

DIPLOMA IN PROJECT MANAGEMENT

PROJECT MANAGEMENT Final Exams

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**Section A:**

**Answer all questions in section A and any five in section B**

1. **What do you mean by project management?**

By deﬁnition, any effort or work that requires the planning and coordination of resources is more than likely a project, and a project is usually managed using some form or tool of project management. Considering the fact that PM has been around for so long, it is surprising that we still approach it like a new fashion or invention. What has occurred over the last two decades is a maturity of the processes used in project management. There is now a standardized body of knowledge in place, thanks in large part to the Project Management Institute (PMI). This body of knowledge, known as the project management body of knowledge, identiﬁes this profession’s accepted standards for PM. Although PMI has an established body of knowledge, it can be argued that there is more than one way to ‘‘skin a cat’’ (apologies to pet lovers everywhere). Many parallels and similarities to the methodology used by the PMI are in existence. At the end of the day, these different methodologies all say the same thing, albeit in different ways. (Phillips J. J, Brantley W. and Phillips P. P, 2012) Project management (ROI)

**Definition of project management**, courtesy of the Project Management Institute, defines the term as: “the application of knowledge, skills, tools and techniques to project activities to meet project requirements. (Williams M., February 1ST, 2008) the principles of project management.

**Bring out the responsibilities of project manager.**

The project manager is the person assigned by the performing organization to lead the team responsible for achieving the project objectives. The project manager’s reporting relationships are based on the organizational structure and project governance.

In addition to any specify technical skills and general management proﬁciencies required for the project, project managers should have at least the following attributes:

* Knowledge about project management, the business environment, technical aspects, and other information needed to manage the project effectively;
* Skills needed to effectively lead the project team, coordinate the work, collaborate with stakeholders, solve problems, and make decisions;
* Abilities to develop and manage scope, schedules, budgets, resources, risks, plans, presentations, and reports; and
* Other attributes required to successfully manage the project, such as personality, attitude, ethics, and leadership.

1. **How budgets are framed in projects?**

**Determine Budget** is the process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline. The key beneﬁt of this process is that it determines the cost baseline against which project performance can be monitored and controlled. This process is performed once or at predeﬁned points in the project. The needs of the project determine which components of the project management plan and which project documents are necessary. (Published by: PMI, Inc., 2017) Guide to the project management body of knowledge, Sixth Edition.

**Project management Plan Components**

Examples of project management plan components that may be inputs for this process include but are not limited to:

* Cost management plan,
* Resource management plan, and
* Scope baseline.

**Projection Documents Examples**

Examples of project documents that may be inputs for this process include but are not limited to:

Basis of estimates,

* Cost estimates,
* Project schedule, and
* Risk register

**Project Documents Updates**

Project documents that may be updated as a result of this process include but are not limited to:

* Cost estimates,
* Project schedule, and
* Risk register

1. **Write a note on Break Down structure.**

WBS is a key project deliverable that organizes the team's work into manageable sections. The Project Management Body of Knowledge (PMBOK) defines the work breakdown structure as a "deliverable oriented hierarchical decomposition of the work to be executed by the project team." The work breakdown structure visually defines the scope into manageable chunks that a project team can understand, as each level of the work breakdown structure provides further definition and detail. Depicts a sample work breakdown structure with three levels defined.

* Internal
* Foundation
* External

An easy way to think about a work breakdown structure is as an outline or map of the specific project. A work breakdown structure starts with the project as the top level deliverable and is further decomposed into sub-deliverables using the following outline hierarchy.

The project team creates the project work breakdown structure by identifying the major functional deliverables and subdividing those deliverables into smaller systems and sub-deliverables. These sub-deliverables are further decomposed until a single person can be assigned. At this level, the specific work packages required to produce the sub- deliverable are identified and grouped together. The work package represents the list of tasks or "to-dos" to produce the specific unit of work. If you've seen detailed project schedules, then you'll recognize the tasks under the work package as the "stuff" people need to complete by a specific time and within a specific level of effort. From a cost perspective, these work packages are usually grouped and assigned to a specific department to produce the work. These departments, or cost accounts, are defined in an organizational breakdown structure and are allocated a budget to produce the specific deliverables. By integrating the cost accounts from the organizational breakdown structure and the project's work breakdown structure, the entire organization can track financial progress in addition to project performance.

