



Analysis and Design of Information System Cash Purchase of Jelita Sprey with Object Oriented Methodology

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Abstract— Purchasing is one of the important activities in each company primarily engaged in the production. To supervise the activities of the purchase, it would require the support of a good information system, so that it can follow the development of a growing company. This is due to the increasing number of transactions and transaction costs that occur until the moment of purchase documents are still handled manually.

Dainty Sprey is one of the businesses engaged in retail. In addressing the cash purchase system at Jelita Spray done manually and the results given are still less than the maximum, so that it causes problems that the length of the data search, percatatan and calculation errors, as well as the duration of the reporting process. In order to avoid the errors of data and processing reports reported properly required a computerized system of cash purchases.

Keywords— cash purchase, information systems, object-oriented methodology, analysis and design

I. INTRODUCTION

In the business world, competition between companies is increasing, therefore every company is required to make changes to achieve a success in doing business^[1]. Information technology has a great influence in various aspects of community life because it is an integral part of everyday life. The development of information technology has developed so rapidly in every field of life, making their impact on each sector of automation associated with various areas.

Easiness given by information technology are not just a secondary requirement but has become a primary need that is the prime mover in every area of people's lives, because of the contribution given by the information technology to be very helpful in our daily activities.

Dainty Sprey is a business engaged in the retail field. Jelita cash purchase system at Sprey is still done manually. By processing the data generated from the purchase is done manually, allow for errors or problems. To solve the problems, the use of a computerized system with the presentation of timely and accurate information is necessary and expected to assist the process of business done on Jelita Sprey.

The problems faced by Jelita Sprey today is the lack of communication between the inside of the booking process, the difficulty in finding the data and presentation of the report inaccurate and not timely.

Based on the above issues, researchers are trying to provide a solution on Jelita Sprey order to help the process of cash purchases. With Cash Purchase Information System was designed, is expected to achieve the goal is to overcome the problems that exist in the information management Jelita Sprey.

Limitation of issues to be discussed regarding the design of Information Systems at Jelita Sprey Purchasing Cash is cash purchase transaction data management to the provision of the necessary reports.

II. LITERATURE REVIEW

A. Basic Concepts Systems

Information derived from the system and information system, an activity or activity that involves a series of processes, it contains information that is used to achieve the goal. According to Jacob (2012: 1), "The system is a network of procedures interconnected, gathered together to perform an activity or purpose".^[2]

B. Basic Concepts of Information

Information is very important for an organization. The quality of information obtained will be directly proportional to the quality of the decisions taken by the management in an organization. According to Sutarman (2012: 14), "Information is a collection of facts (data) that is organized in a certain way so that they have meaning for the recipient".^[3]

Tata Sutabri (2012: 1) defines the following information: "Information is data that has been processed into a form that has meaning for the recipient and have real value and a feel for the decision or a decision at that time to come".^[4] And to be useful, the information must be supported by three pillars, namely Relevant (Relevance) means that information has benefits for the user because of the relevance of the information for each person each other differently, Timely (Timeliness) means information come on recipient information may not be too late. Because the information is outdated useless, Accurate means that information should be free from mistakes and not misleading. Accurate also means that information must clearly explain the intent.

C. Basic Concepts of Information Systems

According to Sutarman (2012: 13), "The information system is a" system can be defined by collecting, processing, storing, analyzing, disseminating information for a particular purpose. Unlike other systems, a system consisting of input information (data, instruction) and outputs (reports, calculations) ".

An information system can be defined technically as a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization. In addition to supporting decision making, coordination, and control, information systems may also help managers and workers analyse problems, visualize complex subjects, and create new products.^[5]

D. Basic Concepts Systems Analysis

Analysis of the system is a method that is required to identify and investigate problems, obstacles occur, the expected needs so that it can be proposed improvements. According to Jacob (2012: 142), Analysis of the system can be defined as a process to understand the system, by analyzing the positions and job descriptions (business users), business processes (business process), the provisions or rules (business rule), issue and seek solution (business problems and business solution), and plans of the company (business plan).

E. Object-Oriented Analysis

According to Adi Nugroho (2010: 6), "UML (Unified Modeling Language) is a modeling language for systems or software paradigm (object-oriented)".^[6]

Three principles of Object Oriented namely:

- a. encapsulation, Class and object to protect its data and operations.
- b. inheritance, A subclass (subclass) or objects inherit attributes and operations from its predecessor Class (superclass). Any changes to the data or operations contained in the direct superclass is inherited by all subclasses derived from the superclass.
- c. polymorphism, Polymorphism is a very special nature saves the effort of the expansion of an existing object-oriented systems. By using a concept called overloading, a subclass can define their own operations that already exist in the superclass. With polymorphism, several different operations can use the same name.

