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# Student satisfaction survey at XYZ Campus using the Slovin formula method and mwater application

**Nurkholis[1*], Pria Sukamto[1], Fia Dhatul Prima Kusuma[2]**

[1*] Universitas Muhammadiyah Cileungsi, Indonesia 16820
[2] Politeknik Negeri Sriwijaya, Palembang, Indonesia

* Corresponding Author: nurkholis@sttmcileungsi.ac.id

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**ABSTRACT**

The progress of an institution as a learning process organizer on a campus is a key organizational goal, as it fosters competitiveness and enhances benefits for the organizatio. However, in the process of achieving this progress, it is necessary to measure student satisfaction, whether they are satisfied or not, which is the problem in this study. The purpose of this study is to measure student satisfaction with each campus resource that has been provided, whether it has reached the expected student satisfaction category or not. The method used to measuring this satisfaction is the Slovin method and the MWater application, which method is a method for collecting data and opinions from customers or students regarding the products or services received. In this case, a student satisfaction survey can be used to determine the level of student satisfaction and interest in services and facilities on campus. This student satisfaction survey can be packaged in the form of questions related to new student services, such as information regarding new student admissions (PMB), administrative services and available campus facilities. With the MWater application, we can create survey forms and collect survey answers quickly and efficiently, while the Slovin formula is used to determine the number of samples needed from the population of the number of new students in each faculty. The results of the study using the Slovin formula and the Mwater application showed that 77.8% of students were satisfied with the campus service, while 5.6% were dissatisfied, 5.6% were dissatisfied, and 11.1% were very satisfied. The results of this survey can then be used as a reference for the campus in planning future promotional strategies and university policies.

**Keywords**: Survey; Slovin; GIS; Mwater; Students.

## 1. Introduction

Institutions as organizers of learning process activities on a campus are part of the organization's goals, because this progress creates good competitiveness in increasing benefits for the organization. However, in the process of achieving this progress, it is necessary to measure student satisfaction, whether they are satisfied or not, which is the problem in this study. Satisfaction surveys are a way to collect data and opinions from customers or students regarding the products or services they enjoy [1]. In this case, student satisfaction surveys can be used to determine the level of satisfaction and interest of new students towards services and facilities on campus by using the mWater application [2]. The mWater application is an open-source platform designed to create online survey forms. Through this application, new students can complete online surveys prepared by the campus to provide feedback and input regarding the services they receive [3].

Student satisfaction surveys are typically structured around questions related to new student services. For example, questions about new student admissions (PMB) information, administrative

processes, and campus facilities [4][5][6]. Students can answer these questions using a rating scale or provide direct comments [7]. The Slovin formula is used for sample calculations because it is simpler and produces accurate sample sizes without requiring extensive knowledge of the population [8]. It offers flexibility in determining the error rate [9].

The data collected from this digital survey will be used by the campus to assess the quality of services received by students [10]. If any shortcomings are identified, the campus can make improvements as needed [11]. Furthermore, the survey results also help the campus understand student expectations, thereby enhancing student satisfaction with campus services [12].

In conclusion, the student satisfaction survey using the mWater application is an efficient method for assessing student satisfaction levels and improving campus service quality [13]. Students can easily provide feedback and suggestions, while the campus can utilize the results to improve services. To determine the number of respondents from the new student population in each faculty, the Slovin formula was used. The campus can then use the survey results to develop promotional strategies and formulate better university policies [14], the influence of service satisfaction [15], the measurement of service quality, the influence of customer perceptions of quality [16], and the influence of service quality reliability [17].

The purpose of this study was to measure student satisfaction with each campus resource provided and determine whether it had achieved the expected level of student satisfaction. The method used to measure satisfaction is the Slovin method and the MWater application, where this method is a method used to collect data and opinions from customers or students regarding the products or services received.

## 2. Method

Types of research: This study uses a quantitative method with a survey approach to measure the level of satisfaction of new students with services at XYZ University.

Population and sample

a. Population: All new students of XYZ University.
b. Sample: The number of samples is determined using the Slovin Formula:

$$n = \frac{n}{1+N(e^2)} \quad (1)$$

Where:
*n*: Number of samples
*N*: Population size
*e*: Margin of error (10% atau 0,1)
Calculation Example: If the population (N) is 1,000 new students, then:

$$n = \frac{1000}{1 + 1000(0{,}1^2)} = 91$$

The minimum sample size is 91 respondents.

c. Sampling Technique: Selected randomly (Simple Random Sampling) so that each student has the same opportunity to be selected.