**Decomposition**

**Decomposition** is a technique used for dividing and subdividing the project scope and project deliverables into smaller, more manageable parts. The work package is the work deﬁned at the lowest level of the WBS for which cost and duration can be estimated and managed. The level of decomposition is often guided by the degree of control needed to effectively manage the project. The level of detail for work packages will vary with the size and complexity of the project. Decomposition of the total project work into work packages generally involves the following activities: (Published by: PMI, Inc., 2017) Guide to the project management body of knowledge, Sixth Edition.

* Identifying and analysing the deliverables and related work,
* Structuring and organizing the WBS,
* Decomposing the upper WBS levels into lower-level detailed components,
* Developing and assigning identiﬁcation codes to the WBS components, and
* Verifying that the degree of decomposition of the deliverables is appropriate

1. **Explain the methods of scheduling projects.**

**Planning and scheduling** are crucial for any project, from simple jobs like roof replacement to complex endeavor such as building a skyscraper. No matter what the project, it is important to know what needs to be done (planning) and when it needs to happen (scheduling). Equally important to know is how to accomplish this process. The sections below provide some insight and examples of planning and scheduling a construction project.

**Project Planning**

In its most basic form, project planning consists of determining the milestones of the project and outlining the individual tasks that need to occur in order for the milestones to be completed. For example, one milestone during construction of a residence is completion of the building foundation. The construction of the foundation can be broken down into individual subtasks such as:

* Clearing the building site
* Excavating the soil to foundation depth
* Placing reinforcing bar and creating forms for the upcoming concrete pour
* Pouring and finishing the concrete
* Providing a concrete curing period
* Removal of the concrete forms.

All of the above tasks need to occur in the specific order listed in order for the foundation to be built. A length of time, or duration, will be established for each sub task so that the overall time frame required to complete the foundation can be determined. The duration for completing specific tasks is usually established based on past experience or by using references such as construction estimating manuals. Once the order of tasks is established and the duration selected for each, a construction schedule can be created. Some of the more common techniques for construction scheduling will be covered below.

**Critical Path Method**

The critical path method, abbreviated as CPM, is the most commonly used type of scheduling technique in the construction industry. The critical path method is built around the use of predecessors and successors for each construction task needed to accomplish the job. Most tasks (except the initial task) will have one or more predecessors that need to be accomplished before that task can start. If we select a certain task, such a framing a house, we need to determine what must occur before the framing can be constructed. In this case the ground floor slab will need to be finished before the framing can be placed on top of it. Therefore, creation of a ground floor slab is the predecessor of the house framing task. Conversely, framing the house is a successor of the ground floor slab construction.

Following the placement of tasks in the schedule, along with the creation of linkages between the predecessor and successor tasks, a critical path will become apparent. The critical path is formed by the longest chain, time wise, of interrelated tasks from the project start to the project finish. Basically, if any of the tasks in the longest chain were to take longer than their planned duration, the length of the project would be extended. The extension happens because the schedule slippage in one component in the critical path will push back the start dates of that component’s successor tasks. Therefore, the project manager places a high priority on these critical tasks, in order to keep the project on schedule.

Tasks that are located off of the critical path will often contain what is known as float. Float is an important concept, and is basically spare time contained within tasks that are located outside of the critical path. For example, the installation of a building roof may be scheduled for four weeks but in reality it is only expected to take three weeks. The extra week is float contained within that task, and the actual duration of work may “float” within that time period, sliding backwards or forward as needed to accomplish the project goals. If a project task that contains float happens to run over schedule, it can use the float time to finish and not affect the completion of the overall project.

**Resource Oriented Scheduling**

A scheduling technique known as resource oriented scheduling may be used in projects where there is competition between tasks or components for project resources. Resources may be comprised of:

* Materials such as water or cement
* Specific labour types such as welders or machine operators
* Transportation resources such as access to construction elevators or cranes

Attempting to implement a CPM approach to scheduling when resources are limited is not always effective. A better approach may entail breaking the project in time periods or phases and calculating the resource demand during each phase. This would be followed with planning the application of the available resources to fill in the demand. Often, the layout of the initial schedule will expose resource gaps in the project. This provides the project manager with knowledge regarding the tasks that will require supplementation of existing resources or the transfer of excess resources to another portion of the project.