According to Dennis, the Unified Modeling Language (UML) is a standard language for the visualization, specification, construction and pemdokumentasian of the artifacts of a software, and can be used for all step in the system development process from analysis, design to implementation, according to Denn^[7].

Based on the perspective in the process of object-oriented analysis and design with UML, there are several major UML diagram that can be used, namely:

1. Use Case Diagram.
Describe the functionality expected of a system and describe the workflow^[8].
2. Activity Diagram.
An analysis model used or describe a process activity.
3. Sequence Diagram.
Describe the objects that exist in the use case and the message that run in a use case.
4. *Class Diagram*.
Describe a number of classes and the relationships between the classes in the system.

F. Design Database

a. *Entity Relationship Diagram*

Entity Relationship Diagram (ERD) or ER-D diagram is a model approaches which states or describes the relationship of a model. In the relationship of the main stated ER-D depiction diagram. ER-D diagram is used to show data objects (entities) and relationships (Relationship) which is in the next entity.

b. ERD diagram Transformation Into Record Logical Structure

ERD diagram transformation into Logical Record Structure (LRS) is an activity form of the data-ER diagram into LRS.

c. Logical Record Structure

The next step is transforming into LRS after transformation ERD-LRS has been completed.

d. normalization

Normalization is a process that is done to avoid the possibility of the presence of anomalies (abnormality) upon utilization of the database. Relationships that obtained from the entity should normalize relations first.

e. Specifications Database

Specifications Database is a detailed description of each - each relation (table or file).^[9]

III. RESEARCH METHODOLOGY

The methodology is a set of methods or procedures for more detailed about the stages of doing a research to solve a problem. Here are the stages in this research:

1) Research Methodology

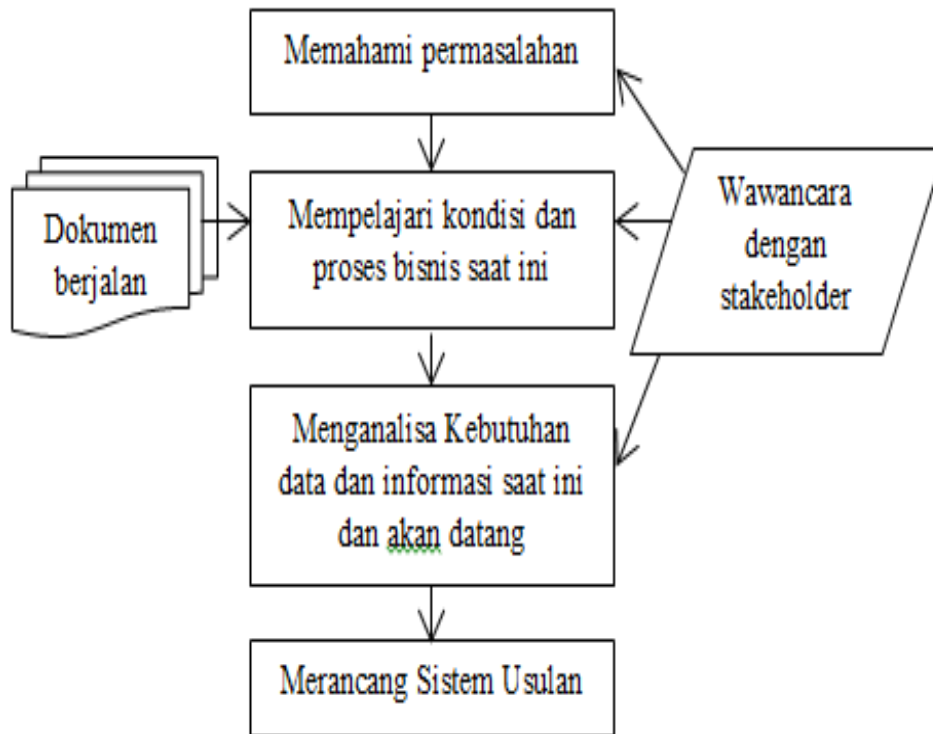


Figure 1. Research Methodology

This stage is the initiation of the study, which is looking for problems faced by Jelita Srey is done by conducting interviews with the purchasing department.

2) Study conditions and current business processes

The next stage is to study the current conditions, as well as an ongoing process. This was conducted by researchers in order to understand the current condition of the beginning to the end of the process so that the entire picture will be a running system. This activity is carried out by interviewing the stakeholders and document analysis.

3) Needs analyze data and information on current and next datang. Tahapan is getting the user needs and user requirements for the system to be

4) Designing System Proposed

Based on the previous stages, the researchers will try to design a system to address the needs of the issues faced by the organization. Features that will exist, the conceptual design of a database, to design the GUI is done at this stage.

