CHAPTER I

INTRODUCTION

1.1. Background

In today's twenty-first century world, technology has come to play an ever-increasing role in the daily lives of people across the globe. One of the ultimate goals of new technology is that it improves the experience of the user in some way. When applied to the commercial industry, by these principles technology should also work to make whatever process, task, or project it is working on more efficient. One example of such a technology currently making strides by streamlining commercial processes is unmanned aerial vehicles (UAVs), more commonly referred to as a *drone*. One industry in specific that has utilized the various benefits of drone is the construction sector. According to Urzillo and Robbins (2017) the construction industry represents one of the largest commercial industries in the world. Fortunately, drone have the potential to cut down on costs and time in several areas of construction sites, as evidenced by several case studies evaluating them.

Drone have the potential to improve efficiency on a wide variety of construction site jobs, including surveying, digital mapping, and volumetric analysis, as shown in several separate case studies in the some journal. The use of drone on these projects have limitation, which to help decrease costs, productivity efficiency at inspection or monitoring in case (*live report*), and would ultimately

lead to a *higher return on investment* for construction firms (Urzillo and Robbins, 2017).

Unmanned aerial systems (UASs) are an emerging technology known for their role in military applications (Nisser and Westin 2006). More recently, the potential use of UASs as tools in civilian environments has gained significant attention in domains such as agriculture, forestry, archaeology, architecture, and construction. In addition, federal and state agencies in the United States have been operating or considering operating small UASs for law enforcement or surveillance purposes.

The main reason for author conducted studying about UAV (*drone*) supervisory is to analysis the differentiation traditional methods of monitoring, inspection, and cost application. These studies hopefully useful decide which method construction sites prefer, making several tasks easier, more efficient in all sector application.

1.2. Problem Statement

A success construction project can be shown from some consideration, first is the accuracy of time it means the project can be finished on time based on the schedule. The second is the accuracy of budget, it means the project is finished in accurate budget or does not need so many additional costs outside the plan before. The third is the potential increase the productivity of the jobs they perform, and able to increase their return on investment for projects.

There are many problems that can be founded during construction. To recognize major problem in construction, and analyze the influence of the project.

The following research questions were formulated to further examine the problem statement :

1. How to evaluate current application of unmanned aerial systems *(UASs)* in the construction project?
2. How to analysis the factor influencing supervisory and monitoring of the project using conventional *(traditional)* tool and unmaned aerial systems *(UASs)*?
3. How to analysis the cost of monitoring and supervisory using unmanned aerial systems *(UASs)* and conventional *(traditional)* tool?

1.3. Problem Limitation

In order to make this research focused in the main problem, author set several limitations :

1. The research will be conducted in on-going high rise-building construction project in Yogyakarta, Jakarta.
2. Observations were do on building projects using drone and building projects without using drone as a comparison.
3. Part of the work will be reviewed is the use of unmanned aerial systems *(UASs)* or *drone* for observation construction projects.
4. Obtain the cost project and worker wage from the related construction project.

1.4. The Objective of Final Project

The purposes of this study are :

a. To evaluate current application of unmanned aerial systems *(UAV)* in the construction project.

b. To analysis the factor influencing supervisory and monitoring of the project using conventional *(traditional)* tool and unmaned aerial systems *(UASs).*

c. To analysis the cost of monitoring and supervisory using unmanned aerial systems *(UASs)* and conventional *(traditional)* tool.

1.5. The Benefits of Final Project

This final project has quite big benefits for the author, benefits of this thesis, they are:

1. For The Contractor: The research can be as refrences to help contractor choose application method supervisory to perform a variety of jobsites more efficiently across several tasks in the fields, the best decision for supervisory method is prefer to increase their return on investment (cost).

2. For academicians / readers: This research can give information about exploratory study and potential applications of visual assets for construction management tasks obtained from UASs applied by the contractors, consultant and how it affects amount total worker wage compare with the conventional supervisory base on several construction project's.

1.6. The Originality of Final Project

According to Antonius Satrio (2016) the previous study was already observed and studied about utilization drone for job monitoring in the construction site. Drone used in construction to improve overall costs and exploratory study of potential applications of unmanned aerial systems for construction management tasks (Javier and Dayana, 2016). This final project wants to continue the result of the previous one by finding and knowing the diffrences between construction monitoring with drone either conventional monitoring toward the improve cost and decide which method prefer for the current project. The application during construction will bring some negative or positive impacts for the project it self, so it is important to find the best solution which method using in construction site "UASs or Conventional" that influences continuity of project the most.

The topic "***A Study Of Application Of Unmanned Aerial Systems In Construction Projects***" has never been used in any other final project before. Therefore, there has never been any attempt to conduct a similar research in Indonesia construction industry. This final project will be a unique and a new project in its attempt to identify the application of UASs implementation in Indonesia construction industry.