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Term End Assignment – Project Management 30/11/2022

Assignment Task:

Task 1: (Total: 30 points)

The ABC Company is preparing a bid to build a new 5,000-seat multipurpose sports complex for a university. The construction must start on 1st July 2017 and be completed in time for the start of the 2023 academic season. A penalty clause of $250,000 per day of delay beyond 1st July 2023 is written into the contract.

You, as the president of the company, expressed optimism at obtaining the contract and revealed that the company could net as much as $3 million on the project.

You also expressed your confidence and said that if we are successful, the prospects of future projects are bright since there is a projected growth in building multipurpose sports complexes with smart features.

ID	Activity	Duration	Predecessor(s)
1	Multipurpose sports complex		
2	Clear stadium site	70 days	—
3	Demolish building	30 days	2
4	Set up construction site	70 days	3
5	Drive support piling	120 days	4
6	Pour lower concrete bowl	120 days	5
7	Install playing field	90 days	6
8	Construct upper steel bowl	120 days	6
9	Install seats	140 days	8
10	Stadium infrastructure	120 days	8
11	Build roof supports	90 days	4

ID	Activity	Duration	Predecessor(s)
12	Construct roof	180 days	11
13	Install roof	90 days	12
14	Inspection	20 days	7, 10, 13
15	Handover	10 days	14

Given the information provided in Table 1, construct a network schedule for the stadium project and answer the following questions.

Question 1 (10)

Will the project be able to be completed by the 1st of August deadline? How long will it take?

Solution: A depiction of the AON for the Project:

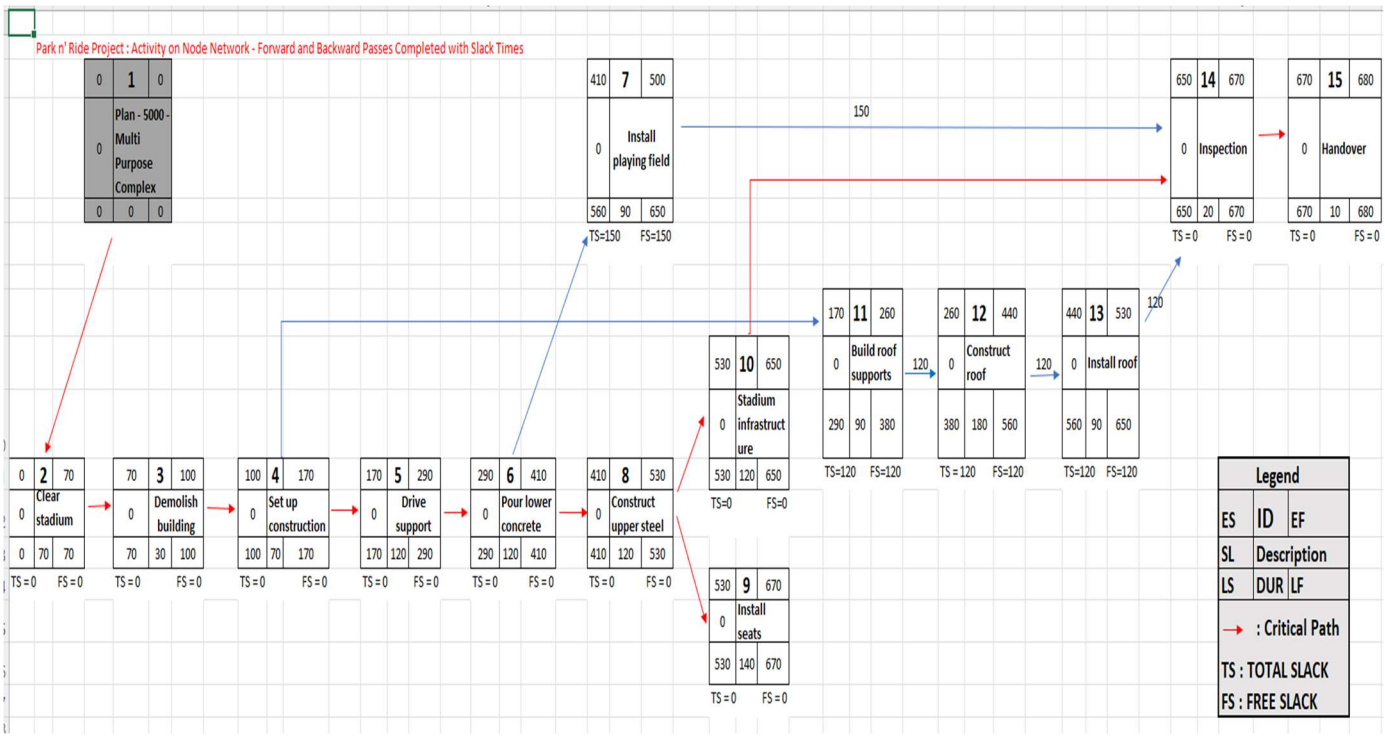


Figure 1- Activity on Network

Typically, networks are developed from left to right, with activity precedence and event times indicated as the network is built. Utilising the network, crucial activities and events are identified, early and late

activity start timings are defined, available slacks for each activity are calculated, and probabilities of project completion by certain times are determined. Yes, the project will be completed before the deadline and should take 680 work days.

