Proceeding PICKS 2021, December 18th , Bandung, Indonesia

ISSN: 2407-1722

Employee Workload Data Processing Information System Using Android-Based Time Motion Study Method (Case Study : Pt.Umas Jaya Agrotama)

Achmadi Hudadin Albarqi, Yodhi Yuniarthe, dan Romi Hendri
Faculty of Computers, University Mitra Indonesia, Lampung, Indonesia

Abstract : *The production process carried out by PT. Umas Jaya Agrotama which is carried out continuously for 24 hours in order to meet the company's achievement targets with a production capacity of 80,000 tons per year with a total of 105 employees while the production process is only stopped when the cassava stock runs out or when a thorough machine maintenance will be carried out. It is known that the data on the number of employees and the company's achievement targets are not balanced, therefore the company measures the workload of employees to obtain data related to the workload that is borne by each employee. The purpose of this study was to assist companies in designing and building an information system for processing employee workload data using the Android-based time motion study method. This information system was developed using the Rapid Application Development (RAD) method so that the resulting information system is in accordance with user needs with a shorter processing time. The method used to measure the workload of employees in this study is the Time Motion Study, which is a method that measures the workload of employees by recording movement and time.*

Keywords*: Rapid Application Development, Time Motion Study, Employee Workload*

Introduction

PT.Umas Jaya Agrotama is a national private company (PMDN) which is engaged in the [1]tapioca flour production industry for food and beverages. The company which was founded in 1979 was originally named Umas Jaya Farm before being renamed to Umas Jaya Agrotama in 1990. It has a total of 105 employees.

The production process carried out by PT. Umas Jaya Agrotama applies the division of work time into two, namely non-shift workers with working hours starting at 08.00 s.d. 16.00 WIB and shift workers are divided into 3 shifts, namely shift I (08.00 to 16.00 WIB), shift II (16.00 to 00.00 WIB), and shift III (00.00 to 08.00), this is because the company's production process is carried out continuously continuously for 24 hours to meet the company's achievement targets with a production capacity of 80,000 tons per year.

The process of measuring the workload of employees carried out by PT. Umas Jaya Agrotama started when there were many complaints from employees about the workload they were carrying. Employee complaints are accommodated by the Human Resources (HR), then the HR contact the officers to measure the workload of employees, this is to find data related to the workload borne by each employee. The officer records the activities carried out by employees according to working hours by using stationery such as pens and workload measurement forms,

[1] Achmadihudadinalbarqi.student@umitra.ac.id

ISSN: 2407-1722

after that the officer copies the activity records into the excel system, then the officer provides a report on the results of the employee workload measurement in excel form to the HR , then the HR then performs data processing in order to get the results of the workload measurement which will then be submitted to the head of the section.

The inefficient processing of workload measurement data by Human Resources has resulted in the slow submission of reports on the results of processing employee workload data to the head of department. So here the author offers a system entitled "Information System for Employee Workload Data Processing Using Android-Based Time Motion Study Method". This application is expected to help speed up the process of measuring employee workloads carried out by officers so that the data from the workload measurements can be immediately processed by the Human Resources (HR) and then immediately reported to the head of the section.

Literature Review

A. Information Systems

According to Pratama in (Ramadhan, Sarkum, & Purnama, 2019). The system is defined as a set of interrelated and interconnected procedures to perform a task together. Broadly speaking, an information system consists of three main components. The three components include software, hardware, brainware. These three components are interrelated with each other.

According to Pratama in (Ramadhan, Sarkum, & Purnama, 2019). Information is the result of processing data from one or various sources which are then processed, thus providing value, meaning, and benefits.

B. Workload

According to Danang Sunyoto in (Arfani & Luturlean, 2018). Workload is too much can cause tension in a person. This can be caused by the level of expertise demanded is too high, the work speed may be too high, the time limit is short, the work volume may be too much and so on. Given that human work is mental and physical, each has a different level of loading.

C. Employees

According to Hasibuan in (Savitri, 2020). Employees are people who sell services (mind or energy) and receive compensation, the amount of which has been determined in advance.

D. Time Motion Study

According to Wignjosoebroto in (Romadhoni & Pudjirahardjo, 2016). Time and motion study is one of the workload measurement techniques. Time and motion study is a systematic study of a work system that has the aim of developing better systems and methods, standardizing systems and guidelines, setting time standards and training workers.

E. Android

Android is one of the operating systems on mobile devices. In the development of android applications using the Java platform as the programming language. Google collaborates with more than 47 other companies that are members of the OHA (Open Handset Alliance) to create standards for mobile devices. (Sadewo, Widasari, & Muttaqin, 2017).

