ANALYSIS AND DESIGN OF PRODUCTION SCHEDULLING SYSTEM FOR CV. BULU NUSANTARA GRESIK

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ABSTRACT

CV. Bulu Nusantara is a company located in Gresik – East Java produces some kinds of flour as animal feed ingredients. The flours are come from chicken feathers, chicken bones, fishes and clams. The company has limited production machinery, so as to produce each kind of flour for optimum results, it must be well planned. This study is to analyze and design the information system needed by the company. The system is designed to manage inputs, processing them and resulting some informations like Master Production Schedule, dayly/weekly/monthly production report, and so on. The analysis phase produces two algorithms, each for estimating the order finishing time and schedulling calculation. The design phase produces context flow diagram, first level of data flow diagram, the conceptual and physical data model. The study result is showing us that the company needs the information system whiches consist of seven interrellated entities, eight main processes and flexible period of detailed reporting or resume reporting in form of chart.

Keywords: *Information Systems, Production, Schedulling, forward schedulling, system design*

1. INTRODUCTION

In a production activity, to obtain optimum results, then all production activities must first be well planned. Production schedulling is attempted to obtain an effective job assignment on each part of the work, in order to avoid job stacking so as to reduce idle time or wait time for the next process. CV Bulu Nusantara Gresik is a manufacturing company produces animal feed raw materials. The products are flour chicken feather, fish flour, chicken bone flour, clam flour.

The operational process of CV. Bulu Nusantara Gresik has not done the production schedulling optimally, it resulted delays in product delivery to their consumers. This is caused by less effective production activities, causing customer unsatisfaction. Currently the company applying the production schedulling manually by the supervisor, this matter cause the confirmation about delivery schedule to consumer take a long time

These instructions give guidance on layout, style, illustrations and references and serve as a model for authors to emulate. Please follow these specifications closely as papers which do not meet the standards laid down, will not be published. Papers should be written with the following systematics: introduction (background until related research), the framework of the research, the results and analysis, conclusions.

2. LITERATURE REVIEW

2.1 Definition of Schedulling

In the production planning system, sorting and schedulling play an important role in order to effective and efficient the production process. The more complex in a production system, the more necessary a good production schedulling. Schedulling is defined as the timing process of an operating activity, in general schedulling aims to minimize processing time, subscription waiting time, and inventory levels, as well as efficient use of facilities, manpower, and equipment. Schedulling is arranged with consideration of various limitations (Herjanto, 1999). Good

schedulling will do positive impact, such as low operating costs and delivery times, which ultimately can increase customer satisfaction.

2.2 Schedulling Method

The schedulling method used in this study is the forward schedulling method, which is schedulling the operation activity from the arrival of the job or at t = 0 until completion of the whole work. It is a very simple production schedulling.

3. RESEARCH METHODOLOGY

The research method describes the stages of research to be done in solving problems that form a systematic root as described by Figure 1.

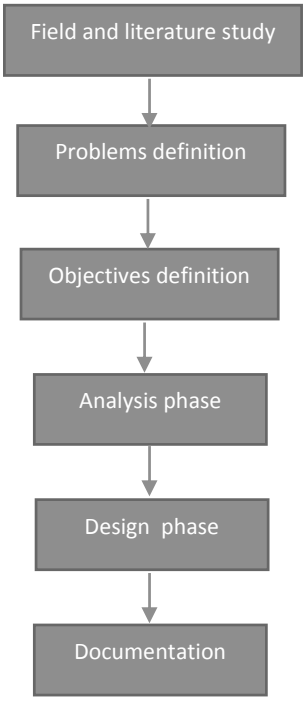

Figure 1. Research Methodology

4. ANALYSIS

The analysis stage yields two algorithms, they are algorithm of delivery date estimation and the other one is the scheduling calculation algorithm. The Algorithm of Delivery Date Estimation is an overview of the flow of the calculation formula of delivery date estimation. The output of this calculation is the next delivery date used for the scheduling calculation as seen on Figure 2.