IV. RESULT AND DISCUSSION

A. Business Process Current System

Here's a simple description of the process of running the object of analysis.

a. Item Request Process

Check inventory in the warehouse, where the item needed are not sufficient, then the warehouse made a list of demands for item to be delivered to the purchasing department.

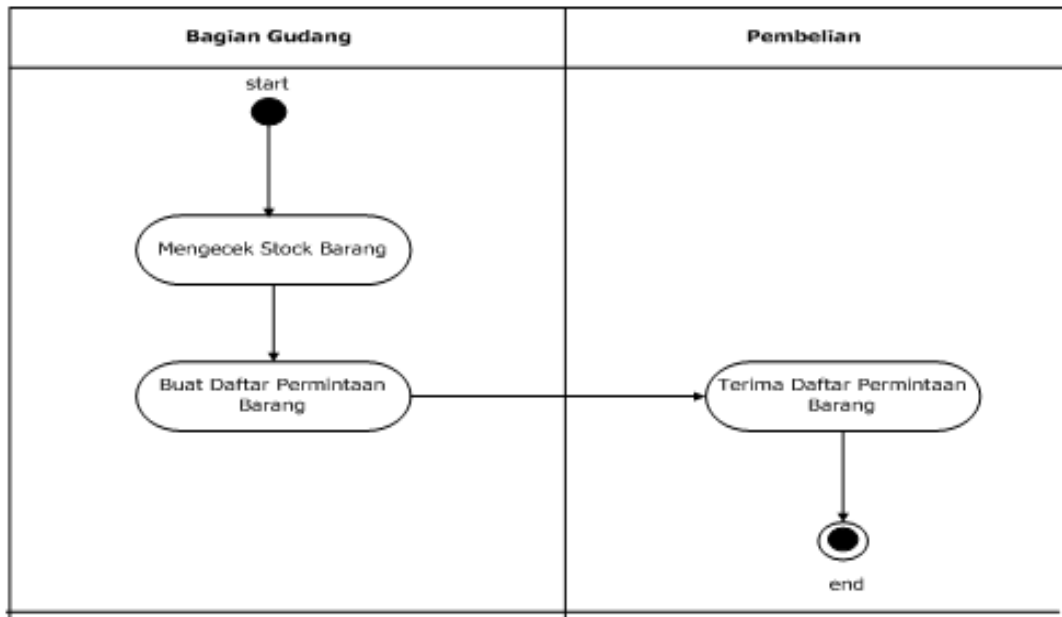


Figure 2. Activity Diagram Item Request Process

b. Product Order Process

After purchasing department receives a request list price, then the purchasing department made a list ordering item (Purchase Order) to order the item to the supplier.

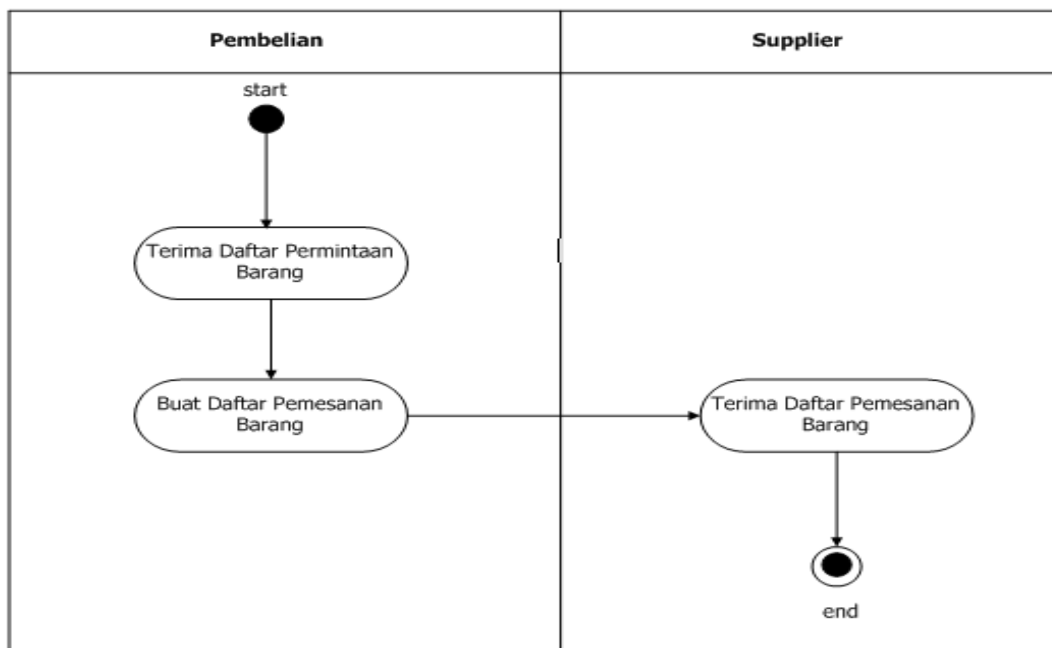


Figure 3. Activity Diagram Product Order Purchase

c. Item Receipt Process

Suppliers send item, delivery orders and invoices to the purchasing department as well as checks. If item received are correct, then the purchasing department will hand over the delivery order and invoice, and then will be submitted to the finance department to put on file.

