

Implementation of Teacher and Staff Attendance Information System Android-based with Appsheets and Spreadsheets for SMP Al-Imam Islamic School Cileungsi

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Abstract

It was found that teachers of Al-Imam Islamic School Cileungsi Junior High School still use the manual attendance method to record the presence of teachers and staff at the school. It is considered ineffective to find out the timeliness of attendance, return and lateness. This study aims to apply an android-based attendance system with appsheets and spreadsheets in order to increase the effectiveness of the punctuality of attendance, homecoming, and lateness of teachers and staff. The results of functional testing of the application of an android-based presence system with appsheets and spreadsheets as application media experts are well assessed according to their function. Based on the results of the test of 23 teachers and staff, it is known that the results of punctuality of attendance, homecoming, and tardiness can be known and more effective than before. It is hoped that this system will be able to increase the effectiveness and accuracy of the attendance of teachers and staff and improve the quality of educational services in schools.

Keywords: *Android-based attendance, effectiveness, AppSheet, Sheet, School.*

1. Introduction

The rapid development of information technology has affected various institutions, including educational institutions. One of the problems that often occurs is the punctuality of the presence of teachers and staff. Recording the attendance of teachers and staff usually includes categories: attendance, permission, illness, and without caption or harp. This recording is generally done once a day in the morning when teachers and staff enter the school area. A record-keeping system that is still manual and uses books often produces less accurate data. This is due to errors in the input of teacher and staff attendance data and errors in the attendance data recapitulation process at the end of the semester. [1].

The definition of teacher and staff presence includes two main aspects of being on time and late teachers and staff, very important in the work process because it directly affects the evaluation of employee performance. For example, teachers and staff who attend tend to have responsibilities to carry out their duties and responsibilities at school. [2].

One of the problems in work in junior high schools (SMP) is the recording of teacher and staff attendance. This problem is influenced by two factors. First, internal factors are obstacles in processing daily teacher and staff attendance data. Second, external factors, namely manipulation or fraud in recording data on the attendance of teachers and staff.

Schools are where teachers and staff make a living, work according to their respective jobdesks, schools not only provide jobs for teachers and staff but also apply the discipline of the presence of teachers and staff is very important for the success of teaching and learning activities so that they can be motivating in every activity. [3].

Al-Imam Islamic School Cileungsi Junior High School still uses the manual attendance method to record the attendance of teachers and staff. This method involves using paper or booklets that contain a list of the names of the order of teachers and staff in the school. The administration then records the names of teachers and staff one by one, teachers and staff who attend will report to the administration every morning. Then the administration marks the presence of teachers and staff with certain signs, such as a check (√). This process requires attention and precision from the administration to ensure that the attendance of teachers and staff is recorded correctly. Although effective, this method is considered time-consuming and requires specialized human resources, which can reduce working time and require extra effort in managing teacher and staff attendance data. [4].

In today's era of easy information development, smartphones can be used for various purposes, including the presence system. One of the features that can be used is the camera, which is very important for taking selfies.

Nowadays, cameras are very familiar to most people. Therefore, it is important to develop a presence application that utilizes camera technology. This aims to make it easier for teachers to recap the attendance of teachers and staff and reduce the possibility of cheating.[5]. To overcome the problem of recording the attendance of teachers and staff at Al-Imam Islamic School Cileungsi Junior High School, a special program is needed. One solution is the implementation of an android-based attendance system with appsheets and spreadsheets, which allows for more efficient monitoring of teacher and staff attendance. [6].

Take advantage of Android that will be applied by taking photos of yourself can provide the presence function of teachers and staff, Build an android-based teacher and staff attendance automation system by taking photos of yourself and LBS (Location Based System) online by using the google spreadsheet system to create/display a database and using the glideapps system. By utilizing android, an operating system with an open platform, developers can create their own applications.

The use of cameras in the implementation of the teacher and staff attendance information system was developed, namely an Android-based software application. It is hoped that the application that has been implemented can facilitate and accelerate the administrative work process in recapitulating the presence of teachers and staff, optimally, effectively and efficiently. [7].

