

Business System Information Analysis Process Outcome in Hospital General Bengkayang Area

Angelia Chantika Sri M^{*1}, Gusti Syarifudin², I Dewa Ayu Eka Yuliani³, Sandy Kosasi⁴,
Budi Susilo⁵

^{1,2,3,4,5}STMIK Pontianak, Indonesia

E-mail: ^{*1}angeliachantika@gmail.com, ²gusti.syarifudin@stmikpontianak.ac.id,
³dewaayu.ekayuliani@stmikpontianak.ac.id, ⁴sandykosasi@stmikpontianak.ac.id,
⁵budi.susilo@stmikpontianak.ac.id

Abstract

In the application of the outpatient information system business process at the Bengkayang Regional General Hospital, there are still problems faced, namely the occurrence of incompatibility of patient medical data information in the examination section / poly section, resulting in delays in the patient handling process. This is the background for the author to analyze the business process of outpatient system information at the Bengkayang General Hospital using the Business Process Management Life Cycle method. This study aims to determine how effective it is in managing the outpatient information system business process at the Bengkayang Regional General Hospital. The analytical technique used is BPMN, value chain, business area analysis and the method used is the BPM life cycle. The results of this study can support the current business processes for the better. With the addition and improvement of optimal technology, with existing information system technology to obtain a more detailed and complete procedural flow chart. The resulting procedure flow chart will integrate the data in each part of the service unit in the outpatient department, so that the data can be used together between departments so that data duplication can be avoided.

Keywords — Business Process Analysis, Information Systems, Business Process Modeling and Notation, Value Chain, Business Process Management Life Cycle.

1. INTRODUCTION

An organization must have business processes that support existing business activities within the organization to achieve the identified vision and mission^[1]. One way that can be used by each hospital is to use information technology to support the implementation of its business processes. Currently emphasizing information systems and information technology that must be managed to support an organization's business processes^[2]. One organization that uses information system services in carrying out business processes is the Bengkayang Regional General Hospital, Bengkayang Regional General Hospital already has a system called a hospital management information system (SIMRS), SIMRS is a computerized system in the form of application programs or computer software that helps the management of the Bengkayang Regional General Hospital in processing and integrating all health service business process flows in the form of a coordination network and administrative procedures to obtain information quickly, precisely, and accurately^[3]. However, in the implementation of service activities at outpatient installations, there are still problems faced, namely the

occurrence of discrepancies in the patient's medical record data information in the examination section / poly section, resulting in delays in the process of handling patients. Meanwhile, the error that occurred was the discrepancy of the report information from the administrative officer with the officer who handled the patient, there was a schedule difference, this was caused because there were officers who did not carry out the SOP on the patient so that the patient went through the procedure at the registration section and went directly to the examination first. The Hospital Management Information System has not been fully running well^[4]. An organization seeks to improve business processes to increase the efficiency of its processes. Improvement efforts require methods and models that are able to describe them well, so that an assessment of the ongoing process can be carried out. An organization's business processes are competitive resources if they enable the organization to innovate or perform better than its competitors. Business process management (BPM) or business process modeling (PPB) can be described by general diagrams representing activities that implicitly focus on a process, action and activity (job). The resources described in business process modeling show how they will be processed^[5].

2. RESEARCH METHOD

In this study, the form of research used is a case study. A case study is a form that focuses on a particular case that is observed and analyzed thoroughly. The research method used in this research is Design Research. The Design Research method is basically a method for problem solving which is an important effort to build bridges across a technological perspective and a managerial perspective as well as the behavior of information systems so as to improve business processes and systems consisting of activities, related to the development and evaluation of a technology to meet organizational needs. and theory development. This data collection method is a very important part of a study. The availability of data is very decisive in the processing and subsequent analysis, therefore data collection must be carried out with techniques that can ensure that the data obtained is true, accurate, and can be accounted for. The types of data used in this study are: (1) Primary data is data taken by direct interviews. Interviews with the head of the administration, the head of the poly, the head of the laboratory and radiology, the head of the pharmacy. The data generated in the form of patient visit report data, patient medical record data, patient examination results data, drug management data, laboratory data and patient radiology. Also conducted interviews with outpatients of the Bengkayang Regional General Hospital to obtain information about the services provided, (2) Secondary data obtained indirectly from the source of the research object. The study studied documentation in the form of documents that exist at the Bengkayang Regional General Hospital such as organizational structure, job descriptions and authorities, patient registration SOP books, medical record SOPs, patient examination SOPs, SOPs for advanced medical actions such as labs and radiology, SOPs for taking drug. This study uses the Business Process Management (BPM) Life Cycle, consisting of 6 phases:

A. *Process Identification*

In this phase, business problems arise. Processes relevant to the problem at hand are identified, defined, and interrelated. To get a broad view of the business processes in line with the value chain (Value Chain). In order to get a broad view of the business processes that align

with the value chain at this stage, it is necessary to examine all available documentation and assimilate how these processes align with service delivery, patient care, support, and financial management. The steps in stage 1 are identifying the main processes, management and support. Identify performance indicators and prepare to analyze business process.

B. *Process Discovery*

In this phase of the ongoing business process modeling phase, the current state of each relevant process is documented, usually in the form of one or more process models as they are.

C. *Process Analysis*

At this stage of analysis, observing ongoing business processes and describing them using BPMN. The analysis phase aims to understand the business processes that can be improved, the process will later be modeled using BPMN. The steps that the author will take in the analysis phase are interviewing actors or business process actors in the registration information system, conducting analysis by understanding BPMN's current business processes, and analyzing supporting documents for business process.

D. *Process Design*

The purpose of this phase is to identify changes to the process that will help address the problems identified in the previous phase and enable the company to meet its performance objectives. After finding failures, delays, and deficiencies in the outpatient business process, the next step is to align with the strategic objectives of the Bengkayang Regional General Hospital and model the new business process.

E. *Process Implementaion*

At this stage there are two ways to implement it through systematic implementation, namely with the help of certain software and technologies, or non-systematic implementation. Whatever is used, the goal is to enable and implement the implementation process as defined and documented in the form of a workflow.

F. *Process Monitoring and Controlling*

Bengkayang Regional General Hospital as a health service provider that already has a strategy. In order to find out whether the business processes are in line with the hospital's strategic objectives, appropriate indicators are needed to assess whether they are in line with how to assess the results that have been achieved and these indicators include the length of processing time, costs (monetary spent on the process, capacity (how much many processes that can actually provide service) and service quality to check whether there are many errors that can affect customer satisfaction with the services provided.

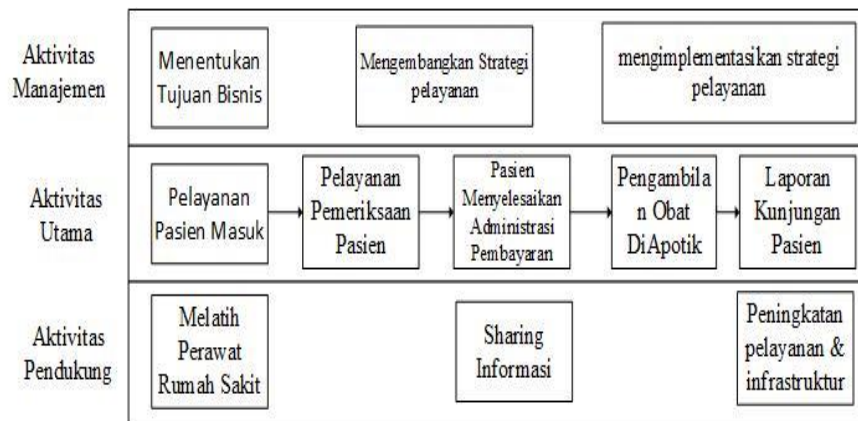
3. RESEARCH RESULTS AND DISCUSSION

The methodology used in the analysis of the outpatient information system business process at the Bengkulu Regional General Hospital is the Business Process Management Life Cycle. Business Process Management Life Cycle is a method used to analyze existing business processes at Bengkulu Regional General Hospital which includes 6 phases. Six phases in business process management are Process Identification, Process Discovery, Process Analysis, Process Redesign, Process Implementation and Process Monitoring. In this study, the author only focuses on discussing 4 phases, namely Process Identification, Process Discovery, Process Analysis, and Process Redesign, which are described as follows:

3.1. Business Process Management Life Cycle

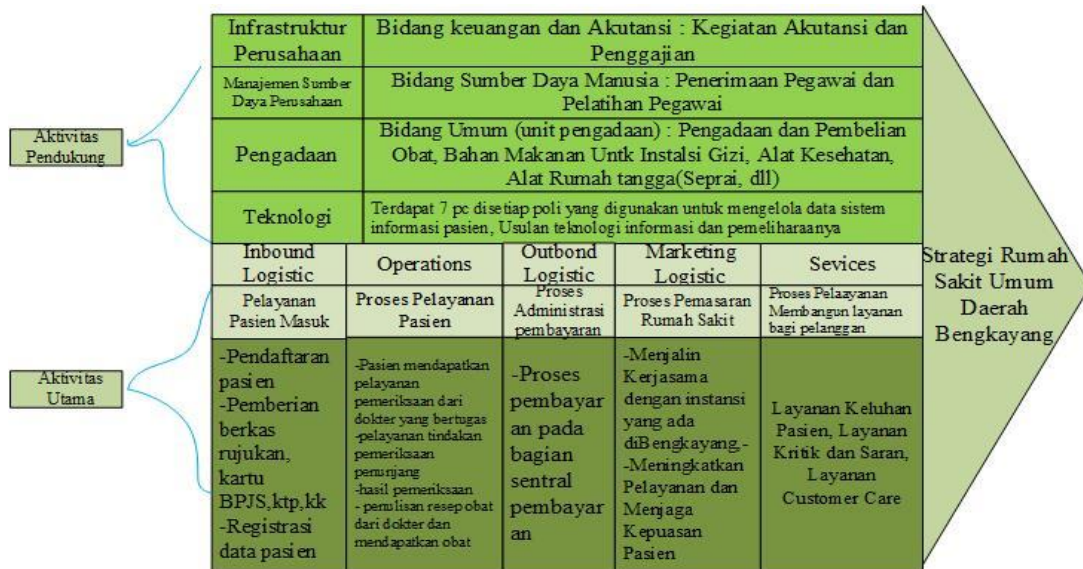
3.1.1. Process Identification

This identification process is the first phase in the Business Process Management Life Cycle and is important in identifying the need for the Bengkulu Regional General Hospital to make changes that can improve patient care. The business process of the outpatient information system of the Bengkulu Regional General Hospital based on the category is divided into three categories, namely the management process category which consists of determining business goals, developing service strategies, and implementing service strategies. For the main process categories, namely incoming patient services, patient examination services, patients completing payment administration, drug retrieval services. While the supporting process category is training medical staff, sharing information, improving services and infrastructure. The three categories are depicted in Figure 3.1



The management process in Figure 3.1 consists of determining business objectives, where the business objective of the Bengkulu Regional General Hospital is to improve the quality of services according to hospital accreditation standards. In determining the business objectives, there can be relations between processes, namely the process of improving service quality and increasing facility utility. The second management process is developing a service strategy that has a relationship between processes, namely through setting organizational goals for the current service strategy. The third management process is implementing service strategies that have a relationship between processes, namely online service strategies and direct service strategies.

The internal activities at the Bengkulu Regional General Hospital need to be analyzed using value chain analysis to look into the hospital's business processes and then reveal where its competitive advantage lies. The value chain of the Bengkulu Regional General Hospital is depicted in Figure 3.2



The Bengkulu Hospital value chain depicted in Figure 3.2 describes the main activities and supporting activities. The main activities are as follows:

a. Inbound Logistics (*Incoming Patient Service*)

The output of this registration process is the registration of patients at the Bengkulu Regional General Hospital and getting a treatment card if a new patient comes from the hospital.

b. Operations

Activities related to patient care consisting of:

1) Patient examination

The output generated from this service process is the patient's medical record if it has been checked at the Bengkulu Regional General Hospital and drug prescriptions for the patient.