**Visual Depiction of Schedule: Gantt Chart**

Project schedules are most commonly depicted through the use of Gantt charts. Gantt charts break down the project into individual tasks, each of which is represented by a horizontal bar. The time-scale of the project travels from left to right, with the left edge of the bar representing the start date of the task and the right edge of the bar representing the completion date. The bar length between the start and the end makes up the duration of that specific task. Arrows are typically drawn from the end of one task to the start of another task that is dependent on the task that proceeded it (predecessor to successor). Similar to the CPM method above, a critical path will become apparent based on the duration of the various linked project paths. Creation of a Gantt chart is relatively simple using commonly-available software, and the chart is easily modified during construction if needed due to unforeseen events or owner-driven changes. If the chart is set up correctly electronically, with the predecessors and successor links intact, the entire project schedule will adjust accordingly when the duration of one or more tasks is modified. (Skwiot J. September 19, 2019) Building Construction Illustrated book.

1. **What is expediting in project management?**

Expediting in regard to the supply chain or procurement is a strategy to ensure that goods and items which are purchased arrive in a timely fashion and meet quality control standards.

Sometimes expediting is done by an external ‘expediter’ or it can be done within the procurement department.

The expediting role is simple; goods will be checked as to their progress and opportunity to achieve the programmed delivery date. Typically, the expediter has to ensure that they meet all targets, including quality, safe packaging, arrival times and are exactly to the specification that was agreed between the supplier and the customer.

**Use of Expediting**

Expediting can be time intensive and this can produce a drain in resources. However, despite this it’s a common process and is symptomatic of various issues within the supply chain.

Despite expediting being time intensive the costs of using an expediter can be typically absorbed against the cost of late delivery – often the cost of the expediter is insignificant when compared to penalty clauses bestowed by customer contracts.

1. **Explain the methods of data collection.**

**Some of the popular methods of data collection are as follows:**

**1. Observation:**

Observation method has occupied an important place in descriptive sociological research. It is the most significant and common technique of data collection. Analysis of questionnaire responses is concerned with what people think and do as revealed by what they put on paper. The responses in interview are revealed by what people express in conversation with the interviewer. Observation seeks to ascertain what people think and do by watching them in action as they express themselves in various situations and activities.

Observation is the process in which one or more persons observe what is occurring in some real life situation and they classify and record pertinent happenings according to some planned schemes. It is used to evaluate the overt behavior of individuals in controlled or uncontrolled situation. It is a method of research which deals with the external behavior of persons in appropriate situations.

**2. Interview**:

Interview as a technique of data collection is very popular and extensively used in every field of social research. The interview is, in a sense, an oral questionnaire. Instead of writing the response, the interviewee or subject gives the needed information verbally in a face-to-face relationship. The dynamics of interviewing, however, involves much more than an oral questionnaire.

Interview is relatively more flexible tool than any written inquiry form and permits explanation, adjustment and variation according to the situation. The observational methods, as we know, are restricted mostly to non-verbal acts. So these are understandably not so effective in giving information about person’s past and private behavior, future actions, attitudes, perceptions, faiths, beliefs thought processes, motivations etc.

**3. Schedule:**

Schedule is one of the very commonly used tools of data collection in scientific investigation. P.V. Young says “The schedule has been used for collection of personal preferences, social attitudes, beliefs, opinions, behavior patterns, group practices and habits and much other data”. The increasing use of schedule is probably due to increased emphasis by social scientists on quantitative measurement of uniformly accumulated data.

Schedule is very much similar to questionnaire and there is very little difference between the two so far as their construction is concerned. The main difference between these two is that whereas the schedule is used in direct interview on direct observation and in it the questions are asked and filled by the researcher himself, the questionnaire is generally mailed to the respondent, who fills it up and returns it to the researcher. Thus the main difference between them lies in the method of obtaining data.

**4. Questionnaire:**

**Questionnaire** provides the speediest and simple technique of gathering data about groups of individuals scattered in a wide and extended field. In this method, a questionnaire form is sent usually by post to the persons concerned, with a request to answer the questions and return the questionnaire.

According to Goode and Hatt “It is a device for securing answers to questions by using a form which the respondent fills in himself. According to GA. Lundberg “Fundamentally the questionnaire is a set of stimuli to which illiterate people are exposed in order to observe their verbal behavior under these stimuli”.

Often the term “questionnaire” and “schedule” are considered as synonyms. Technically, however, there is a difference between these two terms. A questionnaire consists of a set of questions printed or typed in a systematic order on a form or set of forms. These form or forms are usually sent by the post to the respondents who are expected to read and understand the questions and reply to them in writing in the spaces given for the purposes on the said form or forms. Here the respondents have to answer the questions on their own.