In a nutshell, the Appsheet application is a tool for online attendance that makes it easy to record attendance activities and the time of teachers and staff when conducting attendance. Teachers and staff only need to download this app to connect the classroom system with their smartphones. Creating teacher and staff attendance by implementing the Appsheet and Google Access apps hopes to solve attendance issues in a fast, accurate, and precise way. This system will make it easier to input attendance data and use Google Sheets as a storage or database, so that reporting can be managed more easily. [8].

Appsheet is an efficient attendance application, which can improve the attendance filling process in educational institutions. [9].

Presence is one of the main supports that can motivate and support all activities to be carried out in it, android is an open platform for developers to build applications that have been created that can be run by various driving devices.

The topics to be discussed are the benefits of technology to reduce the gap in attendance gaps, while making it easier for teachers and staff to make attendance, and helping in terms of punctuality and attendance of teachers and staff. [10].

2. Literature Review

2.1. Definition of application

Etymologically, the word "application" comes from the root word "apply" which is suffixed "pe" at the beginning and "an" at the end, meaning the process of a way or action to apply, install, or practice something. Some experts argue that the application is done to achieve a specific goal for the benefit of a particular individual or group as well as to practice certain theories, methods or other behaviors.

According to Guntur Setiawan, implementation is a continuation of an activity, which serves to adjust the process of the relationship between goals and actions to achieve the desired results. This implementation also requires support from the implementation network and an effective bureaucracy.

According to Wahab, Implementation is an action taken by an individual or group to achieve the goals that have been set in the decision. On the other hand, application refers to the implementation of work that can be achieved through a method, so that it can be practiced in the community. Based on the opinions of experts, it can be concluded that implementation refers to the way of implementation and planned activities that aim to achieve the desired results. Implementation is not just an activity, but an activity that is carefully planned and carried out seriously, based on certain norms, to achieve the goals that have been set.

2.2. System definition

In general, a system comes from the Latin systema and the Greek sustema, which is a unit consisting of interrelated parts or components working together in a process of data, matter, or energy to achieve a goal. A system is also a unit of parts that have various relationships in a space, and have an object as its drive. A system, as defined in the Great Dictionary of the Indonesian Language (KBBI) is a set of elements that interact with each other periodically so as to form a totality.

A system is also defined as a series of actions that are organized from the point of view, hypothesis, standard, and so on. KBBI also defines the term "system" as "method". Meanwhile, according to Rahman (2021), a system is a collection of several assumptions (a collection of conclusions), standards, and others that form a unit that is interconnected with each other.

2.3. Definition of presence

The presence of teachers and staff in schools is often referred to as the presence of teachers and staff. This term encompasses two aspects, namely attendance at school and the absence of teachers and staff is considered important in school management because it relates to the evaluation of teacher and staff performance and reflects order in the school. The presence of teachers and staff means physical and mental participation during effective hours at school while absence means no physical participation in work activities at school. Although the development of educational technology allows teachers and staff to learn from home, physical presence in schools is still considered important because education involves active engagement, not just the absorption of knowledge. The attendance of teachers and staff is recorded by the administration in the attendance book, while the absence is recorded in the attendance book.

2.4. Definition of Teachers and Staff

Teachers and staff are important elements in the teaching and learning process in schools, with a central role in efforts to achieve educational goals. As individuals with skills, work experience and integrity, teachers and staff strive to achieve this to the best of their ability. The success of the teaching and learning process in schools is greatly influenced by teachers and staff, because they are the determining factors that affect everything necessary to achieve educational goals.

1. **Character and Moral Development:** Not only the academic aspect, the work of teachers and staff includes the development of personality as well as morals. Includes the creation of good behavior, ethics, responsibility and social relations skills with others.
2. **Evaluation and Assessment:** Teachers and staff are evaluated on their achievements through various evaluation procedures, such as training, activity leaders, field heads, and other expertise evaluations. The results of this assessment are markers of the work achievements of teachers and staff as well as equipment to measure the usability of the work process.
3. **Rights and obligations:** Teachers and staff have rights in the educational environment, including the right to decent employment, the right to access information, and the right to engage in school activities. In addition, teachers and staff also have responsibilities, such as complying with school rules, respecting peers, teachers and staff, and playing an active role in creating a positive learning environment.