F. Rapid Application Development

One of the SDLC developments is the Rapid Application Development (RAD) model which can also be used in system development by prioritizing time. The system designed and built applies the Rapid Application Development (RAD) model where in this model the stages of designing and working on the system are relatively short, around 60-90 days. (Fadli, 2018).”

The system development carried out on the employee workload processing information system uses the *Rapid Application Development (*RAD) method. The steps taken are:

ISSN: 2407-1722

1) Requirement Planning phase
2) User design phase
3) Contruction Phase
4) Cutover Phase

Methodology

A. Data Collection Techniques

Data collection was carried out by means of interviews with field supervisors at PT. Umas Jaya Agrotama and doing direct observation aims to determine the method that will be used in the process of measuring the workload of employees.

While the system development method carried out on the employee workload processing information system uses the Rapid Application Development (RAD) method. The steps taken are:

1. Requirement Planning phase

At this stage, data collection is carried out by interviewing to analyze system requirements so that we can design a new system using a mapping chart.

2. User design phase

At this stage, the design of the system design is made in several designs as follows:

a) Flowchart design.
b) Design of Data Flow Diagrams (DFD).
c) Entity Relationship Diagram (ERD) design.
d) Database design.
e) System display design.

3. Contruction Phase

This stage is done by building an application by implementing a user design that has been made into a programming language to become a program. The application used to build this program is the Visual Studio Code application which functions to create the system and XAMPP as a web server.

4. Cutover Phase

This stage is the process of testing the program that has been made using the blackbox testing method to find errors in the system that has been made.

Findings & Discussion

A. Requirement Planning

System design is the stage of analyzing the needs of a system that is running and a new system that will be built, in this case what will be done is making a mapping chart of the system that is running and the system that will be built. The results of this stage are as follows:

1) Stages of analysis of the current system and propose a new system to be built. The process of measuring the workload of employees carried out by PT. Umas Jaya Agrotama started when there were many complaints from employees regarding the workload they were carrying. Employee complaints are accommodated by Human Resources (HR), then HR contacts the officers to measure the workload of employees, this aims to find and validate data related to the workload borne by each employee. The officer records the activities carried out by the employee according to the working hours carried out by the employee, after that the officer copies the activity record into the excel system, then the officer provides a report on the results of the recording to the HR, HR then processes the data to get the results of measuring the workload from the recording carried out by the officer, submitting the data to the head of the section, after the head of the section gets

ISSN: 2407-1722

the results of data processing from the HR, the head of the section confirms the approval of the HR department and the data from the workload measurement results can be used.

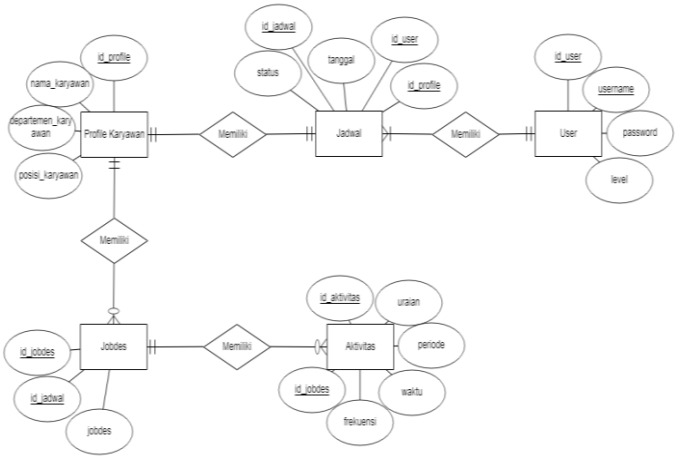
2) The system design to be built uses a system flow created using Mapping Charts, starting from the admin (HR) inputting user data, employee profiles, and employee workload measurement schedules. The process of inputting user data aims to make employee workload measurement officers get access rights to log into the application, input employee profiles and employee workload measurement schedules. employees' schedules and profiles, officers can carry out their work, namely inputting the data needed to measure employee workloads such as jobdes, work time, frequency and period of employee work.

B. User Design

User Design is the design stage resulting from the requirements planning stage which will then be applied to the design of the software system (software). The following are the stages of this User Design which will be implemented in the form of: DFD (Data Flow Diagram), ERD (Entity Relationship Diagram).

