THE DESIGN OF ONLINE SMART APPLICATION SIRISKA (WORK RISK MAPPING SYSTEM): A STUDY OF OIL PALM HARVESTING WORKERS IN PTPN IV ADOLINA PLANTATION

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ABSTRACT

Background: National Social Security Agency for Employment (BPJS Ketenagakerjaan) in North Sumatra has noted since January 2021 there were 1,272 work accident cases in North Sumatra. Work accident prevention data with a scientific approach already has adequate information, but the digitalization era 4.0 prioritizes fast availability of information, where all entities in the industrial environment are always connected and can share information with each other. By using fast information it will make it easier for decision maker to make faster decisions and control actions in work safety and health issues. Method: The type of research was the System Development Life Cycle (SDLC) method in 9 afdelings with a total of 219 oil palm harvesters. Results: This application is the final process of the research, namely evaluating the results of the test and the feasibility of implementing the application for use by workers. Conclusion: This Android-based application can help map the risks of near misses and work accidents, making it easier for companies to record data on near misses and work accidents. In addition, the data input process by workers can be carried out quickly because the data input is done in real time.
Keywords: Application, Planning, Accident Report, Siriska

INTRODUCTION

National Social Security Agency for Employment (BPJS Ketenagakerjaan) in North Sumatra noted that since January 2021 there were 1,272 work accident cases in North Sumatra (BPJS Ketenagakerjaan. 2021). BPJS Ketenagakerjaan for North Sumatra Regional Office also recorded the number of work accident cases of around 4,092 work accident cases occurred in Aceh and North Sumatra regions and this number is still classified as a big number.

Each occupation has its own risks, for both indoor and outdoor workers. The risk of work accidents and work-related diseases that can occur to workers makes the company have to continue to record and map these work risks to minimize the incidences of the accidents and work-related diseases. Based on Law no. 13 of 2003 article 87 paragraph 1 says that "every company is obliged to implement an occupational safety and health management system that is integrated with the company's management system (Undang-Undang Republik Indonesia No. 13 Tahun 2003).

Data to prevent work accidents with a scientific approach already has sufficient information, but in the era of digitalization 4.0 it prioritizes the speed of the information availability , where all entities in an industrial environment are always connected and can share information with each other. By using fast information and not using traditional systems anymore, it will make it easier for decision maker to make faster decisions and control actions in work safety

and health issues.

Work accident reports were made and referred to the Minister of Manpower Regulation No. 03/MEN/1998 and the Decree of the Director General of Development of Industrial Relations and Labor Inspection of the Department of Manpower No. Kep 84/BW/1998 Regarding How to Fill in the Accident Statistical Report and Analysis Form. Writing a report on the results of an accident investigation and its analysis using a standard form has several advantages, including a) The report form can raise questions that must be answered during the investigation. b) The report form provides consistency of reported data. c) The report form provides a follow-up action plan. d) A properly designed report form will be able to explain all types of losses that occur, thus the simpler the report form, the better and easier it will be to achieve the objectives of the investigation or examination.

As time goes by, technology is getting more sophisticated. Technological developments, especially in the field of personal computers and the internet have brought changes to companies or organizations in carrying out their activities. With the help of advanced technology, human work is increasingly assisted and facilitates the completion of various jobs.

One example of technological developments is the number of applications created. Applications are software used to process data and documents quickly. Rahmad. H. S. (2012). The risk of work accidents and work-related diseases that can occur to workers makes the company have to continue to record and map these work risks to minimize the incidence of work accidents and work-related illnesses. Based on Law no. 13 of 2003 article 87 paragraph 1 it says that "every company is obliged to implement an occupational safety and health management system that is integrated with the company's management system.". The importance of android-based occupational risk mapping technology to be widely known and the availability of software for Occupational Safety and Health (K3) for companies for good OSH implementation.

The case study was conducted at PTPN IV Adolina Gardens, a company engaged in the palm oil sector, this industry is located at Batang Terap, Perbaungan District, Serdang Bedagai Regency, North Sumatra. Occupational risk analysis was carried out on oil palm harvesters. Workers in the harvesting section are divided into 2 parts, namely pendodos and borers. All workers in the harvesting division are at very high risk of experiencing work accidents, considering the plantation work environment has a large potential for danger.

The SIRISKA smart online application (Occupational Risk Mapping System) is an application that was created to help workers and related parties such as supervisors, company polyclinics, and management and even BPJS Ketenagakerjaan to carry out a reporting system easily, cheaply, quickly and accurately. This application is useful for measuring and mapping work accidents and area-based accident risk factors. Workers who experience near misses or work accidents can directly input data in real-time into this application.

GIS (Geographical Information System) is a system that processes data about spatial information and has the ability to store, build, manage and display information visually in graphical form. GIS works using a computer device to analyze and produce map-referenced data or geospatial data (Ogato, 2020). The components that must exist to build a GIS are Hardware, Software, Data (Spatial and Non-Spatial), People, and Methods (Eldita, 2018).

The information system itself is a system within an organization that meets the needs of daily transaction processing, supports operations, is managerial and strategic activities of an organization, and provides certain external parties with the necessary reports (Jogiyanto, 2005). The importance of android-based occupational risk mapping technology to be widely known and the availability of software for Occupational Safety and Health (K3) for companies for good

OSH implementation. The background of this research is there was no accurate basic data regarding work risk mapping yet recording and reporting of cases was still manual hence data search still require a lot of time and effort.

Feature Determination

Features are variables that are formed for the clustering process or grouping of OHS risk areas along with an accurate, fast and precise recording and reporting system. The features used in this study are mapping, recording and reporting of work accident cases, OHS risks and control measures.