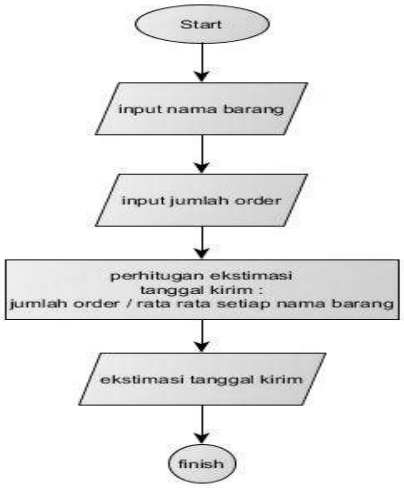

Figure 2. Algorithm of Delivery Date Estimation

The next alorithm is for calculate the production schedule. Scheduling calculation algorithm describes of the flow of the production scheduling calculation which output is the number of targets of procudtion volume per day that must be done. For the day's work is described with a "√" tick mark.

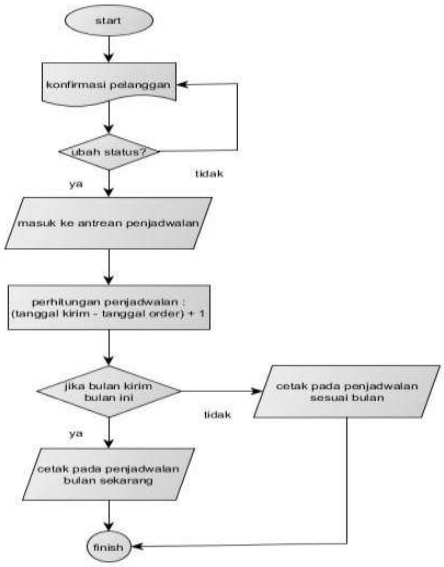

Figure 3. Algorithm of Production Volume Calculation

5. SYSTEM DESIGN

5.1 Context Flow Diagram

Context Flow Diagram describes the input and output data of the Production Scheduling Information System and its relations to external entities. Figure 4 shows the system has two external entities, they are Engineering and Marketing division, later the user of the system. Engineering as an entity give the system data of each machine capacity and receive production schedule from the system. Marketing Division give order data to the system and receive the delivery estimation date. It is used to confirm their customer about production completion.

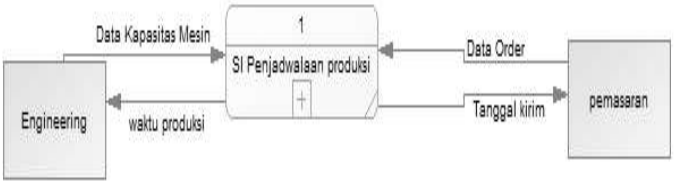

Figure 4 Context Flow Diagram

5.1 Data Flow Diagram Level 1

At this stage it is explained structurally about input, process, output. In this design it is clear that the stakeholders have their respective tasks according to the DFD Level 1 design figured in Figure 5. The output generated by each process is stored in the datastore / database. Description of processes as follows; The process of adding master machine data such as engine capacity and drying machine capacity. Entry Timing process that is in the production of flour does not use machine workmanship in each section of production. Input customer master data, in this process input customer data first before making input order. Customer data will serve as the customer master. Marketing of goods in the order form as customer wishes. Production calculation process to determine the completion date, in this process there is already calculation date of send according to the existing formula. Production start-up process depends on customer approval of the estimated delivery date processed by the system. If agreed then the sequence of data will be scheduled in the production queue. Production of SPP (Order of Production), order data is required for this process as a letter of attestation from PIC to Production section. Making MPS (Master Production Schedule) is a core part of this system, production section can print MPS as a reference work

