CHAPTER I INTRODUCTION

I.1 Background

The use of information and communication technology (ICT) is increasing day by day because it has so many benefits to society. In Indonesia, information and communication technology (ICT) is quickly expanding. This is proved by the Information and Communication Technology Development Index (IP-ICT) data in Indonesia at 5.32 on a scale of 0-10. The result was greater than the previous year, which only reached 5.07 (Statistic Indonesian, 2020). The diagram of this IP-ICT can be seen as below:

Figure 1. Scale of IP-ICT Development in Indonesia

One of the benefits of information technology that can be felt by the community in everyday life is information technology in the field of education. The number of students in Indonesia in 2019 was 8,310,582 and increased in 2020 by 8,483,213, spread across universities in Indonesia (Statistic Indonesia, 2020). This makes the campus both public and private, allowing it to improve its services in all fields, including the field of information technology. This also encourages the development of IT projects in Indonesia to support the needs of technology, especially information technology in the field of education.

A project is a temporary, undertaken to create a product, service, or unique result (Project Management Institute, 2017). Projects have several types including construction projects, manufacturing projects, research and development projects, management feasibility projects, and capital projects. Each project has major limitations such as scope, time, and cost. For the project to run following the original objectives, a project manager must be able to consider several things such as the scope to be done in the project by meeting the demand from stakeholders, then ensuring the work on a project can run according to the planned schedule, and consider the costs needed to complete the project.

An IT project is a project engaged in IT, or technology and information. These IT projects can be software development, hardware installation, cloud systems, virtualization launches, network improvements, data management projects, and implementation of IT services ((TOG, 2019). In its implementation, IT projects have a variety of scales ranging from small-scale to large-scale. Small-scale IT projects can be managed by only a few people, but if the project is large-scale, then the project requires a team with dozens of members because the scope of the project is getting bigger. Usually, the completion of the project takes a monthly period of one year according to the complexity of the project.

The IT project has reached the world of education. Currently, the world of Indonesian education, especially at the university level, needs to be more advanced by improving information technology systems. This situation is in accordance with the Hapsari et al. (2018) statement, which asserts that one of the influences of information technology that exists in everyday life is in the field of education at the college level. The implementation of IT projects in the world of education can be described as in this Z University project simulation.

Z University is one of the universities that implement information technology systems. Z University has 10 faculties and 39 study programs. The faculties at Z University are the faculties of engineering, the faculty of science and informatics, the faculty of economics and business, the faculty of social and political sciences, the faculty of medicine, the faculty of psychology, the faculty

of pharmacy, the faculty of manufacturing technology, the faculty of dentistry, and the faculty of health sciences and technology. Since the university has various faculties and study programs, the campus needs to build an integrated information system for all academic activities on the campus so that documentation in every academic activity is monitored and well-controlled so that company XYZ offers to create an integrated information system for the academic campus of Z University.

XYZ Company is an intermediation institution under the auspices of Telkom Education Foundation, which was established in 2010 (Agesty & Fakhri, 2017). XYZ Company is located on one of the private campuses in Bandung, West Java. By having the vision to be a driving force in realizing the Indonesian information society and the driver of the growth of the ICT and technopreneur industries in Indonesia, Company XYZ becomes one of the innovation containers for the community to build and develop an information technology-based business. The XYZ company has various divisions, one of which is the Solutions and Technology (SOLTEK) division. The division engages in a project called the Z University integrated Education application Development Project.

Table 1. List of Application

No	Project Team	Application
1	Team 1	Academic Application
2		Student Application
3		TA/PA/Thesis Application
4		Graduation Application
5		Feeder Application
6		Student Application V.2
7	Team 2	Accreditation Application
8		Institutional Academic Dashboard
9		SPI Application
10		SPMI Application
11		Benchmark Study Program Application
12		DMS (document management system)
13	Team 3	PMB Application
14		Tracer Study Application
15		CDC

No	Project Team	Application
16		PMB V.2 Application
17		Cooperation Application
18	Team 4	Web Application and Blog
19	Team 5	General ERP
20		ERP Finance Academic Finance Application Academic Payment Application
21		HR ERP Academic HR Application
22		ERP Program and Funding
23		Library Application
24		Electronic Service Note Application (NDE)
25	Team 6	PMB Test Sinau Application
26		Regular Study Program Sinau Application
27		Applications Sinau Health Clump Study Program
28		Sinau Micro Credential Application
29	Team 7	Academic Mobile Application
30		Mobile E-learning Application for Regular Program
31		Mobile E-learning Application for Health Cluster Study Program
32	Team 8	Health Clump Academic Applications
33	Team 9	Helpdesk Application Information system
34		Lab Centre Application
35		Certification Activity Application
36		TOEFL Activity Application
37	Team 10	Integration API and SSO

