Construction Management Performance Analysis of Dittopad Flat Building Project

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ABSTRACT

In construction work, construction management is needed. Construction management is the activity of planning, actuating and controlling projects using resources effectively and efficiently. The fundamental functions of construction management are planning, organizing, actuating and controlling. The Dittopad flats are a construction carried out by Pusziad TNI AD to raise personnel morale by providing a place to live. The purpose of writing is to analyze the application of construction management that occurred in the Dittopad Flats building construction project. The research method used was a literature review obtained by filling out a questionnaire with 50 respondents involved in the construction of the Dittopad Flats. The analysis was carried out using factors that influence the construction work system on basic management functions related to aspects of time, cost and quality. Based on factor analysis of the construction management work system, it was found that the most influencing function was planning with a value of 4.31. From the analysis of the actions taken by construction management at the Dittopad Flats, it was found that the one that had the most influence was the planning stage with a value of 4.26.

Keywords: Construction management, Functions of Construction management, Construction projects.

1. INTRODUCTION

In a construction job, management is needed as a management effort. Management is taken from the old French "management" which means the art of organizing something. Management is an effort in planning, coordination, organization, and control of resources in an effort to achieve the desired goals or things effectively and efficiently [1]. Effective in this case means according to planning and efficiency means in an organized manner. Construction management is an activity of managing work in the implementation of physical development which is handled by multi-discipline professionals, where there are stages of preparation, planning, tendering, work implementation, and operation with an integrated system [2]. Construction management has the aim of producing an optimal goal by minimizing costs, utilizing time, and maintaining project quality. Construction management is a real process consisting of planning, organizing, actuating, and controlling by utilizing the fields of science and art [3].

A construction project is a temporary activity that is determined at the beginning of the work until the time of completion of the work and is limited in time to achieve the goal of producing a change that is useful or has added value [4]. A construction activity cannot be separated from the problems that occur [5].Problems can occur due to many things, such as delays in processing time, lack of communication between service providers, labor that works not according to its capacity, management that is not carried out properly so that costs increase due to problems that occur in construction, it is the task of construction management to be able to solve problems that occur in a construction project. With good and proper management, construction projects can be completed in accordance with the expected time target. Construction management also helps construction can be done using efficient costs while still maintain quality according to the quality standards used. With the use of management that can manage construction, management is the first step that is influential in achieving a target [6].

Construction management is also used in construction that occurs in the military environment. In this case, the Indonesian Army carried out by The Indonesian Army Corps of Engineers is carrying out the construction of Dittopad flats (Directorate of Army Topography). The construction of these flats is used to provide living facilities for army personnel to increase personnel morale. In its planning, the Dittopad flats are three floors high, with a house type of 45 on each floor. This construction was carried out on land owned by Dittopad, which was previously an official residence. The construction of this flat is to add to the houses owned by Dittopad personnel with small land. The work carried out in this development starts from construction preparation, foundation work, structural

work, plumbing work, architectural work, and finishing. This study aims to conduct a performance analysis based on construction management in the Dittopad flat construction project based on four management functions in the form of planning, organizing, actuating, controlling. From these four management functions, further analysis will be carried out on three aspects of the application of construction management, namely time, cost, and quality

.2. METHODOLOGY

2.1 Management Functions

Construction management has 4 management functions. These management functions are planning, organizing, actuating, and controlling.

2.1.1 Planning

The planning function is fundamental to the management process and is considered its most critical component. Planning is an activity that determines the action in requiered achieve the desired goal [7]. Planning should be able to anticipate the situation of the construction project, which is initially uncertain to be more certain and clear. The purpose of construction planning is to meet specific criteria for construction projects by determining work plans. The primary goal of construction planning is to satisfy specific criteria by establishing detailed work plans. Planning encompasses setting objectives, developing policies, creating systems, outlining projects and programs, and formulating procedures to attain the established goals. Through good planning, it is expected that the project completion time can be adjusted to the target. Due to the importance of planning, it is expected that there will be special attention during planning so that it can control the project. Through good planning, it is expected that the project can be completed on target [8].

