Project Scheduling Essay, Research Paper

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12/6/2000

PROJECT SCHEDULING

Managing a project is no easy task. A project is a series of tasks or jobs that are related to each other and directed toward a common goal or output. Projects usually require a significant time commitment, and tend to be handled by groups of workers. The employees at Craft Construction, a small business that deals with complete remodeling and some small commercial buildings, generally divide into groups of two or three workers per project. The number of employees assigned to a job usually depends on the size of the project. For each project, a project manager and a lead carpenter are assigned to handle most of the work. Project scheduling is different for every job. Smaller jobs require less planning because there is not as much that goes into them. Larger projects that may take months or years tend to be more involved, and therefore require more planning. These jobs tend to have more unseen problems which lead to rescheduling and incurring more costs. Mr. Kevin Hollmann, an employee of Craft, believes that the smaller projects are the ones where more money can be made. He said this because the time necessary for planning is much less and, overall, the time on the project is less, which keeps labor costs low. This allows for a bigger profit for the company.

Businesses that allow poorly planned projects to proceed are only wasting resources and placing their employees in danger. Projects can fail for a number of reasons, but the main one is insufficient planning. Planning is essential for project scheduling. It is believed that the process of planning is more important than the resulting plan. Projects involve coordinating resources such as labor, materials, equipment, and many other things, so that everything can be done at the proper time, allowing the task to be completed on time. Before any work can occur, and before any scheduling can occur, planning must be done. One tool that assists management in planning and budgeting is the work breakdown structure. This can be described as a hierarchy of tasks or jobs to be done. The work breakdown structure defines the scope of work, identifies what specific tasks need to be done, and assigns responsibility to individuals or subunits. The work breakdown structure facilitates the planning process, especially when dealing with larger jobs.

The project manager at Craft Construction is usually responsible for any planning and scheduling that takes place on a specific project, including preparing the work breakdown structure and the actual schedule of events. This manager performs the initial planning and scheduling of tasks and costs, and then hands it down to the lead carpenter, who is responsible for carrying out the duties and getting the job done. Mr. Hollmann is one of the company’s lead carpenters. Managing projects carefully is very important for Craft. The project is broken down into phases, allowing the project manager to know what subcontractors will be needed, and more importantly, exactly when they will be needed. This is where the project schedule becomes quite handy.

Project scheduling can be performed in many ways. Some of the more common and popular methods of project scheduling are network analysis and the critical path method of scheduling (CPM). Although companies do not always use these methods in there exact form, most do tend to use a modified version of one or both of these methods. I discovered that Craft does not use network analysis or CPM, but they do have a scheduling method that works for them and is quite similar to CPM.

Network analysis is a visual representation of what needs to be done, and when it needs to be done. Networks are basically a technique to help management in the planning and control of projects. They also show relationships between the different tasks that need to be accomplished. Networks are not only useful for planning and controlling, but they can provide a means of communication between the various departments that participate on the project. As a project progresses, network analysis can provide an up-to-the-minute assessment on the differences between what was planned and what is actually occurring. The availability of such accurate data is very essential in providing project managers with a means of control. The feedback between the actual and planned activities and times that results from this system provides a very good control system. Computers can further aid project managers with quick analysis of the information, especially when dealing with large projects.

CPM tends to branch off of network analysis. Once the network is drawn, the estimated times can be entered and a critical path can be determined. CPM’s objective is to evaluate the extra costs of reducing the time taken by activities, and then comparing those numbers with the savings from the reduction of the project time. This method displays the project in graphic form and relates the tasks to focus attention on those tasks that are crucial to the project’s completion.