Question 2 (10)

What is the critical path for the project?

Solution:

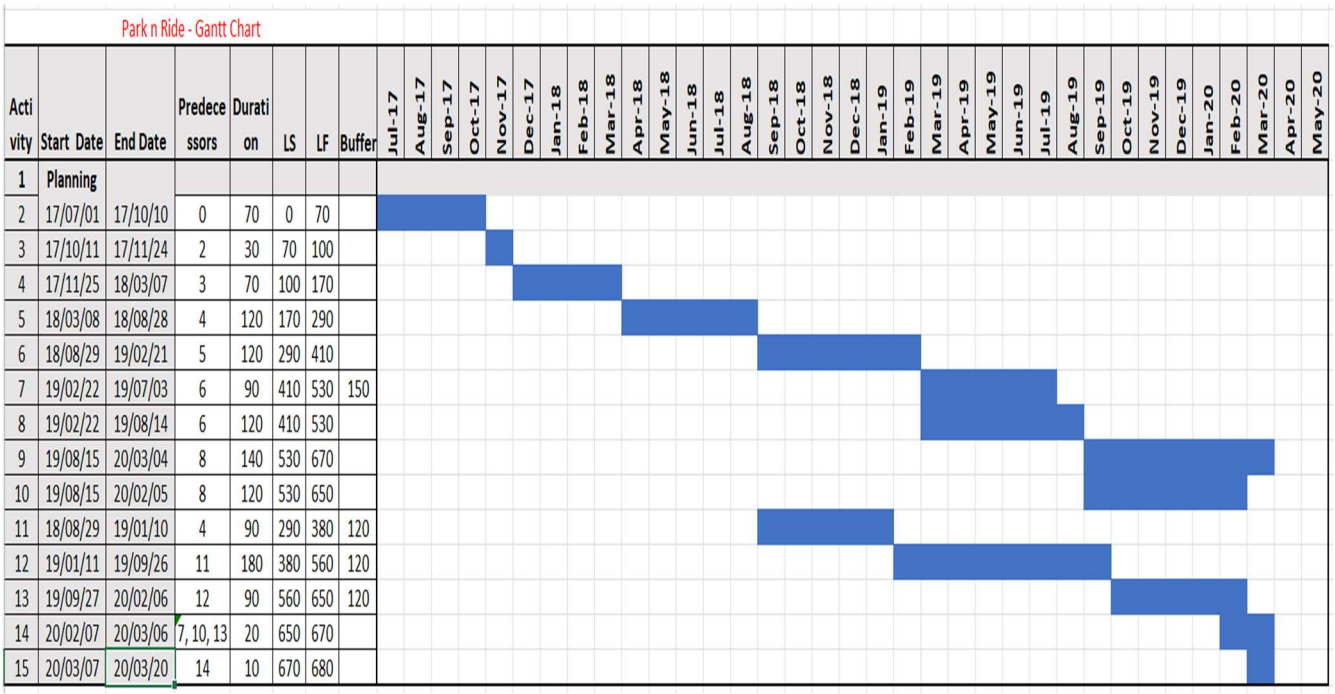
DuPont developed the Critical Path Method. The Critical Path is the sequence of actions defining the longest path through a project, determining the shortest achievable duration. Critical Path Method (CPM) is a technique used to determine the minimum project duration and the amount of schedule flexibility on the logical network paths within the schedule model.

The critical path for the project is Activity 1, 2, 3, 4, 5, 6, 8, 9 & 10, 14, 15

Question 3 (10)

Based on the schedule, would you recommend ABC company to pursue this contract? Why? Include a one-page Gantt chart for the stadium schedule.