2.1.2 Organizing

The organizing function is an act of determining, grouping, and organizing all activities used in an effort to achieve goals. This management function has the aim of placing each individual in the activity being carried out, providing the tools used, and determining the authority that is relatively used to authorize each individual who carries out the activity [9]. A project can run well if the organization behind it runs well too. The organization is project management which has the aim of organizing the stages of work implementation to achieve goals. A good organization can divide the roles and functions of each part with good communication and clear leaders [10]. This organization brings together the thoughts of a group of people, including owners, consultants, contractors, and supervisors.

2.1.3 Actuating

The actuating function is an activity in realizing the desired and required building according to the wishes of the project owner based on what is designed by the planning consultant with cost and time constraints. The actuating function is divided into two, namely the staffing and directing functions. The staffing function is a function related to recruitment, training, job assessment, placement, and development of the workforce in the organization. The directing function is a function related to the mobilization of resources owned by the organization so that it can move in unity according to the plan made [5].

2.1.4 Controlling

The controlling function is the regulatory activity of various factors in the company with the aim of matching the provisions in the plan. Supervision is a measurement and improvement of the work done so that the plans made can be realized [9]. The supervisory function is an important function. This is because the supervisory function is an act of controlling whether what is planned has been implemented. Supervision is also carried out to check for obstacles and problems so that they can be resolved properly. The targets of supervision include:

1. The Implementation of designated tasks can proceed as planned.
2. The structure and hierarchy in the organization are in accordance with the pattern in the plan.
3. The Placement of people according to talent, education, expertise and experience and the development of subordinate skills is carried out in a planned, continuous, and systematic manner.
4. Economical in the use of tools.
5. Work procedures and systems do not deviate from the policies made in plan 5.
6. The division of tasks, responsibilities, and authority is based on objective and rational considerations.
7. There is no misuse or deviation in the use of position, power, and authority in construction activities.

2.2 Data Processing

Figure 1 illustrates the data collection process through a flowchart, ensuring the accuracy and reliability of the collected data.

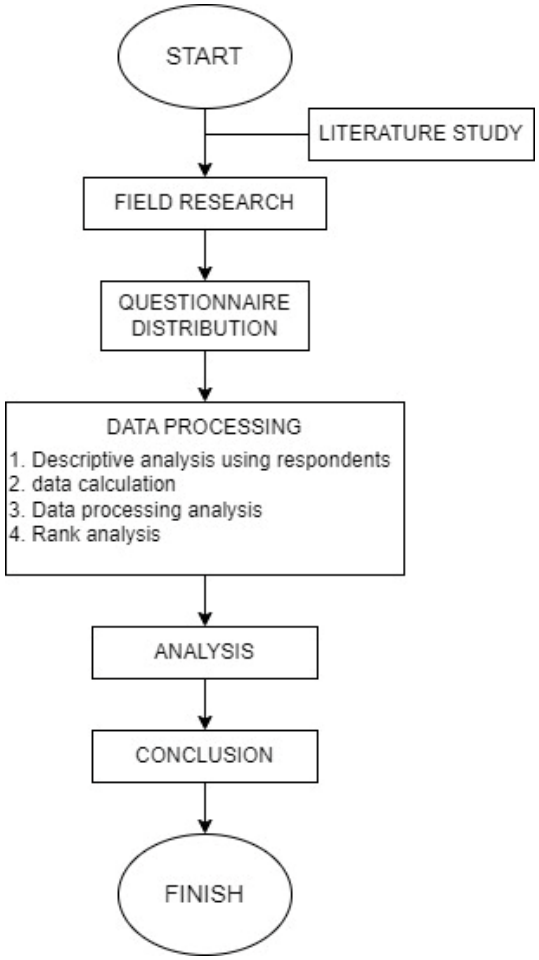

Figure 1. Research Flow Chart

1. **Descriptive analysis using respondents**
   Data obtained from respondents through filling out questionnaires distributed by the author. The questionnaire contains questions that will be processed and used as a description or explanation. Overview in tabular form. The target of the respondents is the parties involved in the construction of the Flats of the Directorate of Army Topography (Dittopad) with a total of 50 respondents.
2. **Data Calculation**
   Data processing using Microsoft excel by preparing tables according to the questionnaires filled out. The table is divided into values for each job in the management function based on time, cost, and quality factors. Factors affecting the implementation of the construction management work system from the questions asked will be calculated and given an average value. From the average value it will be sorted in the table. The equation for calculating the mean value can be seen in Equation (1). From the average value for the factors obtained. The calculation analysis is carried out from the average for each basic management function in the form of the IKR (Index of Relative Importance) value [11]. The equation for calculating the IKR value can be seen in Equation (2), where, *xi* is size of respondent's factor score, *n* is number of respondents, *IKR* is relative importance index n, *mean* is average of value and *M* is influence factor (5)

