

Project Name

CONSTRUCTION OF TUWAIQ RESORT

Group No. 5180

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1. Strategy

A business strategy, in simple terms, is a documented plan on how an organization is setting out to achieve their goals. A business strategy contains a number of key principles that outlines how a company will go about attaining these goals. For example, it will explain how to deal with your competitors, look at the needs and expectations of customers, and will examine the long-term growth and sustainability of their organization.

The reason why having a strategy is so important is because it gives business time to get a sense of how they are performing, what their capabilities are, and if these capabilities are able to help them grow.

Any Strategy should consist of three main aspects, Mission, Vision and Objectives the same is elaborated more under the below sections.

1.1 Mission

Mission describes how to get to where you want to be. However, the importance of mission in organizational strategy are:

- 1- Mission statements are standard and critical elements of the strategy of an organization.
- 2- Most known companies develop mission statements that serve as foundational guides in the establishment of organizational objectives.

The organization then develops strategic and tactical plans for objectives.

In our project, “the mission is to provide and deliver outstanding services, hospitality, and entertainment that are beyond our guests’ expectations. Simply, it is to be such unique memorable moments to all at our resort”.

1.2 Vision

Vision signifies how an organization or an organization concerning the outer world will look like in the future. It is an important starting point because it provides direction to the organization. All the next set of activities are dependent on vision. In our project, our vision is “to be one of the best resorts to give you a new experience and make your best memories”.

1.3 Develop and Identify the Project Objectives in SMART model

First, the objective is to set out what achievements will be gained from the project and these objectives should be in line with the project vision, mission and strategy.

There are many tools to help the organizations as well as the individual to set their objectives in an effective and productive manner.

In our project, we shall use The SMART acronym to help us develop and identify our project objectives.

Why use SMART objectives?

- To provide a structured approach to developing and designing a work plan.
- To systematically monitor progress towards a target
- To set the stage for measuring performance and identifying opportunities for improvement
- To succinctly communicate intended impact and current progress to stakeholders
- To concretely describes how goals will be met

SMART is stand for:

- “S” Specific
- “M” Measurable
- “A” Attainable
- “R” Realistic
- “T” Timeframe

The Table 1-1: below shows the SMART objectives, related to our project:

Table 1-1 SMART Objectives

S. No.	SMART OBJECTIVES
1)	By September, 2022, complete the construction of the Resort and handing over to the Client.
2)	To maximize the utilization of local suppliers/ manufacturers supporting the local community achieving the required localization requirements (20% of Contract Value).
3)	Achieve 10% profit margin by optimizing the design and selecting the best suppliers serving the project purpose, manage expenses during the construction phase.

4)	Assure to follow strictly all safety regulations and give a periodical training by Safety manager to the team member towards zero incidents.
5)	Assign qualified personnel on the project team and maintain periodic training to enhance their knowledge and capabilities to assure that project is done as per the Contract with Client satisfaction.
6)	Targeting 60% of the occupancy of the rooms when open the Resort for the first year by starting the marketing for the resort in parallel with the construction phase.
7)	Increase the room occupancy to be 80% by the end of third year of running by increasing the direct booking through the web site, through mobile apps, customer loyalty program, and by direct contracts and promotional campaign with main flight operators, tour agents and major local companies such as Saudi Aramco, Sabic...Etc.
8)	Targeted to achieve profit of the resort to 20% by the end of third year of running the Resort by creating additional channels for earning other than the room booking like pool day use, Restaurant, rents the halls for events and meetings.
9)	Improve the time response for customer complaints to be within 30 minutes for room service and within 1 hour for booking issues by the staff.
11)	Increase the employee loyalty and healthy work environment to reach 70% which will reduce the turnover cost, through continued skills improvement, motivations, incentives.

1.4 Develop and identify the performance measurement indicators

One of the key factors to monitor the progress of a project is KPIs, which are important metrics to make sure the objectives of the project are met, and to monitor the performance and the health of the project.

Key Performance Indicators (KPIs) help define and measure the organizational goals which are fundamental to an organization's current and future success. Having solid KPIs is crucial for companies that are implementing performance management systems, such as balanced scorecards, six sigmas, or activity-based management. In many organizations, KPIs are often too numerous,

randomly assembled, and overly complex—essentially rendering them ineffectual, or at worse, counterproductive. Key Performance Indicators provides a model for simplifying the complex areas of KPIs while helping organizations avoid common mistakes and hazards”(Parmenter, 2010).

Table 1-2 Performance Measurement Indicators:

Strategic Objectives	Lead Measure	Lag Measure
1-By September, 2022, complete the construction of the Resort and handing over to the Client.	-Total number of manpower. -Total working hours.	-100% of the project handed over to the client.
2-To maximize the utilization of local suppliers/manufacturers supporting the local community achieving the required localization requirements (20% of Contract Value).	-% of orders issued to local suppliers. -Number of local manpower trained	-20% of local orders achieved.
3-Achieve 10% profit margin by optimizing the design and selecting the best suppliers serving the project purpose, manage expenses during the construction phase.	-Total savings from issued orders below the budget.	-10% of profit achieved.
4-Assure to strictly follow all safety regulations and give a periodical training by Safety manager to the team member towards zero incidents.	- Number of incidents during construction. -Average of training hours.	-Zero number of incidents. -20 hours of training achieved.

5-Assign qualified personnel on the project team and maintain periodic training to enhance their knowledge and capabilities to assure that project is done as per the Contract with Client satisfaction.	-% of qualified manpower. -Number of NCRs.	-5 qualified manpower assigned to the project. -% of client satisfaction score.
6-Targeting 60% of the occupancy of the rooms when opening the Resort for the first year by starting the marketing for the resort in parallel with the construction phase.	-Total number of rooms occupied through early contracts.	-60% of room occupancy achieved.
7-Increase the resort occupancy to be 80% by the end of third year of running by increasing the direct booking through the web site, through mobile apps, customer loyalty program, and by direct contracts and promotional campaign with main flight operators, tour agents and major local companies such as Saudi Aramco, Sabic...Etc.	-Number of visitors for the resort website. -Total number of contracts with major agencies and local companies.	-80% occupancy achieved.

8-Targeted to achieve profit of the resort to 20% by the end of third year of running the Resort by creating additional channels for earning other than the room booking like pool day use, Restaurant, rents the halls for events and meetings.	-Number of day use tickets issued for pool guests. -Number of booked tables in the restaurant.	-20% profit achieved.
9-Improve the time response for customer complaints to be within 30 minutes for room service and within 1 hour for booking issues by the staff.	-Number of complaints. -Average of customer call waiting time. -Average time required.	-Number of customers increased. - Client satisfaction score.
10-Increase the employee loyalty and healthy work environment to reach 70% which will reduce the turnover cost, through continued skills improvement, motivations, incentives.	-Number of resigned employees per year.	-10% of Turnover achieved.

1.5 Develop and prepare the project charter model

Develop Project Charter is the process of developing a document that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities.

The project charter establishes a partnership between the performing and requesting organizations.

Table 1- 3: Project Charter

Project Name:	CONSTRUCTION OF TUWAIQ RESORT		
Start date	5/9/2021	End date:	4/9/2022
Sponsor:	Everyone's Smart University		
Project Manager:	Abdullah	Address.	RIYADH
Estimated budget:	1,000,000 SR		
Major Stakeholders:	Tourism Authority Ministry of Commerce Ministry of Human Resources Municipality		
Project Description:			
Our resort is a self-contained commercial establishment that provides excellent hospitality services, such as food, drink, lodging, sports, entertainment, and shopping on the premises.			
Customers:			
High-class, middle-class family and especially couples			
Government guests.			
Tourist groups			

Deliverables	1- 1 executive suite 2- 3 Junior suite 3- 10 double room 4- 5 single room 5- 1 admin building 6- Lobby 7- Swimming pool 8- Playing areas 9- Parking lot 10- Restaurant	
Project Risks:		
1- Construction material market price change 2- Global Pandemic restrictions 3- Lack of resources 4- Changes in regulation and laws		
Project Milestones:		
Milestone	Target Date	
Project documents completion	15/9/2021	
Start constructions	16/9/2021	
Finish constructions	4/9/2022	
Soft opening	10/9/2022	
Opening ceremony	1/10/2022	

2. Governance, Structures and Process

2.1 Organizational Structure

Organizations, like ships at sea, need a clear design, hierarchy, and well-defined processes to navigate sometimes challenging waters and reach their destinations safely(planergy.com,2019).