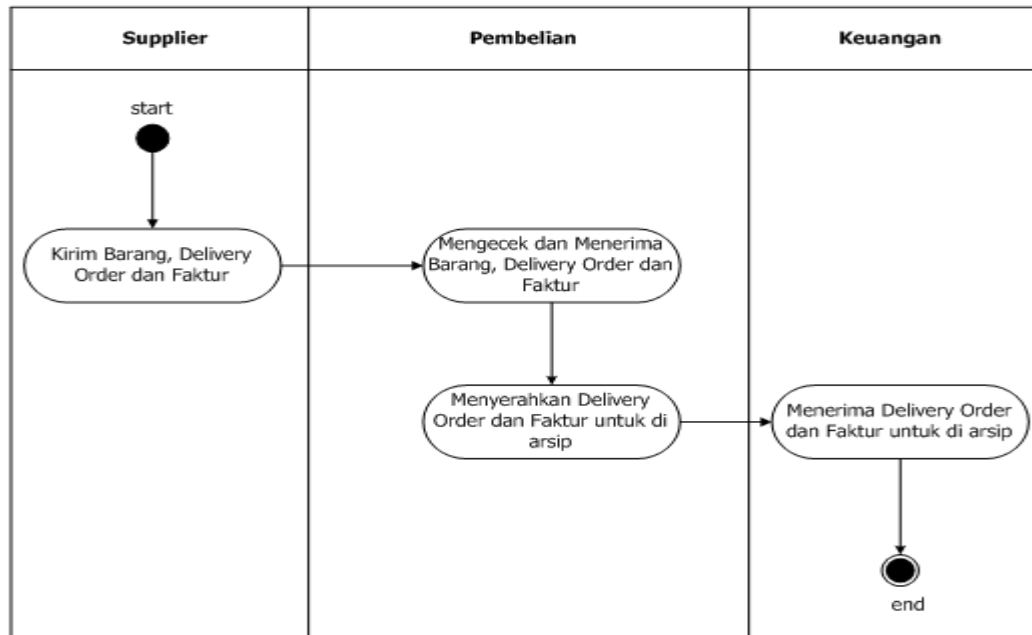


Figure 4. Activity Diagram Item Receipt Process

d. Payment process

The finance department to make payments by wire transfer to the supplier who will then be saved as proof of payment. After the transfer, the finance department to confirm to the supplier.

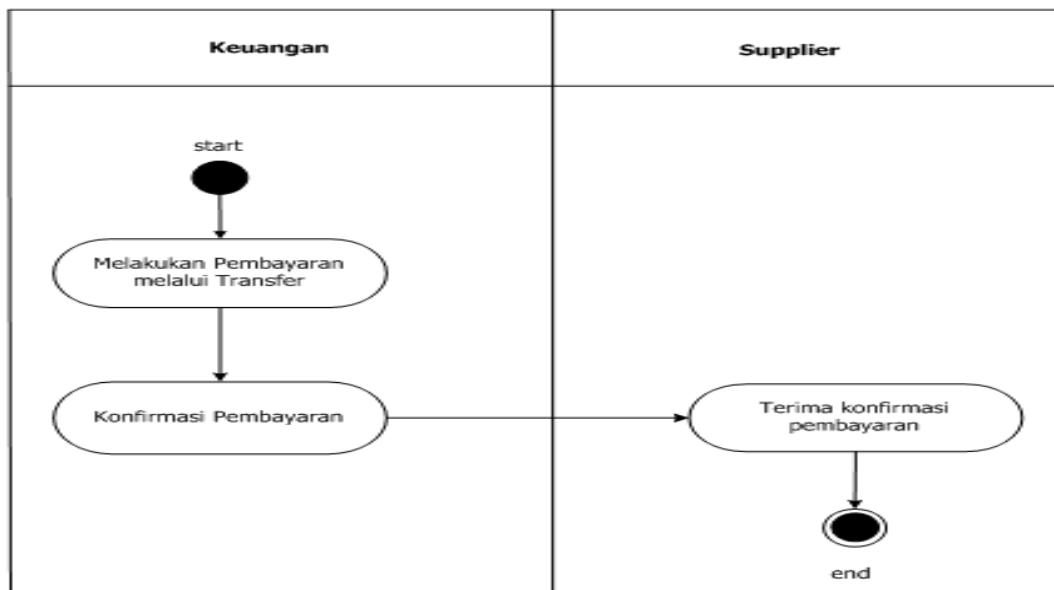


Figure 5. Payment Process

e. Reporting Process

As evidence of accountability to the owner, then the purchasing department made purchasing reports to be submitted to the owner of each end of the month.