2) Supporting investigation

The resulting output is the patient's examination results.

3) Medication Administration

The output that will be produced is a note of payment and medicine for the patient.

c. Outbound Logistics (*Payment Administration Process*)

The output produced in this section is proof of payment in full.

d. Marketing Logistics (*Hospital Marketing Process*)

Activities related to increasing patient loyalty to the Bengkayang Regional General Hospital. The activities carried out are collaborating with existing agencies in Bengkayang, carrying out activities for promotional facilities such as social services, free examinations.

e. Services (*Service Process Building Services for Patients*)

The resulting output is the number of patient complaints and reports of criticism and suggestions received by the Bengkayang Regional General Hospital.

Supporting activities are as follows:

1. Company Infrastructure

Payroll and hospital accounting activities are carried out by the finance department. The activities carried out are recording financial transactions by all sections, payroll for employees of the Bengkayang Regional General Hospital, and also managing the finances of the Bengkayang Regional General Hospital.

2. Human Resource Management

Employee training activities, the activities carried out are recording employee performance, conducting employee training, and appreciating the employees of the Bengkayang Regional General Hospital.

3. Procurement

All activities carried out in this process are procuring and purchasing drugs, medical devices, food ingredients and household equipment needed by the Bengkayang Regional General Hospital.

4. Technology Development

Performing the required technology proposals, and performing maintenance on the system and information technology at the Bengkayang Regional General Hospital. Information technology that is useful in the outpatient department has 7 treatment clinics consisting of dental poly, tht poly, surgery poly, gynecology poly, internal medicine poly, physiotherapy poly, and pediatric clinic. With a total of 1 PC per poly department that can distribute patient information to be stored in the hospital database, this process is used to assist in managing the hospital information system (SIMRS) every day.

3.1.2. Process Discovery

The discovery process is the second phase of the Business Process Management Life Cycle, process discovery is the act of gathering information about existing processes and organizing them in the form of a process model as it is. During the process of this invention define the business process information system outpatient Bengkulu Regional General Hospital more broadly than process modeling.

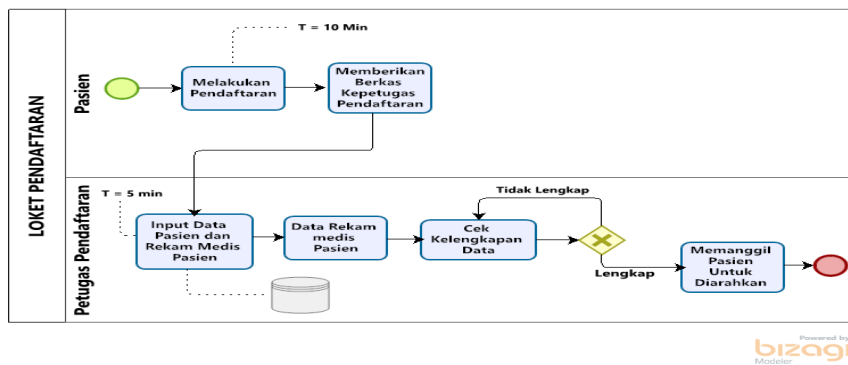


Figure 3.3 Patient Registration Services

The activity of the patient acceptance process is according to Figure 3.3 Bengkulu Regional General Hospital serving patients. The patient will go to the registration section to register and take a queue number, give the file to the registration section, after that the registration section will input patient data and medical records into the SIMRS application. The registration section checks the data equipment, if it is complete, the patient will be called and will be directed to the polyclinic, while if the data is not complete, the data will be checked again.