Research Instruments: The instrument used was a digital questionnaire via the mWater application, which consisted of:

a. Respondent Identity: Major and semester (name optional).
b. Satisfaction Questions: Using a Likert scale (1-5) to assess satisfaction with:
   - New Student Admission Process (PMB).
   - Administrative services.
   - Campus facilities.

Data collection: Data was collected online through the mWater app. Respondents completed the questionnaire using a smartphone or computer. The questionnaire link was shared via social media or WhatsApp groups.

Data Analysis: Data was analyzed descriptively to provide an overview of student satisfaction levels [9]:

- Frequency and Percentage: Shows the distribution of responses.
- Mean: Calculates the average satisfaction score.
- Visualization: Graphs, tables, and automated GIS maps from mWater [18].

Interpretation of results based on the Likert scale:
Score 1–2: Not Satisfied.
Score 3: Quite Satisfied.
Score 4–5: Satisfied.

Validity and reliability

a. Validity Test: Ensures the questions are relevant to the research objectives.
b. Reliability Test: Ensures the consistency of the results with a Cronbach's Alpha value > 0.6.

Research Ethics

a. Respondents provide informed consent before completing the questionnaire.
b. Respondents' identities are kept confidential to maintain privacy.
c. Respondents are free to stop participating at any time without pressure.

Research limitations

a. The results only cover freshmen at XYZ University, so they cannot be generalized.
b. Limited access to technology may impact participation.

Flow diagram (research flow)

The following is a flow diagram to visualize the research steps:

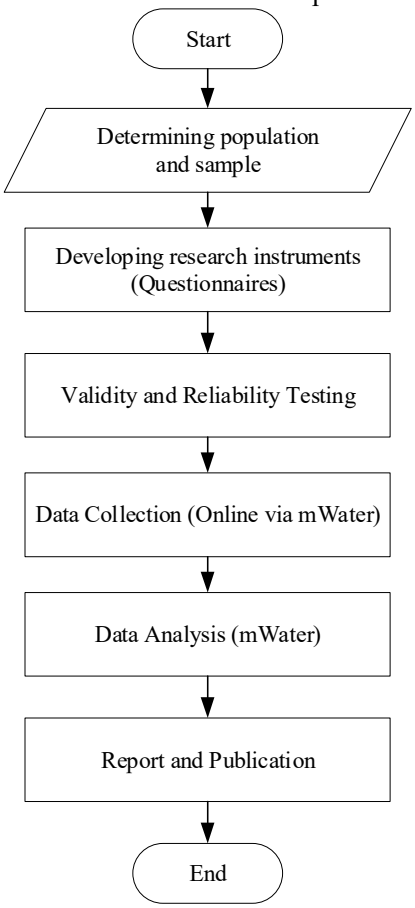


Figure 1. Research Flow

Figure 1 this research began by determining who would be the respondents [19]. After that, the researchers created questions in the form of a questionnaire based on the research objectives. The

questionnaire was pre-tested to ensure its content was clear and reliable. Once deemed appropriate, the questionnaire was distributed online using the mWater application. Data from respondents was then collected and analyzed through the application. The results of the analysis were summarized in a report. This report was then published for the benefit of all stakeholders. This completed the entire research process and provided benefits.

## 3. Results and Discussion

Creating a Questionnaire in the mWater App

Use the mWater web application, new users must first register an account by entering information such as name, email address, organization, and purpose of use. Once registration is complete, the main admin can begin designing a questionnaire tailored to the survey's needs.

The questionnaire covers several important aspects, such as respondent identity (name, major, semester), information about sources of knowledge about the campus (e.g., social media, teacher/lecturer recommendations, or alumni), and questions related to student satisfaction with administrative services, campus facilities, and the university website. Figure 2 shows an example of a questionnaire created in the mWater application.

