BORANG PENGESAHAN STATUS TESIS^

JUDUL: _LABOR COST SYSTEM_

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LABOR COST SYSTEM

CHUAH PENG PENG

This report is submitted in partial fulfillment of the requirements for the
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2013

DECLARATION

I hereby declare that this project report entitled

LABOR COST SYSTEM

is written by me and is my own effort and that no part has been plagiarized
without citations.

STUDENT   : _____ Date: _____

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SUPERVISOR   : _____ Date: _____

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DEDICATION

To my beloved parents and brother…

ACKNOWLEDGEMENT

This project could not have been completed without the assistance and efforts of a number of individuals that provided professional review and support.

A special thank goes to my helpful supervisor, Yahya bin Ibrahim for providing the direction from the start until the end of my project. The guidance and support that he gave truly help the progress and smoothness of the project. The advice and supervision is very much appreciated.

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Last but not least, I would like to thank my beloved parents, course mates and friends especially those who shared their information and sources, and thanks for being here all the while.

I could not have made it and completed this project successfully without all of the people mentioned above. Again, thank you very much.

ABSTRACT

There are plenty small-scale companies in the Manufacturing Industry that cannot afford to have a large system or multiple systems to help with the working process. The world today is fast-paced and technology-driven, causing all the small-scale companies struggle to keep up. This project will develop a system specifically for them to calculate the labor cost, by simplifying and fastening the process of calculation. After the cost is calculated, the values will then provide another system to calculate the total production cost. Besides the calculation, this system is able to store all the relevant information that is needed for the calculation. In addition, this project worked in conjunction with the Manufacturing Faculty of Universiti Teknikal Malaysia Melaka (UTeM), where the requirements were collected from a client from the faculty, and the requirements are based on the current marketing value. The system's details will be explained and illustrated in detailed, in this report.

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CHAPTER I

INTRODUCTION

This chapter will briefly describe the project preliminary investigation and those that are involved in the problem analysis phase. The subtopics that are included in this chapter are the project background, the problem statements, objective, scopes, system overview, project significance and the conclusion.

1.1   Project Background

This project is named Labor Cost System (LCS), and is mainly used to calculate the labor cost and for the purpose of reporting data to another system to calculate the total production cost, which also include material cost and packaging cost of the products in different companies; in this case, small-scale companies, of the manufacturing industry.

This is a system worked in conjunction with the Manufacturing Faculty in Universiti Teknikal Malaysia Melaka (UTeM). All requirements and specifications were provided by the client from the Manufacturing Faculty. Most of the companies today are still calculating the costs manually. Hence, Labor Cost System (LCS) is developed to simplify and fasten the calculation process.

This system provides plenty functions. One of the main functions that are deployed in the system is the timecard processing, where the duration of the working hour is calculated automatically upon saving the clock in and clock out time, which is needed in the process of labor cost calculation. Besides, this system requires username and password upon log in, which provides confidentiality and security for the data in the system. All entered data will be stored in the database.

More functions with detailed explanation will be further discussed in the next chapter – Chapter II, Analysis.

1.2   Problem Statement

Based on the observations and researches, it is understood that similar systems that are available in the market today that is used to calculate labor cost specifically for the manufacturing industry is very rare. Some of the companies are still calculating the cost manually, which is often considered as a very long and complicated process. It is risky too, as it involved huge amount of staffs, work shifts, working hours, wages and etc.

Furthermore, to be able to calculate the labor cost for each staff accurately, the system will need various data such as the staff's biodata, his/her basic salary, working hours, overtime, leaves applied and etc. It is difficult to get a single system to store all of the related information. This information normally is distributed across numerous systems and is retrieved only when needed. This will then prolong the calculation process and reduce the efficiency.

Besides the need to store the required data, it is important to be able to maintain them too. Operations such as update and delete should be made available to manage certain information. For example, it is crucial to be able to update staff's details, when he/she is promoted to a higher position or when he/she has changes in their basic salary. It is essential too, for leave processing, especially when a staff needs to change his/her applied leave to another day, or even cancel the applied leave. Functions like these are valuable and they improve the efficiency of the calculation process.

1.3   Objective

After reviewing the problem statements, the main objectives for this project are identified and listed, as below:

i.   To successfully develop and implement the Labor Cost System (LCS).

ii.   To calculate the labor cost accurately.

iii.   To record and store the relevant data in the database.

iv.   To ensure data confidentiality and security.

v.   To provide the labor cost to another system to calculate the total production cost.

1.4   Scope

The complexity, diversity, and size of the staff population, the rules and regulations, and the requirements in the respective companies place unique demands on the operations in calculating the labor cost for each of the staff. When it comes to building this system, it is important to look not only at the functional capabilities of the labor cost calculation process, but also the managerial environments in which this system is supported and/or operated.