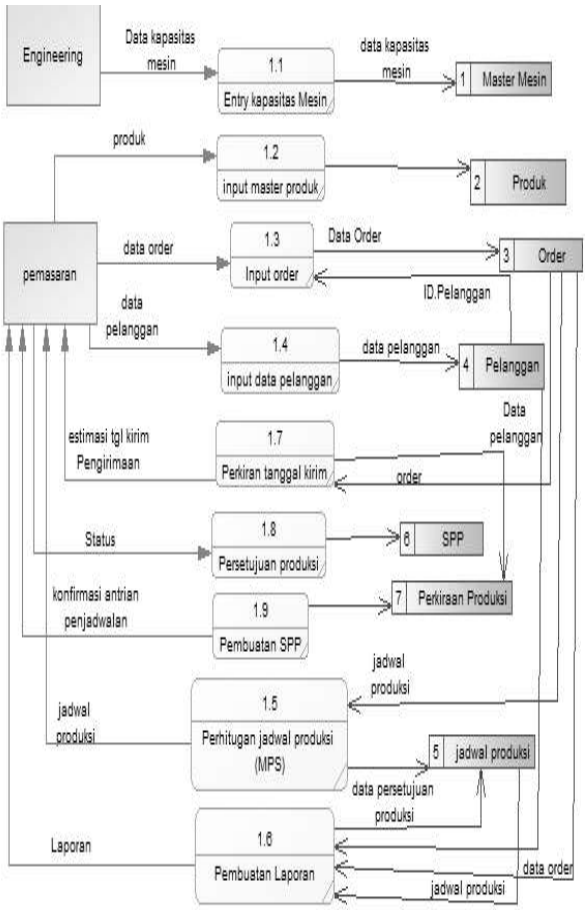

Figure 5 DFD Level 1

5.2 Conceptual Data Model

In addition to the process, input and output design, the database design must be created prior to the implementation phase. The Conceptual Data Model (CDM) shows the relationships between entities of each data store generated from the Data Flow Diagram. The CDM is shown in Figure 6.

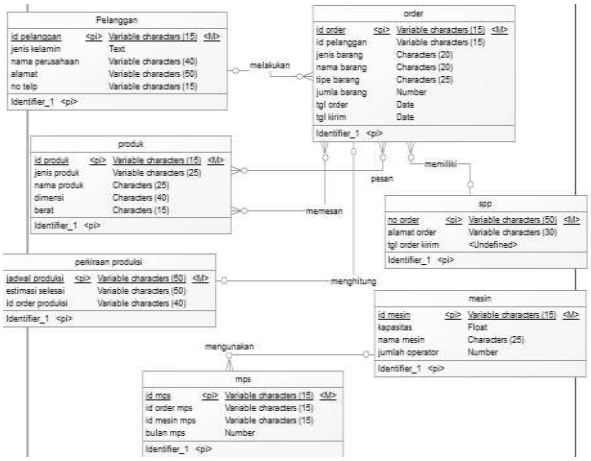

Figure 6 Conceptual Data Model

Each entity has attributes required in the design of the table structure on the database.

5.3 Physical Data Model

Physical data model (PDM) is generated from CDM. This model describes us the structured of data in the system, how they will be saved physically as shown in Figure 7. Two new entities generated because of the relationship among them refers to the same key.

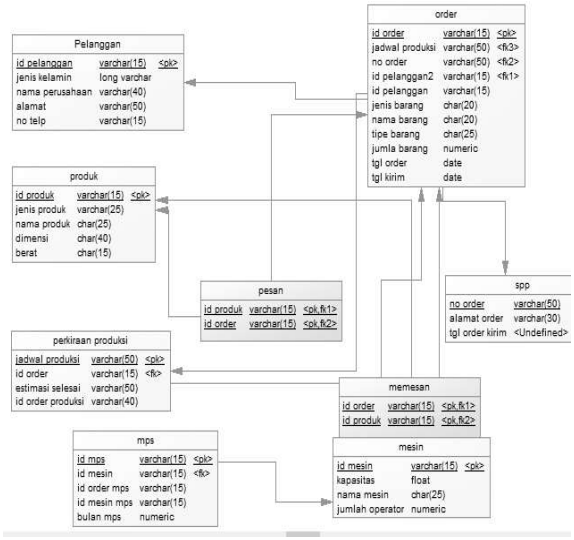

Figure 7. Physical Data Model

5.4 Interface Design

This section contains all of the system interface design, including input form and output as layout of reports it produces.