On the other hand, schedule is also a form or set of forms containing a number of questions. But here the researcher or field worker puts the question to the respondent in a face to face situation, clarifies their doubts, offers the necessary explanation and most significantly fills their answers in the relevant spaces provided for the purpose.

Since the questionnaire is sent to a selected number of individuals, its scope is rather limited but within its limited scope it can prove to be the most effective means of eliciting information, provided that it is well formulated and the respondent fills it properly.

A properly constructed and administered questionnaire may serve as a most appropriate and useful data gathering device.

**5. Projective Techniques:**

The psychologists and psychiatrists had first devised projective techniques for the diagnosis and treatment of patients afflicted by emotional disorders. Such techniques are adopted to present a comprehensive profile of the individual’s personality structure, his conflicts and complexes and his emotional needs. Adoption of such techniques is not an easy affair. It requires intensive specialized training.

The stimuli applied in projective tests may arouse in the individuals, undergoing the tests, varieties of reaction. Hence, in projective tests the individual’s responses to the stimulus situation are not considerate at their face value because there are no ‘right’ or ‘wrong’ answers. Rather emphasis is laid on his perception or the meaning he attaches to it and the way in which the endeavor to manipulate it or organizes it.

The purpose is never clearly indicated by the nature of the stimuli and the way of their presentation. This also does not provide the way of interpretation of the responses. Since the individual is not asked to describe about himself directly and since he is provided with stimulus in the form of a photograph or a picture or on ink- blot, etc. the responses to these stimuli are construed as the indicators of the individual’s own view of the world, his personality structure, his needs, tensions and anxieties etc., says Bell.

**6. Case Study Method:**

According to Biesanz and Biesenz “the case study is a form of qualitative analysis involving the very careful and complete observation of a person, a situation or an institution.” In the words of Goode and Hatt, “Case study is a way of organizing social data so as to preserve the unitary character of the social object being studied.” P.V. young defines case study as a method of exploring and analyzing the life of a social unit, be that a person, a family, an institution, cultural group or even entire community.”

In the words of Giddings “the case under investigation may be one human individual only or only an episode in first life or it might conceivably be a Nation or an epoch of history.” Ruth Strong maintains that “the case history or study is a synthesis and interpretation of information about a person and his relationship to his environment collected by means of many techniques.”

Shaw and Clifford hold that “case study method emphasizes the total situation or combination of factors, the description of the process or consequences of events in which behavior occurs, the study of individual behavior in its total setting and the analysis and comparison of cases leading to formulation of hypothesis.”

1. **What is auditing?**

Auditing is defined as the on-site verification activity, such as inspection or examination, of a process or quality system, to ensure compliance to requirements. An audit can apply to an entire organization or might be specific to a function, process, or production step. Some audits have special administrative purposes, such as auditing documents, risk, or performance, or following up on completed corrective actions.

defines an audit as a "systematic, independent and documented process for obtaining audit evidence [records, statements of fact or other information which are relevant and verifiable] and evaluating it objectively to determine the extent to which the audit criteria [a set of policies, procedures or requirements] are fulfilled." There are three main types of audits:

**Process audit:** This type of audit verifies that processes are working within established limits. It evaluates an operation or method against predetermined instructions or standards to measure conformance to these standards and the effectiveness of the instructions. A process audit may:

* Check conformance to defined requirements such as time, accuracy, temperature, pressure, composition, responsiveness, amperage, and component mixture.
* Examine the resources (equipment, materials, people) applied to transform the inputs into outputs, the environment, the methods (procedures, instructions) followed, and the measures collected to determine process performance.
* Check the adequacy and effectiveness of the process controls established by procedures, work instructions, flowcharts, and training and process specifications.

**Product audit:** This type of audit is an examination of a particular product or service, such as hardware, processed material, or software, to evaluate whether it conforms to requirements (i.e., specifications, performance standards, and customer requirements).

**System audit:** An audit conducted on a management system. It can be described as a documented activity performed to verify, by examination and evaluation of objective evidence, that applicable elements of the system are appropriate and effective and have been developed, documented, and implemented in accordance and in conjunction with specified requirements.

* A quality management system audit evaluates an existing quality management program to determine its conformance to company policies, contract commitments, and regulatory requirements.
* Similarly, an environmental system audit examines an environmental management system, a food safety system audit examines a food safety management system, and safety system audits examine the safety management system.