In general, teachers and staff are an important part of education, where teachers and staff are the main concern in educational efforts to form a generation that is knowledgeable, skilled, and has good character.

2.5. Application Definition

An application is a computer program designed to perform certain tasks according to the user's needs. An application consists of a series of activities or commands executed by a computer. The way a computer system functions is governed by a program that controls all processing activities. This program contains man-made logic constructions that have previously been translated into machine language according to the format on the instruction set. The application makes use of the computer's operating system and the supporting applications. This term has been introduced in the realm of Information Technology since 1993 abbreviated as an app. By application is software developed by the company. An app is software that a company buys from its creator. The term was coined by the PC industry to reflect the new competition that parallels the competition between emerging operating systems.

2.6. Definition of Android

Android is a Linux-based operating system developed by Android Inc., which was later acquired by Google in 2005. This operating system is specifically designed for mobile devices such as smartphones and tablets. Android is an open-source platform supported by a large community of developers, allowing for wide usage as well as flexibility in app development. According to Teguh Arifianto (2011: 1), Android is a Linux-based operating system designed for mobile phone devices. Hermawan (2011: 1) explained that Android is a mobile operating system that appears in the midst of other OSs that exist today, such as Windows Mobile, iPhone OS, Symbian, and so on. However, those other OSs tend to focus on core applications that are developed in-house without tapping into the huge potential of third-party applications. As a result, there are limitations in terms of access to the phone's original data, communication between processes, and the distribution of third-party applications. From this explanation, it can be concluded that Android is a Linux-based operating system that is growing rapidly amidst other OS.

2.7. Definition of Camera

Cameras used in attendance recording systems at work or educational institutions. These cameras can be used for a variety of purposes related to attendance management, including verifying an individual's identity, recording time of arrival, and managing attendance data. In the context of attendance, cameras can be used to:

1. **Facial Recognition:** Cameras can be used to take pictures of the faces of individuals present to verify their identity. Facial recognition technology can then be used to match the image to the teacher's database to ensure proper attendance.
2. **Time Recording:** Cameras can record an individual's arrival time as they take a photo or picture of themselves. This time information can be used to record accurate working hours or attendance hours.
3. **Attendance Audit:** Cameras can also be used as a tool to audit attendance, by recording images of individuals present as proof of attendance that can be double-checked if needed.
4. **Ease of Use:** Using a camera for attendance is often easy for users, as it only requires individuals to take photos of themselves using the provided camera.
5. **Cheating Reduction:** The use of cameras for attendance can also help reduce the chances of cheating or false attendance logging, as photo evidence can provide clarity about a person's presence.

2.8. Definition of Google Maps

Google Maps is a digital map service provided by the technology company Google. It allows users to search for geographic locations, get directions, find businesses and services around them, and explore specific areas using a satellite map view, street view, or 360-degree panoramic view. Some of its functions include:

1. **Navigation:** Google Maps helps users find the best directions and routes to reach their destinations, whether by car, bike, public transportation, or on foot.
2. **Place Discovery:** Users can use Google Maps to find local businesses, restaurants, hotels, attractions, and various other places of interest around them.
3. **Travel Time Estimation:** This service provides estimated travel time for trips using various modes of transportation, which helps users better plan their schedules.
4. **Location-Specific Searches:** Users can search for specific locations, such as home or business addresses, and Google Maps will display relevant results along with detailed information such as reviews, hours of operation, and phone numbers.

2.9. Definition of Appsheet

Appsheet is a developer platform that allows anyone to create applications without the need for programming skills. The Appsheet app can be used from the Google Sheets data source. The main features of Appsheet include:

1. Flexibility in App Customization: Users can customize the app's layout, design, workflow, and logic as per their needs. This allows for the creation of apps that fully fit the needs of the business without having to follow a standard template.
2. Support for Multiple Devices: Apps built with Appsheet can be accessed through a variety of smartphone, tablet, and desktop devices. flexibility to users in using the app according to their device preferences.
3. Easy App Management: Appsheet provides tools to easily manage users, access permissions, and app versions. This makes it easy for users to distribute apps, control user access, and manage app updates.
4. Security Features: AppSheet offers a range of security features that are essential for protecting data and applications, including user authentication, access control, and data encryption. Users can manage permissions to set who has access to change data in the app.

