The effectiveness of Smart Workinary for attendance data delivery and information based paperless system

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Abstract. This study aims to build an information system that can send attendance data automatically and convey information by reducing paper use. Smart workinary is an information system that is used to meet the needs of sending attendance data directly and can be used as information. Paperless is a method used to reduce paper use by storing documents and data digitally and stored into digital storage. Smart workinary system is built to overcome the withdrawal of presence data manually from the presence machine and display information without using paper use. The results obtained by building a smart workinary system is to be able to quickly and automatically send presence data and information that can be displayed while reducing paper usage. With a smart workinary system that sends data automatically, there is a reduction of manual activity of taking data attendance and reduced paper use by 35%. Reducing this activity results in speed, accuracy, and effectiveness of data processing.

1. Introduction
The development of information technology has comprehensively entered into many industries that support business processes. Technology systems make it easy and effective to help an organization or company increase work productivity [1]. Likewise, also in processing attendance data for employees. Data attendance is very important in an organization, because it is one of the considerations in terms of work productivity [2]. The application of the attendance system has been widely used, using various identification and verification techniques ranging from iris recognition, voice identification, fingerprint identification, DNA identification and so on. In implementation, the system that is running uses more of a system that is semi-computerized. The identification system uses fingerprints, but in terms of data withdrawal and processing, it is still manual; it has not been automatically systemized, even though the purpose of implementing attendance systems using fingerprints is to make it easier to calculate attendance and facilitate data reporting [3].

Asides the attendance system, something that is very important in the organizational environment is the delivery of information for all members of the organization. This becomes very important when there is information that must be delivered quickly and precisely. In the implementation, these two things cannot be separated from manual processes and procedures in the withdrawal of attendance data and information. This manual process creates several obstacles including the process of withdrawing old attendance data, old procedures, and the excessive use of paper media, which cause the operational costs to swell. The paperless system is a solution that can be used to overcome excessive paper use. A growing trend in the use of information technology in various fields in higher education has made information technology an office without paper use such as electronic mail, electronic learning, web
documentation, and social networks [5]. Jaikumar and colleagues used fingerprint attendance as a record of attendance to students that can be monitored directly by their parents. That is why attendance data is very important [6]. Nizam Osman conducted a study that produced a fingerprint-based and web-based employee attendance system to improve services for industrial companies. This system provided comfort and convenience in monitoring data for HRD section of company [7]. Armine measured satisfaction of a number of staff in the use of paperless-based technology systems. The results showed that technology can improve efficiency in satisfaction of experience in registration [8]. Pasquini argued that the use of technology in higher education today can effectively support academic processes [9].

In this study, the use of information technology is used by making smart workinary system. Smart workinary is a system for sending attendance data and information based on paperless system. With a paperless system, data sent via automated mechanisms without the use of paper media. The objective to reduce the use of paper in the delivery of information and attendance data.

2. Research Methodology

2.1 Process of downloading attendance data manually

The business process that occurs when withdrawing employee attendance data manually consists of several components, namely fingerprint, fingerprint application, and administrator. Manual withdrawal data retrieval system is a system of withdrawal attendance data by utilizing a special fingerprint application. The system is a common system default application used by the administrator. The resulting data is in the form of a file with a format of (.Xls) that stores attendance data for each employee. This data retrieval is done manually by the administrator who is directly connected with the fingerprint machine. The workings of the manual data retrieval system is illustrated in Figure 1.
Figure 1 shows an explanation of how the system pulls attendance data manually. The process is as follows:

1. Fingerprint application is the default application that is used for administrators to do the process of downloading attendance data stored on the fingerprint machine.

2. Fingerprint connection is the stage where an administrator connects to the fingerprint machine with a default application as preparation for downloading attendance data.

3. Connection status is the connection information between applications with fingerprint machines. If the application is connected to the machine, the attendance data would be ready to be downloaded. Whereas if the status is not connected, the administrator will try to re-establish the connection between the application and the fingerprint machine.

4. Attendance data download is the stage for the process of downloading attendance data from the fingerprint machine. This download process takes time so the administrator must wait for the process to complete.

5. The download process is the stage of downloading attendance data from the fingerprint machine. If the download process is complete, it can be seen whether the process is successful or not. If the process is successful, the file is stored in the specified directory. If it does not work, the administrator can try re-downloading it.

6. The result of downloading, this process is the final stage in the process of downloading attendance data. This process is the final result of downloading attendance data stored in certain directories. If the directory already exists, the file has been downloaded successfully.
7. File download, is the file as a result of downloading the attendance data which is carried out by the administrator. This file is in the form of (.xls) which there is attendance data that has been downloaded.

