Design of Project Data Management Information System

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Abstract. The purpose of this research is to further improve the design of the project management information. PT. XYZ is a company located in Kiarapayung, West Bandung, Indonesia. This company is engaged in services in the procurement of building construction or road construction. The company has not used an integrated information system in the management of project data, companies have difficulty in managing both transaction data and create reports. Information system aims to support operations, management, and decision-making [1]. Data that has not been integrated has resulted in difficulties in managing reports, and has made it difficult to process the salary of workers who are involved in ongoing project implementation which needs a management information system to help the project data so that data management and report generation can be easily created, because the data is already integrated with the database. It can be concluded from the problems described earlier that the company needed a data management information system project. Object-oriented approach method and prototype system development method were used for this study. The result is that project management system can improve the process of managing data more easily and quickly.

Keywords. Management, Project, Information, Companies, Workers.

1. Introduction
PT. XYZ is a company engaged in services in the procurement of building construction or road construction. This company has been established since 2014. This company already has various experiences in handling construction. The company has problems in handling project data management and does not yet have an integrated information system so that there are difficulties in managing data related to the project. From the results of the analysis it is known, that the company requires an integrated information system in managing the data. Information system is a system within an organization that brings together daily transaction management needs, supports operations, encourages managerial and strategic activities of an organization as well as provides certain outside parties with the necessary reports. [1] Information systems and organizations influence one another. [2] The use of information systems in various fields are now widely used, including in companies engaged in construction such as PT. XYZ. Information system is used to facilitate the company in the management of existing business processes, in order to become more effective and efficient. Companies only use MS Excel applications in data management and create reports, therefore in this study information systems will be designed to help the company's performance. This information system is made web-based, using object-oriented analysis and design.

Research related to project management information systems is carried out, one of them is research entitled ‘Project Management Information System at PT. palembang contrindo anugrah pertiwi. In this study, management information systems are made desktop-based using SQL Server 2008 as a database.
at PT. Anugrah Pertiwi Kontrindo Palembang. The method used in writing this research is the RUP (Rational Unified Process) method by carrying out the Inception phase, Elaboration phase (expansion/planning), Construction phase, and Transition phase. [3]

Other research that related to the research conducted was a research entitled "development of a data management system for students’ final year projects case study: department of information systems". This research used by institutions in the Information Systems department is a data management system for the final year project students who can manage their grades and produce complete reports. This system will be developed as a web-based system, with a limited access only to the university's local network. To design this new system, the data and class management would do an analysis of the procedures from the last project. The results of the analysis would form the basis of database design and development system management - core support of data management systems [4]. It is intended that departmental administrations and Department Heads could get a benefit from using this system such as entering, managing, and viewing the student's final year projects and their respective values. [5]

Another research that related is a research entitled Information System Design of an Inventory Online Website. This research discusses about the design of online inventory information systems that can replace manual processes in supporting the fulfillment of information requirements, help processing data with computerization, as well as help processing data’s stocks, materials and orders using computer media. The prototype method is used to develop the system. The method used in this paper is a descriptive analysis method related to online inventory of warehousing systems. The aim is to produce information systems from online inventory websites in the form of warehouse information systems that can be accessed through computer applications [6]. Therefore, this study was conducted by discussing the flow map of the current warehousing system and the proposed warehousing system. [7]

The difference between research that is used as a reference and the research conducted is on the object of research and the use of development methods.

2. Method

There are two methods used in this research. For the system approach method, this study used the object-oriented approach method by pouring the results of analysis and design into several diagrams including case diagrams and scenarios, activity diagrams, and other diagrams [8]. The steps being taken in the analysis, using data collection methods, namely: [9]

a. Interview
b. Observation
c. Questionnaire

In addition to the use of the system approach, the study also used development as a reference for the research stage. The system development method used the prototype system development method. The prototype model (prototyping model) starts from collecting customer needs for software that will be made [10]. Then a prototype program was made so that customers were more imagined about what they really wanted [11].

3. Results and Discussion

From the results of the system’s analysis that runs, it is known that there are some shortcomings in the company, as well as how to solve the problem proposed by designing a project management information system. These data can be seen in Table 1.
Table 1. Problem and Solution

| No | Problem                                                                 | Division                      | Solution                                                                 |
|----|-------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------|
| 1  | The process of recording and archiving work contracts is still done using Microsoft Excel, this makes it difficult for the data management process including the data search process. | Project Manager & Site Manager | Creating a recording system and archiving work contracts with a computerized system using a database. |
|    |                                                                         |                               |                                                                          |
| 2  | It is still difficult to make a report because there is no integration between data. | Executor                      | Creating an Information System that has integration between data using a database. |
|    |                                                                         |                               |                                                                          |
| 3  | Calculation of daily wage employees still counted and recorded manually vulnerable to errors in the calculation. | Site Manager                  | Make a system for calculating workers' wages so as to facilitate the calculation of total wages and minimize the possibility of errors in calculations. |

In Table 1 explained the problems that exist in the company, and the solutions offered by the design of the project management information system. The results of the project management information system design can be seen in the diagram use-case, in the Figure 1.

![Figure 1. Use-case Diagram](image_url)
Figure 1 explains that the leader took part in every management which are work and development stages, monitoring, labor wages, as well as recording except in planning and scheduling. The description of the actors involved in the use of project management information system will be designed in the Table 2.

| Actor       | Description                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Project Manager | Project manager will input all of the data contract that has been approved by the leadership.                                                   |
| Site Manager | Site Manager will handle cooperation projects if the contract has been inputted by the Project Manager. Then the site manager is authorized to plan labor costs, plan the type of work needed, plan the scheduling of each stage and change the work plan. |
| Leader      | Leaders monitor progress of work.                                                                                                             |
| Executor    | Executor assist the site manager in planning phases of work.                                                                                   |

Table 2 is an explanation of several functions that exist in the information system that will be designed in the company while the use-case will be described in Table 3.

| UseCase                | Description                                                                                                                                 |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Record the contract    | The data collection process into the contract that management company and only approved by the leadership                                     |
| Planning & Scheduling  | In the process of determining, we need to know what stages of work are needed to complete the project. Scheduling and planning for each phase of work, so that the project could be completed on time has been determined. |
| Labor Wages            | In the process of planning and scheduling there is a process to find out what costs are needed for wages for workers, as long as the project is running and to find out what workforce is needed in this project so that it can be resolved properly. |
| Work & Development Stages | The process of commencing the stages of work that has been entered into the system, then the Project Manager clicks the "Start" button so the system can run and can calculate the realization of the day. Leaders can monitor the development of the project every day, the leader can also see the current projects, which have been completed, or not completed. |

4. Conclusion
Based on the results of the research that has been done, it can be concluded that the existence of a project management information system, can help companies in the process of managing data more easily and quickly. Previous errors caused by a system that has not been integrated can be handled, for example in making reports easily done because the data used by the company is integrated. And can help facilitate the process of calculating the wages of workers. This project management information system can help manage work schedules, thereby minimizing the occurrence of project delays.
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