2.10. Definition of Spreadsheet

Spreadsheets are computer programs that allow users to organize, store and analyze data for table formats. Generally, spreadsheets consist of columns and rows that make up the cells where data can be entered. Rows use numerical labels 1,2,3 and so on. While the columns use alphabetical labels such as A, B, C, and so on. Processing of spreadsheet data is stored in a cell, the naming of cells according to the use of labels on the columns and rows used for example A1, A2, A3 and so on. Here are some of the key components and features of SpreadSheet:

- a. Formulas and Functions: One of the main features of spreadsheets is the ability to use mathematical formulas and functions to perform calculations and data analysis. Examples of formulas include addition, subtraction, multiplication, division, and others.
- b. Complex functions such as statistics, logic, and search functions are also available. Formatting: Spreadsheets allow users to format data in a variety of ways, such as changing typefaces, colors, or text sizes, adding borders, and applying numeric formatting.
- c. Graphs and Data Visualization: Spreadsheets are usually equipped with features for creating graphs and data visualizations, which allow users to present data in the form of bar graphs, lines, pie, etc. to facilitate data understanding and analysis.
- d. Sharing and Collaboration Capabilities: Spreadsheets can often be accessed together by multiple users online, allowing team collaboration in editing and updating data in real-time.

3. Research Methods

In this study, the researcher uses quantitative research methods, quantitative research is research in which the process of measurement, formula, calculation and certainty of numerical data in planning, processes, building hypotheses, data analysis techniques and drawing conclusions.

Quantitative research methods are based on the philosophy of positivism, used to research on certain populations or samples, data collection using research measuring tools (instruments), quantitative/statistical data analysis, with the aim of testing and proving hypotheses that have been made/applied. In general, the quantitative method consists of survey methods and experimental methods. The researcher used the Pre-Experimental method with One Group Pretest-Posttest Design. In this study, there is one group of pretest results and posttest results. According to Sugiyono in his book, it is explained that experimental research methods can be interpreted as research methods used to seek the influence of treatment on others in constrained conditions (Sugiyono, 2014).

3.1. Research Sample

The sampling technique used in this study is the likert scale with the reason in determining the sample with consideration from the researcher and certain objectives so that it can represent the population. The researcher selected all employees of Al-Imam Islamic School Cileungsi Junior High School, which can be seen in table 1 below.

Table 1: Research Sample

No.	Employee Name	Position
1	Arif Rohman	Principal
2	Tri Yuli Aryani S. Pd	Teacher
3	Dewi Fitria Nugraheni, S.Pd.	Teacher
4	Sahroni	Teacher
5	Sumiati S.Pd	Teacher
6	Eli Umiyati, S.Pd.	Teacher
7	Aning Nurhayati, ST	Teacher
8	Guntur Ageng Auliawan	Teacher
9	Asril ardiansyah	Teacher
10	Muhammad Raihan Ramadhan	Teacher
11	Tri Nuryani S.S.	Teacher

12	Anwaruddin, S.Pd.I	Head of Al-Qur'an
13	Yayah Rukiah S.Pd.I	Qur'an Teacher
14	Itang Setiawan, S.Pd.I	Qur'an Teacher
15	Shella Rizka Isnaeni	Qur'an Teacher
16	Nuryanti	Qur'an Teacher
17	Mutmainah	Qur'an Teacher
18	Sinta Rusmawati, A.Md.	Qur'an Teacher
19	Anida Fauziyah	Qur'an Teacher
20	Hendriansyah	Head of Office Boy
21	Aziz	Office Boy
22	Ahmad Irham Sofwan	Design Graphic
23	Zuan Fadli Faqih	Videographer

From the following research sample table, a total of 23 people are known, to determine the size of the sample is searched with the formula:

$$\frac{n = N}{1 + Ne^2}$$

Information:

N = Sample Size

N= Population Size

E = the relaxation of inaccuracy due to tolerable sampling errors, e.g. 10%.

The known population size is 23 people, so the sample size used is:

$$\frac{n = 23}{1 + 23 (10\%)^2} n = 99.96$$

To facilitate research in data processing, the researcher rounded the sample from 99.96 to 100 samples.

