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SINOPSIS

Jurnal Nasional Komputasi dan Teknologi Informasi (JNKTI) merupakan jurnal ilmiah nasional yang diterbitkan oleh Program Studi Teknik Informatika Universitas Serambi Mekkah yang mempublikasikan artikel-artikel ilmiah dalam bidang komputasi dan teknologi informasi. Jurnal ini terbit sebanyak 2 (dua) kali dalam 1 (satu) tahun yaitu pada Bulan Maret dan Oktober. Bidang-bidang fokus penelitian yang akan dipublikasi dalam jurnal ini antara lain :

- Bidang Rekayasa Perangkat Lunak
- Bidang Jaringan Komputer
- Bidang Multimedia dan Pengolahan Citra Digital
- Bidang Komputasi
- Multidisiplin ilmu lainnya yang relevan

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Progress of Construction Project Information System Based on SMS Gateway

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Abstract. Management of reporting project progress and material inventory reporting otherwise known as supply chain management is needed, namely to ensure that the project has progress or not. Based on the reporting activities that have been carried out there are activities that are less effective than the system of recording progress reporting and the supply of construction materials in the field, namely reporting time and recording system. So because this paper aims to explain the making of information systems the progress of construction projects that are integrated with the reporting system of inventory of empty materials using the SMS gateway. The methodology is built using the phases of context diagrams, data flow diagrams and entity relationships. The system is built using PHP programming, mySQL database and Gammu. The results of the study show that the project progress information system has produced project reports and progress in the form of web pages. As well as a brief report on the progress of the project, Hanphone has received an SMS. Research is expected to benefit construction companies so that reporting can be more effective and efficient.

Keywords: Construction Project, Information System, SMS Gateway, Web

1. Introduction

Construction projects are activities that have an important role in a stage of activities related to establishing a building. In construction projects, many involve human resources that have basic skills such as civil engineering and architecture. However, to strengthen the success of a project, good project management is needed. One project management that needs to be considered in a project is progress management and material inventory.

Management of reporting project progress and material inventory reporting otherwise known as supply chain management is needed, namely to ensure that the project has progress or not. And find out information on whether construction material is available or not when the construction project is executed. If there is no progress and the supply of empty material will cause the work to stop and the labor costs continue.

At present progress management and inventory are managed by construction supervisors who monitor the work in the field and simultaneously oversee the availability of material in the field. Progress information along with the conditions of incoming and outgoing material

will be recorded. Reports in the form of notes will be reported to the leadership responsible for project progress and material inventory. Based on the reporting activities that have been carried out there are activities that are less effective than the system of recording progress reporting and the supply of construction materials in the field, namely reporting time and recording system. Therefore, to anticipate this, the need for an information system for project development is integrated with an empty material reporting system using the SMS gateway service.

Based on the problems faced above, this paper aims to explain the making of information systems for the progress of construction projects that are integrated with the reporting system of empty material inventory using the SMS gateway.

2. Literature Review

The application of information technology in various fields has helped produce decision making on problems in various business activities. Information system is one of the implementation of information technology that aims to combine hardware and software systems to produce meaningful information [1]. Business data that has been processed into information will be distributed to users with various interfaces such as web-based information systems [2].

Several studies that have been developed in the form of management information systems are applications in business such as business management information systems for the purchase and sale of community commodities [3]. While the implementation in the field of health clinic management there is a patient queue information system that is integrated with the health medical record management information system [4]. And a warning information system for school time change which is an application of information systems in the field of school management [5]. And the application of information systems to lecture management by building a thesis supervisor management system [6]. From some information system research that has been built is an information system using a web interface.

The use of information systems using web media as an interface is one of the communication media that is run in real-time and can be easily accessed by all information systems that provide web browser and internet network facilities [7]. However, the internet utilization system is smaller than the use of mobile phones in personal communication. One of the Mobile communication services is the SMS service. Larger SMS services are available in remote areas than internet services. Besides that, SMS services are also easier to send to users. This can be seen in the use of SMS in the house fire disaster monitoring information system [8] and home security information system based on SMS Gateway [9][10]. The use of SMS in the information system can provide personal information to homeowners in real time.