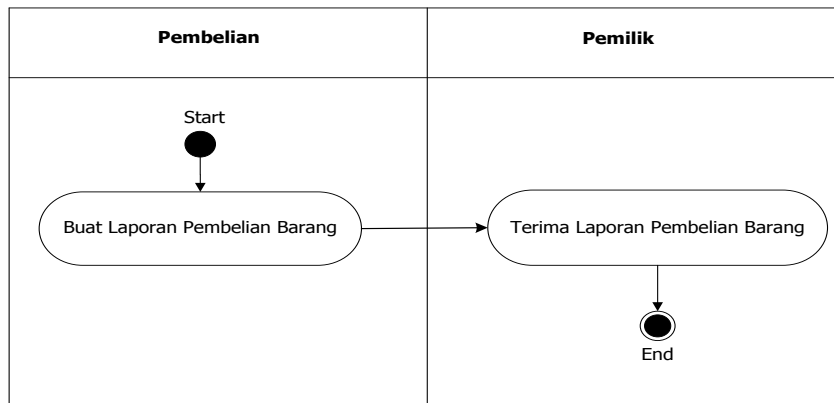


Figure 6. Payment Process

B. Analysis of the Proposed

1. Use Case Diagram

a. Use Case Diagram Master File

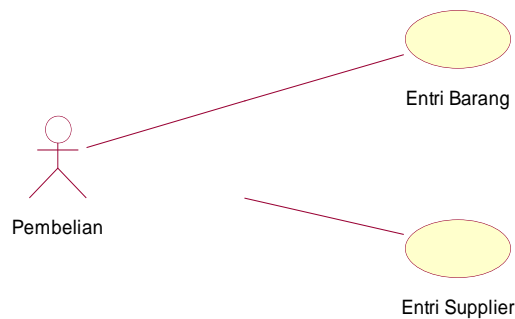


Figure 7. Use Case Diagram Master

b. Use Case Diagram Transactions

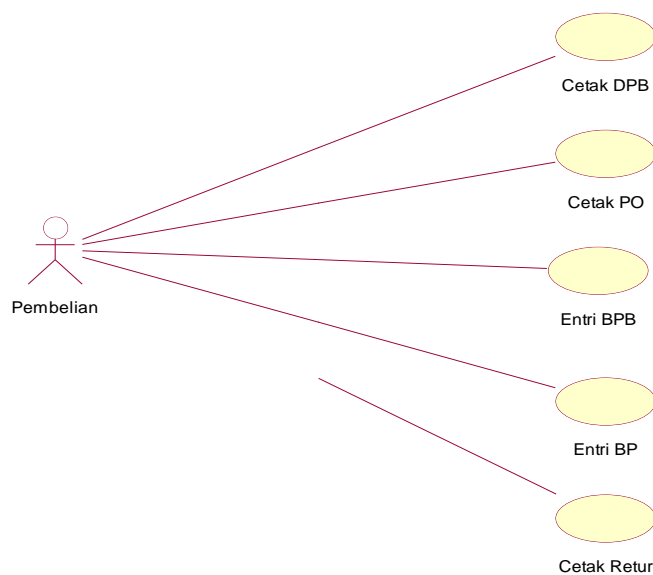


Figure 8. Use Case Diagram Transactions

c. Use Case Diagram Reports

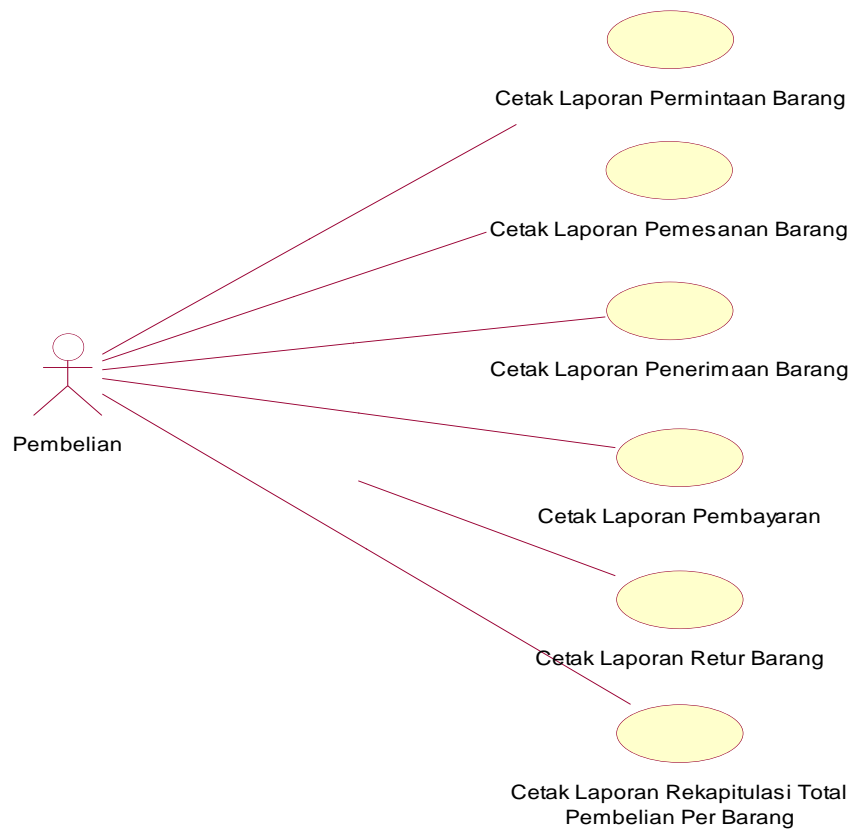


Figure 9. Use Case Diagram Reports

2. DRAFT DATABASE

The goal in designing a database is to create a database structure according to user needs for the present and future. In designing a system, of course, necessary to design the database as a supporter.

a. Entity-Relationship Diagram

Entity Relationship Diagram(ERD) or Diagram ERD is a model approaches which states or describes the relationship of a model. In