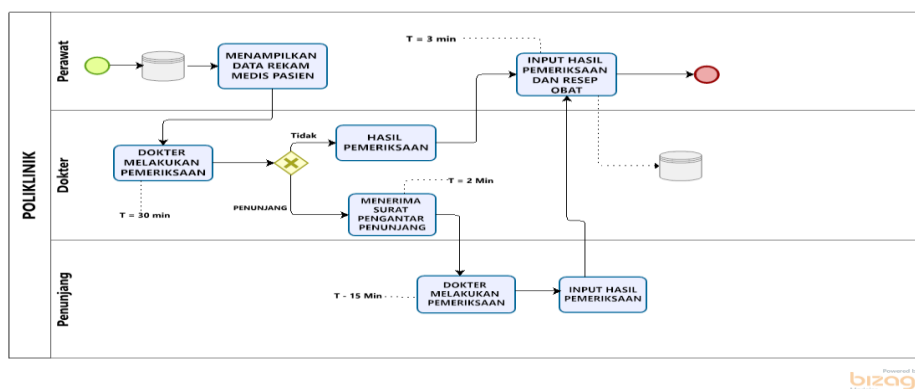


Figure 3.4 Inspection Process

The activity of the patient examination process according to Figure 3.4 starts from the polyclinic, where the doctor will examine the patient, after carrying out the examination the doctor will decide whether to carry out an examination to the supporting section or not if carrying out a supporting examination the patient will be given a supporting letter of introduction to the laboratory, surgery, and radiology department. Then the patient will be directed to take the results of the examination and prescription drugs from the doctor.

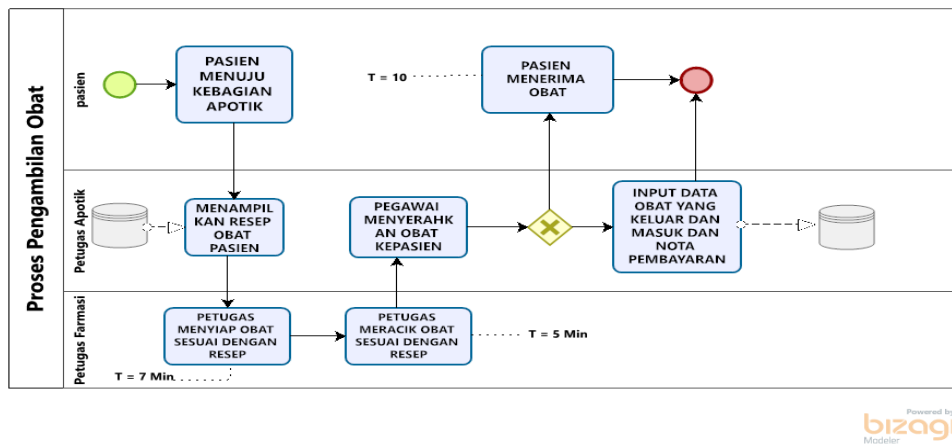


Figure 3.5 Drug Taking Process

The drug-taking process activity according to Figure 3.5 starts from the patient coming to the pharmacy to take the medicine at the pharmacy, the pharmacy staff will see the patient's drug prescription and hand it over to the pharmacist to prepare the drug and mix the patient's medicine, then the pharmacist prepares the drug and mixes the patient's medicine. The drugs that have been prepared will be handed over to the pharmacy staff, the pharmacy staff will hand over the drugs to the patients.

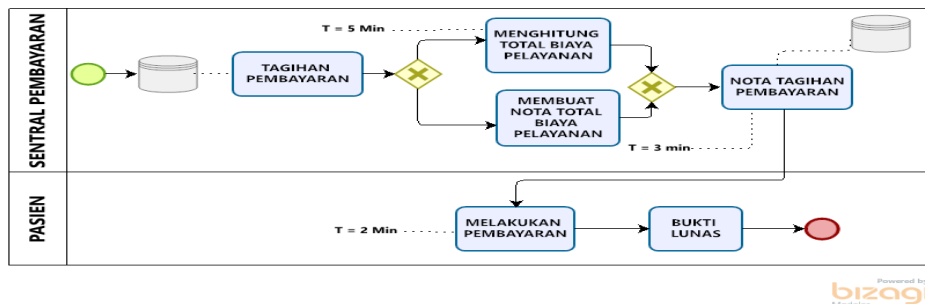


Figure 3.6 Payment Process

The payment process activity according to Figure 3.6 starts with the patient getting to the payment center, the payment center employee will calculate the total cost of services provided to the patient, then the employee will make a payment note, so that the patient can find out the total payment and the patient can make payments, the patient gets proof of payment.