2.1.1 A Definition of Organizational Structure

Organizational structure is the framework of reporting relationships in an organization. These relationships can usually be diagrammed in the form of an organization chart. The organization chart does not necessarily reflect actual reporting or decision-making relationships in an organization, so we can make a distinction between the formal and the informal structure. This note will deal primarily with the formal structure.

Organizational systems are the processes that attempt to coordinate those divisions of work. The structure of an organization is like a skeleton: it defines the spatial relationships and influences the power relationships among its various parts. The skeleton alone does not do much work; it merely provides the framework within which the body tries to organize its resources to accomplish its task (Waterman & Philips, 1984, p.132).

2.1.2 Types of Organizational Structures

There are different types of organization Structures, such as:

- 1) Hierarchical org structure
- 2) Functional org structure
- 3) Horizontal or flat org structure
- 4) Divisional org structures (market-based, product-based, geographic)
- 5) Matrix org structure
- 6) Team-based org structure
- 7) Network org structure

In our project we will select the most common structure which is Hierarchical Structure where the chain of command goes from the top to down.

Below figure 1-1 shows the Project organization structure – Construction phase:

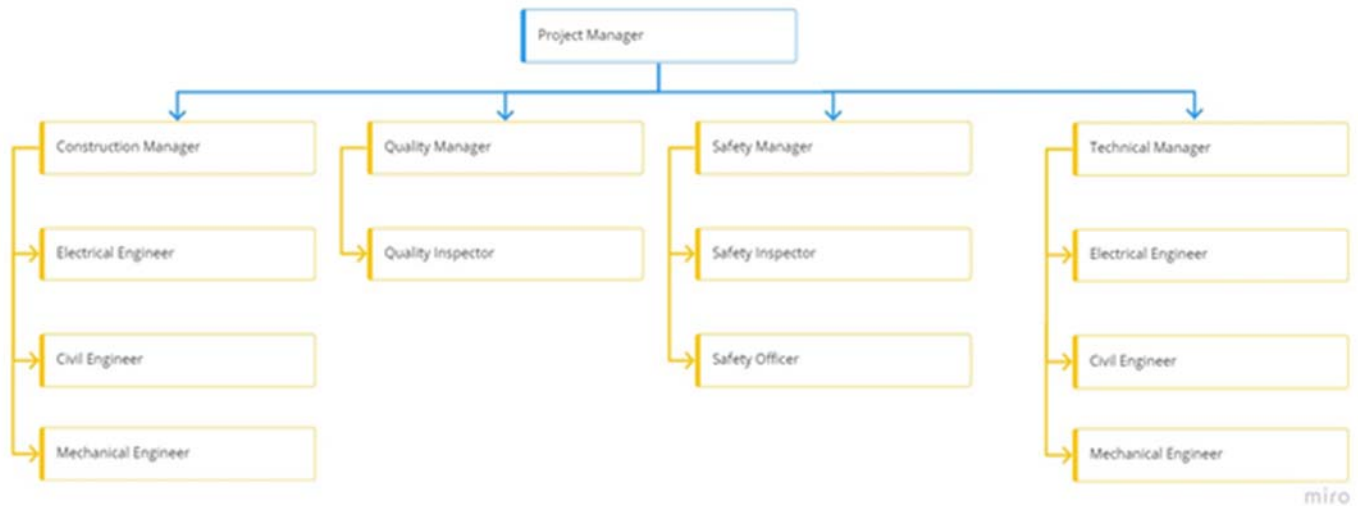


Fig 1-1 Project Organization Structure – Construction Phase

Below figure 1-2 Shows the Project organization Structure – Operation Phase

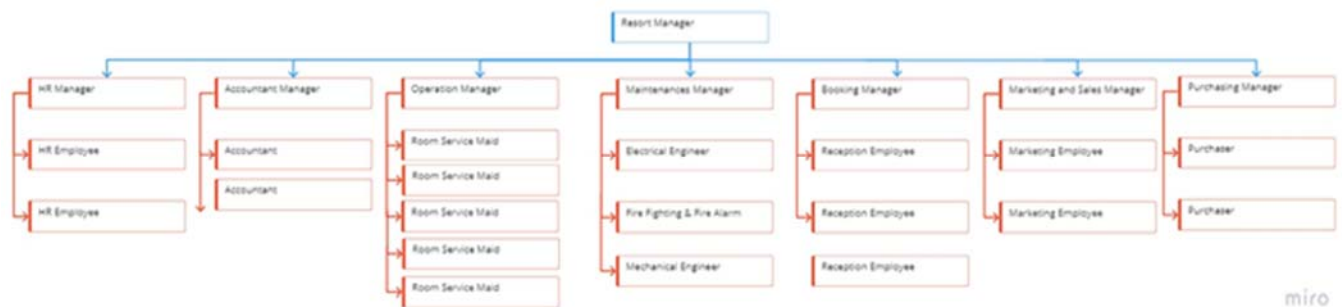


Fig 1-2 Project Organization Structure – Operation Phase

2.2 Why Hierarchical Structure?

There are many reasons to go with this structure and here we mention our opinion for the same:

- Better defines levels of authority and responsibility
- Shows who each person reports to or who to talk to about specific projects
- Motivates employees with clear career paths and chances for promotion
- Gives each employee a specialty
- Creates camaraderie between employees within the same department.

2.3 Identify Projects Office Model

The project management office (PMO) is defined as an entity or department within the

organization that directs everything related to projects. It aims to improve the performance and results of project management, and to assist project managers in achieving project goals. It is found in matrix organizations or in project-based organizations, for developing methodologies and institutionalizing project management practices. According to Desouza & Evaristo, PMO is an exercise to customize and sustain the practices, methods, techniques, and tools in organizations. (Desouza & Evaristo, 2006)

Project office model is the directive model and the reason for choosing this model is because our organization is a projectized organization, the project manager controls the project. The ultimate authority in relation to the project lies with the project manager. Directive PMO's take complete control of all the projects executed within the organization.

3. Compliance, Standards and Regulations

3.1 Design a check compliance model

Compliance is a general concept of conforming to a rule, standard, law, or requirement such that the assessment of compliance results in a binomial result stated as “compliant” or “noncompliant” (PMBOK 5th, 2013).

We would provide excellent services and security for our customers, and safe working environment, training, suitable salaries plus bonuses and other benefits for the best employees. Additionally, we would be equitable and honest return to our investors, making significant contributions to our partners and the community as a whole. Our resort would be an environmentally friendly organization that offers more jobs opportunity for the community. There will be incredible products and services to be offered which include 1 executive suite, 3 junior suite, 10 double room, 5 single room, and 1 admin building

Table 3-1 Compliance

Requirements				Compliance		
No.	Goal / Deliverable	Responsible	Details of Deliverables	Goal / Deliverable	Compliant (Yes/No/NA)	Remarks
1	Regulations	Sponsor	hospitality	Applying regulations	yes	
			Culture			
2	Air condition	Main contractor	Energy efficiency label level C or higher from SASO	Energy efficiency	yes	
3	Drinking water	Sub-contract	TDS 250 max	SASO specs.	yes	
4	Lightening	Main contractor	Energy efficiency label level B or higher from SASO	Energy efficiency	yes	
5	Furniture, Beds & mattresses	Furniture contractor	Lobby	Class A classic	yes	
			executive suite	Class A classic	yes	

			Other rooms	(IKEA or equal)	yes	
			admin building	(IKEA or equal)	yes	
6	Key employees	PM	Resort Manager	Hospitality graduates, +5 years' experience	yes	
			Accountant			
			Chef			
			Reception			
7	Number of car parks	PM	5 VIP	Cars barking specs.		
			5 handicaps			
			30 normal			

3.2 Develop Checklist model for the three stages of the project (Start-Plan- Achieve Close)

A checklist for project management provides a benchmark for your project execution direction. It is an approach that will show what to do in the projects and lets you know if you have met the project quality. Project managers juggle a lot of responsibilities. From negotiating with the stakeholders to dealing with vendors, they handle everything. They're also responsible for directing the team and ensuring everything goes smoothly.