1. **List out the types of organization structure in project management.**

**Types of Project Organizational Structures**

Organization is the key in a business and a project’s organizational structure can make or break a company’s main initiatives. If there’s too much bureaucracy and red tape, it might suffocate innovation. If there’s too much freedom, employees might struggle in confusing roles. These four types of project organization structures have had demonstrated success across a number of major companies. The one you choose for your project depends on your goals.

**Forms of Project Organization: Functional**

There’s a good chance that you’re already deeply acquainted with functional organization, or as it’s commonly called, the bureaucratic organizational structure. This is one of the most popular forms of project organization and is used across Fortune 500 companies and small businesses alike. If you’re running a small business, you probably have already mulled over this dedicated project team structure if you’ve thought about expanding beyond just a handful of employees.

At its heart, a functional organizational structure divides a project or organization into smaller groups that have dedicated, specific tasks. For example: an independently owned string of successful car dealerships might split their workforce into departments like sales, marketing and administration. Each of these departments has a head who reports to the CEO.

Though this is one of the forms of project organization that allows talent to specialize in what they’re truly good at, it also lacks interdepartmental communication. In other words: two departments may have entirely different expectations of the job, which causes disagreements and unexpected slowdowns. It also encourages employees to look at their specific tasks rather than the overall company.

**Forms of Project Organization: Divisional**

This dedicated project team structure is often chosen by larger companies that have a lot of objectives. It allows a company to focus on different roles within their business and gives a lot more self-sufficiency to the different departments. They essentially function like their very own individual businesses.

For example, a construction business might want to split their company into a commercial division, a residential division and a government division. If they have to build a school, that project would be given to the government division. If they are building an apartment complex, it might go to residential. Companies can also opt to split into geographical divisions. For example, that same construction company might branch off into North east, Midwest and South east divisions. Each division has its own resources and there isn’t much inter-division face time.

Unlike a functional organizational structure, where a marketing team will rely on the sales team to know what to market, divisional structures allow each department to function alone. This is one of the types of project organizational structures where projects are completed with little bureaucracy among departments and objectives remain clear within each department. It is not a loss to have so-called “tunnel-vision” like it would be in a functional structure, but it does make taxes a little bit more complicated – especially if departments are split regionally.

**Forms of Project Organization: Matrix**

This is one of the types of project organizational structures that has the best of both worlds. It’s essentially a hybrid between two forms of project organization: functional and divisional. In this case, a company is split into specialized teams like marketing, sales and administration, but those teams are also split into divisions like – keeping with the construction company example – government, residential and commercial.

Basically, you’ll have workers who primarily focus on the marketing of government contracts and others that focus on the marketing of residential contracts rather than a dedicated, overall marketing team (though members of the marketing team may be on both the government and residential team).

In this structure, employees don’t just have one boss. They have two or more bosses that focus on different objectives. This can make it confusing and hard for employees to define their role, but it can also help peel down the responsibilities of departments. It really just depends on how communicative upper management actually is.

**Forms of Project Organization: Autarchy**

Though tall types of project organization structures are most popular among larger companies, start ups and small businesses may opt for a flat structure. This means there is no one way of communication. An employee does not report to the project manager, who reports to the department head, who reports to the CEO. The project manager can take decision-making all the way up to the CEO and the CEO can request things from the project manager if needed.

This structure opens up a lot of communication and dismisses unnecessary levels of bureaucracy that slow projects down, but it can also be kind of confusing if everyone involved doesn’t agree on the structure. In other words: an employee can easily run with an idea and become the project manager of a team that never previously existed, but that doesn’t mean the employees around her will want to take orders. Goodbye red-tape, and hello innovation. Just make sure to always keep the lines of communication open so the dedicated project team structures don’t get complicated when new teams arise. Loveland M., (2019 June 07), Types-project-organizational-structures.

1. **Explain conflict management**

Eventually a conflict is a situation, where two people or parties does not agree on a common opinion. In other words, conflict primarily arises because of the differences in opinions or perspectives.

Strong conflict management skills are an advantage in most positions, as conflict is virtually impossible to avoid. It is human nature to disagree, and disagreements are in fact healthy when approached correctly. Eliminating conflict entirely would cause its own problems: there would be no diversity of opinion and no way for us to catch and correct flawed plans and policies.