Based on the table above, the project is developing 37 digital information systems for the university. The project is divided into 10 teams, with team 1 developing academic applications, team 2 developing accreditation applications, team 3 developing PMB applications, team 4 developing websites and blogs, team 5 developing ERP applications, team 6 developing sinau applications, team 7 developing academic mobile applications, team 8 developing academic applications of health clumps, team 9 developing information system helpdesk

applications, and team 10 developing integration API and SSO applications. Team 2 is the focus of the research currently. especially for developing accreditation applications. The average existing condition in the application in team 2 does not have the right tools for academic activity, so it is currently still using manual tools for file management. So, this is a breakthrough for the academic activity, which is to create an integrated application in team 2.

Table 2. Project Delay Timeline

Timeline	**--2021--**			**--2022--**
Month	**October**	**November**	**Desember**	**n-Month**
Project Should Start				
Acctualization of Project Start				

Based on the interview results with project owners, as can be seen in figure 2 above, there is a delay in the integrated education application development project for Z University from the plan set out at the beginning. The yellow line indicates the project work plan, and the green line indicates the actual realization sof the project work. The project was supposed to have started in October, but the realization was that it began in December. This indicates that the project is already 2 months behind from the original plan. This will have an impact on the addition of time and cost on the sustainability of the project in the future.

Naturally, there will be a lot of actions performed while the project is in progress. Each of these activities will undoubtedly incur expenses. for instance, the meeting will need travel and consumable expenses. Printing, copying, and stationery supplies must be paid for at the time the document is prepared. The expense reimbursement process is still implemented manually via WhatsApp, so there are no suitable tools that may help the project team more easily regulate

and monitor each activity as the budget is unquestionably necessary to achieve project requirements.

The delay and other problem caused by several factors presented in the fishbone below:

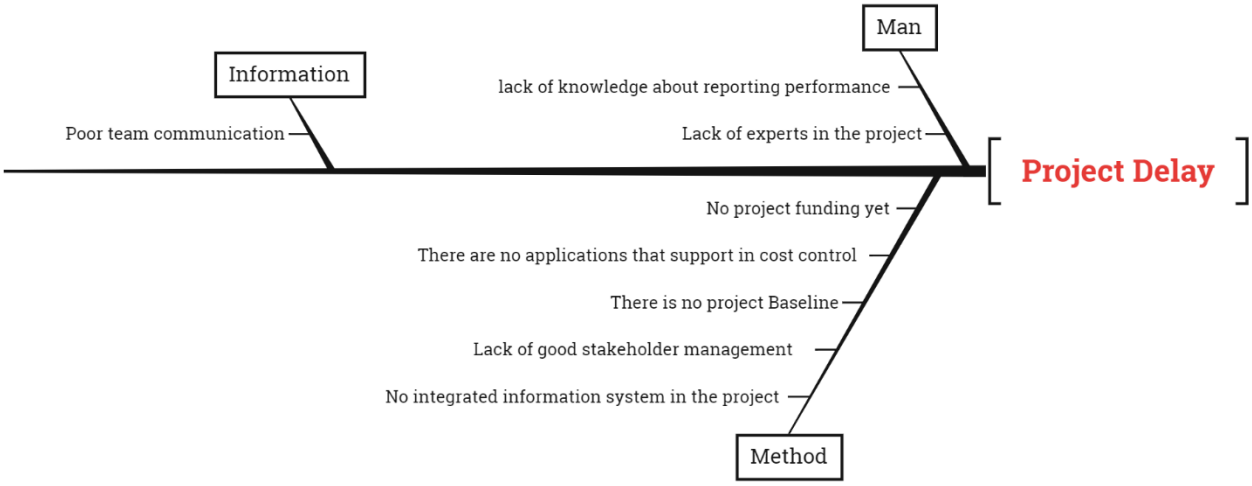

Figure 2. Project Delay Fishbone

Based on Figure 2 of the fishbone diagram above, project XYZ company has some problems in the project planning phase that have not been under the system in project management. First, the man aspect of lack of understanding about reporting performance, lack of expertise in the project, and the team leader's failure to understand the nature of the project. The second aspect of the method is the lack of good stakeholder management, no integrated information system in the project, and a poor planning stage. Then the last aspect is the information aspect. the fact that the project lacks a project information system and poor team communication. Some of the things mentioned in the event show that many aspects make the project delay, and for that reason, it needs some alternative solution that can solve the problem.