Solution: Gantt charts, a monitoring approach, are similar to network diagrams but are easier to understand and provide a clearer view of the project's current situation



Activity	Start Date	End Date	Predecessors	Duration	LS	LF	Buffer
1	Planning						
2	17/07/01	17/10/10	0	70	0	70	
3	17/10/11	17/11/24	2	30	70	100	
4	17/11/25	18/03/07	3	70	100	170	
5	18/03/08	18/08/28	4	120	170	290	
6	18/08/29	19/02/21	5	120	290	410	
7	19/02/22	19/07/03	6	90	410	530	150
8	19/02/22	19/08/14	6	120	410	530	
9	19/08/15	20/03/04	8	140	530	670	
10	19/08/15	20/02/05	8	120	530	650	
11	18/08/29	19/01/10	4	90	290	380	120
12	19/01/11	19/09/26	11	180	380	560	120
13	19/09/27	20/02/06	12	90	560	650	120
14	20/02/07	20/03/06	7, 10, 13	20	650	670	
15	20/03/07	20/03/20	14	10	670	680	

Figure 2 - Project Gantt Chart

Yes, I recommend taking the project as there is sufficient time to complete the profitable project and to deliver value within the constraints of technical, cost and schedule objectives. Even if there are any unexpected delays due to weather or climate impacts, the project will still be profitable, given that it will be completed in approximately two years and nine months, including weekends and holidays, and penalty charges will only kick in much later, 01 July 2023. The project is expected to be completed by March of 2020.

Task 2: (Total: 30 points)

You are in charge of organizing a cultural fest in May 2023 for your college as it is organized annually. You have been appointed as program leader for that fest.

Question 4 (10)

Discuss if the program fits in the definition of a project. Why and why not?

Solution: According to the Project Management Institute, a project is defined as follows:

A project is a transitory undertaking intended to produce a distinct product, service, or outcome.

As with other organisational endeavours, the primary objective of a project is to fulfil consumer demand. Beyond this essential resemblance, a project's qualities distinguish it from the organization's other activities. The following are the key qualities of a project:

- A well-defined aim
- A life span that has a beginning and an end.
- Typically, many departments and specialists are involved.
- Typically, attempting something that has never been attempted.
- Specific criteria for time, cost, and performance.

First, projects have well-defined goals, such as organising a cultural fest by May 2023 or publishing version 2.0 of a certain software application as soon as feasible. This clear goal is frequently absent in regular organisational life, as employees do repeated tasks.

Second, because there is a clear aim, the project has a certain conclusion, in contrast to conventional work's continual obligations and responsibilities. Employees often shift from one project to the next rather than remaining in a single position. After assisting with installing a security system, an IT professional may be tasked with creating a database for another customer.

Thirdly, unlike most organisational activities split by functional specialisation, projects of this nature often require the joint efforts of a number of professionals. Instead of working in separate offices under different managers, project participants, including engineers, financial analysts, marketing experts, and quality control specialists, collaborate closely under the direction of a project manager.

The fourth quality of this project is that it is non-routine and has distinctive aspects. This is a matter of degree rather than either/or. It is necessary to address previously unsolvable challenges and employ innovative technologies to do anything that has never been done before, such as developing an electric

vehicle or landing two robotic rovers on Mars. Conversely, even simple construction projects, including known processes and procedures, require a degree of customisation that makes them distinctive.

This Project is bound by the specified time, cost, and performance limitations. Projects are assessed based on their completion, cost, and duration. This triple limitation necessitates a greater level of accountability than is normal for most positions. These three also emphasise one of the fundamental responsibilities of project management, which is to strike a balance between time, money, and performance while ultimately pleasing the client.

This Project is distinct from routine duties. A project is not only a series of mundane tasks! Ordinary everyday labour often involves repeating the same or similar tasks, but a project is performed just once and results in a new product or service.

A project is the production of a festival or event. Using project management techniques to organise an event or festival has several advantages. In addition to overseeing the event's commencement, planning, and execution, project management controls the event's closure. It tries to integrate management plans from several knowledge domains into a unified, executable project plan. In response to the changing nature of contemporary business, goods and services must increasingly be handled as projects.

A product in the modern world evolves continuously. Upgrades to the software are examples, as they generate a continually changing environment (O'Toole and Mikolaitis 2002). The expansion of the event business is a consequence of this transition. As the national economy evolves, new events are required to reposition cities and regions on the market. Projects include festivals and special events. The project results in creating a unique event or festival. The event is the project's ultimate deliverable.

The administration of the project includes its planning, organisation, leadership, and oversight. The project management of events focuses on the management process associated with the event's creation. An event is the output of a management procedure. Project Management is called the "overlay" since it unifies all management duties. Planning, leadership, marketing, design, control and budgeting, risk management, logistics, staging, and assessment are all components of event management.

