Project Management Application in Food Machine Manufacturing Company

Gida Makine İmalat Şirketinde Proje Yönetimi Uygulaması

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ABSTRACT

The importance of project management and resource planning is increasing with each passing day, especially companies do project basis business. The usage of project management principles and techniques enable to complete the project in accordance with its budget, specifications and due date. In addition to this, it facilitates the achieving the objectives such as productivity and quality. Therefore, companies gain advantage in terms of competition. Planning while taking project in companies related to it provides knowledge about its cost, completion time and resource requirements. Thus, companies make a decision whether the project is profitable or not. If final decision is that the project is profitable, required material, labor and finance are supplied for completing the project perfectly and in time. In this study, information about project management and project planning were given firstly. Secondly, project management application for a food machine was conducted. Finally, results of the project were evaluated by investigating its cost, resources and schedule.

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Introduction

Today, almost all businesses are involved in many projects. The projects have an important place in change and are in need of modern business life. Most of the projects involve information technology and therefore businesses must be constantly at the cutting edge of technology.

Mazlum and Güneri, 2015 have conducted project management work for internet branch planning. Durucasu et al. 2015 have implemented the management of a construction project using the fuzzy CPM method. The durations of the activities in the study are expressed as triangular fuzzy numbers rather than exact numbers.

Businesses are constantly producing projects as a necessity to grow, and they try to practice these projects to life. These projects may be small diameter or large diameter (dam, bridge, etc.). Small-scale projects are generally projects that do not require expertise and can be easily designed.

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and implemented; But it is not possible to say the same for big projects. Large-scale projects are complex and require high-level expertise, and these projects are difficult to prepare, manage and implement. At the same time project management and planning are proportional to project size. It is difficult to manage large projects and especially for businesses planning. For this reason various methods and programs have been developed for the enterprises. GANTT scheme, Program Evaluation And Review Technique (PERT), Critical Path Method (CPM) are some of them. By thanks to these methods, enterprises can have preliminary knowledge about the project by carrying out cost, source, time analysis before the project starts and by thanks to the data to prepare in advance, the project can be completed in the best way.

Project Management

A project can be defined as a temporary and difficult process that begins to be implemented to produce a product, service, or result. The transitional word here means that the project will start and end at a time interval. Project management is the application of knowledge, skills, tools and techniques in order to meet project requirements for the operation of a project. Today, factors such as producing high quality products, producing personalized products, getting to market faster, global competition, easier information access and technological advances have increased the importance of project management. In order to better understand project management, the functions that constitute it are discussed separately below (Richman, 2011).

Planning: Planning is a process that begins with a sense of the present situation and the desired situation. The gap between these two situations leads project managers to identify and evaluate alternative approaches. Recommended action plans are synthesized to ensure applicability.

Management: Management is in communication with goals, objectives and procedures. Management is the process of communicating linguistically or typographically with the plan.

Organization: Organizing is the period in which the non-human resources needed to achieve the goals of the project are brought together. This process begins with defining the requirements for the supplied materials and equipment. In addition, procurement and ordering resources and storage, security and disposal activities are determined in this process.

Employment: Employment is about collecting human resources under the same roof. From a managerial perspective, human resources are seen as a numerical value that is a mixture of unit cost, physical and logical placement, skills and competence level.

Control: Control is a process in which the progress towards achieving objectives is measured, how long it has remained in the completion of the project, and the corrective actions taken to achieve the objectives.

Coordination: Coordination is an action taken to ensure that the activities in the project are carried out without any conflicts and in the desired manner. For example, if two or more activities need the same resources as time, money, people, then coordination is a necessity. The primary mechanism of coordination is to prioritize.

Findings and Discussion

General Information about the Program Used in Practice

Today, where time and productivity are the competitive advantages, projects must be delivered at the right time and at an efficient level. That’s where the power of project management comes in. The reasons for failure in projects are headed by inadequate project management. At this point, MS Project is becoming the greatest facilitator of project managers.

With MS Project, project management is the process of programming the resources in the most efficient way and controlling the project activities to achieve the goals of performance, cost and time. These three goals are achieved through efficient and effective use of resources.

This program aims at carrying out the planning and realization phases of the projects with a certain goal in the business life and with the help of the MS Project - CPM (Critical Path Management) technique of the projects which are composed of specific tasks and defined with the budget of the previous time in the most accurate way.

In this way;

• The duration, budget and resources of the project can be planned and controlled in advance.
• The projects can be planned according to the workflow, the duration of the works, the cost
and the source of the work can be defined and tracked.