Craft uses a similar system. The method they use seems to be mix of the various scheduling methods. They use a graph that breaks the project tasks down on a week by week basis (sometimes even half weeks are used). This graph/schedule determines what needs to be accomplished, and when each task needs to be accomplished. Mr. Hollmann could not emphasis enough that companies need to be flexible when dealing with project scheduling. Flexibility is especially important in the construction industry, where any number of things can go wrong in one instant. Weather is a major problem for businesses in the construction industry. Changes must constantly be made due to rain, snow, or some other type of problem. Mr. HoUmann commented that this uncertainty, and trying to stay within the project goals for scheduling is what makes his job truly interesting. Due to problems and changes in the schedule, there is always down time at Craft, where certain workers are not needed on the job they were assigned, and are therefore scheduled to other jobs.

Even though Craft runs into many problems, they do not tend to incur many extra costs when the problems occur. Usually, projects need to be crashed in order to get them finished by the desired date. This is due to problems that arise throughout the project. This tends to involve extra costs, many of which can be quite significant. Craft generally figures their projects pretty tight. They usually have a feel of what will happen during the project. The manager keeps a close eye on labor costs, so when a problem does occur, not many extra costs are involved. The company is constantly pulling people away from jobs and having to reschedule. Fortunately for the company, they do a good job of controlling their labor and the project costs.

Project scheduling and coordinating is one of the best ways for builders to reduce cycle time. By reducing cycle time, project costs can be reduced and reducing cycle time will maximize capacity. Productivity will increase as well as quality and profitability with shorter cycle times. Because the success of projects depends on the application of project scheduling, consulting companies have developed solely for this purpose. Construction Consultants, Inc. is a company that provides services in project management such as preparing CPM schedules. They assist businesses in developing effective systems by serving in top management positions on major construction projects.

Obviously, scheduling is important for any project. Various types of software have been developed to aid project managers in the planning and scheduling process. There are more than sixty computer programs for critical path scheduling alone! There are also on-line control models designed for network analysis. These are basically decision-making support models that are consistent with the particular management strategy for the project. Visual multimedia applications are especially useful in project management. These tools are particularly useful in the construction industry. Computer pictures can show unnecessary and/or incorrect construction practices. They allow builders to “see” the project before it is even started. Providing workers with a visual map of what the final project will look like can be very beneficial. Problems can be defined and corrected before they even arise. Multimedia data modeling and database design can also provide visual guidelines to trainees about complex operations.

Craft does have software that allows them to “see” their projects, but it is not used. Mr. Hollmann said that there is usually no time for it. However, he did mention that their architect uses it for schematics. It provides the architect with an idea of what the finished product will look like. Craft does use a planning estimator program, which is a national average for estimating on jobs. He mentioned that this program allows them to develop and make easier bids on projects.

The final aspect of project scheduling is control. Scheduling allows managers to have better control over the projects they are responsible for. Scheduling provides project managers with a clearer understanding of exactly how much labor and materials will be needed, and more importantly, when they will be needed. Having idle workers and resources only cause project managers to incur more unnecessary costs. By following the continuously up-dated schedules, project managers can quickly adjust to any problem. With such a handy “progress report,” managers will be able to pin-point the critical activities that need to occur next or that need to be expedited in some fashion. Without the feedback that scheduling can provide, it is difficult to develop a good control system.

Craft uses project scheduling for obvious reasons, which were pointed-out throughout this paper. Project scheduling is necessary for this company’s survival. They use the project schedule to determine the type and the time the subcontractors will be needed, when labor will be needed and how many workers, and the exact order that events need to occur. The schedule can be used as a means of control and communication between employees. The project schedule provides a concrete list of duties for the “lead carpenter” to accomplish. This creates a clearer job description for the employees because they know exactly what is expected of them. Scheduling can also be very helpful in creating budgets. Labor can be tightly controlled, allowing the project manager to know exactly how much of the expenses should come from labor. Through the planning and scheduling process, materials can be ordered and received when needed. With the aid of computer software, problems may be recognized before they even occur. This enables the company to better and more quickly adjust and possibly even prevent the problem from ever happening.

Project scheduling has many uses. It is not only a means to identify what needs to occur, but to provide input, feedback, direction and control. The success or failure of a company might often depend on project scheduling. Project management can only be successful with the full support of top management and all those who use the system. Without the proper support, not even the best system can succeed.

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