Indeed, you can rely on this checklist to ensure that you don't miss any step or waste precious resources by repeating a task. A good project management checklist addresses this issue and

emphasizes on the steps or processes your team has missed in the previous projects.

Table 3-2 Check List of the Project

Phase I Construction			
START	Yes	No	Notes
Fund			
Equipment manpower			
Materials Stakeholders			
Telecommunication Application			
Consultant Regulation			
PLAN	Yes	No	Notes
Specification			
Availability Mock-up			
Approvals Safety			
Satisfaction			

ACHIEVE	Yes	No	Notes
Mobilization			
Application			
delivery plan			
Admin building			
Executive suite			
Junior suite			
Double room			
Single room			
CLOSE	Yes	No	Notes
De-mobilization			
Admin building			
Executive suite			
Junior suite			
Double room			
Hand-off			
Handover			

Phase II Operation			
Running & Operation	Yes	No	Notes

Booking list			
Attendance			
Electronic Safe			
Safe Instruction Card			
Telephone & Internet working			
Purchases & expenses			
Emergency Exit Plan			
Revenue & budget			
Cleaning up			

4. Power Interest

4.1 Develop a stakeholder register and form groups for them.

The main output of the Identify Stakeholders process is the stakeholder register. This contains all details related to the identified stakeholders including, but not limited to:

- **Identification information.** Name, organizational position, location, role in the project, contact information;
- **Assessment information.** Major requirements, main expectations, potential influence in the project, phase in the life cycle with the most interest; and
- **Stakeholder classification.** Internal/external, supporter/neutral/resistor, etc.

The stakeholder register should be consulted and updated on a regular basis, as stakeholders may change—or new ones identified—throughout the life cycle of the project.

Table 4-1: Stakeholder Register

Project Name	CONSTRUCTION OF TUWAIQ RESORT		
Project Manager	Abdullah		
Stakeholder Name	Internal	Project Role	Contact Information
Ahmad	Internal	Resort manager (sponsor)	Mobile No. Email:
Saleh	Internal	Operation manager	Mobile No. Email:
Ali	Internal	Maintenance manager	Mobile No. Email:
Sami	Internal	Purchase manager	Mobile No. Email:
Saad	Internal	Accountant manager	Mobile No. Email:
Abdullah	Internal	PM	Mobile No. Email:
Bandar	Internal	Internal Audit	Mobile No. Email:
Foti	External	External Auditors	Mobile No. Email:
Fahad	External	Contractor	Mobile No. Email:
Hamad	External	Governor	Mobile No. Email:
High-class, middle-class family and especially couples	External	Guests	Mobile No. Email:
Government guests.	External	Guests	Mobile No.

			Email:
High-class groups	External	Guests	Mobile No. Email:
Civil defense	External	safety precautions	Mobile No. Email:
Tourism Authority	External	Tourism regulations	Mobile No. Email:
passports affair department	External	Visa regulations	Mobile No. Email:

4.2 Develop the two networks: (Strength/Interest) and (Influence/ Strength)

Influence / Interest Stakeholder

- **High influence, interested people:** these are the people you must fully engage and make the greatest efforts with e.g. A head of department, who represents the users/customers
- **High influence, less interested people:** provide sufficient information to these people to ensure that they are up to date but not overwhelmed with data e.g. the Accountable Body (Management Board or Operations Committee)
- **Low influence, interested people:** keep these people adequately informed, talk to them to ensure that no major issues arise. These people can help with the detail of the project e.g. End Users, other Project Managers, Business Community.
- **Low influence, less interested people:** provide these people with minimal communication to prevent boredom e.g. other departmental members, teams unaffected by the change.

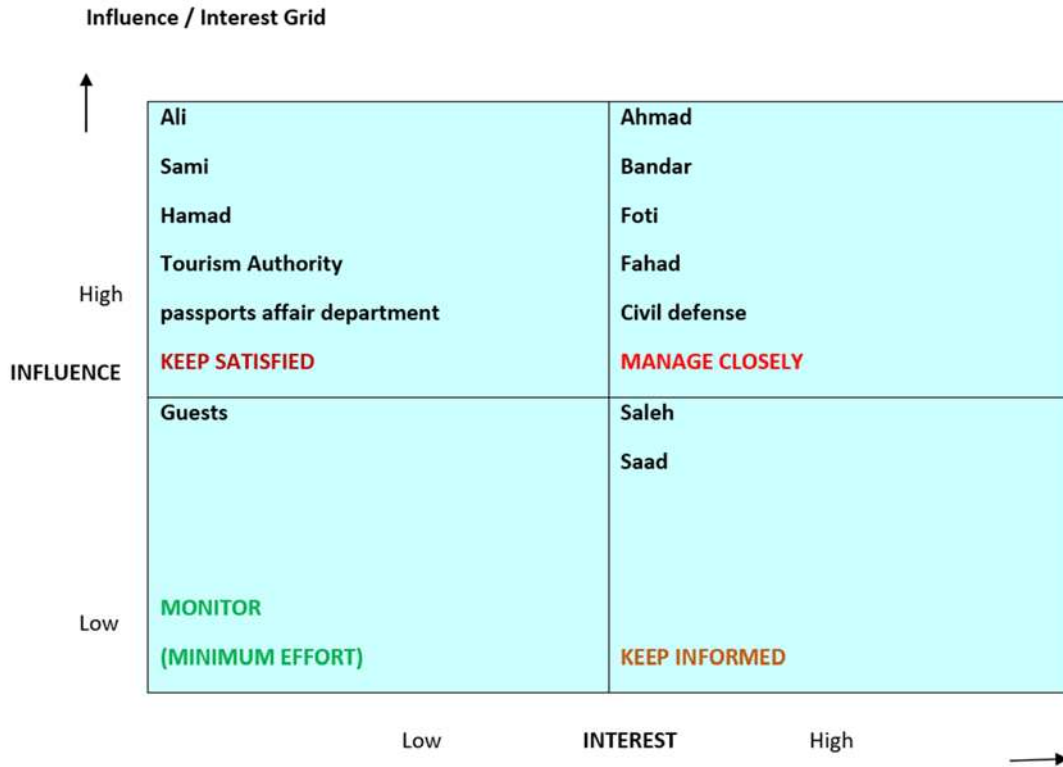


Fig 4-2 (Strength/Interest) and (Influence/ Strength) Networks

4.3 logical diagrams for the register of the stakeholder.

