in 2022, at STIA Yppt Priatim Tasikmalaya. The results of this study obtained a score of 0.537 or 53.7%, This means student's satisfaction is 53.7% affected by the presence of e-service quality. Significance value is 0.000, which means it is far from the alpha value of 0.05 (5%) [9]. Next, the research was conducted, Najam Burhanudin Akbar in 2022, at the Pkb Taxpayer Joint Office Xyz. The results of the study showed a User Satisfaction Index (IKP) value of 0.86 which was declared good but there were 3 attributes that had a negative satisfaction value, namely the comfort attribute of the waiting room, supporting facilities such as the lack of waiting chairs and a less spacious parking area of -2.2, employee attributes of solving problems quickly, precisely, and meticulously by -2.06/-1.03 and the Consumer Safety attribute of violating tax regulations of -0.23 [10]. The last research conducted by Alvin in 2020, at Bank Jabar Banten Syariah Bandung Branch. As a result of this research, the services provided are quite good. MeanwhileThe calculation result of the CS coefficient showed the best value of 1.02 for the 23rd service attribute, 13, 23, and 25, that is, hospitality of customer service, accuracy of customer service, and customer service that provides comfortable service, and the worst value is -1.49 in the 15th attribute, namely the ability to communicate customer service [11].

Based on the previous research described above, in general there are some similarities in the findings obtained. However, the results found turned out to be sourced from different data processing. Some researchers are using CSI to process medyantiwi data, 2020; Iis Miati,2022.). While others do not use CSI. While others use gap values and means (Muhammad Rizki, 2021; Najam Burhanudin Akbar,2022; Alvin,2020). This research is similar to the research of Muhammad Rizki, Najam Burhanudin Akbar, Alvin) using gap values and means to process data. However, this study is different from the research above, especially sampling. This study used the Simple Random Sampling technique by measuring samples using Slovin. On the other hand, they use the Purposive Sampling technique. The purpose this study for determine student satisfaction with quality SIAKAdm STIKes HangTuah Pekanbaru services using the ServQual and Kano Methods in order to create an effective and efficient SIAKAdm service.

2. RESEARCH METHODOLOGY

The methodology of this research starts from the planning stage to the report preparation stage. The steps taken to improve the research are shown in the figure below

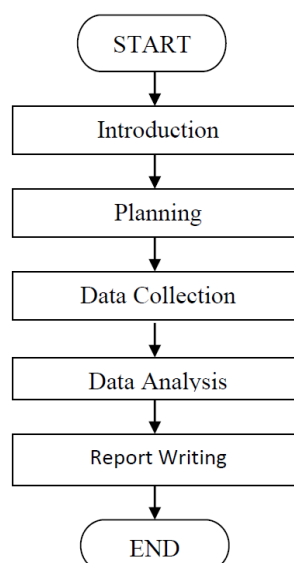


Image 1. Research Methodology

Here is a full explanation of the steps performed based on Figure 1 above.

2.1 Preliminary Stage

In the preliminary stage, researchers conduct direct observations and surveys to find out what problems will be used as consideration. And the researcher will choose and plan what to study, determine what data is needed in the study and what methods will be used in the study. In the preliminary stage, researchers conduct direct observations and surveys to find out what problems will be used as consideration. And the researcher will choose and plan what to study, determine what data is needed in the study and what methods will be used in the study.

2.2 Planning Phase

At the planning stage, the activities carried out consist of identifying problems through preliminary interviews with system managers and some active students of Hang Tuah University. After identifying the existing problem, the researcher determines the boundaries, goals, and benefits to be achieved in the study. After that, the researcher determined the The data required for this study are both primary and secondary data Primary data found successfully collected such as the results of interviews and questionnaires. Meanwhile, the secondary data obtained is the history of the agency, vision, mission, organizational structure and previous research.

2.3 Data Collection Stage

At this stage, it is carried out to obtain information related to the research to be studied, so that a goal can be achieved. This literature is obtained through journals, books and documents. Then the researcher conducted an interview based on the 5 dimensions of the ServQual and Kano methods, so that several problems and obstacles were found that were felt by users. Interviews in this study were conducted with system managers and some active students as users of the system. After that, it is continued by making observations to observe directly the running system. The servqual method is a method used to measure the quality of service from the attributes of each dimension, so that a gap value (gap) will be obtained which is the difference between the respondent's perception of what will be received, so that a gap value will be obtained which is the difference between the respondent to the service received and the fact that the respondent will receive the service to be received [12]. While the Kano method was developed by Noriaki Kano in 1984, the Kano Model is used to measure the extent to which the service function can meet customer wants and needs, according to Kano, customer needs can be divided into three types, namely must be (basic needs), one dimensional (performance needs), and attractive (excitement needs). Apart from the three basic categories of canoe models, there are also other categories, namely indifferent, reverse and questionable [13]. After observation, the next step is to determine the research sample using Slovin's equation with error evaluation of 0.1 or 10% [14].