2.2 Process of manually announcing information
Business processes that occur when making information announcements consist of making announcements, printing announcements and posting attachments. The way the manual announcement system works is illustrated in Figure 2.

![Flowchart information announcement](image)

**Figure 2. Flowchart information announcement**

The process is as follows:
1. The writing of announcements is the process of making announcements that will be submitted to the concerned parties.
2. The printing of announcements is the process of printing the results of announcements that have been made previously and printed through paper printing machines.
3. The posting of announcements is the process of posting the announcements that have been printed to be posted on the media provided.
4. The posting of the results of the announcements are the final stages of the announcement that have been posted.
3. Results and Discussion

3.1 Design of Smart Workinary system

The Smart Workinary system is a system that can be used to process the withdrawal of employee attendance data from a fingerprint machine and as a medium to send announcements and information (See Figure 3).

![SMART WORKINARY STATION](image)

Figure 3. Smart Workinary Station

Figure 3 is an overview of the Smart Workinary Station system that is used to withdraw attendance data and announcements. The component consists of an administrator, a fingerprint machine, and a Smart Workinary application system. Administrators are users who can directly access the Smart Workinary system with a fingerprint machine to process attendance data downloads. In addition, the administrator can also send the necessary announcements that will be installed in the Smart Workinary system.

Fingerprint machine is a component that stores employee attendance data. Smart workinary is a system that can download attendance data directly and save the data into the attendance database that has been provided. Smart Workinary can also display announcements that have been installed by the administrator. Information technology is very important in the management of organizations [10].

The system of paperless data withdrawal required in attendance to provide a positive impact of technological change in a variety of fields. Technology can play an important role in the efficiency and user satisfaction [8]. (See in Figures 4 and 5).
Figure 4 shows how the system withdraws attendance data using Smart Workinary. The number of processes or procedures in withdrawing attendance data in the Smart Workinary system are four procedures or stages used. The process is as follows:

1. The Smart Workinary system runs, this system runs directly when the computer is first turned on. The system runs for 24 hours.
2. Scheduled downloading of data, this process is a process for downloading attendance data from the fingerprint machine automatically. Downloading this data is scheduled for two times at 09.00 and 22.00. This schedule is the system processing time to download attendance data.
3. Data download process, this process is where the Smart Workinary is connected directly to the fingerprint machine to process data downloading. This process ranges from 3-5 minutes by downloading data on two fingerprint machines.
4. The results of downloading attendance data, is the process of downloading attendance data that is entered directly into the attendance database that has been provided.
The number of processes or procedures in the announcement of information in the Smart Workinary system are three procedures or stages used starting from the announcement design, uploading the announcement results to the Smart Workinary system, and posting the announcement on the Smart Workinary system. The process is as follows:

1. The process of uploading announcements to the system, is the upload stage of the results of the announcement design stage in the form of an image file (.jpg) that has been prepared to be uploaded to the system.
2. The process of posting announcements, this process is the final process of announcements with Smart Workinary, the results of announcements that have been installed on the system.

### 3.2 Effectiveness comparison between Smart Workinary system and manual process

In a process or procedure being used, effectiveness is very important. It is a measurement of various criteria; a reduction in risk, steps, implementation costs, ease of use of implementation, ease of monitoring size effects, public acceptance and others [4]. In this case, the effectiveness used is the effectiveness of reducing procedures or steps (see Table 1).

|                         | Number of Procedures / Processes to Download Attendance Data | Number of Procedures / Processes to make an Announcement |
|-------------------------|---------------------------------------------------------------|--------------------------------------------------------|
| **Manual**              | 7                                                             | 4                                                      |
| **Smart Workinary**     | 4                                                             | 3                                                      |

Table 1 is a comparison of the effectiveness of steps or comparison procedures between the process of downloading attendance data and announcements at the manual stage and using Smart Workinary. Comparison of the effectiveness results in a reduction in the number of steps in the process of downloading attendance data, from 7 steps or procedures to 4 steps or procedures to reduce the 3 steps or procedures. So Smart Workinary makes the data download process effective at 40% of
the initial procedure. As for the announcement process, Smart Workinary can reduce steps by 1 step from the initial number of 4 procedures to 3 procedures. With this result, Smart Workinary can reduce procedures in announcements by 30%. Combining this amount of effectiveness, Smart Workinary can make effectiveness in the process of downloading attendance data and announcements by 35%. The use of technology based paperless can significantly improve innovation [11]. Besides, it can also increase our satisfaction against the use of the technology because it can reduce some of the stages [8].

4. Conclusion
Smart Workinary can be used as automatic attendance data download system and information announcements. Smart Workinary provides benefits by reducing the number of procedures or manual steps in the process of downloading attendance data and posting attachments. This makes Smart Workinary effective by reducing the procedure and the use of paper media for announcements by 35%.

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