3.1.3. Process Analysis

Bengkayang Regional General Hospital has several goals to be achieved in its business process to improve services, namely:

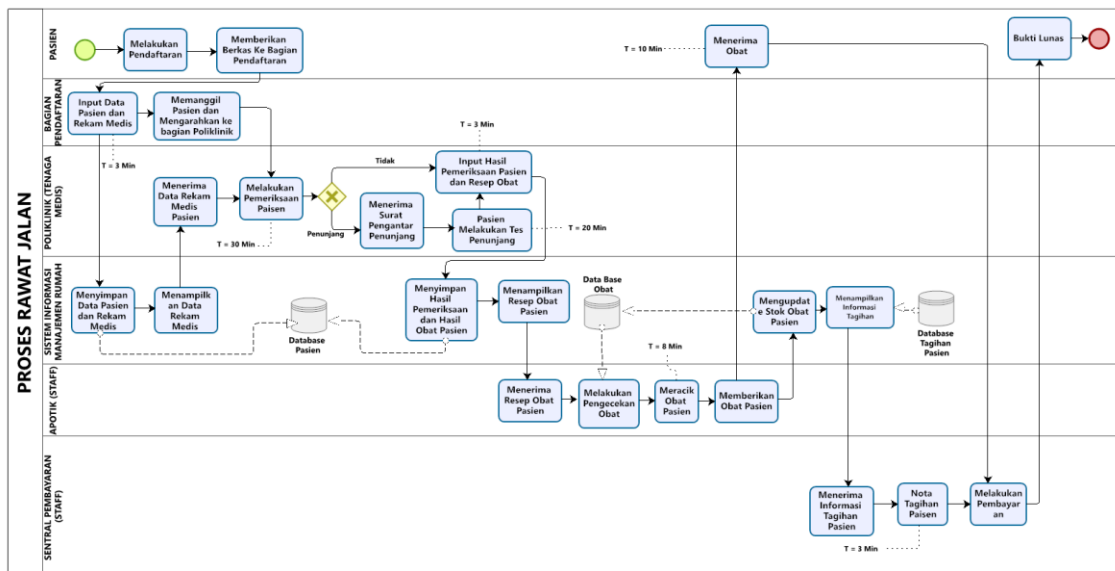
Table 3.1 Analysis of the Goal and Problem Matrix

| Problem Goal | Patients who are not satisfied with the services provided | Competition between local and private hospitals | Inadequate information technology infrastructure |
|---|---|---|--|
| Improving the quality of patients | X | | X |
| Improve the quality of employee performance | | | X |
| Dominate market share | X | X | X |

In the matrix above, it can be seen that the quality of outpatient services is not good. Competition between hospitals and inadequate information technology infrastructure can be an obstacle for the outpatient business process of the Bengkulu Regional General Hospital in achieving its goals, namely improving the quality of service to patients, improving the quality of employee performance and controlling market share.