$$n = \frac{4399}{1+(4399 \times 0.01)} \quad (1)$$

$$n = 97.77 > 98$$

The number of active STIKes student samples to be taken is 98 (ninety-eight) people. Research sampling using Simple Random Sampling technique. That is, the sampling technique is carried out randomly, regardless of the level present in the members of the population. After the number of samples in the study was known, the next step was to distribute the questionnaire to the 98 respondents. The deployed research questionnaire contains 27 statement items covering 5 dimensions of ServQual reliability, assurance, tangibles, empathy, responsiveness.

2.4 Data Analysis Stage

The activity carried out at this stage is the collection of data obtained through the dissemination of questionnaires. The data obtained is processed using Microsoft Excel to determine the gap values and means. This stage is run to find out the dampk of each ServQual and Kano dimension. So that it is known how the expectations and realities of students use SIAKAdm.

2.5 Report Writing

At this stage, the activities carried out consist of writing a report on the performance's of the study and presenting the performance's of the Implicit.

3. RESULTS AND DISCUSSION

3.1 Academic and Administrative Information System (SIAKAdm)

The services contained in SIAKAdm are KRS filling, consulting services, financial details, academic services such as KRS and KHS printing, final project services such as online guidance, submission of supervisors, proposals to compress registration. The SIAKAdm can be accessed via the link <https://siakadm.htp.ac.id/>. The following is the appearance of the menu on SIAKAdm shown in the following figure.

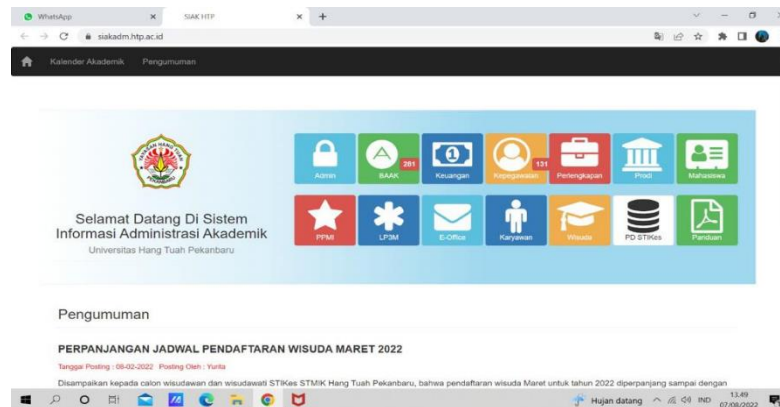


Image 2. Menu SIAKAdm

3.2 Respondent Analysis

The respondents in this study were active students of HangTuah University Pekanbaru who used SIAKAdm from 2019/2022. The questionnaires made based on the variables / dimensions in this study amounted to 5 (five) variables / dimensions and 27 (twenty-seven) statements, the samples used were 98 taken directly using the distribution of questionnaires. Respondents' identities by name, nim, age, gender, major, semester. The scores used in the questionnaire to measure SIAKAdm success rates used four points of the Likert scale from Strongly Disagree (STS) to Strongly Agree (SS). The four points of the Likert scale;

- a. Strongly Disapprove (SD) scored 4
- b. Disagree (D) scored 3
- c. Agree (A) is scored 2
- d. Strongly Agree (SA) scored 1

3.3 SPSS

a. Validity Test

Validity testing is used to determine the accuracy of a meter in meeting its measurement function; validation in research is through item validation, that is, correlating item scores with total scores. With a significance level of 5%, degrees of freedom (df) = n-2, with a total sample of 98 respondents. So in this study df = 98 – 2= 96. Then it can be seen that the value of r of the table is 0.2. Then r table is compared with the value of r count, where if r count > r table and positive value then the statement or indicator is declared valid. For accurate results, you can get the calculated r-value. Using IBM SPSS 26.0 software, the validity test results can be seen as follows:

Tabel 1. Validity Test

Item	R Hitung	R Tabel	Keterangan
P.1	0,355	0,198	VALID
P.2	0,517	0,198	VALID
P.3	0,241	0,198	VALID
P.4	0,563	0,198	VALID
P.5	0,564	0,198	VALID
P.6	0,473	0,198	VALID
P.7	0,435	0,198	VALID
P.8	0,418	0,198	VALID
P.9	0,481	0,198	VALID
P.10	0,358	0,198	VALID
P.11	0,418	0,198	VALID
P.12	0,261	0,198	VALID
P.13	0,291	0,198	VALID
P.14	0,345	0,198	VALID
P.15	0,471	0,198	VALID
P.16	0,483	0,198	VALID
P.17	0,511	0,198	VALID
P.18	0,337	0,198	VALID
P.19	0,357	0,198	VALID
P.20	0,382	0,198	VALID
P.21	0,372	0,198	VALID
P.22	0,339	0,198	VALID

P.23	0,206	0,198	VALID
P.24	0,225	0,198	VALID
P.25	0,288	0,198	VALID
P.26	0,318	0,198	VALID
P.27	0,311	0,198	VALID

b. Reliability Test

A questionnaire can be declared reliable or reliable is when a variable that is declared reliable is if the value of Croanbach's Alpha > 0.600. The results of the reliability test at the level of student expectations and academic performance of SIAKAdm are as follows:

Tabel 1. Reliability Test

Cronbach's Alpha	N of Items
.506	28

3.4 ServQual Methode

Service Quality (ServQual) measurement aims to find out which attributes in which dimensions are contributed from the largest to the smallest, so the calculation of hangtuh university student expectations and the academic performance of HangTuh University is carried out.

Tabel 3. ServQual Model

No.	Dimension	Performance (P)	Hope (E)	GAP	Q = P/E
1	<i>Tangible</i>	15,56	18,90	-3,34	0,823
2	<i>Reliability</i>	12,53	16,01	-3,48	0,782
3	<i>Responsivennes</i>	9,06	11,57	-2,51	0,783
4	<i>Assurance</i>	13,08	17,62	-4,54	0,742
5	<i>Emphaty</i>	7,7	11,51	-3,81	0,668
	Means	11.586	15.122	-3.566	0,7596

To analyze the quality that has been given, the formula Q is used, namely if $Q \geq 1$, then the quality of service is said to be good. The above table shows the service quality of each dimension in SIAKAdm, but it is said that the service in SIAKAdm is still unsatisfactory

3.5 Kano Methode

In classifying service attributes in the kano method, the first thing or step is to group respondents' questions based on functional and dysfunctional question groupings. To group the attributes of each respondent, use the Kano evaluation table. The classification of canoe attributes is as follows:

Tabel 4. Classification of kano methods

No	Attribute	Categories Kano
1	SIKAdm's attractive interface	A
2	SIKAdm is easy to operate	A
3	No interruptions when using SIKAdm	A
4	The feature features in SIKAdm are easy to understand	A
5	SIKAdm's ability to provide services to system users/students	A
6	SIKAdm can be accessed at any time.	A
7	The applied SIKAdm has adjusted technological developments	A
8	Student Learning Outcomes (grades) come out according to the specified schedule	M
9	Accuracy of lecture schedule information provided by SIKAdm	A
10	The accuracy of SIKAdm provides curriculum information.	A
11	KRS filling via SIKAdm.	A
12	Accuracy of Payment Information (SPP, Value List, Thesis, Judiciary) through SIKAD	A
13	Accuracy of lecturer information provided to students through SIKAdm	R
14	SIKAdm minimizes student data errors.	M
15	SIKAdm is quick to respond when there is a curriculum change.	M
16	KRS printing on SIKAdm is quick and easy.	M
17	The values in SIKAdm are in accordance with the grades given by the lecturer.	M
18	Student data security on SIKAdm.	O
19	Notification of changes to the Lecture Schedule at SIKAdm.	R
20	Notification of course lecturer replacement information.	M
21	Notification of curriculum change information.	M

22	Informasi nilai-nilai pada SIAKAdm selalu up to date.	M
23	Update alumni information every graduation period.	A
24	Providing convenience for students to store / change student data.	R
25	Make it easier for students to find lecturer information.	O
26	Make it easier for students to find curriculum information.	A
27	SIAKAdm is very helpful in academic affairs	O

3.6 Model Intregation ServQual Dan Kano

The intergation of the servqual model through gaps after weighting with the canoe category with the Kano method can determine the attributes that have a significant effect on consumer satisfaction, namely attributes that belong to the attractive, Reverse, one dimensional and must be categories. The intergation is as follows:

a. Attractive

Attributes that fall into I need to keep the categories because it reduces user satisfaction. It becomes very high when the attribute power goes up, but when the attribute power goes down Happiness does not decrease when attributes perform poorly.[15]. The factors that fall into to category are:

Tabel 5. *Attribut Attractive*

No.	Attribute Attractive	GAP
1	SIAKAdm's attractive interface	-0,54
2	SIAKAdm is easy to operate	0,07
3	No interruptions when using SIAKAdm	-0,46
4	The feature features in SIAKAdm are easy to understand	-0,57
5	SIAKAdm's ability to provide services to system users/students	-0,89
6	SIAKAdm can be accessed at any time.	-0,5
7	The applied SIAKAdm has adjusted technological developments	-0,45
9	Accuracy of lecture schedule information provided by SIAKAdm	-0,71
10	The accuracy of SIAKAdm provides curriculum information.	-0,73
11	KRS filling via SIAKAdm.	-0,81
12	Accuracy of Payment Information (SPP, Value List, Thesis, Judiciary) through SIAKAD	-0,25
23	Update alumni information every graduation period	-0,58
26	Make it easier for students to find curriculum information.	-1,82

b. Reverse

This category is a higher degree of consumer satisfaction if the service is unduly, when compared to satisfaction with a service that is running well [16].

Tabel 6. *Attribute Reverse*

No.	Attribute Reverse	GAP
19	Notice of information on changes in the Lecture Schedule at SIAKAdm	-0,89
24	Make it easier for students to store/change student data	-1,01

c. One Dimensional

Attributes that fall into the category are very important to be prioritized by SIAKAdm because Satisfaction depends linearly on these performance’s attribute [17]. Where the factors that affect it are as follows;

Tabel 7. *Attribute One Dimensional*

No	Attribute One Dimensional	GAP
18	Student data security in SIAKAdm	-0,65
25	Make it easier for students to find Lecturer information	-0,76
27	SIAKAdm sangat membantu dalam urusan akademik	-0,22

d. Must be

Attributes that are in category are still considered necessary by the user because the user becomes dissatisfied If the performance attribute is low, so user satisfaction is unlikely to increase further than the neutral value even if the performance of the attribute is high. Must be a weak statement of satisfaction but more positive than neutral[18]. The factors this category are:

Tabel 8. *Attribute Must be*

No	Atribut Must Be	GAP
8	learning outcomes (grades) com out according to the specified schedule	-0,71
9	Provision of lecture schedule information provided by SIAKAdm	-0,73
20	Notice of course lecturer replacement information	-0,89

21	Notice of curriculum change information	-0,88
22	The value information on SIAKAdm is always up to date..	-0,58

3.7 Result

The highest gap value is in the Assurance variable, which is with a GAP value of -4.54. This means that the response / agility of SIAKAdm staff / admins in providing services has not been fast and responsive. The handling of student problem complaints has not been satisfactory. The lowest gap value is in the Responsivennes variable of -2.51. This shows that the concern of SIAKAdm staff / admins in providing services to students is quite good based on the comparison of the five servqual variables.

3.8 Recommendations and Suggestions

- It is necessary to improve SIAKAdm services by maximizing all unsatisfactory services, especially in terms of IT facilities/infrastructure, especially in this case the network.
- Based on the acquisition of servqual scores for Academic and Administrative Information System (SIAKAdm) services, what needs to be improved and considered is the Assurance variable, such as there are still some staff who do not provide knowledge assurance explaining problems related to the SIAKAdm system to students. This is the need to improve services so that the quality of Academic and Administrative Information System (SIAKAdm) services is even better.
- Although the Responsivnes variable obtained the lowest gap value, this must be improved in order to give attention to students to feel satisfied with the existing SIAKAdm system.

4. CONDUCTION

Conclusion of the results presented above of data processing and analysis carried out previously, It can be concluded that the results of service quality using the integration of the servqual method and the canoe model obtained 27 service attributes 5 dimensions of service quality. Where the 5 dimensions not enough to satisfy user satisfaction with the system because the satisfaction value of the five dimensions is small from one ($Q < 1$), so it needs to be prioritized improvements that must be carried out by HangTuah University for SIAKAdm in an effort to recommend improvements that are suitable for services. The following are the conclusions of this study, namely:

- Overall, the results of calculating the quality of SIAKAdm services on user satisfaction are still not satisfactory. This is seen from the results of the achievement of each servqual variable with a negati(-3,566) value.
- For HangTuah University, it can pay attention to SIAKAdm to be able to improve the quality of service that is better in increasing student satisfaction with the services provided and consider the design of proposed improvements to be used so that the improvement of services that are considered unsatisfactory for users.

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