This Labor Cost System (LCS) provides, as a minimum, the following qualities:

- Complete, accurate, and prompt result of the labor cost;
- Complete, accurate, and prompt storage of the data and records;
- Timely access to complete and accurate information, without extraneous material, to those internal to the companies who require the information; and
- Adequate internal controls to ensure that the system is operating as intended.

There will be mainly one type of user for the Labor Cost System (LCS), which is the system administrator appointed by the company.

1.5   System Overview

This Labor Cost System (LCS) contains five main components that are incorporated into one single system to calculate the labor cost.
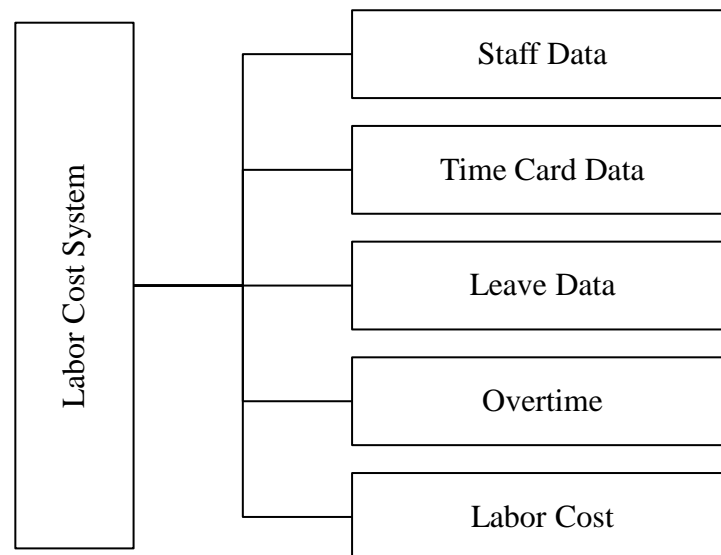
Figure 1.1   System Components

The five components shown in Figure 1.1 will be further explained in Chapter III, Design.

1.6   Project Significance

The benefits and advantages of this project are listed, as below:

i.   Accurate labor cost calculation
        This system is able to calculate the labor cost for each staff accurately, according to the duration given by the user.

ii.   Effective and efficient calculation process
        This system is able to ease and fasten the calculation process.

iii.   Data storage and availability

This system is able to record and store the relevant data, and provide the data accordingly.

iv.   Data confidentiality and security

This system is able to ensure data confidentiality and security, as username and password are needed in order to gain access to the system.

v.   Data distribution

This system is able to provide and distribute the calculated labor cost to another system – to calculate the total production cost.

1.7   Conclusion

Chapter I covers the introduction of the entire project. This Labor Cost System (LCS) is built for the small-scale companies in the manufacturing industry due to the lack of similar system in the market. As the main objective, this system will be able to calculate the labor cost accurately and provide the calculated labor cost to another system, and at the same time, store all the relevant information in the same system, and provide data confidentiality to protect the company's data. This chapter provides a brief insight into the Labor Cost System (LCS) by giving an overview of the system and by presenting the significance of the project.

The next chapter will be Chapter II - Analysis, and it will be describing the problems in the similar existing systems and the requirements for the Labor Cost System (LCS).

CHAPTER II

ANALYSIS

2.1   Introduction

This chapter describes both the problem analysis and requirement analysis of the Labor Cost System (LCS) in details. It is to collect, analyze and define high-level needs and features of the system. It also covers the functionality of the system and the comparison between the as-is and the to-be system, including the user interface that will be used in the system.

2.2   Problem Analysis

2.2.1   As-Is System

After doing some researches and surveys, it is obvious that the exact system to the Labor Cost System (LCS) is difficult to find on the market nowadays. Similar systems that are easily found are Payroll Systems, Booking Systems and etc. What the common systems have been doing are either storing the data or calculating the salary. It is rare for a system to have all the data needed for the calculation stored in the same system. In fact, it is normally distributed across several systems and when it comes to retrieving the relevant data for further processing, the time used to get the data is longer and hence, slowing down the whole process.

Besides, not all companies can afford to have several different systems. There are some small-scale companies that can only afford to have a single system to do all the important work. For example, companies that cannot afford to have a punch card system. It will be very difficult for them to calculate the labor cost manually by flipping through papers and hand written timecards of each employee, by calculating every working hour using a calculator, not to mention adding the overtime and deducting the unpaid hours, then enter the data into another system (if they are lucky to have one), and finally, have the sum of the labor cost for each staff recorded or printed for further usage. During this whole complicated and tiring process, there is a very high tendency for mistakes or miscalculations to happen.