$$mean = \frac{\sum_{i=1}^{i=n} Xi}{n} \quad (1)$$

$$IKR = \frac{mean}{M} \quad (2)$$

3. **Data Processing Analysis**
   The questionnaire data that has been calculated, then processed using descriptive statistical methods. Descriptive statistics are statistics used for data analysis using descriptions or describing the data collected to make conclusions [12], [13]. From the average value obtained, it is entered in the table in order. The average value of each factor affecting the construction management work system that is the largest will be considered the best or dominant value and ranked. From the IKR assessment for basic management functions, a ranking is carried out from the highest to the lowest IKR value.
4. **Rank Analysis**
   After ranking the IKR values, the author determines the range to group each variable with four levels according to the importance in the field. Based on this ranking analysis, conclusions can be drawn. The description of the assessment results can be seen in Table 1.

Table 1. assessment of questionnaire results

Average (X)	Description
4.0 < X < 5.0	Very influential
3.0 < X < 4.0	Influential
2.0 < X < 3.0	Not influential
1.0 < X < 2.0	Not very influental

3. RESULTS AND DISCUSSION

On Table 2, it is found that for the basic function of construction management in the form of **planning**, the most influencing value is the quality indicator with a value of 4.58. This means that the factor affecting planning is the lack of qualified experts who can affect the construction management work system. In the basic function of construction management in the form of **organizing**, the most influencing value is the time indicator with a value of 4.31. This means that the factor that affects organization is the lack of coordination between service providers so that it can affect the work system. In the basic function of construction management in the form of **actuating**, the most influencing value is the quality indicator with a value of 4.40. This means that the factor affecting actuating is an error in the selection of materials for construction work, thus affecting quality. In the basic function of construction management in the form of **Controlling**, the most influential value is the time indicator with a value of 4.34. This means that the factor that influences supervision is the deviation of the implementation time in the field from the planning schedule.

Table 2. Analysis Of The Average Construction Management Work System Factor Based On Indicators

Activities	Indicator	Average
Planning	Time	4.19
	Cost	4.17
	Quality	4.58
Organizing	Time	4.31
	Cost	3.71
	Quality	3.97
Actuating	Time	4.18
	Cost	4.23
	Quality	4.40
Controlling	Time	4.34
	Cost	3.91
	Quality	4.14

From the results of the analysis for factors that influence construction management (POAC), namely Planning, Organizing, Actuating and Controlling, the most influential is the Planning factor. The planning factor has an average of 4.31 with an IKR value of 0.86. Followed by the actuating function, controlling function, and organizing function As seen in Table 3 and Figure 2.

Table 3. Analysis IKR Value of Construction management Work System Factor

Activities	IKR	Rank
Planning	0.863	1
Organizing	0.800	4
Actuating	0.854	2
Controlling	0.836	3

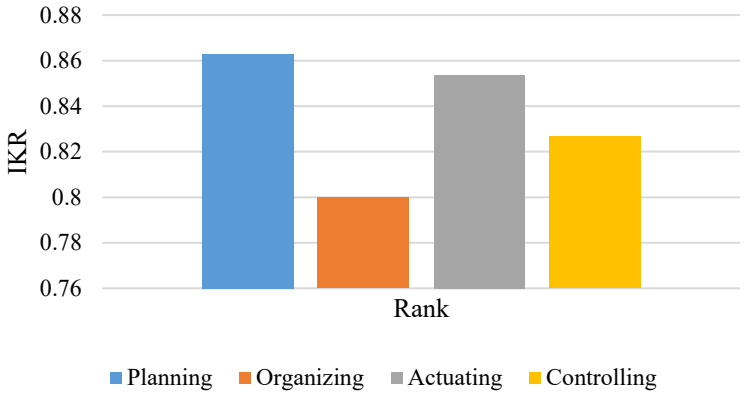

Figure 1. IKR value for Construction Management Work System Factor

Table 4. Analysis the Description of Management Functions Based on Construction Management Work System Factors

Activities	Average	Description
Planning	4.31	Very influential
Organizing	4.00	Very influential
Actuating	4.27	Very influential
Controlling	4.13	Very influential

In table 4, it is found that the management functions of Planning, Organizing, Actuating, and Controlling have values between 4.00-4.31. Based on table 1, the four management functions are included in the value of 4.0 < X < 5.0 with the description "very influential".