I.2 Alternative Solutions

The problem is complex. So, it requires an alternative analysis of solutions to the problem. Due to the limited access to project data, only two alternative

solutions were selected to be used as research for this final task. Alternative solutions are presented in the table below:

Table 3. Alternative Solutions Table

No.	The Root of the Problem	Potential Solutions
1	Integrated communication that can hold information in the project	Dashboard management system Project Design
2	Lack of good stakeholder management	Stakeholder Engagement Plan Design
3	There is no Project Baseline	Designing Scope and Schedule Baseline
4	Lack of cost control management	Cost Reimbursement Dashboard System Design

As seen in Table 1, an alternative solution is that there are some problems in the company's project that are the cause of the late project. At the root of the first problem, the absence of an integrated communication system in the project becomes an obstacle to the project running smoothly. This becomes a problem because team communication is a key factor in the success of a project. Communication is a means of connecting team members. Communication management is important to manage for the team to have the same goals. The Dashboard Project's design could be a potential solution to the root of this problem. A Dashboard Project is the collection, creation, distribution, storage, feedback, management, control, monitoring, and arrangement of project information that occurs on time and as planned.

The second root of the problem is the lack of good stakeholder management. From the lack of understanding about stakeholder management, how can the company meet the requirements of stakeholders if stakeholder management is not managed properly. An alternative solution to managing stakeholders in the design of the stakeholder engagement plan is that it includes how to fulfil the request from stakeholders into a change request so that the output of the project can follow the requests of stakeholders.

The third problem is there is no baseline project. In running a project, the creation of a baseline document is one of the important things that must be created. Because the baseline is a reference to the actual condition of the project,

the baseline is used to ensure the project runs by the scope, schedule, and costs that have been determined at the beginning. So, the alternative solution to this problem is the creation of a baseline project. Because of the limitations of data access, this research only includes the creation of a scope and baseline schedule.

The next problem involves cost control and management. In this integrated education application development project, there is no tool to assist the team in recording operating expenses from each project team; therefore, the entire process is performed manually. A solution that can accommodate the project team in the reimbursement application process is required for this problem. When the project team incurs personal costs, the company must repay these costs following the standard policy.

I.3 Formulation of the Problem

The alternative data solutions resulting from the formulation of the problem in this research below :

1. How is the Scope Baseline designed for the accreditation application development project?
2. How is the Schedule Baseline designed for the accreditation application development project?
3. How is the cost reimbursement dashboard system designed for the accreditation application development project?

I.4 Research Objective

Based on the problem formulation, the purpose of this research describes in below:

1. Designing the scope baseline for the accreditation application development project.
2. Designing the schedule baseline for the accreditation application development project.
3. Designing the cost reimbursement dashboard system for the accreditation application development project.

I.5 Research Advantage

The benefits of this research are as follows:

1. For Researchers

   Providing insight, knowledge, and experience in the design of scope, schedule baseline and cost reimbursement dashboard system.
2. For Company

   It can be used as a basic reference for the implementation of ongoing projects and solutions to existing problems in the project.
3. For Future Research

   Providing information and data that can be used as a reference for the design of baseline and cost control applications with different objects.

I.6 Systematic Writing

This research is described in systematic writing as follows:

Chapter I Introduction

This chapter discusses the background, alternative solutions, problem formulation, end task objectives, final task benefits, and systematic writing.

Chapter II Literature Review

This chapter contains about general theories or concepts related to problems and designs and the selection of theories used in the design.

Chapter III Method of Research

This chapter discusses the stages of the mechanism/plan of design solution of the problem including systematic design, Limitations, and assumptions of the final task, identification of integral system components, and the final task completion time plan.

Chapter IV Integrated System Design

This chapter is about data collection, data processing, data testing, and designing integrated system solutions. The data that has been collected is processed through the process that has been described in the previous chapter. Data

processing aims to answer the problem formulation of this final task. The integrated system design describes the design results of this final task, namely Scope Baseline and Baseline Schedule.

Chapter V Validation and Evaluation Results

This chapter contains the analysis and evaluation of the results of the draft. This chapter describes the analysis of the data that has been processed in the previous chapter. From the analysis obtained an evaluation of the results of the design in this research.

Chapter VI Conclusions and Suggestions

This chapter contains the conclusion of the final task that has been examined, answers the problems contained in the problem formulation identified at the beginning of the final task, and gives advice.