Furthermore, there is very little system that is specifically built for a specific process. For example, a payroll system is normally used to produce pay slips for all of the staffs in a certain company. Some of the companies even used it to calculate some other similar costs, such as labor cost. When it comes to the manufacturing industry, getting the cost for a specific production will be difficult.

These are some of the main reasons that make us decided to develop the Labor Cost System (LCS). Unlike the common existing systems, LCS is built specifically for the manufacturing industry to calculate the labor cost, with all of the relevant data stored in the same system to improve efficiency, and to allow faster data retrieval.
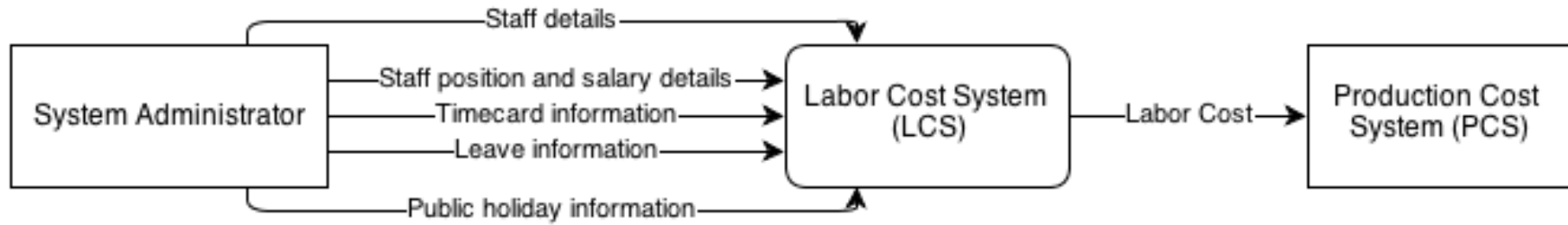
2.3   Context Diagram

Figure 2.1   Context Diagram

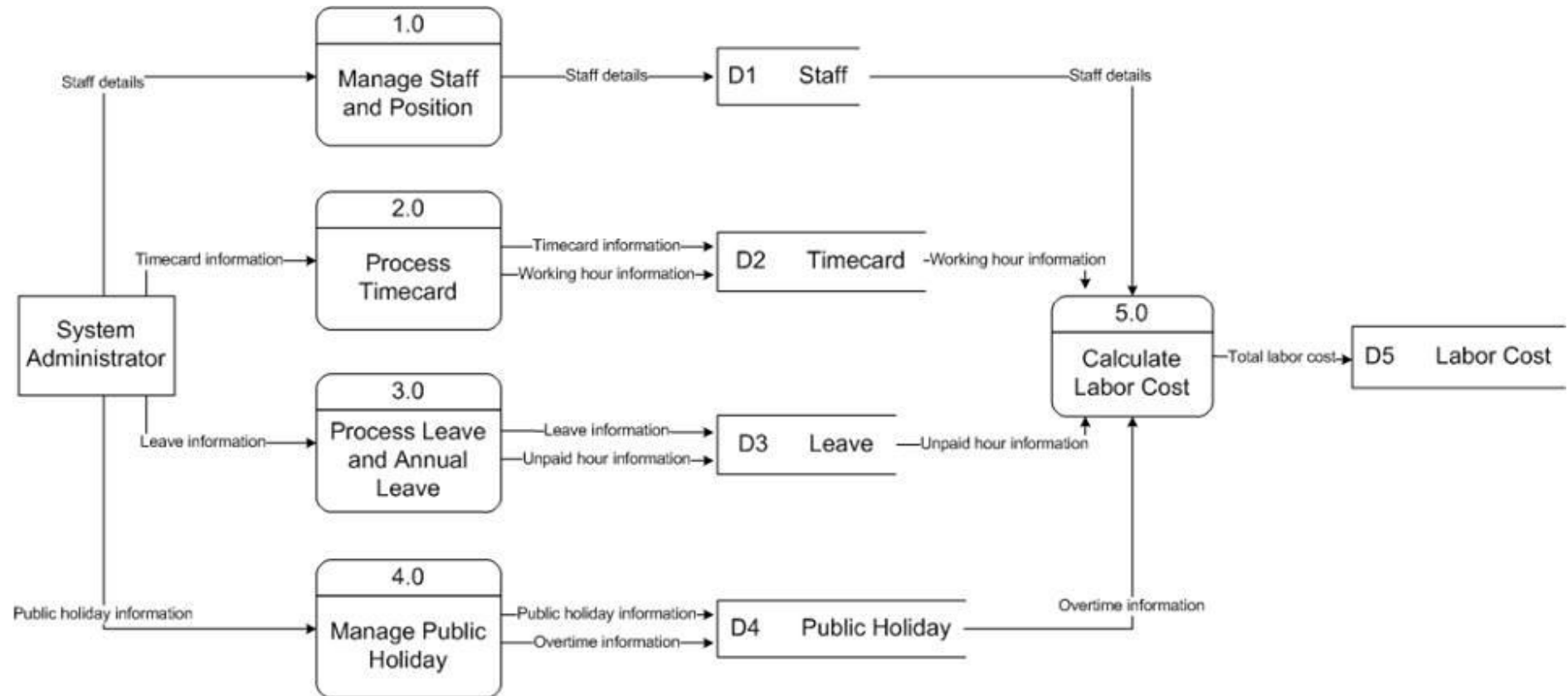## 2.4 Data Flow Diagram (DFD)