Project Management of this project may be viewed as merging all these disciplines; consequently, it encompasses all major management disciplines and combines them to achieve the event's objectives.

Question 5 (10)

Consider it as a project and develop a scope statement for a fest that contains examples of all the elements required in the fest. Assume that the event will occur in 4 days.

Solution:

Project Scope Statement:

Project objective:

COLLEGE CULTURAL FEST – SCOPE STATEMENT

Title of project: FEST 23

Date of preparation: November 20th, 2022

Event scope description:

This four-day event contributes to the cultural advancement of college students and other participants by facilitating and supporting the delivery of a vibrant and sustainable cultural festival that engages the college community, improves the quality of life for its residents, fosters community pride, and offers opportunities and places for people to connect and celebrate local culture, heritage, and talent.

Deliverables:

- Setting up the venue
- Setting up the stage
- Sell tickets
- Promotion materials
- Human Resource Management (HRM) –staff ready for the project
- Performances and rehersals
- The event
- Post-festival Service
- Final Itinerary for the 4 days of the fest
- Arrange Dress rehearsal and final meetings with a schedule of participants
- Finalised schedule of vendors
- Secure Mrs Kate Williams, a renowned culture specialist and psychiatrist, delivered the opening Keynote address
- Secure and rehearse College Power Anthem performed by JZ's music group
- Become the premier summer event in the region - It must attract many students from different colleges
- Offer the most sustainable festival experience possible
- Implement above-and-beyond health and safety requirements
- Increased social media engagement and media coverage over the next 6 months, creating a community around the cultural festival

Milestones:

- Secure a festival venue by 08 January 2023
- Confirmed festival's lineup and vendors by 15 January 2023
- Develop a Volunteer Handbook by 30 December 2022
- Feature in the local newspaper During the month of April and May 2023
- Final inspection 18 April 2023
- Gates open 4th May 2023: 8 am
- Day 1 - 4th May 2023
- Day 2 - 5th May 2023

- Day 3 – 6th May 2023
- Day 4 – 7th May 2023
- Cleaning and disassembly 8th May 2023
- Evaluation and closeout report 21st May 2023

Technical requirements:

- Permit to be obtained from local municipality for the event
- Selecting an Executive Board and/or Organizing Committee
- Waste Management Plan
- Volunteer Management Plan
- Emergency Action Plan
- Inclement Weather Protocol
- General Liability Insurance

Limits and exclusions:

Site work is limited to Monday through Friday, 8:00 a.m. to 6:00 p.m.

Maximum Event capacity of 5000

The board and organising committee reserve the right to contract out services.

Reviews with customers:

- Increase ticket sales by 20% compared to last year
- Reach 70% returning attendees from previous years
- Increase food and beverage sales by 35%
- Increase the number of performances by 20%
- Promotion of strong corporate governance, transparency, and accountability by ensuring that the festival has a properly constituted Board of Directors, particularly when receiving donor monies.

Question 6 (10)

Develop a Work Breakdown Structure (WBS) for the same. Be sure to identify the deliverables and organizational units (people) responsible.

Solution:

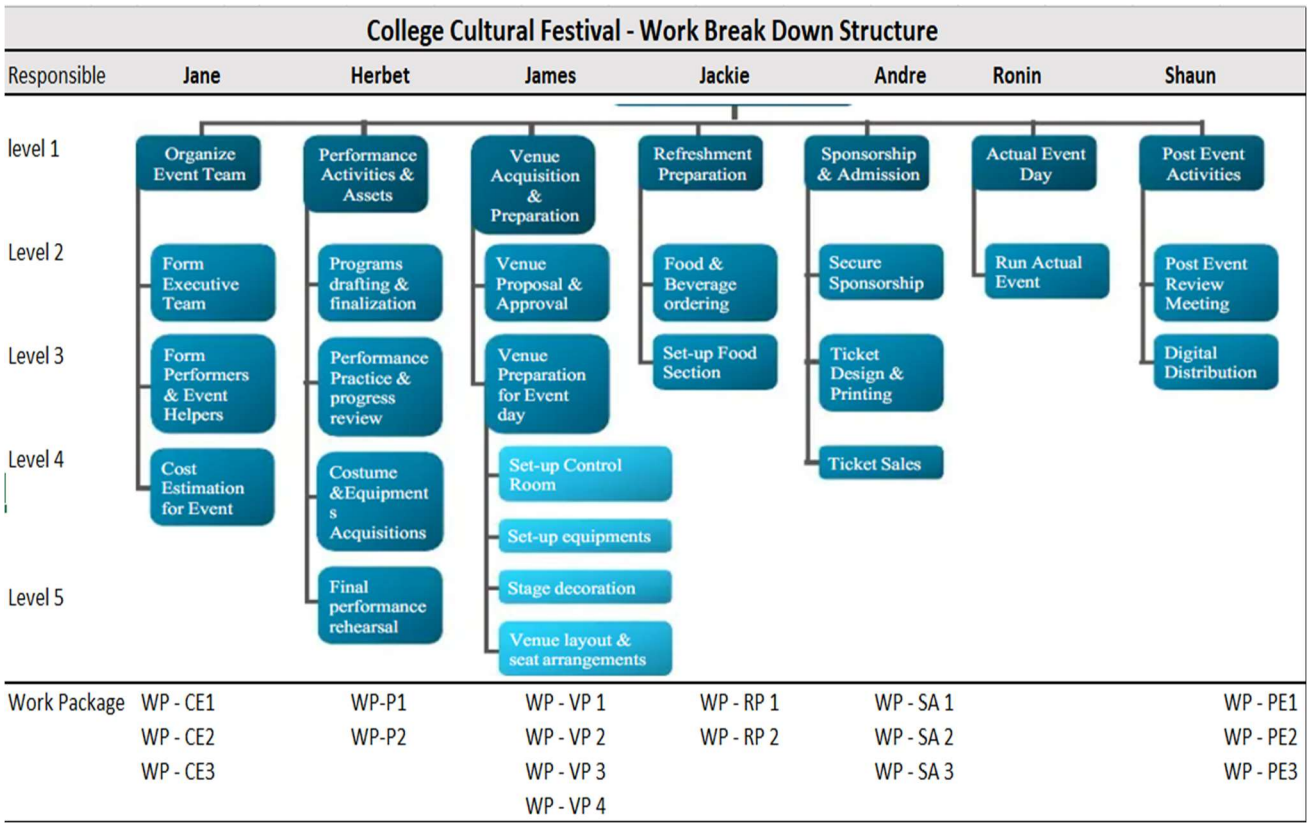


Figure 3 - Work Breakdown Structure

Task 3: (Total: 40 points)

Imagine you are conducting a review of the Chandrayan-2 mission of the Indian Space Research Organization (ISRO). Research press coverage and the internet to collect information on the current status of the project.

Question 7 (10)

What are the successes and failures, to date, of the project as per your analysis?

Solution: The successes were that the GSLV MK-3 rocket launched India's second lunar mission, Chandrayaaan-2, on 22 July 2019 from the Satish Dhawan Space Centre. It was the most crucial and awaited mission for India and the entire world, as Chandrayaan-2 had to land on the south pole area of the moon, where no one had ever been before. Its principal objectives were to comprehend the moon's dark side, map the lunar surface, and detect the presence of water near the South Pole.

This expedition cost around 9,78 billion Indian rupees. It was the most expensive space mission in Indian history. Chandrayaan-2 consisted of the Orbiter, the VIKRAM Lander, and the PRAGAYAN Rover. However, the mission was somewhat successful because the lander and rover crash-landed on the lunar surface.

On November 16, 2019, the Failure Analysis Committee reported to the Space Commission that a software error caused the disaster. It was an unanticipated occurrence because the programme performed effectively throughout the testing. The vehicle's velocity decreased from 1,683 metres per second to 146 metres per second as it descended from 30 kilometres to 7.4 kilometres above the Moon's surface. However, the velocity drop during the second descent phase was more than anticipated, which caused real calculations and conditions to exceed the parameters of the onboard programme, necessitating a hard landing by Vikram. The aircraft then crashed within 500 metres of the chosen landing place. The impact of the collision harmed its onboard system and communication, rendering it ineffective.

Using its eight cutting-edge scientific equipment, the Orbiter's projected orbit around the Moon will enhance our understanding of the moon's development and mapping of the minerals and water molecules in Polar areas. The Orbiter camera has the greatest resolution (0.3 m) of any lunar mission to date. It will generate high-quality photographs that will benefit the scientific community worldwide. The accurate launch and mission management have extended the spacecraft's lifespan to over seven years instead of the originally intended one.

My analysis further reveals that the VIKRAM rover's attempt to land on the moon was unsuccessful; however, the mission accomplished 95 percent of its aims and objectives. ISRO has also planned a new lunar surface landing mission with Chandrayaan-3. Chandrayaan 2 is not a failure despite landing difficulties. It distinguished itself due to its relatively modest cost of around $140 million. The United States spent $100 billion on the Apollo lunar missions. It will serve as evidence of India's economical space program. The orbiter, which comprises 95% of the project, will continue to study the Moon from a distance and take photographs for one year. Only 5% of the mission has been lost, consisting of the Vikram and Pragyan landers could not land represented barely 5% of the mission. 95% of the mission will be completed by an orbiter successfully positioned. Orbiters capture images of the moon and transmit them to ISRO.