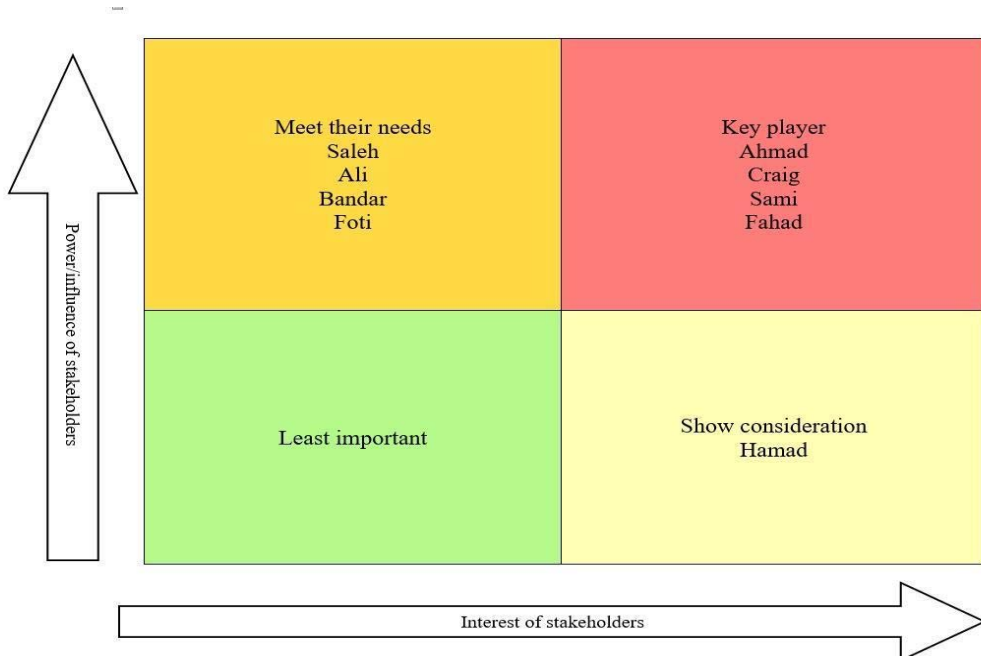


Fig 4-3 Logical Diagrams for the Register of the Stakeholder

5- Cultures and Values

5.1 Identify the culture of the organization

Organizational Culture is the set of behaviors or beliefs that determine how an organization or team interacts or carries out work. Awareness of culture and different circumstances/attitudes is key. Influenced by: The industry, environment, customers, organizational practices. Also, Personalities, values, principles, etc. of the organization, leader, and team. Regarding Organizational Values and Needs, it is similar to the concept of culture, organizations have defining characteristics: How customers are treated (input, visibility into inner workings), Risk tolerance and preferred schedule certainty, Experience level of personnel and management. In this project, we are planning to implement a remarkable resort. We are focusing on the Islamic Culture since our resort is in an Islamic Arabic country. Islamic Culture includes several things: creating prayer areas, charity and volunteering activities. As when we have such activities, we can attract many clients within the society. We will make sure that each activity is well established and meaningful to the clients. In addition, high customer service which will be implemented before, during and after the activities to achieve the success of the resort. Important note to mention that the organization culture and environment within the employees is healthy. One of the strategies that are going to be set up to maintain communication with the top management of the resort and the customer service agents is connected by key communication channels such as face to face meetings. Face to face meeting gives the chance to go over everything and dialogue about it, which results in great communication. Face to face meetings are a great tool for decision making, brainstorming and provide a high-level service to the clients.

5.2 Organization Values

You can find below the organization values:

Table 5-1: Organization Values

Value	Description	Responsible	Duration
Customer Needs	Providing customer needs	Customer Service Agents	24 Hours
Customer Voice	High level customer care	Complaints Department	1 business day

Entertainment	Providing diversified activities	Resort Employees	Operational
Saudization	Saudization for suppliers and Manpower	Top management of the resort	Operational
Teamwork	Teamwork Engagement	Resort Employees	Operational
Commitment	Committing to the line management	Resort Employees	Operational

6- Self-reflection and Self- Management

Self-management is really about controlling your reactions. When I think of self-management I recall Thomas Jefferson, the third President of the United States, who is reported to have said, “If you are angry count to 10, if you are really angry count to 100.”

Our self-management (reactions) can be improved by reflecting. So, what is reflection? Reflection involves describing, analyzing, and evaluating our thoughts and actions (blog.velsoft.com, 2019).

6.1 Personal behaviors of the student that can influence on the project

There are many personal behaviors effect on the project, and here we will specify only three (3), as stated below:

1) Arrogant:

This behavior is affecting the project negatively since it is causing huge difficulties with the team to communicate as the person consider himself superior and better than his team mates such as objecting any team proposal and unwilling to accept any comment related to his duty/performance, beside overconfidence and underestimating others capability and productivity.

2) Distracted:

This behavior affects the quality of tasks. In addition to causing additional burden on the team as we will have to double check every task he did.

3) Lazy:

Laziness will cause delay or missing the task deadlines and effecting all cascaded activities

waiting for him to complete his task.

This will cause very unrequired stress on the team since other team members may have to crash their schedule to recover the delay caused by the lazy person.

6.2 Study the behaviors, identify their reasons, and how they can be eliminated

1) Arrogant:

There are many reasons why a person becomes Arrogant, in our opinion the main one is feeling insecurity and lack of self-confidence.

In addition, he uses it as a defense mechanism, for him it is a way to protect his self- esteem and self-worth.

Below are few tips how to deal with such persons:

- 1) Don't enter a conversation angry.
- 2) Allocate apt tasks to this person.
- 3) Keep interactions brief.

2) Distracted:

With current modern life there are many reasons why to get distracted, such as:

- 1) Smartphone Usage and social media
- 2) Not well organized so he will not be focusing on finishing one task.

Below are few tips how to deal with such persons:

- 1) Regulate using the smartphones/ social media to be limited during the break time only.
- 2) Guide him to schedule the activities to focus and to prioritize the tasks.

3) Lazy:

According to psychological studies, laziness is mainly linked with depression and low time management (Procrastination), indecisiveness and losing motivation.

Below are few tips how to deal with lazy co-worker:

- 1) Encouraging them and providing continuous motivation.
- 2) Maintain proper documents for all tasks.
- 3) Involve management and superiors.

- 4) Keep time slack in their tasks.

6.3 Self-professional assessment by using SWOT model

What is a SWOT Analysis?

SWOT stands for Strengths, Weaknesses, Opportunities, and Threats, and so a SWOT Analysis is a technique for assessing these four aspects of your business.

You can use SWOT Analysis to make the most of what you've got, to your organization's best advantage. And you can reduce the chances of failure, by understanding what you're lacking, and eliminating hazards that would otherwise catch you unawares (mindtools.com).

Figure 6-1. Shows the SWOT Analysis for the Resort



Fig 6-1 SWOT Analysis

7- Personal integrity and Reliability

Integrity and reliability are very important ethics in every community. It means the quality of being honest and having strong moral principles.

7.1 Provide “3” behaviors that contradict moral integrity.

These are three of behaviors contradict the moral Integrity:

- 1) Plagiarism. 2) Embezzlement. 3) Bribery.

7-2 Analyze the financial, social, and technical influence, if any, of such behaviors on the works of the project and the relationships.

This schedule will explain and analyze the influence of these behaviors that contradict moral Integrity.

Table 7-2: Integrity Analysis

Behaviors contradict moral Integrity.	Financial influence	Social influence	Technical influence
1)Plagiarism.	Financial penalty by the government.	Destroyed the professional reputation of the company.	Struggles to get a new project.
2) Embezzlement.	It will affect the company cash flow and budget plan.	It will affect getting new projects and bad reputation of the company.	It will put the company in a bankruptcy situation.
3) Bribery.	It will affect the company cash flow and budget plan.	It will put the company in jeopardy since it isn't ethical.	Close by the government.

8- Personal Communication

8.1 Prepare the register of the stakeholder

There is no doubt that communication management is one of the most important factors that lead to the success or failure of the project. Therefore, it is obligatory for those who oversee the project to develop a plan to manage communication among all stakeholders. In our project, we set up a

way of communication that we have thought would work for everyone as per the preferable method and time.