- It can be determined who and what materials and equipment each of the projects will carry out.
- It can be seen when the work starts and ends. In addition, reporting can be done at any level and provides the planability and controllability of the project at all levels.

**General Information on Application**

The main activity of the operating entity covered in the application is about the production of food machines. Since the factory produces project-based production, dry boiling and kneading machines are examined in this study. There are 162 steps to be taken for the dry-scalding machine. These applied work steps are grouped into laser machine cuts, scissors and saw cuts, twist, leveling, welding, assembly and fason steps. MS Project program was utilized to provide effective management of the project. In this context, the work steps of the project are associated with other steps. At the same time, the company has some of its business as a freight company.

The company works project-based and produces dry boiling and kneading machines according to the scope of the project. The company does all the operations of the machine except for the freight business itself.

In this application, the process of the dry boiling and kneading machine is determined and the whole system is planned by detailing the project, dividing the activities into sub parts, sorting, duration, resource costs and usage.

**Grouping of Activities Done in the Project**

There are 162 work orders for the dry boiling and kneading machine in the project. These are consists of 12 section which are most commonly referred to as "laser cut", "bend", "grinding", "assembly", "welding", "saw cutting", "lathe", "fason", "shears cutting", "test" "drilling" and " shipment ". Job breakdown structure was established according to the time of construction and the order of construction.

**Application of Project Data with MS Project**

the GANTT scheme and critical path diagram of the project are drawn with MS Project software. The working days in the project are set as Monday to Friday, and working hours are 08.00 - 12.30, 13.30 - 18.30. The main name of the project is given as "dry boiling and kneading machine" and the steps following it are written with their names. In addition, the beginning and end dates of each phase are given along with the duration.

On the main page of the MS Project program, the main view of the project, namely activity names, activity periods, start-finish times, premise-consecutive relations, source names, and GANTT graph display format are entered on the right side. The machine starting with laser cutting continues with twist and other steps. The duration of each phase is given by the start and end times. In the Predecessor section it shows which of the previous pendants. Thanks to this it is indicated which activity should be completed before an activity starts. The black bar that appears in the graph shows the time interval between the start and end of the activity. In the same way the blue bar shows the start and end of the sub-activities. The line between the two blue bars shows what the next activity is. The source names that appear on the right side of the blue bars on the Gantt chart indicate which masters work in that activity. (Figure 1.)

Figure 2 shows the MS Project Network Diagram display. this network view shows the beginning of the process followed by the lower stages of the laser cutting, twist, grinding, and other processes. In addition, it can be seen which of the lower branches started at the same moment, after which activity the other activity could come. After all operations are completed, the machine is finally tested and finally the project is completed.

Figure 3 shows the use and cost of the Ms Project task. How long the main tasks are completed and how much is the cost is specified here.

On the Gantt chart, the time and order of the main activities from the beginning of the project to the end of the project are visualized.

During the project, 2 people work in the laser cutting, 1 person works in the twist, 1 person works in the levelling, 6 people in the assembly, 4 people in the welding, 1 person in the saw, 1 in the turning machine, 1 in the cutter, 1 in the drilling, 2 in the test. This study was completed within 18.78 days. Some steps in the construction of this machine do not have to wait for each other. It can be performed at other stations. However, they have to wait for each other at the welding and assembly stations.
Figure 1. MS Project Home Page

Figure 2. MS Project Network diagram
### Table: Cost and Resource Utilization

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Figure 3. Cost and Resource Utilization

Figure 4. Report Screen
Conclusion

In this company, which produced project-based food machines, project management application was carried out until the stages of dry cutting and kneading of the machine from the laser cutting stage to the realization of the testing stages. In this application, MS Project program was utilized. The premise and successive associations of the activities in the study, the duration of the activities and the workforce were taken into account.

Since the company runs project type, it pays a penalty if there is any delay in the project delivery time. One of the biggest reasons for project delay is the lack of project management and planning. Project management work was carried out with MS Project so that these delays could be avoided, resources could be used in a planned and correct way, activities would be carried out in the correct order and no time lost.

The company estimates the time and labor power required for the business in such project purchases and calculates the cost accordingly. When this happens, workers do not always work in a permanent job, because of continuous employee change, the process of learning the job is repeated and causes time loss. In addition, since the job sequence, which activity is to be carried out first, is not completely clear, when an assembly operation which is not to be done before is performed, that part is disassembled and then inserted again. All of this leads to great time loss, labor power and cost. Therefore, the project delivery time is delayed and therefore the company has to pay penalties. All of these problems are reduced to a minimum thanks to MS Project as a result of project management application.

References