Question 8 (10)

What performance evaluation technique will you suggest for project evaluation? Discuss any one technique in detail.

Solution: Examining the project plans to extract performance, time, and cost objectives is the first step. These objectives should correspond in some way to each level of detail, i.e., some should relate to the project, others to its tasks, others to the work packages, etc. The achievement of these objectives must be measured with data, and procedures must be created to collect and store these data. If at least some of the facts do not pertain to the level of the work unit, no action is likely to be taken. Ultimately, the project's detailed work must be modified if any part of the performance is to be altered.

I will utilise the earned value technique, which requires offering a credible assessment of performance relative to a budget that is phased over time. Earned value (EV) is the budgeted cost of the job that has been completed. The value contribution of project work may be measured in the short- or long-term. It may be challenging to separate value contribution if it is intermingled with contributions from operational operations.

Earned value is not new; the U.S. Department of Defense (DoD) pioneered the initial earned value cost/schedule system in the 1960s. The earned value approach begins with the time-phased expenditures that serve as the budget baseline for the project, also known as the planned budgeted value of the work, scheduled (PV). Using earned value, comparisons are made between actual and projected schedules and expenditures, given this time-phased baseline. The earned value method provides linkages that are absent from traditional cost-budget systems. A status report can be generated at any moment for the project.

The earned value cost/schedule system employs several abbreviations and formulae for analysis. This trend is represented in Project Management Institute content, project management software, and most practitioners. Since earned values are derived from costs (or sometimes work hours or other metrics), it is vital to notice that the connection between costs and time is dynamic.

A significant issue with comparing actual expenditures to anticipated or baseline spending for any particular time period is that the comparison needs to account for the amount of work completed to the cost expended. The earned value of work performed (value finished) for tasks in progress is calculated by multiplying the projected percentage of physical labour completion for each task by the budgeted cost for those tasks. The outcome is the amount that should have been spent thus far on the project. This can then be compared to real expenditures.

Estimating the total percentage of a project's completion without examining each of its tasks and work units is illogical, however, some individuals continue to do so. Rather, it is evident that at any time over the project's lifetime, the following general condition exists: Some work units have been completed and are 100 percent complete; others still need to be completed.

A simple schedule variance is determined by looking at performance on the critical path. When used with earned value management, it is the difference between earned and planned value.

For instance, a negative SV variance is achievable when the project is ahead on the critical path. This would occur when delays in non-essential tasks exceed progress on the crucial path. Therefore, it is essential to remember that SV is expressed in dollars and is not a precise measure of time; rather, it is a reasonably accurate indicator of the overall project's condition in terms of being ahead or behind schedule until the project has reached X percent completion. Only the project network or tracking Gantt chart and completed work may provide an accurate estimate of the project's timetable and performance at the work package level.

A program-level appraisal of value may also be required for effective project management when the project is a programme component. A reliable value appraisal must consider the project's product's complete context and life cycle. While value is realised over time, efficient procedures can facilitate the early realisation of benefits. With efficient and successful implementation, project teams may show or attain results such as prioritising delivery, enhancing customer service, and enhancing the work environment. By collaborating with organisational leaders responsible for implementing project deliverables, project leaders may ensure that the deliverables are positioned to achieve the desired results.

A crucial aspect of project performance is comparing what the project accomplished (the final evaluation) and what it intended to accomplish (the project proposal). This comparison may be broad

and must contain explanations for all significant discrepancies between reality and plan. A discussion of the final gained value might also be beneficial. Since the final report is not a formal review, it might reflect the PM's best judgement on the causes of the successes and failures. Recommendations for future initiatives with similar or identical technical issues should follow this comparison.

Organisations should evaluate the team-building process, the efficiency of group decision-making and problem-solving, group cohesiveness, trust among team members, and information exchange quality. Customer and user satisfaction with project deliverables (i.e., project outcomes) must be measured frequently. Nonetheless, the project's success hinges heavily on the satisfaction of these two crucial stakeholders. The team is responsible for the quality of the delivered products.

Equally essential, the process of developing and executing projects can be enhanced by suggesting the continuation of good management and organisational systems and the modification of ineffective practices and procedures. In this manner, the conduct of projects will become more efficient, and the likelihood of producing high-quality outcomes on time and within budget will grow. In considering how to improve the administration of future projects, it is crucial to remember that we need not wait until the next generation of projects implements more effective project management techniques. After obtaining approval from the PMO or whoever administers the organisation's project management process, we may often introduce them as they are identified. The discipline of project management is always evolving. Thoughtful project managers and team members contribute to its evolution.