Table 8-1: Stakeholders register

Stakeholder Name	Internal / External	Role	Contact Information	Frequency	Method	Time
Ahmad	Internal	Resort manager (sponsor)	Mobile No. Email:	Weekly	Email	Thursday Morning
Saleh	Internal	Operation manager	Mobile No. Email:	Daily	Face to face	Early Morning
Ali	Internal	Maintenance manager	Mobile No. Email:	As needed	Conference call	Noon
Sami	Internal	Purchase manager	Mobile No. Email:	Weekly	Email	Sunday
Saad	Internal	Accountant manager	Mobile No. Email:	Monthly	Email	Sunday
Abdullah	Internal	PM	Mobile No. Email:	Daily	Face to face	Noon
Bandar	Internal	Internal Audit	Mobile No. Email:	As needed	Email	Monday
Foti	External	External Auditors	Mobile No. Email:	As needed	Email	Monday
Fahad	External	Contractor	Mobile No. Email:	Conference call	Daily	Morning

Hamad	External	Governor	Mobile No. Email:	Monthly	Email	Sunday
Civil defense	External	safety precautions	Mobile No. Email:	Monthly	Visit	Wednesday
Tourism Authority	External	Tourism regulations	Mobile No. Email:	Monthly	Visit	Wednesday

8-2 Identify personal communication and effective communication.

Many studies have found that the project manager spends 90% of his time only communicating with the project team and different levels of stakeholders either externally or internally. Effective communication is the ability to communicate an idea in a simple and clear way to others. It also plays an important role in solving problems and reducing their occurrence, by maintaining calm and hearing all points of view and then finding an appropriate solution for every issue. In our project, we always try to build a good relationship with all using many techniques as follows:

- 1- Building respect and mutual trust among all and taking into consideration the multicultural environment.
- 2- Active listening which is the key to understanding and delivering messages.
- 3- Making sure everyone is on the same page and understands the goals.
- 4- Emotional intelligence: The speaker must be able to interact and influence others.
- 5- Making sure all team members read the team charter and know their responsibilities.

8.3 Identify the shapes, models, and channels of personal communication

There are many ways to exchange information throughout projects such as written forms and spoken forms or through gestures or media. In our project, we have many factors that determine the most suitable form to use to send or receive messages. Those factors are urgency and sensitivity of needed information, availability of technology, and to whom we are talking.

Anyhow, interactive communication like phone calls, and face-to-face meetings, is the best method to deliver messages. Push communication like emails and fax, and pull communication like uploading project drawings to google drive, have been used throughout different stages of the project.

8.4 Establish the communication matrix

The communication matrix is a document that helps sponsors, project managers, project team, and stakeholders to establish effective and efficient methods of communication which contribute clearly to the success of the project.

Table 8-2: Communication Matrix

Owner	Role	Audience	Frequency	Method	Tasks	Agenda
Abdullah	Project Manager	Project team Project sponsor Stakeholders	Once	Face to face	Kickoff Meeting	Introducing a project. Review objectives and goals
Abdullah	Project Manager	Project team	Weekly	Face to face	Project Team Meetings	Review status of project
Abdullah	Project Manager	Sponsors and Stakeholders	Monthly	Conference call	Project Status Meetings	Present project schedule
Abdullah	Project Manager	Key Stakeholders	Monthly	Conference call and Email	Project Status Reports	Detailed report on project status including progress, costs, and problems

Saleh	Operation manager	Project Manager and Contractor	Daily	Conference call	daily briefing	Review status and upcoming tasks
Civil defense	External	safety precautions	Quarterly	as needed	Visit	Regular Check
Tourism Authority	External	Tourism regulations	Quarterly	as needed	Visit	Regular Check

8.5 Provide 3 wrong scenarios of communication

- 1- If any of the team members send some confidential information through what's up. In team charter, the official email is the only method to exchange confidential stuff.
- 2- If the project manager tried to call a certain stakeholder, and he did not get his call answered. The project manager did not update the stakeholders register regularly so that the stakeholder might change his phone number.
- 3- If the project manager speaks only in English in the morning briefing, and some employees do not know English.

8.6 Develop and prepare stakeholder assessment matrix

Managing the involvement of stakeholders is one of the most challenging yet important tasks of a project manager. However, there are many tools and techniques such as the stakeholder engagement matrix that facilitate and improve a project's stakeholder management significantly. The Stakeholder Engagement Assessment Matrix is a simple yet powerful project management technique to document desired and monitor actual engagement levels of stakeholders. It helps identify potential gaps in the involvement of stakeholders.

How to Create a Stakeholder Engagement Matrix?

A stakeholder engagement assessment matrix consists of several rows, each of them representing one stakeholder (or a group of homogenous stakeholders, if applicable).

The columns indicate the level of engagement. However, the sixth edition of PMBOK suggests the following classification:

- unaware,
- resistant,
- neutral,
- supportive,
- leading.



Table 8-3: Stakeholder Engagement Matrix

Owner	Power / interest	Unaware	Resistant	Neutral	Supportive	Leading
Ahmad	High / High	C			D	
Saleh	High / low			C	D	
Ali	Medium / low				D C	
Sami	High / medium			C		
Saad	Medium / medium				D C	
Abdullah	Medium / High				C	D
Bandar	Medium / low	C				
Foti	Low / Medium			C	D	
Fahad	Medium / Medium			C		
Hamad	Low/low		C			

9- Leadership

9.1 Identify the leadership model, which is preferred to the project leadership

Leadership is as old a phenomenon as human civilization; and perhaps that is why there are so many definitions of leadership. However, while remaining cognizant of the focus of this study; that is the impact of leadership skills of the project leader for successful execution of the project, only relevant definitions will be discussed.

Leadership is defined as the conduct of an individual which aims at guiding the activities of a group for achievement of a shared goal” (Gregoire & Arendt, 2004, p.396).

Project leaders may lead their teams in many ways. The style a project leader selects may be a personal preference, or the result of the combination of multiple factors associated with the project. The style a project leader uses may change over time based on the factors in play.

9.1.1 Leadership Styles

Research describes numerous leadership styles that a project leader can adopt. Some of the most common examples of these styles include but are not limited to:

- **Authoritarian Leadership Style:** This style is also called Autocratic style, where the leaders are distant from their employees. This type of leadership is gained through demands, punishments, regulations, rules and orders. Followers of authoritarian leaders must adhere to all the instructions without comment or question.
- **Democratic Leadership Style:** This is also known as participative leadership style. This style, unlike the authoritarian style, is characterized by cooperation, active participation, accountability and delegation of responsibilities and tasks. Followers are held accountable for their decisions, actions, and willingness to maintain the group’s freedom and autonomy. **This the style which will be selected in our project**
- **Laissez-faire leadership Style:** (e.g., allowing the team to make their own decisions and establish their own goals, also referred to as taking a hands-off style), Laissez-faire is often used to describe a laissez-faire economics or political policy but is also used regularly in the business world to describe a leadership style. Laissez-faire leaders have an attitude of trust and reliance on their employees. They do not micromanage or get too involved; they do not give too much instruction or guidance. This leadership style is suitable for

organizations that have long-term employees. It is, however, not suitable for environments that require direction, quick feedback and praise (Uhl-Bien & Marion, 2009).

9.2 The reasons for which such model is preferred

The democratic style of leadership allows the team to work as they want freely and with minimal interference, because he trusts the team with less interference from him. It will be successful, because the team is self-motivated and well experienced.

The democratic leadership style can be one of the most effective styles of leadership. This leadership style values collaboration and affirmation of followers.

A democratic leader shares the decision-making and problem-solving responsibilities with his or her leadership team, while retaining the ultimate say in the final resolution.

This type of leader encourages employees to set workable goals and recognizes their achievements (S. Jakhar, 2017).

9.3 To provide “5” proposals for the motivation methods that are compatible with the nature of the project

Below are some key tactics to keep the team motivated:

1) Offer employee rewards

If people know they'll be rewarded for a job well done, they'll be 1) more likely to, well, do a good job, and 2) stay to see things through. By starting an incentive program, you will assure that your good people are motivated. Maybe it's a quarterly bonus. Maybe it's a commission structure that's better than the competition.

2) Give them room to grow

Giving the employees room to grow within the company is a huge motivator. When you give your best employees growth opportunities, it shifts their thinking from “this is just a side job” to “this could be a full-fledged career.”