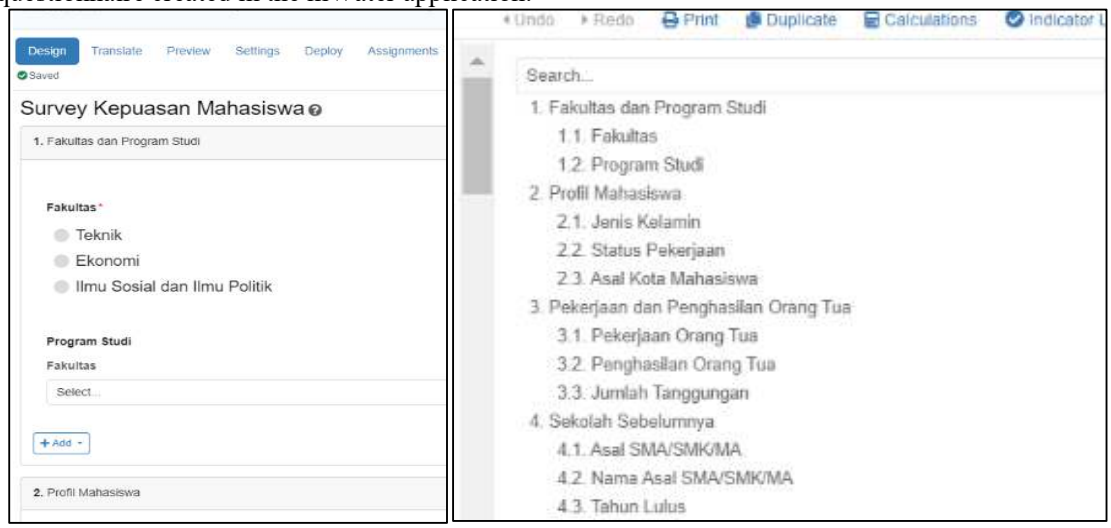


Figure 2. List of questions

The advantage of mWater is its ability to structure questions in various formats, such as multiple-choice, Likert scale, and free-form. This format allows for more varied and in-depth data collection. Furthermore, the application supports automatic data validation, reducing the risk of input errors.

Calculating the number of samples using the Slovin formula

Determine a representative sample size, the Slovin formula is used with a 10% margin of error. This formula is highly relevant in research. The following is the sample size calculation using the Slovin formula:

$$n = 1 + Ne^2N \quad (2)$$

Where:

$n$ = number of samples required,
$N$ = population (total students),
$e$ = confidence level (margin of error).

This Figure 1 calculation ensures that the sample taken is representative enough to represent student opinion as a whole. By using the Slovin formula, researchers can save time and money without sacrificing data validity.

Table 1. Sampling count calculation table

| No | Information | | Number of Students | Sampling Distribution Per Semester |
|---|---|---|---|---|
| | Study program | Semester | | |
| 1 | Informatics Engineering | 1 | 15 | 5 |

| No | Information | | Number of Students | Sampling Distribution Per Semester |
|---|---|---|---|---|
| | Study program | Semester | | |
| 2 | Informatics Engineering | 3 | 16 | 5 |
| 3 | Informatics Engineering | 5 | 24 | 8 |
| | | Total | 55 | 18 |
| Sampling Amount (rounding) | | | | 18 |

Field survey data collection

Once the survey form is designed, the next step is data collection in the field. At this stage, surveyors install the Android version of the mWater application to access the questionnaire created by the XYZ University admin team. Before starting the survey, surveyors must first register to ensure that the data collected comes from a verified source. Figure 3 shows the Android version of the mWater application. This application is very user-friendly, making it easy for surveyors to operate. In addition, the application's geotagging feature allows for real-time tracking of respondents' locations, which helps minimize the risk of data manipulation by surveyors.

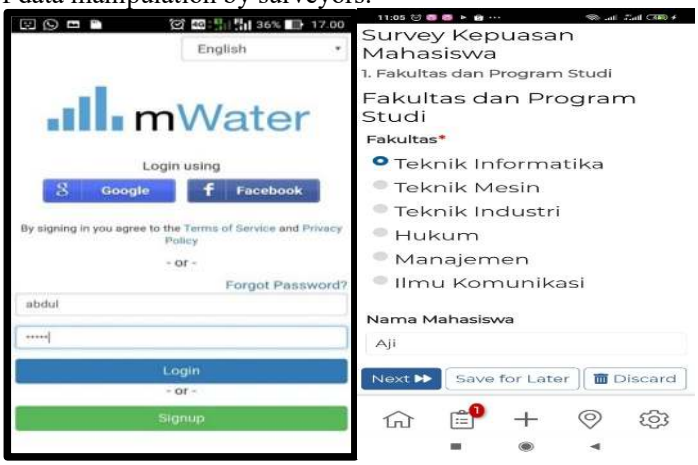


Figure 3. Mwater android application display

During the data collection process, respondents were asked to answer pre-prepared questions. The mWater application supports automatic data synchronization to a central server, allowing data to be processed immediately without requiring lengthy wait times.