3.2. Research Sample

3.2.1. Normality Test

Normality test is a test that is carried out with the aim of assessing the distribution of data on a data group or variable, whether the data is normally distributed or not. Before analyzing the data with the "t" test, the data from the normality test current test with chi squared can be known or searched using the following normality test formula:

$$x^2 \frac{(f_o - f_h)^2}{f_h}$$

Information:

x^2 = Chi Kuadratf

f_o = Observative Frequency

f_h = Expected Frequency

If the calculation is obtained, it is stated that the data is normal, and if it is more than $>$ it is declared abnormal. The normalist test aims to find out whether the distribution that occurs is normal or abnormal. $x^2_{hitung} \leq x^2_{tabel}$ To facilitate research in data processing, the researcher rounded the sample from 99.96 to 100 samples.

3.2.2. Hypothesis Test

The paired sample t test is one of the statistical tests used to find out the difference or average similarity between two groups of data samples that are related to each other or in pairs. The data used may be abnormally distributed. The way to calculate the t-test is as follows:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} - 2r \left(\frac{s_1}{\sqrt{n_1}} \right) \left(\frac{s_2}{\sqrt{n_2}} \right)}}$$

Information:

$\bar{X}_1$ = Average sample of income groups after.

$\bar{X}_2$ = The average sample of previous income groups.

s_1 = Standard deviation of income group sample after.

s_2 = Standard deviation of income group sample after.

r = Correlation

However, before calculating the paired t-test formula, you must first know the standard deviation value and the correlation value. The standard deviation formula is as follows:

$$s = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n - 1}}$$

Information:

x_i = Sample group data

$\bar{x}$ = Average sample group

n = Number of samples

While the correlation formula is as follows:

$$r = \frac{n \sum x_1 x_2 - (\sum x_1)(\sum x_2)}{\sqrt{[n \sum x_1^2 - (\sum x_1)^2][n \sum x_2^2 - (\sum x_2)^2]}}$$

Information:

n = Number of samples

$\sum x_1$ = Number of opinion groups after

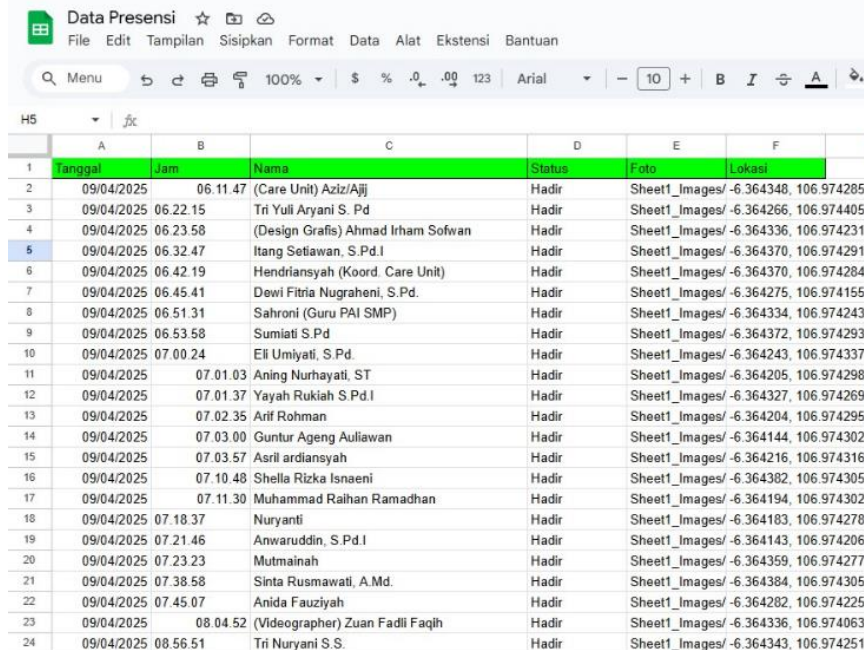
$\sum x_2$ = Number of opinion groups before

Test: After calculating the t-test, the Irank then compares it with the table values to draw conclusions if the calculated t-value is smaller than or equal to the table t-value, then the zero H_0 hypothesis is accepted, while the alternative hypothesis H_a is rejected. Conversely, if the calculated value of t is greater than the value of the table, then H_0 is rejected and H_a is accepted.