Question 9 (5 + 5)

- **What forecasts would you make about the completion of the project, and why?**
- **Which method did you use for the project projection? Explain.**

Solution: Forecasting a project is the process of predicting or estimating the future of an ongoing project. I would establish whether the project is on track by examining variables such as cost, duration, and the quality or performance of the delivery. If the project prediction indicates positive progress, I can continue the project, approve comparable projects, or publicly announce the project. If the prediction reveals unanticipated obstacles, make the necessary modifications to meet the altered project trajectory.

Among the factors that I would consider are:

Cost: By combining historical and current spending metrics, project managers can provide the most precise estimate feasible. This is crucial in determining whether a project will come in within or over its initial estimated expenditure.

Understanding how long a project may take to complete and if it is anticipated to fulfil its deadlines is essential for efficient project management. To effectively predict time as a project parameter, project managers examine previous and future project risks, such as limited or uncertain resource availability.

For this project, the quality of the deliverables is crucial, yet the quality indicators and criteria can differ greatly from one project to another. In addition to historical data and prototypes, project forecasting provides the most current information on the project after it has left the planning phase.

I would use a combination of various methods that permit field specialists to modify original baseline durations and costs, considering fresh evidence indicating that the initial estimates were inaccurate. The rationale is that the project is extremely complex and specialised; therefore, experts would be best placed to provide cost estimates for completion, given the complexity and duration.

We have used EACre to reflect amendments made by experts and practitioners involved in the project. On smaller projects, the adjustments made by project specialists are virtually always utilised.

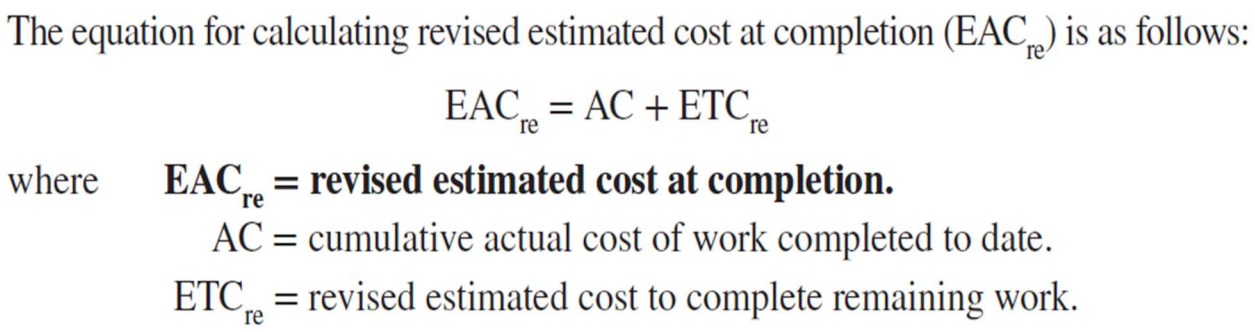


Figure 4 - Equation for calculating revised estimated cost at completion

For the project manager to calculate a set of critical ratios for all project activities on large projects. (actual progress/scheduled progress) (budgeted cost/actual cost) is the important ratio.

Some qualitative procedures entail conducting individual interviews with experts and allowing them to express their own unique, impartial viewpoints. Forecasters can compare these perspectives to discover the most frequently accepted conclusion. Alternatively, you might request collaboration from specialists, facilitating dialogue and leading to team consensus.

Time series analysis and forecasting

Predictions regarding the project's future are made using quantitative data and patterns with these tools. For time series analysis and projection approaches, historical data is crucial since larger data sets that span a longer period of time results in more accurate predictions. Examples of approaches belonging to this category include:

Trend analysis: Also known as trend forecasting, trend predictions, or straight-line forecasting, this method employs historical data to anticipate the project's spending trajectory to its conclusion. It is frequently used to anticipate the cost and profitability of a project.

Break-even analysis: This project forecasting technique forecasts the entire project cost and uses that prediction to determine how much money the project needs to generate to surpass its original cost and become profitable. This makes break-even analysis valuable for building investor and project team trust.

This forecasting method functions by quantifying the costs and benefits of a project so that forecasters can compare them. This also allows the project manager to readily compare the benefits of one project to another, which may assist them in selecting which initiatives to focus on.

