



Project Management Planning to Increase Company Resource Efficiency and Effectiveness in Indonesia

Almahadi Abdeljalil¹ and Faraj Abdeljalil²

¹Academic Studies Department, Higher Institute of science & technology, Sirte, Libya

²Transportation Project Board, Tripoli, Libya

Corresponding Author : almahdy1310@gmail.com

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ABSTRACT

This study aims to develop global project management activities in the form of Work Breakdown Structure (WBS) and create project scheduling with Activity On Arrow (AOA) diagrams and barchart/gannt chart. So that with the preparation of the right WBS and AOA, the success of project management planning will be achieved. This research was conducted using a method starting from the findings of the problem, determining the research objectives, collecting and processing data, to the conclusion. The steps taken include: Perform (WBS) of project activities and create a sequence of project activities, so that they can be analyzed with (AOA), and barcharts. the following conclusions showed that Activity On Arrow takes 23 days to determine the HR requirements needed in the preparation of project management plans, while Barchart takes 23 days to determine the HR needed in the preparation of project management plans.

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1. Introduction

The use of modern technology that continues to develop, in order to improve better quality. The development of the project in line with the development of technology

must be carried out. Companies that develop in the field of technology services such as consultants and service providers and are followed by adequate human resources. So that in planning the project it is necessary to adapt to the development of existing technology and the selection of human resources used. One of the factors that support the success of the project is the availability of various adequate human resources and experts in their fields. So that the construction service company continues to advance and develop and get a good profit oriented as well. There are many aspects that must be owned by every workforce and must be able to support the achievement of the organization's goals. These aspects include aspects of competence, motivation, loyalty and work discipline. If these aspects of human resources can be met, then the performance of workers will increase so that the productivity of these human resources will also increase. In improving the quality of the results, the company seeks to improve the quality of services provided by making structured project plans, so that more optimal use of resources will have an impact on the effectiveness of the performance of internal HR within the company. One of the factors that support the success of the project include good project management and the availability of adequate human resources in accordance with the needs. If human resources are adequate, then the project will run smoothly and the company will grow and get a good profit oriented as well. There are many things that need to be considered for every workforce in order to support and meet the achievement of organizational goals.

These aspects include: competence, motivation, loyalty, and work discipline. If these four aspects are achieved, if these are met, then performance will increase and productivity will also increase.

Project management is made to avoid or minimize project failures and risks (Noerlina, 2008). Good management is related to the management of activities such as scheduling, human resource management which will lead to project cost estimates that need to be budgeted by the company.

The aims of this research are:

1. Develop global project management activities in the form of Work Breakdown Structure (WBS).
2. Create project scheduling with Activity On Arrow (AOA) diagrams and

barchart/gantt chart. So that with the preparation of the right WBS and AOA, the success of project management planning will be achieved.

2. Literature Review

According to Dimiyati and Nurjaman (2014), project management is the process of planning, organizing, leading, and controlling the activities of organizational members and other resources so that they can achieve predetermined organizational goals (Soeharto, 2002).

3. Project Management Functions

Some of the functions of project management (Dimiyati and Nurjaman, 2014), are:

1. Planning function (Planning) This function aims at making decisions that manage selected data and information to be carried out in the future, such as preparing long-term and short-term plans, as a process is output oriented. It is concerned with deciding in advance what, when, how, and who will take the necessary actions to accomplish established objectives. In this context planning is a pervasive management function which is accomplished by all levels in the project hierarchy, the difference being scope, detail, and the magnitude of the effort. Planning forms the foundation for future actions, using the past as a guide.
2. Organizational function (Organizing) The organizational function aims to unite a collection of human activities, which have their respective activities and are interconnected,.
3. Implementation Function (Actuating) The implementation function aims to harmonize all relevant organizational actors in carrying out activities/projects, such as task direction and motivation.
4. Controlling Function The control function aims to evaluate the quality of appearance and analyze and evaluate activities, such as providing suggestions for improvement, and others.

4. Work Breakdown Structure

(WBS) is a combination of work elements shown in graphic form to organize and

divide the overall scope of a work project (Rev, 2003). Critical Path Method (CPM) According to Schroeder (1996) in Dimiyati and Nurjaman (2014), (CPM) uses a linear time-cost balance network. The CPM technique is carried out by compiling a network that is identified concerning activities and using simple time assessments for each activity indicating the working period.