But poor communication or interpersonal tension can easily cause simple disagreements to flare up into resentment or worse. Conflicts that are allowed to fester and grow will ultimately diminish productivity and damage staff morale. This is why employers seek employees with the skills to manage and diffuse conflict. (Doyle A., June 17, 2019) Conflict Management Book

**Section B**

1. **(I) What do you mean by budget uncertainty?**

**The Best Tool for Performing Uncertainty Analysis**

An uncertainty budget is an itemized table of components that contribute to the uncertainty in measurement results. It reveals important information that identifies, quantifies, and characterizes each independent variable. With respect to measurement quality, it is an essential tool typically utilized by physicists, engineers, and meteorologists to perform uncertainty analysis. The goal of an uncertainty budget is to effectively calculate measurement uncertainty using a well-organized, structured approach. The benefit is it provides the evaluator a formal record of the analysis process which can be shared with other professionals who can validate the results

**ii) How risk is managed in projects?**

**Document the risks**

Create a risk log listing each risk with a description, stating who is responsible, the likely impact and the mitigating actions that could be taken. It needs enough information to be useful in monitoring and reporting on risks but not so much that it cannot be easily updated. A straightforward, up-to-date risk log will be useful during the whole life of the project.

**Prioritizes the risks**

In order to priorities effectively you need to understand what factors could make the risk more likely to occur and what impact that would have on cost, time scale and scope/quality of the final deliverable. So prioritizes the risks using a combination of a probability rating and an impact rating. Some risks may be very likely to occur but have low impact; others may be less likely to occur but have a major impact so the overall priority needs to take this into account.

**Plan the response**

For each identified risk decide, firstly, what could be done to minimize the chance of it occurring and, secondly, what action could be taken if the risk does occur. You will then be better prepared to deal with it if you have to (any risks that could not be anticipated are, of course, another matter).

The usual options to mitigate risks that are threats (rather than opportunities) are:

* Accept
* Avoid
* Transfer
* Reduce

And one other point: risk management can and does help ensure more successful projects and it should be an integral part of the project management process but it should not be so large a task that the effort expended is out of all proportion to the size of the project or the potential impact of the risks.

Finally make sure the responses are implemented, without following through on the risk reduction measures then the risk management process will add little value overall.

1. **Explain the concept of Goldratt’s critical chain in project scheduling.**

Traditional project management concepts have been around for over thirty years. If you look at the impetus for their development in the 1950s, you find that early studies noted that for Department of Defense projects, cost and time overruns were often two to three times the initial estimates and that project durations were frequently 40 to 50 percent greater than the original estimates. Similar studies of commercial projects noted cost and duration estimates overran by 70 and 40 percent respectively. Critical Path-based project management was introduced as a cure for these problems with a goal of delivering projects within the original cost and time estimates. Today, Critical Path project management is a significant industry. The discipline is used throughout the world based upon techniques defined in the 1950s and 1960s.

In 1997, Dr. Eliyahu Goldratt introduced the first significant new approach to project management in over thirty years with the publication of his best-selling business novel, Critical Chain. The genius of Goldratt’s approach resides in his development of a new paradigm that addresses, for the first time, both the human side and the algorithmic methodology side of project management in a unified discipline. Based upon Goldratt’s break-through unified discipline, Critical Chain project management completes projects in significantly shorter time than traditional Critical Path project management techniques. Importantly, Critical Chain project management is also simpler to use and requires less work for the project team in both the planning and tracking phases of projects.

**Planning Mode**

**Scheduling Backwards:** In Critical Chain Planning mode, you develop a plan backwards in time from a target end date for your project. This focus on completion date is natural. When you get assigned a new project you are usually told when the results are needed as opposed to the project start date. It’s your job to determine when you have to start to meet the target end date. PS8 gives you this information when you develop your plan.

Let’s talks a little about planning backwards. This doesn’t mean that you have to think backwards. Instead, it means that as you define your project with tasks, durations, and dependencies, PS8 schedules your tasks backwards in time from your defined end date. When you are done with your plan, the calculated project start date tells you the latest date you can start that will still meet the target end date.

Now, there is a school of thought that also advocates that you develop your project plan by actually thinking backwards from your project objectives using a network drawing as the medium for defining the tasks and their relationships. This method existed well before Goldratt invented Critical Chain and is not fundamental to the CCPM method. The approach is based upon the reasoning that working backwards is counter intuitive and therefore you are less likely to create unnecessary task dependencies based upon past practices. Additionally, because you start with the objectives and work back, you are also less likely to add tasks that don’t add value to the objectives. However, this backward thinking approach is, as it was designed to be, counter intuitive. If you find it difficult to think this way, and many people do, don’t do it.