3) Be transparent

Having insight into how business is going makes your employees more invested.

4) Recognize their achievements

Sometimes all people want is some recognition for a job well done. So, do not hesitate to praise them. It's not just about the act of recognition, but the principle: If people feel that their efforts are appreciated, they will feel compelled to continue working hard.

5) Ask them what they want

Instead of trying to guess what's most important to them, actually sit down with them and find out what they value. Crazy, right? Doing the unexpected might be the best thing you can do for your employees, and your company (squareup.com, 2020).

10- Teamwork

10.1 To design RACI model for 3 administrative measures of the project

RACI matrix: A table showing for each project task, who is responsible, accountable, who can be consulted, and who needs to be informed. (Also known as responsibility or assignment chart).

- Responsibility Assignment Matrix is Outputs from Quality Planning.

Responsibility Matrix (RM):

One tool that is widely used by project managers is the responsibility matrix (RM). The RM (sometimes called a linear responsibility chart) summarizes the tasks to be accomplished and who is responsible for what on a project. In its simplest form an RM consists of a chart listing all the project activities, the participants responsible for each activity, clarifies critical interfaces between units and individuals that need coordination, provide a means for all participants to view their responsibilities and agree on their assignments & clarifies the extent or type of authority that can be exercised by each participant.

Why responsibility Matrices?

- Responsibility matrices provide a means for all participants in a project to view their responsibilities and agree on their assignments.
- They also help clarify the extent or type of authority exercised by each participant in performing an activity in which two or more parties have overlapping involvement.
- By using an RM and by defining authority, responsibility, and communications within its framework, the relationship between different organizational units and the work content of the project is made clear.

Table 10-1: RACI Matrix

TASK	Marketing team	Marketing Manger	sponsor	Construction manager	project manager	Civil Engineer	Top management of the resort	Resort Employees as a team	Complaints team
Ceiling Molding				A	I	R	C		
Reply to customer complaints					C		A	I	R
Advertisement in the newspaper	R	A	I				C		

R= Responsible: Person who is completing the task

A= Accountable: Person who is making decisions and taking actions on the task(s)

C= Consulted: Person who will be communicated with regarding the decision-making process and specific tasks

I = Informed: Person who will be updated on decisions and actions during the project

11- Conflict and Crisis

11.1 To identify the conflict and crisis

The concept of conflict and crisis has been identified in management literature by several scholars and managers in practice as one of the endemic phenomena which every organization is bound to experience and respond to at any stage of its life cycle as a result of its constant interaction and interdependence with the environment.

Robbins, Judge and Vohra iterate that functional conflict is constructive in nature and supports organizational objectives and enhances performance outcome (2011, p.98). On the other hand,

dysfunctional conflict is destructive in nature and has the tendency to obstruct organizational goal attainment (Wobodo, 2019).

Accordingly, Sullivan (2003) spotted out five forms of crises that are likely to befall organizations at any level of their life circle as including financial, public relation, strategic, natural or sudden and smoldering crisis:

- Financial Crisis
- Public Relations Crisis
- Strategic Crisis
- Natural Crisis
- Smoldering Crisis

11.2 To provide 3 expected scenarios of the conflict's events in the project

Conflict is as inevitable in a project environment as change seems to be. When project team members interact during the course of completing their tasks and responsibilities, there is always a potential for conflict. In fact, it is virtually impossible for people with diverse background skills and norms to work together; make decisions, and try to meet project goals and objectives without conflict.

1. Dependency between tasks and the effect of delaying them, as any delay may cause delays in other activities with other suppliers.
2. Identification of one of the stakeholders at a late time, which caused a delay and an increase in some activities.
3. Non-delivery of reports to the concerned persons, which causes differences and sometimes the lack of interest of those concerned.

11.3 To set the optimal strategies to deal with each conflict, and specify the reason of preference

Table: 11-1 Conflict Resolution Strategy

	Conflict events	Optimal strategies
1	Dependency between tasks and the effect of delaying them	Planning taking into account all interrelated activities and emphasizing with all concerned the use of project schedule management and follow-up of all activities periodically to ensure that there is no delay in the delivery of any activity
2	Identification of one of the stakeholders at a late time	Identify all stakeholders early and review the record of those involved periodically
3	Non-delivery of reports to the concerned persons	Determining all communication plans and assigning responsibilities for delivering the required reports to the concerned persons in a timely manner

11.4 Root Cause Analysis

Root cause analysis (RCA) is a process designed for use in investigating and categorizing the root causes of events with safety, health, environmental, quality, reliability, and production impacts. The term “event” is used to Four Major Steps the RCA is a four-step process involving the following:

1. Data collection.
2. Causal factor charting.
3. -Root cause identification
4. Recommendation generation and implementation.

Table: 11-2: Root Cause Analysis

	Conflict Event (1)	Conflict Event (2)	Conflict Event (3)
Item	Dependency between tasks and the effect of delaying them	Importance of updating registers regularly	Non-delivery of reports to the concerned persons
Why (1)	Delay in electrical inspection	one of the key stakeholders was not able to attend an important meeting	one of the new supervisors did not send the weekly reports to the manager

Why (2)	did not finish the electrical installation as scheduled	we informed him at a late time	the supervisor did not know the right receivers of the weekly report
Why (3)	Some equipment arrived a month behind	we could not reach him on his registered phone number	the supervisor did not get enough coaching
Why (4)	International shipping is suspended	the stakeholder's register was not updated in the last three months	due to relocation, the new supervisor attended only two days of the orientation week
Why (5)	Mandatory lockdown due to COVID-19	The manager was busy following up on deliverables and forgot to update the register	the development team of the project did not follow up with this new supervisor and coach him
Solutions	1-The solution is to plan, confirm and review activities to avoid any delay. 2-Always have alternative plans. 3-Using either fast-tracking or crashing to catch up.	1- the stakeholders register must be updated regularly	1- all team members should read the team charter carefully, especially newcomers. 2- development team should do their responsibilities towards new joiners

12- Resourcefulness

12.1 To distribute the human resources on the functions.

Human resources are the most important in project organization. Therefore, distributor is one way to highly decentralized to achieve project target and balance between authority administrator's different level. This table design to know everyone which his function. This table design to know everyone which his function.

Table:12-1 Human Resources Function

Name	Function	Contact Information
Ahmad	Resort manager (sponsor)	Mobile No. Email:
Saleh	Operation manager	Mobile No.

		Email:
Ali	Maintenance manager	Mobile No. Email:
Sami	Purchase manager	Mobile No. Email:
Saad	Accountant manager	Mobile No. Email:
Abdullah	PM	Mobile No. Email:
Bandar	Internal Audit	Mobile No. Email:
Khalid	HR employee	Mobile No. Email:
Raid	HR employee	Mobile No. Email:
Mahmood	Accountant	Mobile No. Email:
Dan	Accountant	Mobile No. Email:
Saied	Room service maid	Mobile No. Email:
Jaen	Room service maid	Mobile No. Email:
Siddique	Room service maid	Mobile No. Email:
Neel	Room service maid	Mobile No. Email:
Daniel	Room service maid	Mobile No. Email:

Ibrahim	Electrical Engineer	Mobile No. Email:
Sara	Fire fighting	Mobile No. Email:
Mustafa	Mechanical Engineer	Mobile No. Email:
Aisha	Reception employee	Mobile No. Email:
Halima	Reception employee	Mobile No. Email:
Turki	Reception employee	Mobile No. Email:
Manal	Marketing employee	Mobile No. Email:
Hana	Marketing employee	Mobile No. Email:
Abadi	Purchaser	Mobile No. Email:
Rayan	Purchaser	Mobile No. Email:

12.2 Analyze the influence of conducting Crashing and Fast-tracking process on the time table, in addition to representing the table after achieving the two measures.

The skill of schedule development may not be enough as the demand to deliver the project sooner will require the project manager to adjust the schedule for reducing the overall project duration. For this purpose, the project manager will apply schedule compression techniques, viz. fast tracking and crashing.