Survey data processing process

The advantage of the mWater application is that it can automatically generate reports from verified and stored data. Data is processed in tables, crosstabs, graphs, and mapping formats. Figure 4 these graphs are automatically generated by the mWater application after survey data is entered, eliminating the need to manually create graphs in Excel

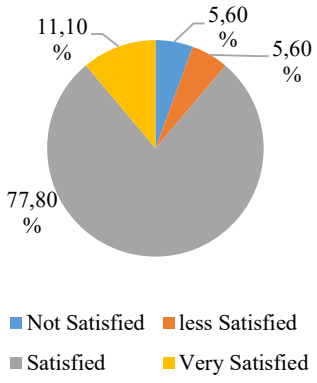


Figure 4. Example of Mwater Report

The mWater app makes it easy for users to manage survey data efficiently and quickly. Data collected through digital questionnaires can be processed directly within the platform. One of mWater's strengths is its ability to present survey results in informative visual graphs. Figure 5 these graphs facilitate the analysis of trends and respondent satisfaction levels. In addition to graphs, mWater also displays data in a neat table format. This makes it easy for users to read respondent details and compare data. This is an example of survey data on the gender category of students from the total respondents [20].

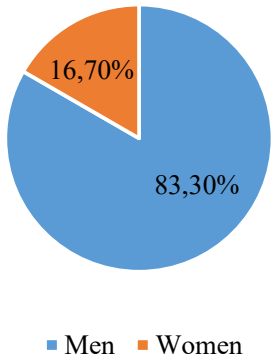


Figure 5. Gender graph

Figure 6 shows the results of a survey on information about the university obtained by students. Six students obtained the highest information through Facebook and Instagram, while 7 students obtained information through other sources (alumni, teachers, and lecturers).

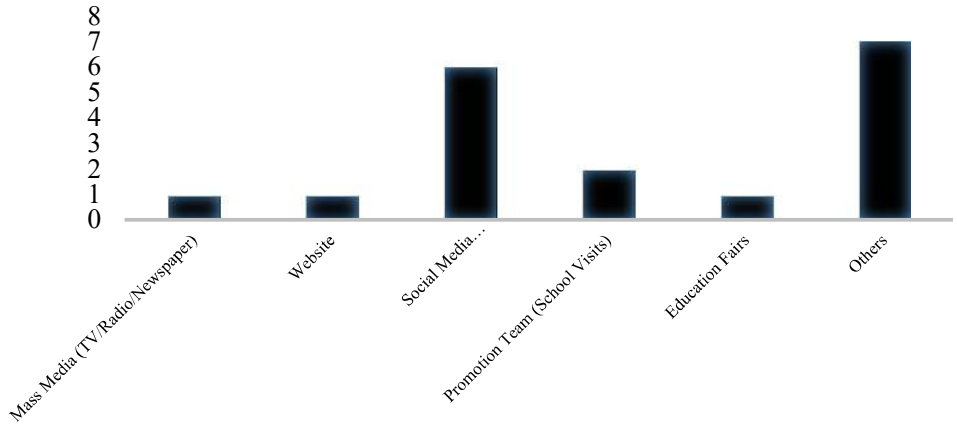


Figure 6. Results of campus information

Figure 7 graphic below shows the results of a survey on campus website assessments, with categories ranging from adequate (61%) to inadequate (22%).

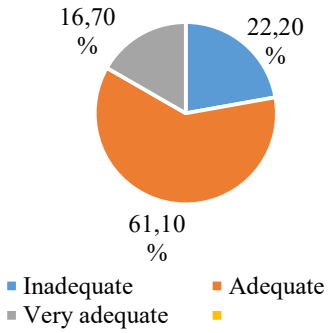

Figure 7. Website assessment survey results

Table 2 in addition to the survey results in the form of multiple choice, there are also survey questions that are answered in writing, regarding questions about hopes and criticisms of this campus, and the results are below.