With regard to the construction project inventory management information system built, there are several information systems based on SMS gateways that implement inventory information systems, namely a warning information system for consumables using SMS gateway communication media. [11]. In the information system the information system sends information to the leadership if there is an empty item. Besides that there are also studies that focus on the process of reviewing the effect of inventory on goods turnover in a shopping center [12].

3. Research Methods

The research method applied in the construction of this information system is system analysis using context diagrams. While the next step is to design a system that uses Data Flow Diagrams (DFD) and Entity Relationship Diagrams (ERD).

3.1 Analisa Sistem

The stages of analysis begin by making a description in the form of a context diagram. Context diagram is used to find out who are the users involved in the proposed system built. In the context diagram above it can be seen that there are three users who use the system along with their tasks. Admin is tasked with inputting field official data. While field officials input contractor data, consultants, project data and data progress reports. And the leader only receives reports that are accessed via SMS and via the web.

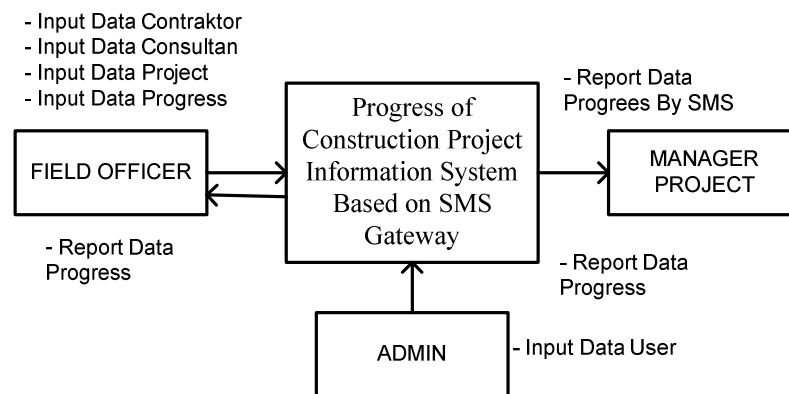


Figure 1. Context diagram

3.2 System Design

In the second stage of the system development method is the design of data flow diagrams (DFD) as seen in Figure 2. And it can be explained that the admin inputs the data officer and saves it to the D1-Field Officer. The Field Officer inputs the Data Contractor and saves it to D2-Contractor, the Field Officer inputs the consultant's data at the D3-consultant. Next the field officers input project data by accessing contractor, consultant data and storing project data on the D4-Project. And

it ends with the officer field officer inputting data progress by accessing project data and saving it in D5-progress.