the relationship of the main stated ER-D depiction diagram. ER-D diagram is used to show data objects (entities) and relationships (Relationship) that exist in the other entity. Next is the transformation of the ERD to LRS is the stage to change the ERD into bentuk LRS, things must be considered as affecting the level relationships (cardinality) is 1: 1, 1: M or M: N. After subsequent transformation is the formation of LRS. Here is a ERD obtained based on the analysis results, which can be seen in the image below:

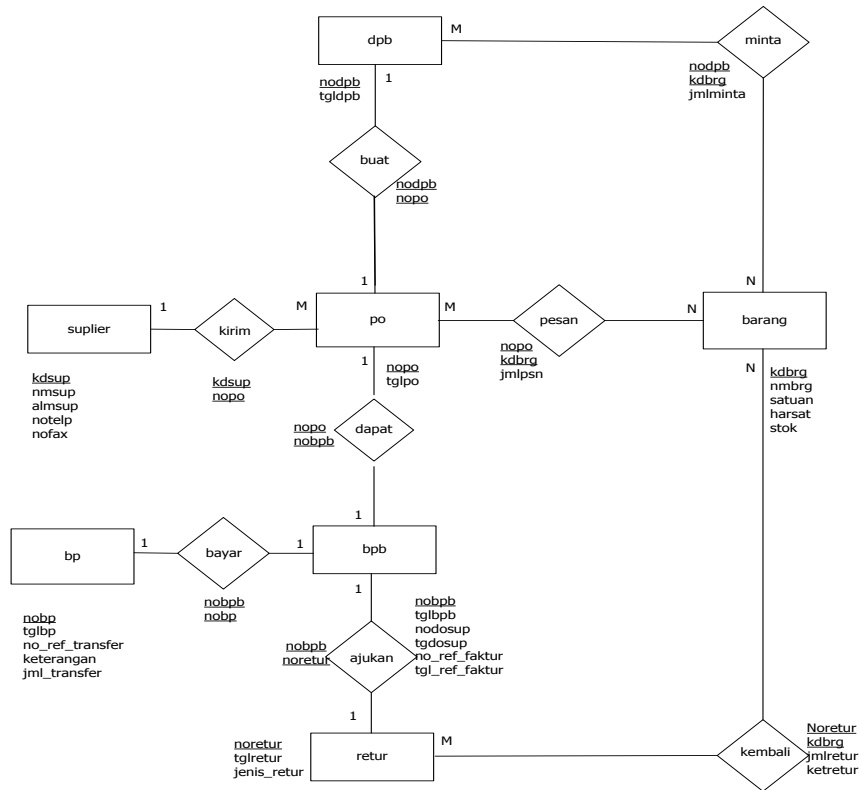


Figure 10. Entity-Relationship Diagram

b. Logical Record Structure

Having already established the transformation of the ERD to LRS, the next step is the formation of Structured Logical Record (LRS), the diagram is the basis of the establishment of the database tables.