If the stakeholders do not agree with the duration of the project schedule during initial schedule

development, the project manager can conduct schedule compression. Sometimes schedule compression may happen while the project is ongoing due to changing needs or delays. Let's look at the reasons for compressing the schedule.

Schedule compression reasons

There can be a non-exhaustive list of reasons for compressing the schedule during the initial schedule development. However, common reasons are as follows.

1. An externally imposed deadline requires completion of the project sooner than later. For example, the deadline to submit some information to the government
2. Lack of additional funding forces the project completion by the end of the fiscal year.
3. The project is part of the program which requires the deliverables from the project earlier so work can proceed on other projects
4. A key stakeholder will be unavailable for an extended period urging an early finish of a part of the project work
5. The project must be delivered before an operational contract expires, etc. Now, here are some reasons for schedule compression while the project is ongoing.
 1. There is an urgency to compress the schedule because the work has progressed slower than expected. The slow progress may have been due to,
 - the low skill level of project resources
 - scarcity of resources
 - a serious setback
 2. The original estimate was too aggressive and unrealistic
 3. There has been a change or an addition to the scope as the project progressed, etc.

So, one or more of these reasons may result in schedule compression.

Methods of schedule compression

There are two ways a schedule can be compressed; by fast tracking or crashing. Fast tracking usually results in increased risk while crashing mostly results in increased cost. There is a possibility that fast tracking increases costs. So, let's talk about these in detail. We will take the example of two activities A and B, that have a finish to start dependency.

Fast tracking

In this method, the activity will start earlier than the originally planned start date. The work of two sequenced tasks will have an overlap. Overlapping refers to the parallel run of the two

activities. So, when fast tracked, B will not wait for A to finish. Instead, it will start earlier and will run in parallel with A. The duration of each activity is unchanged, but the time it takes to complete the set of these activities is reduced.

Fast track the critical activities before considering the non-critical activities because fast tracking non-critical work will not produce any time saving as the deliverables and overall project is still taking the same amount of time. So the whole value of fast tracking is lost, and unnecessary risk is introduced in the project.

Activities that have the same resources working cannot be fast tracked against each other because a resource can work on only one task at one time.

Here is an example.

Activity A is 'Design the Tower' and activity B is 'Construct the Tower'

Activity A has a finish-to-start relationship with activity B.

The design, including reviews and refinement, will take three months to complete. The project manager, working with the project team and stakeholders, decided to begin construction one month earlier because the project must complete the tower sooner. Therefore, the team overlapped the two activities for one what will happen if there are changes to the design as a result of the reviews? The changes may impact the construction work that has already started. So, the risk of rework increases. If there is rework, then it will very likely increase the cost too.

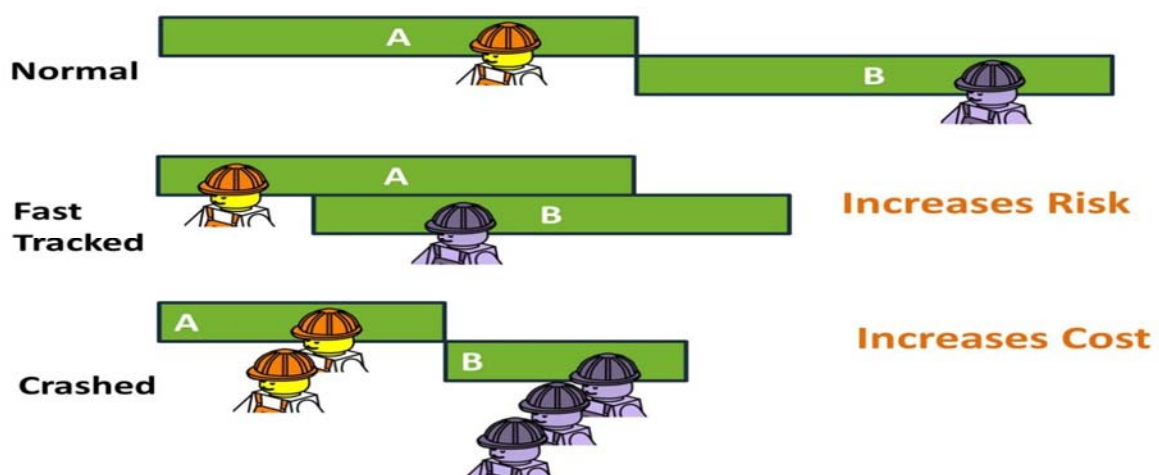


Fig.12-1 Fast Tracking and Crashing

Crashing

Sometimes fast tracking may not be possible or desirable. In that case, the project manager can use crashing to get the desired results. Several methods can be used to crash the schedule and reduce the duration of the activities. For example,

1. Add more resources, which can be both people and physical resources.
2. Make resources work overtime
3. Replace current resources with higher productivity ones
4. Give an incentive to the seller for finishing the work earlier

All of the above options are bound to result in increased costs. To shorten the critical path, always crash the critical activities first. Once all possible crashing of critical activities is complete, then review the non-critical activities. If the critical path has shifted after the crashing of critical activities, non-critical activities may become critical. So, these new critical activities can now be crashed, to further reduce the project duration.

Fast tracking or crashing?

The decision is not so easy. I suggest looking at several factors before making a decision. Here are a few important ones.

- Does the project budget has room to spend on crashing?
- How do stakeholders respond to additional work and project delay? Do stakeholders consider scope change as normal and an unavoidable part of work, or do they frown upon changes and delays?
- Are additional resources available? How long is the process of on-boarding the resources?
- Can we offer an incentive big enough that will entice the seller to finish the work faster?

Similarly, consider any other information that can help.

Stakeholders at an organization consider project end dates as fixed and are not willing to consider a delay. These stakeholders will accept higher risk and lower quality, but will not agree to extend the schedule. In this instance, fast tracking is always preferable.

Another organization considers quality as extremely important. Crashing would be a better choice then as fast tracking may impact quality.

So, projects may need to compress the schedule for various reasons. Both crashing and fast-tracking methods are available. As discussed above, projects can consider several factors to

decide which will be a better method for various sets of activities in the schedule.

Here are links to further readings on fast tracking and crashing techniques.

13- Negotiations

Negotiation is a technique by which individuals settle contrasts. It is an interaction by which compromise, or understanding is reached while staying away from contention and questions. The interaction by which at least two individuals or gatherings settle an issue or show up at a superior result through compromise. Explicit types of exchange are utilized as a rule like irreconcilable circumstance, great buying etc.

Accomplishing a beneficial result, it could be helpful to follow an organized way to deal with negotiation. there is just a set measure of significant worth in the arrangement, and the two sides should leave with the more ideal arrangement.

13.1 General Rules for Negotiation Process:

1- Separate people from problem

- Remember that people are human.
- Emotions can become entangled with the problem and can set positions.
- Try to understand their perceptions.
- Don't assume you know how they feel.
- Be able to see it from their side.
- Openly discuss different perceptions.
- Don't blame people for problems.

2- Focus on interests, not positions

- Interests can inform positions.
- Look at interest from their perspective.
- Sharing interests can show both sides not as opposed as initially thought.
- Seek to understand their needs and wants.
- Money is NOT the most important driver, sometimes there are human needs.
- Openly discuss and understand interests.

3- Invent options for mutual gain

- When stuck, sit back and be creative in generating new ideas.
- Encourage looking at the bigger picture.

- Don't think your offer or view is the only solution.
- Step back from positions and refocus on interests.
- Try to solve each other's problems.
- Be prepared to lead and encourage brainstorming.

4- Insist on using objective criteria

- Bring standards of fairness or scientific merit to problems.
- Use recent comparisons or guides.
- Be specific with facts.
- Refer to original aims and ideal outcomes.
- Review limitations, scope or authority and autonomy.
- Develop specific criteria where needed.