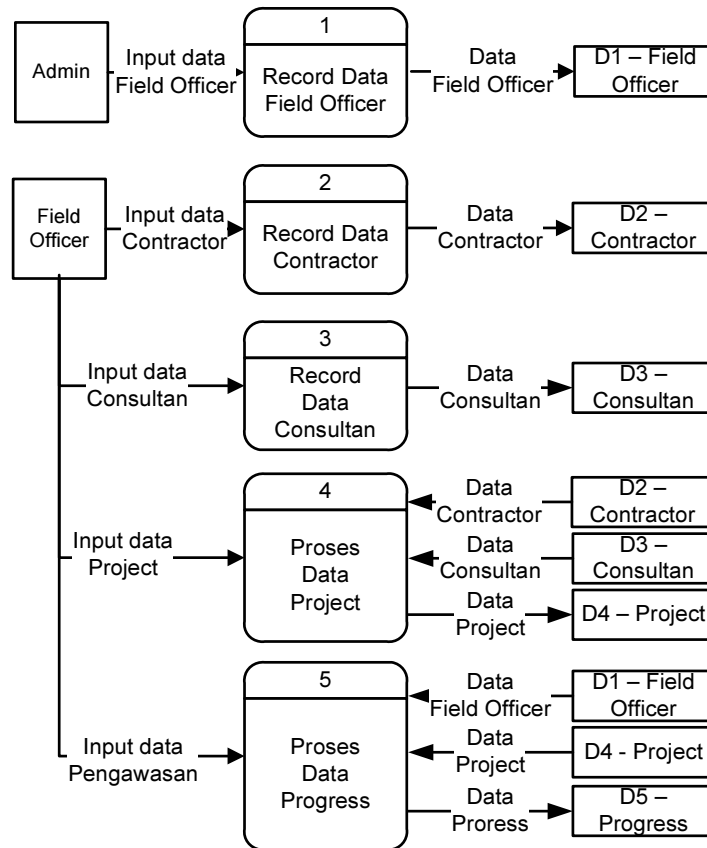


Figure 2. Data Flow Diagram

The database is a pool table that is interconnected with one another which is realized with the relation key described in the entity relationship diagram. In figure 3 it can be explained that each project has a contractor and consultant. Each project has a lot of progress reports. Progress report is done by field officer.

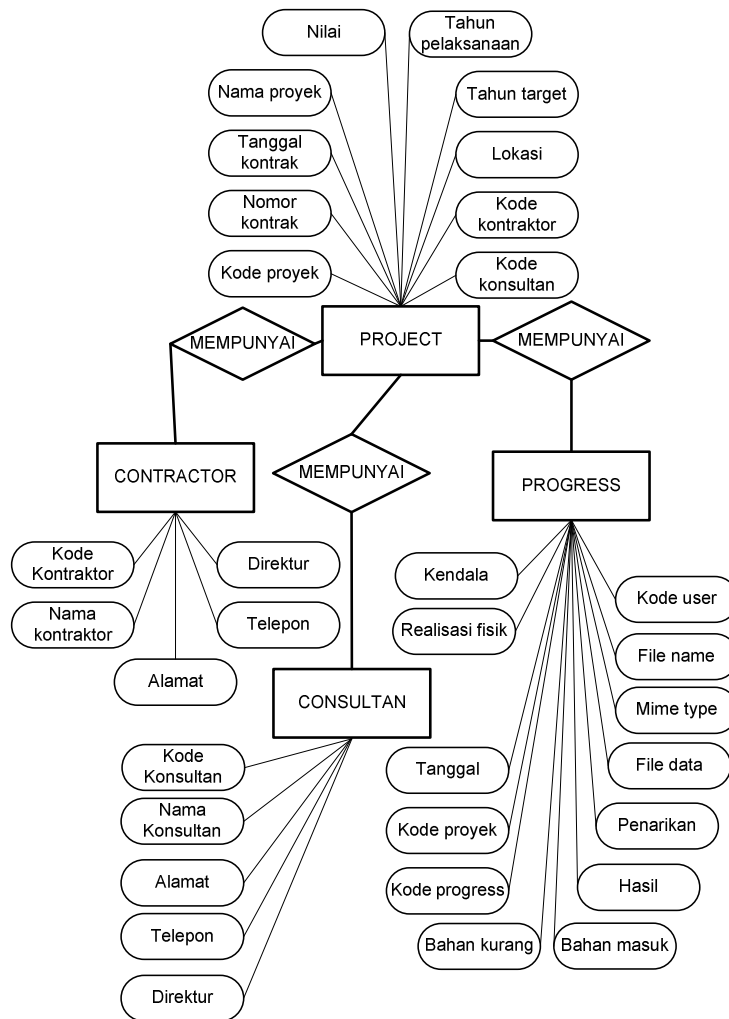


Figure 3. Entity Relationship Diagram

4. Research Results

Based on the results of system analysis and system design, the project progress information system can be seen in Figure 4, which is a project form that functions as a project data input form. The form has one input, namely the name of the project, year of implementation, year of target, location, contractor and consultant. In the table the list of data that has been entered and there are 2 process icons, including the edit link icon and the delete link icon. These icons represent the process for each data.