Some of the terms used in this CPM method are:

- a. Earliest Start Time (ES) is the fastest time an activity can be started, taking into account the time of the activity and the requirements for the sequence of activities.
- b. (LS) is the latest time to start an activity.
- c. (EF) is the fastest time an activity can be completed.
- d. (LF) is the slowest time to complete an activity.

In CPM, the term critical path is known, which aims to determine activities that have a high level of sensitivity to implementation delays, so that they can determine the level of policy priorities in project implementation. This form of CPM can provide information related to the activities carried out first or after, and the duration of the activities. In CPM, the term slact time is also known, which is the time to delay an activity without changing the overall project period.

The network that has been created in the CPM can be reflected as a basis for project scheduling. Project scheduling is usually made in the form of a Gantt chart. Program Evaluation and Review Technique (PERT) PERT is used in scheduling, organizing and coordinating the activities in a project. According to Suharto (2002), the PERT method includes three time estimates, namely:

- a. Pessimistic time (t_p), is the longest time an activity may take.
- b. The most likely estimate time (t_m), is the most probable completion time of project activities, or has the highest probability.
- c. Optimistic Time (t_o), is the fastest time that can be done to carry out the activities of a project.

5. Bar chart (Barchart)

According to Lenggogeni, 2013, in project work, scheduling techniques that are often

used are bar charts / bar charts / bar charts. A bar chart is a set of activities placed in a vertical column, and placed in a horizontal row. The start and end times of each activity and their duration are indicated by placing a horizontal block to the right of each activity.

6. Activity On Arrow (AOA)

According to Wideasanti and Lenggogeni (2013) this method is a form of arrows and circles. The arrows and circles represent project activities, while the circles represent events, the node at the head of the arrow is called the "J" node. This node connects each activity together. The terms involved in forward and backward calculations. While the dummy is an activity with zero duration, which only describes the problem relationship between activities.

7. Effectiveness

Effectiveness is the result of using resources and activities in accordance with their objectives which include quality, cost, time, and others. So that efficiency can be interpreted as the use of resources and the selection of appropriate sub-activities which include the number, type, time of use of other resources and others. Therefore, the management of a project is something that cannot be ignored. Because without this, the project will be difficult to run according to expectations in terms of cost, time and quality.

8. Competence, Motivation, Loyalty, and Work Discipline

According to Dewi (2016) that Competence is, measurable and essential personal aspect to be able to achieve successful performance. Motivation is the energy used to generate encouragement from within the employee that influences, generates, directs and maintains behavior, energy and time based on the work environment. Loyalty is an attitude and action that devotes the ability and expertise possessed in carrying out tasks with responsibility and honesty at work, creating good relationships with superiors, co-workers and subordinates in resolving problems or differences of opinion. Work Discipline is an attitude of respect, appreciation, obedience, and obedience to the regulations that apply in the work environment, including written and unwritten regulations. So that in completing tasks, maintaining the company's

image and being willing to work for a long and determined period of time.

9. Methodology

This research was conducted using a method starting from the findings of the problem, determining the research objectives, collecting and processing data, to the conclusion. The steps taken include:

1. Perform Work Breakdown Structure (WBS) of project activities.
2. Create a sequence of project activities, so that they can be analyzed with Activity On Arrow (AOA), and bar charts.

10. Results

10.1 Identification of Human Resources

Project management planning by identifying human resources from several groupings of activities. The activities of project management are contained in the Work Breakdown Structure (WBS) as follows:

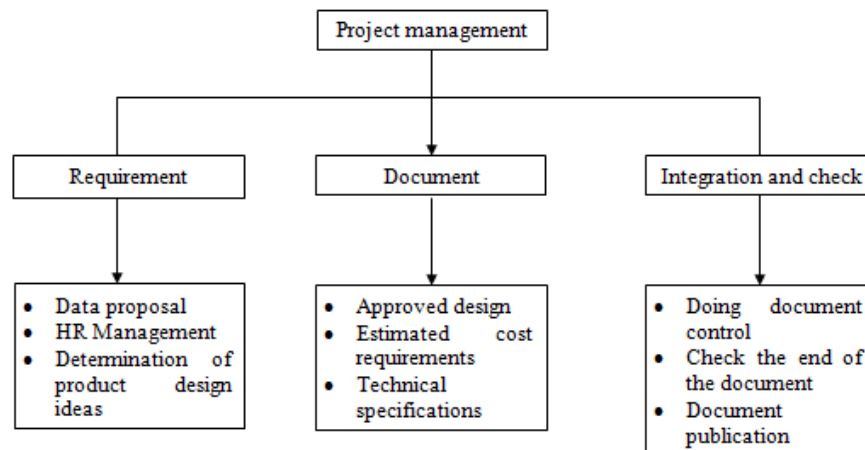


Figure 1. Work Breakdown Structure (WBS)

Furthermore, the identification of human resources is contained in the activities of competent human resources in project management in Semarang. The following is a table of data on human resource activity activities in project management planning carried out in project planning.