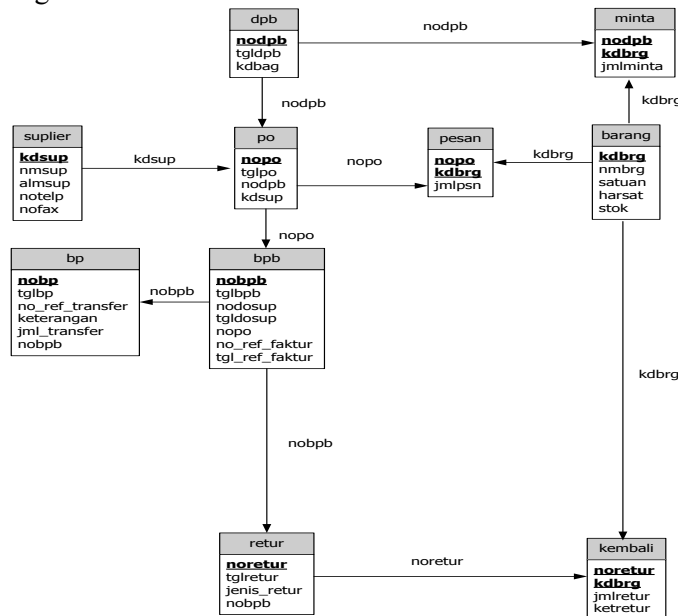


Figure 11 Logical Record Structure

c. Specifications Database

Specifications Database is a detailed description of each - each relation (table or file). Here are the specifications of the data base of the proposed system:

- 1) Table name : Item
- Media : *hard disk*
- contents : Data Item
- Organization : *Index Sequential*
- primary Key : kd_brg
- Record Length : 165 bytes
- Record number : 380 records
- Structure :

Table 1: Structure Table File Item

| No | Nama Field | Tipe | Lebar | Dec | Keterangan |
|----|------------|--------|-------|-----|----------------------------------|
| 1 | Kdbrg | Text | 4 | - | Berisi Kode Barang "B999" |
| 2 | Nmbrg | Text | 30 | - | Berisi Nama Barang "X-30-X" |
| 3 | Satuan | Text | 10 | - | Berisi Satuan Barang "X-10-X" |
| 4 | Harsat | Number | 8 | - | Berisi Harga Barang "99,999,999" |
| 5 | Stok | Number | 4 | - | Berisi Stok barang "9,999" |

- 2) Name Table : Supplier
- Media : Hard disk
- contents : Data Supplier
- Organization : *Index Sequential*
- primary Key : kd_sup
- Record Length : 56 bytes
- Record number : 128 records
- Structure :

Table 2: Structure Table File Supplier

| No | Nama Field | Tipe | Lebar | Dec | Keterangan |
|----|------------|------|-------|-----|-----------------------------------|
| 1 | Kdsup | Text | 5 | - | Berisi Kode Supplier "SU999" |
| 2 | Nmsup | Text | 30 | - | Berisi Nama Supplier "X-30-X" |
| 3 | Almsup | Text | 100 | - | Berisi Alamat Supplier "X-100-X" |
| 4 | Notelp | Text | 15 | - | Berisi Telepon Supplier "X-15-X" |
| 5 | Nofax | Text | 15 | - | Berisi Faximile Supplier "X-15-X" |

3. Draft Interface

a. Design Menu Structure^[11]