1. DFD Design

2. Rancangan Database



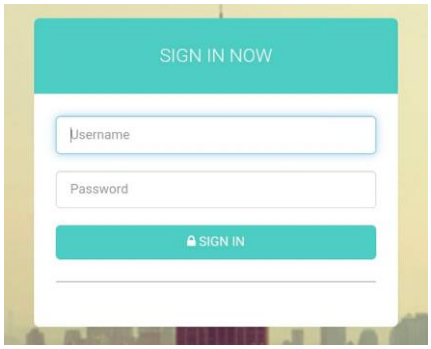
C. Construction

This stage aims to build an information system for processing employee workload data using the Android-based time motion study method from the designs that have been made previously. Here are the construction stages:

1. Display the system login form

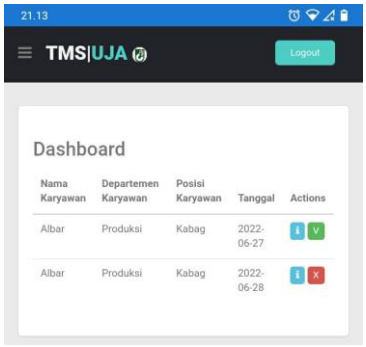
This system login form has 2 access rights, namely admin and user. The authentication process will direct the system user according to the user's access rights.

ISSN: 2407-1722



2. Admin dashboard page view

Admin dashboard page there is information on the implementation of employee workload measurements carried out by officers.



3. User management page

The user management page is used to set, create and determine user access rights.

4. Employee profile management page view

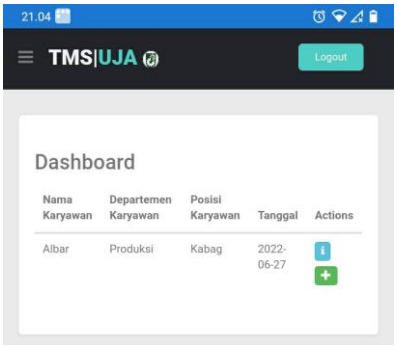
The process carried out on this profile page is to input employee data.

5. Schedule management page

The process carried out on this page is to make a schedule for measuring employee workloads for officers.

6. User dashboard page display

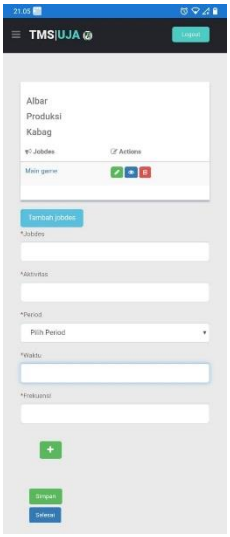
This page was created for officers to find out the schedule for measuring employee workloads.



7. Task page view

This page contains information on employee data for which employee workload measurements will be carried out, and the process of inputting employee workload measurement data.

ISSN: 2407-1722



D. Cutover

This stage is the overall application testing stage, it is intended that the applications that have been built meet the needs of users. If an error occurs in the application that does not meet the user's needs, improvements will be made until the application can be used according to the user's needs. Blackbox testing is carried out using the boundary value analysis technique, which is a technique that tests the upper and lower limits of a value that is input into the application.

References

Ramadhan, S., Sarkum, S., & Purnama, I. (2019, Februari). Sistem Informasi Penilaian Kinerja Pegawai Berbasis Web Pada Operasi Perangkat Daerah Kantor Camat Rantau Utara Labuhanbatu. Volume V No. 1, 93-94.

Arfani, M. R., & Luturlean, B. S. (2018). PENGARUH STRES KERJA DAN BEBAN KERJA TERHADAP KINERJA KARYAWAN DI PT SUCOFINDO CABANG BANDUNG. e-Proceeding of Management, Vol.5, No.2 Agustus, 2774.

Savitri, Y. A. (2020). PENGARUH KEPEMIMPINAN, REWARD DAN PUNISHMENT TERHADAP KINERJA KARYAWAN.

Romadhoni, R. D., & Pudjirahardjo, W. J. (2016). BEBAN KERJA OBYEKTIF TENAGA PERAWAT DI PELAYANAN RAWAT INAP RUMAH SAKIT. Jurnal Administrasi Kesehatan Indonesia, Volume 4 Nomor 1 Januari-Juni.

Sadewo, A. D., Widasari, E. R., & Muttaqin, A. (2017, Mei). Perancangan Pengendali Rumah menggunakan Smartphone Android dengan Konektivitas Bluetooth. Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer, Vol. 1, No. 5, hlm. 415-425 .

Fadli, S. (2018, April). MODEL RAPID APPLICATION DEVELOPMENT DALAM PENGEMBANGAN SISTEM RESERVASI DAN PENYEWAAN KAMAR HOTEL. JIRE (Jurnal Informatika & Rekayasa Elektronika), Volume 1, No 1, 57-64. doi:https://doi.org/10.36595/jire.v1i1.33

Riyanto, V. (2017, Maret). IMPLEMENTASI METODE RAPID APPLICATION DEVELOPMENT DALAM MEMBANGUN E-COMMERCE DI BIDANG UKM. Jurnal Pilar Nusa Mandiri, Volume 13 No.1.

Sitaresmi, H., E. H., & Rosely, E. (2020). Aplikasi Analisis Beban Kerja (studi Kasus: Pemerintah Kabupaten Bandung). eProceedings of Applied Science.