Table 5. Analysis of Average Construction Management Actions Based on Indicators

Activities	Average	Average
Planning	Time	4.19
	Cost	4.17
	Quality	4.58
Organizing	Time	4.31
	Cost	3.71
	Quality	3.97
Actuating	Time	4.18
	Cost	4.23
	Quality	4.40
Controlling	Time	4.34
	Cost	3.91
	quality	4.14

Based on Table 5, it is found that for the actions of the basic functions of construction management in the form of **planning**, the most influential value is the quality indicator with a value of 4.42. This means that the action that influences planning is the process of checking specifications carried out by means of corrective action. In the action of the basic functions of construction management in the form of **organizing**, the most influential value is the time and quality indicator with a value of 4.31. This can be interpreted that the actions that most influence organizing are identifying problems, providing solutions, and checking and studying construction documents as a reference for supervision in the field. In the action of the basic function of construction management in the form of **actuating**, the most influencing value is the quality indicator with a value of 4.26. This means that the action that affects actuating is checking the quality of the materials to be purchased. In the action of the basic function of construction management in the form of **controlling**, the most influencing value is the time indicator with a value of 4.49. This means that the factor that influences controlling is the deviation of the implementation time in the field from the planning schedule. From the results of the analysis regarding actions for construction management (POAC), namely Planning, Organizing, Actuating and Controlling, the most

influential is the Planning factor. The planning factor has an average of 4.31 with an IKR value of 0.86. Followed by the actuating function, controlling function, and organizing function as seen in Table 6 and Figure 2.

Table 6. IKR Value Analysis of Construction Management Measures

Activities	IKR	Rank
Planning	0.863	1
Organizing	0.800	4
Actuating	0.854	2
Controlling	0.836	3

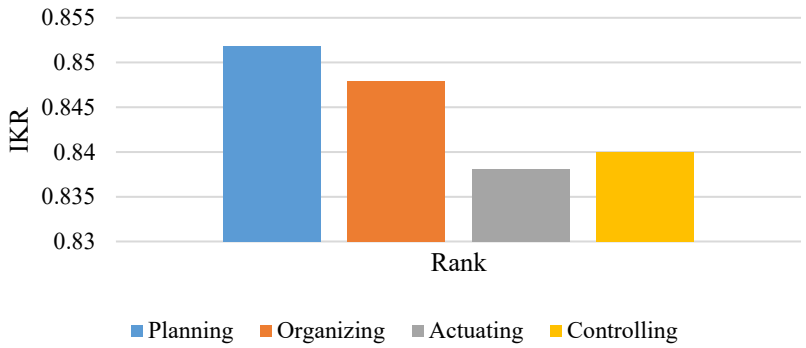

Figure 2. IKR Value for Construction Management Actions

4. CONCLUSION

Based on the analysis, factors that influence the construction management work system in the Dittopad flat construction project in the planning, organizing, actuating and controlling processes, the most dominant is planning with an average value of 4.31 and IKR 0.863. In order, they are planning, actuating, controlling and organizing. An analysis of factors that influence POAC is carried out between cost, quality and time as agreed limits. The factor that most influential the construction management work system for the planning function is the quality indicator with an average of 4.58; the organizing function is the time indicator with a value of 4.31; the Actuating function is quality with a value of 4.40; the Controlling function is time with a value 4.34.

Actions that influence the construction management work system in the Dittopad flat construction project in the planning, organizing, actuating and controlling processes with the most dominant being planning with an average value of 4.26 and IKR 0.847. In order, they are planning, organizing, controlling, and actuating. An analysis of actions that influence POAC is carried out between cost, quality, and time as agreed limits. The action that most influences the planning function is the quality indicator with an average of 4.42; the organizing function is the time and quality indicator with an average of 4.29; the Actuating function is the quality indicator with a value of 4.26; the Controlling function is a quality indicator with a value of 4.49.

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