Table 2. Results of the survey of expectations and criticism

| What are your hopes for this campus? What are your criticisms and suggestions for this campus? | What are your hopes for this campus? What are your criticisms and suggestions for this campus? |
|---|---|
| May it continue to be successful and progress further. I hope it adds facilities. | May it continue to be successful and progress further. I hope it adds facilities. |
| I hope this campus improves and expands so that more students are attracted. | I hope this campus improves and expands so that more students are attracted. |
| Able to compete with other top campuses in efforts to improve campus accreditation. Improved facilities. | Able to compete with other top campuses in efforts to improve campus accreditation. Improved facilities. |
| Good and fulfilling expectations, allowing for effective learning according to improved facilities. | Good and fulfilling expectations, allowing for effective learning according to improved facilities. |
| Continue to progress. Maintain a sense of security from theft. | Continue to progress. Maintain a sense of security from theft. |
| Hopefully, it will develop further. I hope the lecturers are always healthy. | Hopefully, it will develop further. I hope the lecturers are always healthy. |
| Hopefully, it will improve and develop further. Because I am a boarding school student, I must accept the major offered. And that doesn't align with my basic principles. | Hopefully, it will improve and develop further. Because I am a boarding school student, I must accept the major offered. And that doesn't align with my basic principles. |
| My hope is that UMCI will be more advanced in the future. Suggestions: Adequate classes. | My hope is that UMCI will be more advanced in the future. Suggestions: Adequate classes. |
| Hopefully, offline classes are more common because online classes don't provide enough material. At least, for each subject, there should be offline meetings because online classes are difficult to understand and the material is not delivered clearly. | Hopefully, offline classes are more common because online classes don't provide enough material. At least, for each subject, there should be offline meetings because online classes are difficult to understand and the material is not delivered clearly. |
| To become one of the best universities in Indonesia. Some computer software is outdated and needs to be updated. | To become one of the best universities in Indonesia. Some computer software is outdated and needs to be updated. |
| Hopefully, it will become the best university. Computer software needs to be updated. | Hopefully, it will become the best university. Computer software needs to be updated. |
| To make things easier for students. Please update the computer lab. | To make things easier for students. Please update the computer lab. |
| Can continue to develop rapidly and have more faculties. Further development in terms of academics and facilities. | Can continue to develop rapidly and have more faculties. Further development in terms of academics and facilities. |
| My hope for this campus is that it will provide more complete facilities, such as classrooms for studying in each study program. | My hope for this campus is that it will provide more complete facilities, such as classrooms for studying in each study program. |
| Lots of practical work and adequate facilities for students. Good for me, I still hope to accelerate the university's reputation. | Lots of practical work and adequate facilities for students. Good for me, I still hope to accelerate the university's reputation. |

Figure 8 is the main result of the student satisfaction survey, namely the categories of satisfaction and dissatisfaction with XYZ University's services, where 77.8% of students were satisfied, while 5.6% were dissatisfied with the University's services, 5.6% were dissatisfied and 11.1% were very satisfied

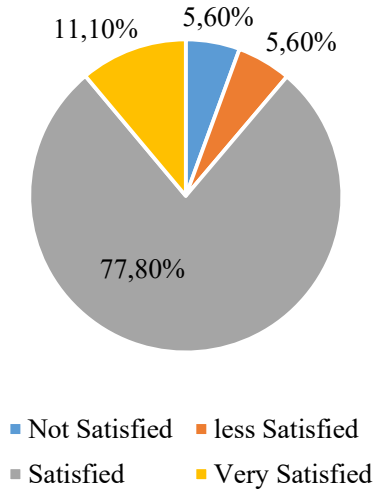


Figure 8. Results of student satisfaction survey

The advantage of the Mwater survey application is that it is GIS-based, allowing respondents' home locations to be viewed and tracked using GIS to determine whether the surveyed homes are correctly located, thus reducing the risk of fraud by surveyors. Figure 9 following is the location of the respondent's list on the GIS map.


Figure 9. Respondent location map

A Respondent Location Map is a visual representation in the form of a geographic map that shows the distribution or location of respondents to a survey. This map is useful for seeing where respondents come from and can reveal certain geographic patterns or trends.

## 4. Conclusion

The results of the implementation and testing, the conclusion of the research using digital or online methods has many advantages compared to manual or conventional survey methods. By using the Slovin method and the MWater application used in measuring satisfaction, where this method is used to collect data and opinions from customers or students regarding the products or services received. With the MWater application, we can create survey forms and collect survey answers quickly and efficiently, while the Slovin formula is used to determine the number of samples needed from the population of the number of new students in each faculty. The results of the study using the Slovin formula and the Mwater application are where the survey results of satisfied students reached 77.8%,

while those who were less satisfied with campus services reached 5.6%, Dissatisfied reached 5.6% and Very satisfied 11.1%. With the above method, students can easily voice their comments and suggestions as well as criticism, and XYZ campus can make the necessary improvements to offer even better service. The results of the survey in this study can then be used as a reference for the campus in planning promotional strategies and university policies going forward.

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