**As-Late-As-Possible Scheduling**: In traditional Critical Path scheduling, your tasks are scheduled as-soon-as-possible (ASAP) from the project start date. This scheduling places work as close as possible to the front of your schedule. In Critical Chain planning, your tasks are scheduled as-late as-possible (ALAP) based upon the target end date. This as-late-as-possible scheduling places work as close as possible to the end of your schedule. There are many benefits to delaying project work as-late-as-possible, and one drawback.

Delaying work as late as possible has many benefits. Using a production analogy, you are minimizing work-in-progress (WIP) and not incurring costs earlier than necessary. From the project manager’s viewpoint, there is better focus at the critical start of the project because there simply aren’t as many tasks scheduled to start. Importantly, in complex, knowledge work, your knowledge increases the further you go into the project. By scheduling tasks as-late-as-possible, you are capitalizing on this increasing knowledge and will significantly minimize the need for re-work.

The single drawback is directly related to the scheduling of all work as-late-as-possible. In traditional Critical Path terminology, this means that all tasks are critical once you are in tracking mode. An increase in duration of any task will push out the project end date by the increased amount. Fortunately, Goldratt has a simple, elegant solution to this problem. In Critical Chain planning, as you will read later, you insert buffers at key points in the project plan that will act as shock absorbers to protect the project end date against task duration increases. With the buffer approach, you get the benefits of as-late as-possible scheduling with adequate protection against uncertainty.

1. **How the projects are planned, monitored and controlled in cycle process?**

**Project Plan Is Key:**

During the project planning phase, plans are developed in the form of project baselines for schedule, cost, scope, quality and risks, all of which are components of the overall project plan. This gives the project manager a basis for monitoring project progress. It also provides the criteria for basing decisions necessary for managing the changes required to help get the project back on track.

**Project Progress**

Project progress is primarily determined by comparing actual project performance to schedule and Work Breakdown Structure (WBS). When actual status exceeds predetermined thresholds, thus causing variances by deviating significantly from expected values, corrective actions are taken as appropriate. These actions often require re-planning, which may include revising the original plan or including additional mitigation activities in the current plan. The process by which the variances are identified and analyzed is called Variance Analysis.

**Project Progress Reporting, Tools & Techniques**

Project monitoring and control also provide information to support status reporting, progress measurement, forecasting and updating current cost and schedule information. During this process, it is also important to ensure that implementation of approved changes is monitored when and as they occur.

As for tools and techniques used in facilitating project monitoring and control, automated project management information systems and Earned Value are among the most commonly used. Both are also used to update information. Earned Value also provides a means for forecasting future performance based upon past performance.

Status reports are used for communicating project progress and status. Variance Analysis reports are typically used to identify variances and the information often used as a basis for determining corrective actions.

**Plan to Keep Control for Success**

As can be ascertained, the project plan lays the groundwork for a successful project. It goes without saying that beyond planning, effective project monitoring and control supply the necessary factors to keep your project in control.

**Keep Your Project in Control**

Project monitoring and control provides an understanding of project progress, identifies deviation from the plan and is a mechanism for making any necessary corrective actions.

* Keep Your Project in Control
* Integrating Project Monitoring and Control with Other Processes

**Monitor and Control to Keep Control**

The purpose of project monitoring and controlling is to provide an understanding of the project’s progress and also successfully communicating that status. You can, then identify when the project’s performance deviates significantly from the plan so that appropriate corrective actions and preventive actions will be taken. Project activity monitoring is an aspect of project management that is performed throughout the project. Controlling is the aspect of the project in which corrective and preventive actions are taken. It falls to the project manager to ensure that the combined monitor and control process is effectively executed. Effective execution of the project monitoring and controlling process leads to successful project delivery.

**Process Integration**

Although project monitoring and control in project management are the focus of this article, there are actually five primary process groups in project management: Initiating, Planning, Executing, Monitoring and Controlling, and Closing. There is an integrative nature, referred to as “plan-do-check-act," that underlies these processes.

The Planning process corresponds to the “plan" component. The Executing process corresponds to the “do" component. The Monitoring and Controlling process corresponds to the “check-act" component. The Initiating process starts the “plan-do-act-check" cycle. The Closing process ends them. It is the integrative nature of project management that requires that the Monitoring and Controlling process interact with every aspect of the other process groups. (Martin

June 16, 2014), Project Management Development.