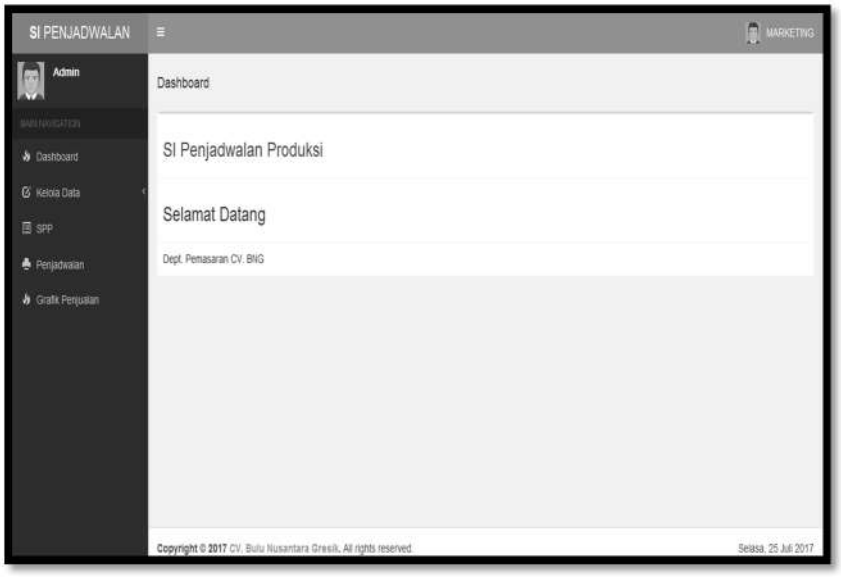

Figure 8. Interface Design Of Dasboard For Administrator

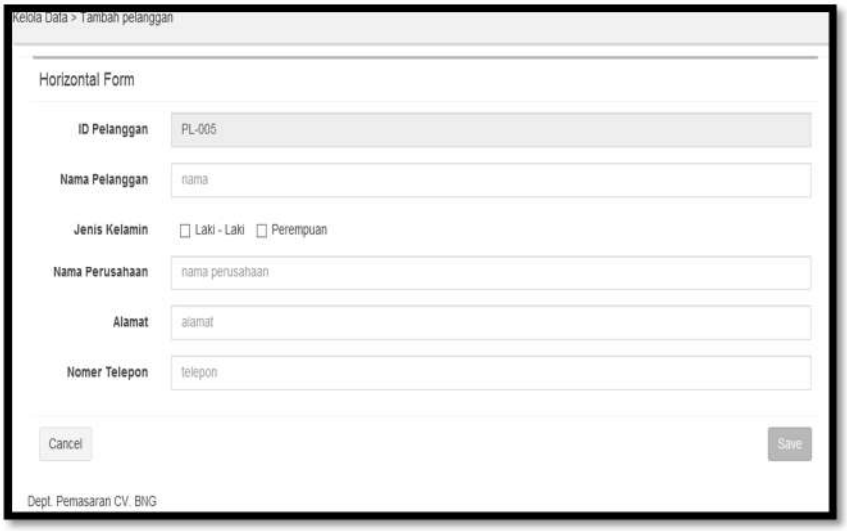

Figure 9. The Interface Design Of Master Customer Input Form

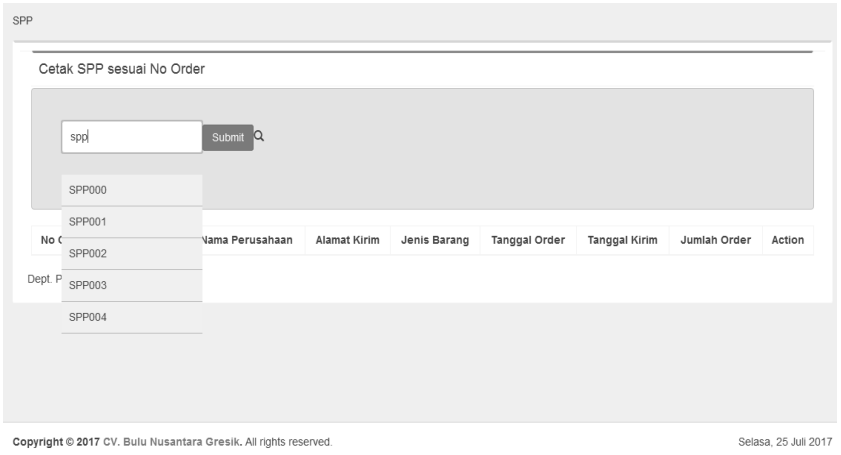

Figure 10. The Interface Design of Production Order Input Form

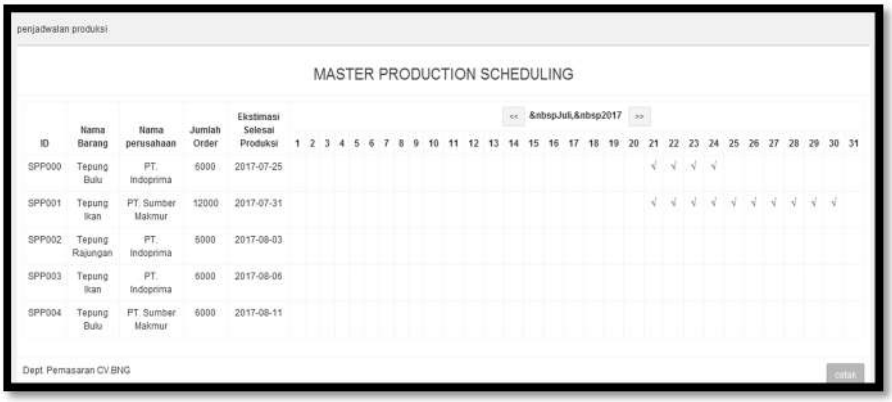

Figure 11. The Interface Design of Master Production Schedule (MPS)

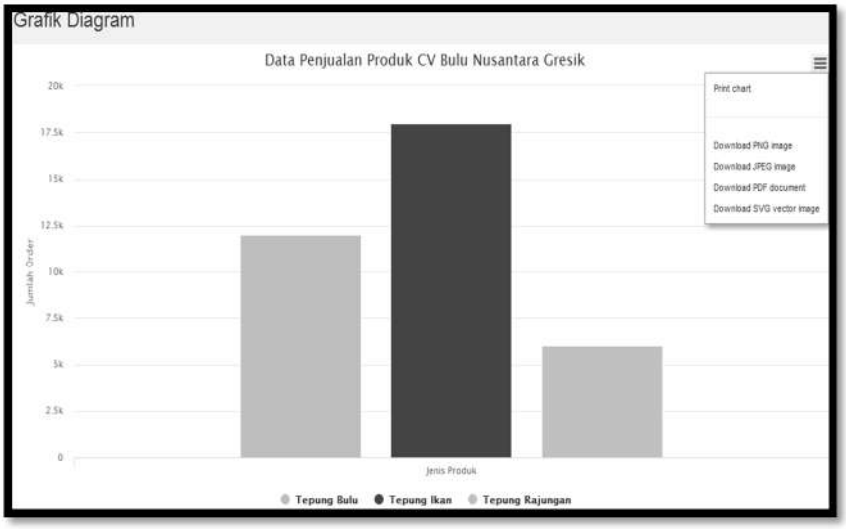

Figure 12. The Interface Design of Graphical Report

6. CONCLUSIONS

From the discussion in the previous section, then the conclusion obtained is that the results of analysis in the form of two calculation estimation algorithm completion of production and calculation of mps. The design phase produces 9 processes and 9 entities. Hope this study can be developed better for mobile app version.

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