4. Results and Discussion

4.1. Preseni Application Display

Below is the form of the results of the Android-Based Teacher and Staff Attendance Information System with Appsheet and Spreadsheet, which can be seen in figure 1 as follows.



	A	B	C	D	E	F
	Tanggal	Jam	Nama	Status	Foto	Lokasi
1	09/04/2025	06.11.47	(Care Unit) Aziz/Ajij	Hadir	Sheet1_Images/-6.364348, 106.974285	
2	09/04/2025	06.22.15	Tri Yuli Aryani S. Pd	Hadir	Sheet1_Images/-6.364266, 106.974405	
3	09/04/2025	06.23.58	(Design Grafis) Ahmad Irham Sofwan	Hadir	Sheet1_Images/-6.364336, 106.974231	
4	09/04/2025	06.32.47	Itang Setiawan, S.Pd.I	Hadir	Sheet1_Images/-6.364370, 106.974291	
5	09/04/2025	06.42.19	Hendriansyah (Koord. Care Unit)	Hadir	Sheet1_Images/-6.364370, 106.974284	
6	09/04/2025	06.45.41	Dewi Fitria Nugraheni, S.Pd.	Hadir	Sheet1_Images/-6.364275, 106.974155	
7	09/04/2025	06.51.31	Sahroni (Guru PAI SMP)	Hadir	Sheet1_Images/-6.364334, 106.974243	
8	09/04/2025	06.53.58	Sumiati S.Pd	Hadir	Sheet1_Images/-6.364372, 106.974293	
9	09/04/2025	07.00.24	Eli Umiyati, S.Pd.	Hadir	Sheet1_Images/-6.364243, 106.974337	
10	09/04/2025	07.01.03	Aning Nurhayati, ST	Hadir	Sheet1_Images/-6.364205, 106.974298	
11	09/04/2025	07.01.37	Yayah Rukiah S.Pd.I	Hadir	Sheet1_Images/-6.364327, 106.974269	
12	09/04/2025	07.02.35	Arif Rohman	Hadir	Sheet1_Images/-6.364204, 106.974295	
13	09/04/2025	07.03.00	Guntur Ageng Auliawan	Hadir	Sheet1_Images/-6.364144, 106.974302	
14	09/04/2025	07.03.57	Asril ardiansyah	Hadir	Sheet1_Images/-6.364216, 106.974316	
15	09/04/2025	07.10.48	Shella Rizka Isnaeni	Hadir	Sheet1_Images/-6.364382, 106.974305	
16	09/04/2025	07.11.30	Muhammad Raihan Ramadhan	Hadir	Sheet1_Images/-6.364194, 106.974302	
17	09/04/2025	07.18.37	Nuryanti	Hadir	Sheet1_Images/-6.364183, 106.974278	
18	09/04/2025	07.21.46	Anwaruddin, S.Pd.I	Hadir	Sheet1_Images/-6.364143, 106.974206	
19	09/04/2025	07.23.23	Mutmainah	Hadir	Sheet1_Images/-6.364359, 106.974277	
20	09/04/2025	07.38.58	Sinta Rusmawati, A.Md.	Hadir	Sheet1_Images/-6.364384, 106.974305	
21	09/04/2025	07.45.07	Anida Fauziyah	Hadir	Sheet1_Images/-6.364282, 106.974225	
22	09/04/2025	08.04.52	(Videographer) Zuan Fadli Faqih	Hadir	Sheet1_Images/-6.364336, 106.974063	
23	09/04/2025	08.56.51	Tri Nuryani S.S.	Hadir	Sheet1_Images/-6.364343, 106.974251	

Fig. 1: Attendance App Screenshot

Below is the form of data results that have successfully entered the spreadsheet from the Android-Based Teacher and Staff Attendance Information System with Appsheet and Spreadsheet, can be seen in figure 2 as follows

Fig. 2: Screenshot Data Spreadsheet Presensi

4.2. Functional Testing

At the application testing stage, it was carried out with an android smartphone by media experts by making a questionnaire. This test was carried out to find out the functionality of the Android-based Appsheet application.