Table 1 Project management HR activities.

No	Description of activity	duration (days)	activity
1	Collect all project data and information needs	5	A
2	Create user stories or project function descriptions based on the needs of the project	3	A, B
3	Allocating manpowers		C
4	Collect design ideas	5	D
5	Compile a list of required technology (software or hardware) requirements	7	D, E
6	Develop a design in the form of a prototype as the first step in project design approval	7	F
7	Drafting the approved Hayyan project system design	7	G
8	Starting project system development	10	H
9	Quality control and trial Project uploaded to public servers	5	I
10	Guarantee (warranty) in the form of final consultation	3	J

From the project management HR activities, there is a critical path in the A, B, C, D, E, F, G, H, I, and j activity paths as follows:

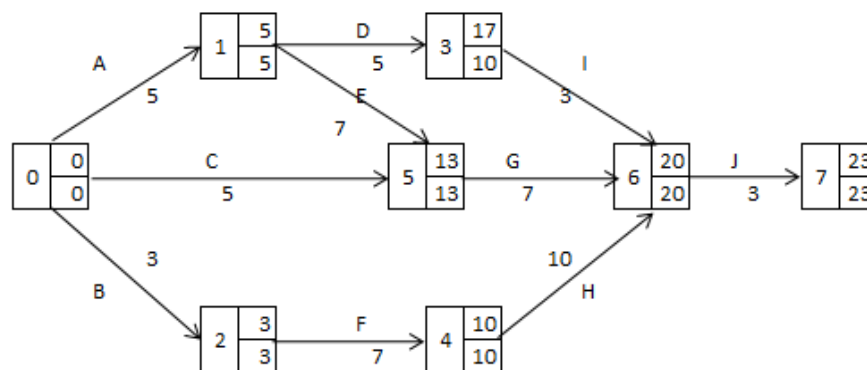


Figure 2. Activity On Arrow Diagram Diagram

From the diagram, there is a critical path on the path A, B, C, E, F, G, H' with a free float value and a total float = 0.

10.2 Project Implementation Time Plan

In Activity On Arrow (AOA), a project management HR can determine the exact implementation time so that HR effectiveness is appropriate and can be achieved. The calculation plan is carried out free float and total float from the AOA. The preparation

of an appropriate WBS, AOA, and Barchart based on respondents must consider the competence of several things, namely:

- a. Competencies possessed by available, competent human resources and appropriate work experience.
- b. There is motivation and enthusiasm from these human resources to move forward and be able to manage and resolve all existing obstacles when preparing project management plans.
- c. The existence of an attitude of loyalty and enthusiasm to move forward and develop from each project is carried out and is ready to face all obstacles.
- d. There is a commitment from these human resources, to work and carry out their duties and responsibilities in a disciplined and effective time.
- e. There is an optimistic and positive attitude in every project management project that is carried out and completed well. From the things above, it is very important that the implementation of project management can be carried out, carried out, and completed according to the work plan. Next, create a barchart / ganntchat chart.

Table 3. Barchart chart

Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
A	■	■	■	■	■																		
B	■	■	■																				
C	■	■	■	■	■																		
D						■	■	■	■	■													
E						■	■	■	■	■	■	■											
F						■	■	■	■	■	■	■											
G													■	■	■	■	■	■	■				
H													■	■	■	■	■	■	■	■	■	■	■
I											■	■	■										
J																						■	■

11. Conclusions

In carrying out project planning, the following conclusions can be drawn:

1. In the effective management of human resources in project management, several things must be considered, including competence, motivation, loyalty, and discipline in work, as well as an optimistic attitude.
2. In the preparation of project management planning, it is necessary to have a breakdown of the activities of the project to be implemented.
3. Activity On Arrow takes 23 days to determine the HR requirements needed in the preparation of project management plans, while Barchart takes 23 days to determine the HR needed in the preparation of project management plans.

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