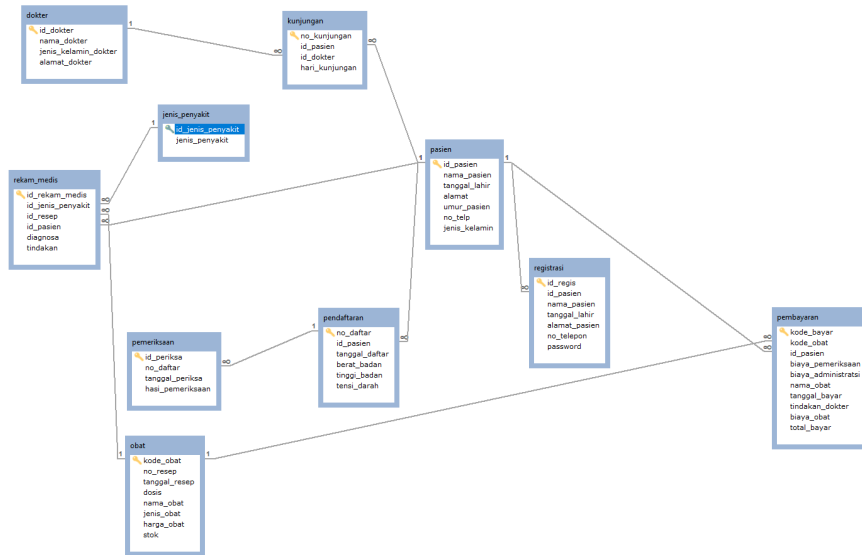
3.1.4. Process Redesign

Process Redesign is an approach that describes the relationship of each step so that it is carried out correctly and in the most efficient and effective manner possible. The proposed process redesign will be described as follows:



With an overview of the proposed system, the process of examining patients is easier, the search process, updating data will be easier because it is stored using a database. The difference between the old system process and the new one is that with the new system, the process of presenting the information needed by docket and other parties is presented quickly, precisely, accurately so as to improve hospital performance.

The need for business units in carrying out business functions and processes at the Bengkayang Regional General Hospital using Entity Relationship Diagrams. Table depicted with Logical Records Structure (LRS). The representation of the tables contained in the Bengkayang Regional General Hospital application database is described in the form of LRS, which shows the structure and relationship of each table. These entities provide input data that will be processed by the system and receive output as a result of the process that occurs.



3.2. Business Area Analysis

Table 3.2 describes the needs of business units in carrying out business functions and processes at the Bengkayang Regional General Hospital.

Tabel 3.2 Daftar Entitas Data

| Business process | Data Entity |
|----------------------|---|
| Registration Counter | data_patient; |
| Registration | data_patient; data_record_medical; |
| Polyclinic | data_patient; data_record_medical; data_result of inspection; data_recipes_medicine; |
| Support | data_patient; data_record_medical; data_result of inspection; |
| Drugstore | data_recipes_medicine; data_payment |
| Payment Center | data_patient; data_transaction; data_total_payments; data_proof_pay; data_status_pay; data_payment_payment; |

The business process matrix of data entities for data users is intended for the purpose of fulfilling business function objectives. This relationship is defined through the process matrix to the data entity. The function area defines the business processes that can be run by the Bengkayang Regional General Hospital, while the data entity is the type of entity that is needed in the implementation of the process.

4. CONCLUSION

Based on the results of the research on Business Process Analysis of Outpatient Information Systems at the Bengkayang Regional General Hospital, the researchers got several conclusions drawn as follows:

- a. Based on Process Identification on the outpatient information system, it was found that there were three categories, namely the management process category, the management category, the main process category and the supporting category. And obtained the hospital value chain and outpatient information system business process portfolio.
- b. Process Analysis is carried out using goal and problem analysis to find out the problems faced that can hinder the Bengkayang Regional General Hospital in achieving its goals.
- c. Process Redesign compiled has resulted in a proposed system and description of data entities. With an overview of the proposed system, the process of examining patients is easier to do, the search process, updating data will be easier because it is stored using a database.
- d. Mapping the business function matrix of the organization to describe the needs of business units in carrying out business functions and processes. Meanwhile, to describe the data requirements, using a business process matrix of data entities.

5. SUGGESTED

Based on the results of the Business Process Analysis of the Outpatient Information System of the Bengkayang Regional General Hospital, the author suggests that in order to develop the business process of the outpatient information system of the Bengkayang General Hospital, the following is the advice given by the author to the Bengkayang Regional General Hospital:

- a. The Bengkayang Regional General Hospital should further develop its outpatient information system business process, which is expected to provide convenience in implementing its information system.
- b. The management of the outpatient registration information system needs to be improved so that each work unit can manage patient data properly and correctly so that it can increase the effectiveness and efficiency in each work unit.
- c. It is hoped that the business process analysis of this outpatient information system can be developed by making an analysis report in the form of an information system procedural flow chart.

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