Figure 2.2   Data Flow Diagram (DFD)

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2.5   Requirement Analysis

This section describes the summary of functional requirements for this Labor Cost System (LCS). The description of each requirement can be found in the next subtopic. There are a few main activities that are required to be in the system, as listed below:

i.   Human resource management activities:
   - Staff management; and
   - Position management and classification.

ii.   Labor cost management activities:
   - Shift management;
   - Timecard processing;
   - Leave processing; and
   - Labor cost calculation.

iii.   Other management activities:
   - User authentication; and
   - Public holiday management

The following discussion illustrates the relationship between the activities.

When an individual is hired, human resource establishes the staff's biodata, salary, position, position level, entitlements etc. This information is then needed in calculating labor cost, which affects leave and salary/wage processing. Any changes to the basic salary and entitlements (annual leave and etc.) must be made before being reflected in the calculation process.

2.5.1 Overview

Functional requirements of the system can be segregated into two general categories, mandatory and value-added. The following are the definitions for these two categories of requirements:

Mandatory – Mandatory requirements describe what the system must do and consist of the minimum acceptable functionality, necessary to establish a system, or are based on certain laws and regulations. These requirements apply to existing systems in operation and new systems planned or under development.

Value-added – Value-added requirements describe features or characteristics and may consist of nay combination of the following: (1) using state of the art technology, (2) employing the preferred or best business practices, or (3) meeting the special management needs of the company. Value-added, optional, and other similar terminology may be used to describe this category of requirements.

The mandatory/functional requirements are listed and briefly explained, as below:

i. **User Authentication**

Verifies and validates user name and password before giving permission to enter the system.

ii. **Staff Management**

Provides for staff management.

iii. **Position Management and Classification**

Provides for position management and classification including the collection and editing of data.

iv.   Shift Management

Provides for shift management including assigning shift to the staff.

v.   Timecard Processing

Provides for timecard processing including auto-calculation of working hour duration.

vi.   Leave Processing

Processes and controls leave advances, conversions, transfer, usages, and forfeitures for each staff.

vii.   Labor Cost Calculation

Provides for the collection, maintenance, and management of labor costs based on a specific duration, for the purpose of reporting data to other systems, e.g., production cost system.

viii.   Public Holiday Management

Provides for the public holiday management of the company and overtime calculation for the staff.

The value-added requirements are:

- Auto-calculation of duration in hours.
- Auto-calculation of duration in days.
- Auto-deduction of annual leave for every relevant applied leave.
- Auto-conversion of relevant applied leave.
- Data selection is presented in a drop-down list.
- Date selection is presented in a calendar.
- Flexible labor cost calculation according to each staff and work date duration.

The following sections define and describe the functional and non-functional requirements of the Labor Cost System (LCS) in details, for effective and efficient human resource and labor cost calculation system based on the foregoing categories of human resources and labor cost calculation system. These requirements are the high-level capabilities of the system that are necessary to deliver benefits to the users.

2.5.2 Functional Requirements

The following functional requirements are identified by key human resource and labor cost calculation functional areas and are expected to be integrated with the company's unique requirements in a manner that best supports the company operations, technical environment, and management philosophy. The requirements listed for each functional area are aimed at providing a high-level description of the major information and processing capabilities needed to have modern human resource and labor cost calculation system.

The table below has three columns. Column 1 is the unique identification number, which refers to the requirement. Column 2 refers to unique name given to a requirement. Column 3 refers to requirement description.

The LCS functional requirements are as follows:

FR_No	Requirement	Description
FR_1	User Authentication	1. The system enables user to login and logout. 2. The system is able to verify and validate the user name and password.
FR_2	Staff Management	1. The system is able to store the staff details in the database. 2. The system is able to present the staff details of the company. 3. The system enables user to save new staff details.