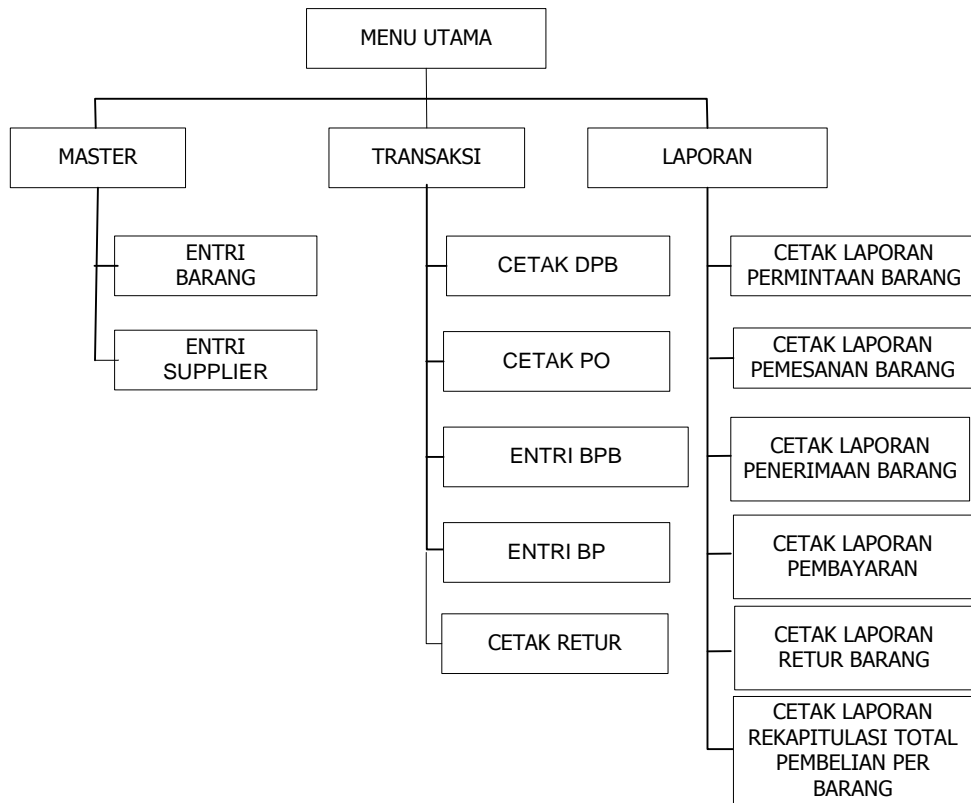


Figure 12. Design Menu Structure

b. User Interface Design



Figure 13. Item Data Entry Design

The image shows a software window titled "FormSupplier" with a yellow background. The main heading is "ENTRI DATA SUPPLIER". Below the heading, there are several input fields and buttons. The fields are: "KODE SUPPLIER" with a placeholder "<AUTO_NUMBER>" and a "Cari" button; "NAMA SUPPLIER" with a placeholder "<X-30-X>"; "ALAMAT" with a placeholder "<X-100-X>"; "NO. TELP" with a placeholder "<X-15-X>"; and "NO. FAX" with a placeholder "<X-15-X>". At the bottom of the window, there are four buttons: "Simpan" (Save), "Batal" (Cancel), "Hapus" (Delete), and "Keluar" (Exit).

Figure 14. Supplier Data Entry Design

V. CONCLUSION AND SUGGESTION

A. Conclusion

After doing this research, then the conclusion such as ^[10]:

- In the draft of this information system, the owner can quickly obtain the necessary reports, so that activities can be controlled cash purchases.
- The errors caused by human limitations (human error) can be reduced with the use of computerized systems.
- The difficulty in making the report can be facilitated by the computerized system.

B. Suggestion

In the design of the proposed system, the authors hope to be useful well for the progressive development of the company. To the authors propose:

- IT personnel are needed for the maintenance of hardware and software.
- Do back up regularly to avoid data loss due to adverse events one natural disasters and damage to hardware or software.
- Providing training and provision of documentation computerized system to allow users to use the system.
- Accuracy of the staff entering data improved in order to reduce the error rate.

REFERENCES

- [1] I. Ranggadara & Suhendra. Zachman Framework Approach for Designing Recruitment System Modules in HRIS Application (Case Study in PT. Karya Impian Teknologi Abadi).IJCSMC, Vol 7, issue 2.2018
- [2] Jacob. Introduction to Information Systems. Yogyakarta: Graha Science, 2012
- [3] Sutarman. Books Introduction to Information Technology. Jakarta: Earth Literacy 2012
- [4] Sutabri, Tata. Concept Information Systems. Yogyakarta: Andi Offset 2012
- [5] Yuwan Jumaryadi, Tazkiyah Herdi, Riad Sahara. Analysis and Design of KB/TK Bunga Bangsa Islamic School Information System. International Research Journal of Computer Science (IRJCS) Issue 04 Volume 5. 2018
- [6] Nugroho Adi. Software Engineering Using UML and Java. Yogyakarta: Andi Offset 2010

- [7] Alan Dennis, Barbara Haley Wixom, Roberta M. Roth, *System Analysis and Design: An Object-Oriented Approach with UML. 5 Edition*, John Wiley & Sons, Inc., United States of America, 2015
- [8] Yaya Sudarya Triana, Indah Syahputri. Implementation Floyd-Warshall Algorithm for the Shortest Path of Garage. Vol 3, Issue 2, February 2018.
- [9] Anhar. *Panduan Menguasai PHP dan MySQL Secara Otodidak*. Jakarta Selatan : Media Kita, 2010
- [10] Achmad, K. (2017). Implementation of Steganography in Image Media Using Algorithm LSB (Least Significant Bit). IRJCS: International Research Journal of Computer Science, Volume IV, 06-13. doi: 10.26562/IRJCS.2017.AUCS10081
- [11] Nia Rahma Kurnianda & Yunita Sartika Sari. Analysis and Design of Information System for Journal Self-Dietary Assesment Based on Food Record for Diabetes Patients. International Research Journal of Computer Science (IRJCS). Issue 06 Volume 5. 2018