Table 2. Functional Testing

No	Statement	1	2	3	4	5
	Aspect of Display					
1	App logo display					x
2	Easy-to-understand menu display					x
3	Teacher and staff data format view					x
4	Display of the attendance list menu for teachers and staff				x	
5	Display of the number of teachers and staff				x	
6	Attendance display					x
	Aspects of Attendance					
7	Have a list of teacher and staff data					x
8	Have course hours				x	
9	Have attendance hours				x	
10	Have an attendance statement				x	
	Feature Aspects					
11	Has a picture/photo capture feature					x
12	Have a presence location					x
	Learning Aspects					
13	Suitability of the application for the purpose of attendance					x
14	Application compatibility with the times					x
15	The application can be used easily by users					x

Information:

1 : Not Good

2 : Not Good

3 : Enough

4 : Good

5 : Good Enough

In the functional testing stage carried out in table 2 above, the application is assessed well according to its function.

4.3. User Testing

In the user satisfaction test, the application was tested directly, namely by making a questionnaire aimed at users on the implementation of the teacher and staff attendance information system using the Android-based Appsheet application. The questionnaire was distributed to 23 teachers and staff.

Table 3: User Testing

Participants	Manual Attendance	Android-Based Attendance
R1	79%	72%
R2	68%	72%
R3	74%	66%
R4	64%	73%
R5	64%	83%
R6	50%	90%
R7	58%	89%
R8	56%	84%
R9	54%	94%
R10	66%	75%
R11	44%	82%
R12	56%	78%
R13	72%	74%
R14	69%	69%
R15	62%	82%
R16	52%	52%
R17	69%	69%
R18	66%	70%
R19	70%	74%
R20	79%	56%
R21	72%	86%
R22	60%	87%
R23	86%	62%
Average	64%	75%

Berdasarkan data yang disajikan pada Tabel 3, hasil penyebaran kuesioner kepada 23 responden menunjukkan tingkat kepuasan pengguna terhadap sistem presensi. Analisis persentase kepuasan mengungkapkan bahwa rata-rata skor untuk sistem presensi manual adalah 64%, sedangkan untuk sistem presensi berbasis Android (menggunakan Appsheet) mencapai 75%. Perbandingan ini menunjukkan adanya peningkatan kepuasan pengguna sebesar 11% (75% - 64%) pada sistem presensi berbasis Android. Dari data tersebut, dapat disimpulkan bahwa penerapan sistem presensi berbasis Android memberikan pengalaman yang lebih baik dan lebih unggul dibandingkan metode presensi manual. Secara keseluruhan, pengujian ini mengindikasikan bahwa implementasi sistem informasi kehadiran menggunakan aplikasi Appsheet berbasis Android efektif dalam memfasilitasi guru dan staf dalam pelaksanaan proses presensi, sehingga lebih membantu dan mempermudah tugas mereka.

5. Conclusion

Based on the results of the development and testing of Android-based attendance applications using Appsheet and Google Sheets, several important points can be concluded as follows:

1. System Functionality and Accuracy: This Android-based attendance application has been successfully developed with features that support accurate attendance recording and minimal cheating. Although the facial recognition and GPS location features are mentioned, the main focus of the previous context is self-photos and LBS (Location Based System) for verification. Therefore, this application allows teachers and staff to verify student attendance more objectively through visual evidence (self-photos) and location information (if LBS is implemented), thereby reducing the potential for data manipulation.
2. Time Efficiency and Ease of Data Management: The application of the digital attendance method using Appsheet significantly helps teachers and staff in saving time during the attendance recording process. This convenience is also felt in the process of recapitulation of student attendance data, because the data is stored in a structured manner and can be accessed quickly.
3. Improved User Satisfaction Rate: User satisfaction test results show a positive response to Android-based presence apps. The average user satisfaction score for manual attendance systems is 64%, while for Android-based attendance increases to 75%. This 11%

increase indicates that the use of the Appsheet application on smartphones is more accepted and provides a better experience for teachers and staff in conducting the student attendance process compared to conventional methods.

In summary, the development of an Android-based student attendance application with Appsheet and Google Sheets has proven to be effective in improving efficiency, accuracy, and user satisfaction in managing attendance data in the school environment.

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