1. **What are the methods used in evaluating, auditing and terminating a project?**

**There are two ways of auditing:**

* Performance audit
* Internal and external audit.

**Performance audit:** Performance auditing is an independent auditing process aimed at evaluating the measures instituted by management or the lack of these measures to ensure that:

* Resources have been acquired economically; and
* Utilized efficiently and effectively.

**Measures;** generally, fall under categorizes namely: - Policy or policy making, Planning, Organizing, Coordinating and Monitoring. An example could be refuse collection. Management at the City Councils are responsible for putting in place measures to ensure that refuse is removed once a week in order to ensure health environments. These measures would include times recruitment of sufficient staff, procurement of vehicles, refuse bins; keeping vehicles in good running order and conducting regular inspections to monitor whether refuse is indeed removed once a week from each dwelling.

Performance Auditing can also be defined as; -

“An independent examination of the efficiency and effectiveness of government undertakings, programs or organizations, with due regard to economy, and the aim of leading to improvements”. Performance Audit invariably is referred to as Value-for-money audit or Operational audit.

**Internal and external audit.**

**Definition of Internal Audit**

By Internal Audit, we mean that an unbiased and systematic appraisal function, performed within the business organization, with the purpose of reviewing the day to day activities of the business and providing necessary suggestions for the improvement.

**Internal audit performs a wide spectrum of activities such as:**

* Evaluating the accounting and internal control system.
* Examining the routine operational activities.
* Physical verification of inventory at regular intervals.
* Analysing financial and non-financial information of the organization.
* Detection of frauds and errors.

The main aim of the internal audit is to increase the value of an organization’s operation and to monitor the internal control, internal check and risk management system of the entity. An Internal audit is conducted by the internal auditors who are the employees of the organization. It is a separate department, within the organization where a continuous audit is performed throughout the year.

**Definition of External Audit**

The periodic, systematic and independent examination of the financial statements of the company conducted by a third party for specific purposes, as required by statute is known as External Audit. The main aim of external audit to publicly express an opinion on:

* The truthfulness and fairness of the financial statement of the company
* The accounting records are complete in all respects and prepared as per the policies outlined by GAAP (Generally Accepted Accounting Principles) or not.
* All material facts are disclosed in the annual accounts.

For carrying out an external audit, the auditor is appointed by the members of the company. He should be independent, i.e. he should not be connected to the organization in any way so that he can work in an impartial way without any influence. The auditor has the right to access books of accounts to obtain necessary information and provide his opinion to the members by way of the audit report. (Surbhi S., July 26, 2018)

The report is of two types:

* Unmodified
* Modified: Qualified, Adverse, Disclaimer.

1. **Explain in detail the functional organizational and matrix organizational structure.**

**Functional organization:**

There’s a good chance that you’re already deeply acquainted with functional organization, or as it’s commonly called, the bureaucratic organizational structure. This is one of the most popular forms of project organization and is used across Fortune 500 companies and small businesses alike. If you’re running a small business, you probably have already mulled over this dedicated project team structure if you’ve thought about expanding beyond just a handful of employees.

At its heart, a functional organizational structure divides a project or organization into smaller groups that have dedicated, specific tasks. For example: an independently owned string of successful car dealerships might split their workforce into departments like sales, marketing and administration. Each of these departments has a head who reports to the CEO.

Though this is one of the forms of project organization that allows talent to specialize in what they’re truly good at, it also lacks interdepartmental communication. In other words: two departments may have entirely different expectations of the job, which causes disagreements and unexpected slowdowns. It also encourages employees to look at their specific tasks rather than the overall company**.**

**Matrix organizational structure:**

This is one of the types of project organizational structures that has the best of both worlds. It’s essentially a hybrid between two forms of project organization: functional and divisional. In this case, a company is split into specialized teams like marketing, sales and administration, but those teams are also split into divisions like – keeping with the construction company example – government, residential and commercial.

Basically, you’ll have workers who primarily focus on the marketing of government contracts and others that focus on the marketing of residential contracts rather than a dedicated, overall marketing team (though members of the marketing team may be on both the government and residential team).

In this structure, employees don’t just have one boss. They have two or more bosses that focus on different objectives. This can make it confusing and hard for employees to define their role, but it can also help peel down the responsibilities of departments. It really just depends on how communicative upper management actually is. Loveland M., (June 7, 2019), Types-project-organizational-structures.

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