No	Kode Proyek	Nama Proyek	Tahun Pelaksanaan	Tahun Target	Lokasi	Kontraktor	Konsultan	Form Progress	Laporan Progress	Edit	Hapus
1	KP001	PERTOKOAN LAMBARO	2017	2018	LAMBARO	CV.PRIMA KONSTRUKSI	CV.CAHAYA ABADI				
2	KP002	REHAP SEKOLAH DASAR KETAPANG	2017	2018	KEUTAPANG	CV.PRIMA KONSTRUKSI	CV.FIRMAN CONSULTAN				

Figure 4. Project Form

The form progress page shown in Figure 5 functions as a Progress data input form. The form has inputs, namely the project code, Progress date, percentage of work, constraints, lack of material, incoming goods and Progress results.

No	Tanggal	Kode Proyek	Nama Proyek	Persentase Proyek	Kendala Lapangan	Bahan Kurang	Barang Masuk	Hasil Progress	Petugas	Foto Kondisi Lapangan	Edit	Hapus
1	2017-05-02	KP001	PERTOKOAN LAMBARO	20%	Hujan	Semen	Bata, Besi	Kondisi Proyek tidak dapat dilanjutkan karena hujan	admin			
2	2017-05-03	KP001	PERTOKOAN LAMBARO	22%	-	-	Pasir	Sedang dalam pembuatan dinding toko	admin			

Figure 5. Progress Form

The order delivery page shown in Figure 6 functions as a project report and Progress. In the report there are some information including the name of the project, year of implementation, target year, location, contractor and consultant.



LAPORAN PROYEK								
No	Kode Proyek	Nama Proyek	Tahun Pelaksanaan	Tahun Target	Lokasi	Kontraktor	Konsultan	
1	KP001	PERTOKOAN LAMBARO	2017	2018	LAMBARO	CV/PRIMA KONSTRUKSI	CV/CAHAYA ABADI	
LAPORAN PROGRESS PROYEK DARI TANGGAL : 2017-05-01 SAMPAI TANGGAL : 2018-05-30								
No	Tanggal	Persentase Proyek	Kendala Lapangan	Bahan Kurang	Barang Masuk	Hasil Progress	Petugas	Foto Kondisi Lapangan
1	2017-05-02	20%	Hujan	Semen	Bata, Besi	Kondisi Proyek tidak dapat dilanjutkan karena hujan	admin	
2	2017-06-03	22%	-	-	Pasir	Sedang dalam pembuatan dinding toko	admin	

Figure 5. Project reports and Progress

For reports based on the SMS Gateway, it can be received by the leadership with the information received is the name of the project, Progress date, percentage of work, constraints, lack of material, incoming goods and Progress results as shown in Figure 6.

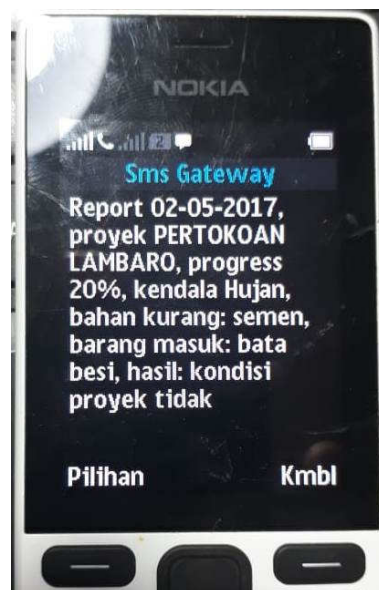


Figure 5. SMS sent by the system

5. Conclusion

Based on the analysis and system design of the project progress information system, it can be concluded that the project progress information system using a GSM communication system with the SMS Gateway service can be run in accordance with the description on the context diagram, data flow diagram (DFD, Entity Relationship Diagram

(ERD) Besides that, the system has been able to send progress information on project implementation via SMS. Based on the results that have been built, this research can help construction companies that require GSM-based project progress information systems.

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