Application Analysis and Design

This stage is the initial stage of application development, starting from the analysis stage by gathering system requirements functionally and non-functionally to facilitate the next stage and design. The case study was conducted at PTPN IV Adolina Garden, a company engaged in the palm oil sector, this industry is located at Batang Terap, Perbaungan District, Serdang Bedagai Regency, North Sumatra. Occupational risk analysis was carried out on oil palm harvesters. All workers in the harvesting division are at very high risk of experiencing work accidents considering the plantation work environment has a large potential for danger. Therefore an Android-based application is needed that can be used to facilitate work risk mapping so that companies can more easily find solutions to these work risks. With this application it is easier for harvesters to report incidents of work accidents.

The increasingly fierce competition among companies in Indonesia indicates the need for good corporate management for these competing companies. The management of a company has several aspects, namely, human resources (man), finance (money), equipment (machine), methods (method), and marketing (marketing). These aspects have a very vital function in the management of a company. The five aspects needed in managing the company are usually categorized as the management company. In this context, the management aspect of being studied is about finance (money).

METHOD

The type of research was System Development Life Cycle (SDLC) method. The type of research was the System Development Life Cycle (SDLC) method in 9 afdelings with a total of 219 oil palm harvesters, while the participants who experienced work accidents and near misses were 3 people, 1 person suffered minor injuries from afdeling V, 1 person suffered minor injuries from afdeling VIII, and 1 person suffered minor injuries from afdeling IX.SDLC is an approach that has stages or stages to analyze and build a system design using cycles that are more specific to user activities (Kendall, 2006). System Development Life Cycle is also a center for developing efficient information systems (Munthe, 2017). SDLC consists of 4 (four) key steps, namely, planning and selection, analysis, design, implementation, and operation. (Valacich, 2012). In addition, the System Development Life Cycle (SDLC) is a process of understanding how Information Systems can support business needs, design the system, build the system, and deliver it to the user (Dennis, 2005).

DATA COLLECTION

Testing of the Siriska application applied for data collection were carried out in 9 afdeling with a total of 219 people harvesting palm oil, while the participants who experienced work accidents and near misses were 3 people, 1 person suffered minor injuries from afdeling V, 1 person suffered minor injuries from afdeling VIII, and 1 person suffered minor injuries from

afdeling IX.

BUILDING GIS APPLICATIONS

This stage was the core stage of this research, namely building applications. An application-based program that makes it easier for application user admins to map OHS risk areas.

MAPPING USING GOOGLE MAPS API

This application utilizes the Google Maps API to make it easier to map areas so that OSH risk data can be displayed in map form so that users can easily find location points and other information needed.

APPLICATION TESTING

After the application was built, it was measured whether the program is in accordance with the needs, then a testing process was carried out by the plantation clerk who will then be given the responsibility to provide information and practice using the application for the foreman and workers.

OUTCOME EVALUATION

This application was the final process of research, namely the evaluation of test results and the feasibility of applying the application to be used by workers.

RESULTS AND DISCUSSIONS

MENU STRUCTURE

The menu structure in the SIRISKA System Application is as follows:

Menu User
1. Menu Login
   a. Username
   b. Password
2. Menu Add report
   a. Location and date
      In the form of information about the time of work accident.
   b. Attachment
      In the form of pictures of incidents and work accident locations.
   c. Victim data
      Represents data on workers who have had accidents.
   d. Accident data
      In the form of information regarding the causes and consequences of accidents.
3. Profile
   Is a user information display that contains Name, NIP, Type of work, Year Entered, Work Area, and Gender.
   a. Data user
      Is user data that contains Name, NIP, Type of work, Year Entered, Work Area, and Gender.
   b. Log out
      Is a menu to exit the application.

HOW TO USE
   a. Login with fill in the username and password
   b. Click add report

c. Fill in the date, time, and location accordingly the incident
d. Fill in the attachment data using 2 menus, a camera or gallery Then select the victims data from the employee menu
e. After selecting the victim data then input the causes and consequences of the accident on the accident data menu
f. After selecting the victim data, then input the causes and consequences of the accident on the accident data menu
g. After sending the report, the report can be viewed on the home menu
h. When finished, press the profile menu then exit to exit the application

DISCUSSION

Testing is the process of implementing a program with the aim of finding an error. A good test case is one where the test has the possibility of finding an undiscovered error. A successful test is when the test uncovers an error that was not initially found.[13]

SIRISKA Application (Work Risk Mapping System) is an application to measure and map occupational accidents and accident risk factors based on region. Workers who experience near misses or work accidents can directly input data in real-time into this application. Interested parties and entitled to use this document namely:

1. Administrator SIRISKA

SIRISKA administrators use this document as a guide on them how to use and perform maintenance for the SIRISKA application

2. User

Users (workers) use this document as a guide on how to use the SIRISKA application according to work risk factors

3. Hardware implementation

Hardware implementation describes the minimum hardware requirements needed to implement application programs created using Android with the specifications mentioned below.

a. RAM : Minimum 2 GB
b. ROM : Minimum 2 GB
c. Internet Connection and GPS

Interface Implementation

Interface implementation is the result of interface design

CONCLUSION

From the results of the research conducted on Android-based application design to help map near misses and work accidents at PTPN IV Adolina Garden based on android, several conclusions can be drawn, namely:

1. By creating an Android-based application to help risk near miss accidents and work accidents, it makes the companies easier to record data on near miss events and work accidents.
2. By creating an Android-based application to help map the risks of near misses and work accidents, the data input process by workers can be carried out quickly because the data is input in real time.

Recommendations

This application can be applied in various sectors of work, on reporting work accidents which can be integrated with workers' insurance.

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