The key ratio consists of two components: the ratio of actual progress to planned progress and the ratio of budgeted cost to actual cost. To paraphrase any economist who has ever lived, a ratio of real to planned improvement larger than one is deemed "excellent." It is "bad" if the ratio is less than one. Similar considerations apply to the budgeted-to-actual cost ratio if all else is equal. Assuming somewhat accurate measurements for each ratio component (an assumption that rivals caeteris paribus for its audacity), the critical ratio is a good indicator of the project's overall health. Note that the critical ratio is the multiplication of the two ratios. This method of combining the two ratios allows a "poor" ratio in one component to be countered by a "good" ratio in the other. This may or may not be deemed a valid measure of the "health" of the project by the project manager.

The critical ratio can also be used to earned values, keeping in mind that "progress" in earned value terminology is stated in monetary units and that only three metrics are available instead of four. Obviously, actual progress is represented by EV, planned progress by PV, and actual expense by AC. Unfortunately, using EVs for budgeted costs does not eliminate the risk of a deceptive critical ratio. There may still be situations where the earned value is less than the planned value (a problem!). However, the actual cost is so much less than the planned value that the critical ratio is still greater than one, or in which the actual cost exceeds the planned value (a problem!). Still, the earned value sufficiently exceeds the planned value that the critical ratio is once again greater than one.

Question 10 (10)

What recommendations would you make to the top management of the program, and why?

Solution: I recommend to management that smart businesses know that human issues are just as, if not more, essential than technological concerns. They educate their employees on collaborating effectively with people from various organisations and nations. This instruction is widespread. It is not confined to management but includes all individuals at all levels who have contact and rely on outside parties for services and work rendered.

To be effective, project leaders must identify potential performance obstacles and know when they will most likely arise in the project's life cycle. The effective project leader takes preventative measures early in the project life cycle and cultivates a work environment that encourages active participation, exciting work, good communication, management involvement, and low conflict.

Whether in general negotiating workshops or one focused on working with Chinese programmers, for example, team members gain a theoretical grasp of the hurdles to collaboration and the skills and processes needed to succeed. The training is supplemented with inter-organizational team-building activities to foster healthy connections before the start of the project. Team-building workshops bring together essential actors from various businesses, such as engineers, architects, attorneys, experts, and other workers. In many circumstances, organisations find that hiring an independent consultant to plan and lead the sessions is beneficial. A consultant of this type is often well-versed in inter-organizational team development and may bring an unbiased viewpoint to the workshop. The length and design of the team-building sessions will be determined by the participants' experience, dedication, and skill level.

Then counsel them on Established Conflict Resolution. There must be processes in place. Conflict is unavoidable in a project, and conflicts managed correctly may improve performance. Dysfunctional

conflict, on the other hand, has the potential to spread and significantly harm project achievement. Because employees are not used to working together and have different beliefs and opinions, outsourced projects are prone to conflict. Successful businesses devote substantial time and attention to developing "rules of engagement" to ensure that conflicts are addressed productively.

The key control technique for dealing with and resolving problems is escalation. The underlying premise is that problems should be handled at the lowest management level within a certain time limit (say, 24 hours), or they will be "escalated" to the next management level.

If this is the case, the principals have the same time restriction to settle the issue before it is moved to the next higher level. It is not an option to take no action. Neither can one party coerce concessions from the other by merely postponing the decision. There is no shame in escalating important issues, but supervisors should be quick to point out to subordinates those issues or queries that they should have been able to settle on their own.

Important company employees are brought together, if feasible, to discuss potential issues and solutions. As previously stated, this is frequently part of a coordinated set of team-building exercises. Focus is paid to developing the change management control system, where most difficulties arise. People that rely on one another strive to anticipate future difficulties and agree on how to overcome them in advance.

When negotiating their tasks, the project manager should attempt to satisfy supporting workers' professional interests and preferences. The success of a project is contingent on the manager's capacity to provide professionally stimulating and engaging work. This results in enhanced project participation, improved communications, decreased conflict, and higher commitment. This is an atmosphere where people work toward predetermined goals in style requiring minimal administrative oversight. Although the scope of a project may be fixed, the project manager typically has some latitude in assigning tasks to different participants.

Increasing numbers of businesses are adopting online questionnaires to obtain information about the quality of working relationships from all project participants. With this information, one may evaluate the project's "pulse" and discover areas that require attention. Comparing survey results from period to period allows for identifying improvement opportunities and potential concerns. In certain instances, follow-up team-building meetings address specific issues and re-energize collaboration.

Finally, when it comes time to celebrate a great achievement, regardless of who is responsible, all parties congregate if feasible. This emphasises the project's goal and identity. It also builds momentum for the subsequent phases of the project.

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