13.2 Negotiation plans:

▪ Plan A:

- a. **Preparation:** Exploring the two sides of the conversation decide your generally wanted and least wanted potential results. Know the relationship that you need to assemble or keep up with the other party.
- b. **Discussion:** Each side has to be permitted to share their fundamental advantages and concerns continuously.
- c. **Clarification of goals:** an essential of the arrangement cycle, without its errors are probably going to happen which might make issues and hindrances arrive at a valuable result.
 - a. This explanation is generally expected to distinguish some shared beliefs.
- d. **Agreement:** understanding should be made completely clear, so the two sides realize what has been chosen. an agree arrangement has been settled upon, the two sides ought to say thanks to one another for the conversation, regardless of the result of the exchange.
- e. **Bargain:** The objective of this progression is to arise with a mutually advantageous result. pointers of adaptability incorporate concession rates, inception of new proposition, and other delicate practices.

- f. **Conclude and implement** at that point, layout the assumptions for each party and guarantee that the case will be executed viably. a satisfactory arrangement has been settled upon the two sides ought to say thanks to one another for the conversation.
- **Plan B:**
 - a. **What's needed:** Think about what you must get out of this negotiation and what you would like to have. The most important thing from your list needs to be obtained.
 - b. **Walkaway points:** concessions you might be prepared to make. reviewing what you are prepared to trade on will make it easier to go into the negotiation. Ensuring that you know what they are prepared to sacrifice during the negotiation.
 - c. **Technique's requirement:** Reviewing techniques might point out involvement through negotiation and achieve the same objective using techniques and identifying sit best for management style.
 - d. **Authority Limits:** confirm from management the authority of discussion and point should step away from the deal.

15- Project design

15.1 Triple constraint of the project

Keeping the three elements of the Triple Constraint in mind as you manage a project will help you adapt to changing conditions while still delivering projects on time, within budget, and within scope. Change is a given in project management, and being adequately prepared ensures



that changes don't jeopardize the entire project and the relationships involved.

1- Scope refers to the extent range, breadth, reach, confines, dimension, realm, gamut, spectrum or spread of the work that's to be done on a project. It encompasses the sum of all the products and services to be provided, describing what's being done and how much of it. Hence, **based on above our project scope is to construct a new resort called Twaiq Resort which will be consist of:**

- 1- 1 executive suite
- 2- 3 Junior suite
- 3- 10 double room
- 4- 5 single room
- 5- 1 admin building
- 6- Lobby
- 7- Swimming pool
- 8- Playing areas
- 9- Parking lot
- 10- Restaurant

2- Time is simply the amount of time you need to complete the project or tasks within the project. **And for our project the estimated duration to complete the work is 12 months.**

3- Cost might include labor costs, hardware, software, and other charges and all resources required for the project. **However, the estimated budget is 1,000,000 Saudi Riyal.**

15.2 List of the project success factors.

There are many factors which may lead any project to success as mentioned below but not limited to:

- 1- Effective communication with Key Stakeholders.
- 2- Proper Risk Management.
- 3- Experienced Project Managers and Professional Project Team Leaders
- 4- Working with Committed People
- 5- Use a Professional Software.
- 6- Strong Closure of Project.
- 7- Effective listening.
- 8- Close Monitoring & Controlling
- 9- Proper Planning

15.3 Develop and identify work breakdown structure, in addition to preparing a guide to illustrate it.

A Work Breakdown Structure (WBS) is a hierarchical outline of the tasks required to complete a project. The WBS “breaks down” the structure of a project into manageable deliverables. Each deliverable is assigned a task, or series of tasks that can be further broken down into subtasks to meet the needs of the project. The advantage of using a WBS as part of project lifecycle management is that it takes large, complex projects and breaks them into smaller, more manageable tasks that can be assigned to specific people or teams to deliver. WBS consists of three factors which are control account, planning package, and work package. However, the control account is a management control point where scope, budget, and schedule are integrated and compared to the earned value for performance measurement. While planning package is a work breakdown structure component below the control account and above the work package with known work. And the work package is the work defined at the lowest level of the WBS for which cost and duration can be estimated and managed. There are two major techniques to create WBS which are decomposition and expert consult. According to PMI, decomposition is “a planning technique that subdivides the project scope and project deliverables into smaller, more manageable components, until the project work associated with accomplishing the project scope and deliverables is defined in sufficient detail to support executing, monitoring, and controlling the work” (PMI, 2004).

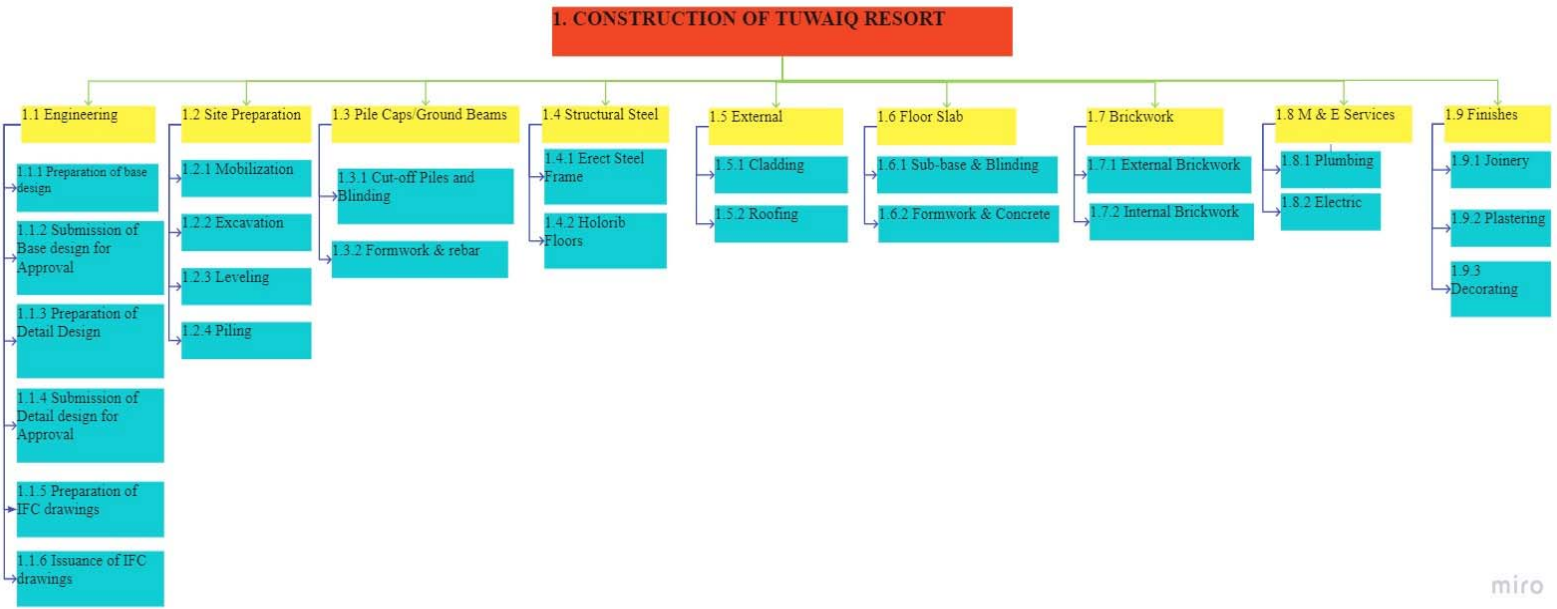


Fig 15-1 Work Breakdown Structure

Table 15-1 WBS Dictionary

WBS DICTIONARY						
PROJ CT No:	MA-015-02	FULL PROJECT NAME:	<i>Construction of Tuwaiq Resort</i>			PROJECT MANAGER: Abdullah
ID	WBS ID	Item	KEY MILESTONES	RESPONSIB LE	COST ESTIMA TES	CON
1.1	1.1.1	Preparation of base design	Electrical Single Line Diagram	Technical Drawing Department	5000.00	Yes
			Electrical Equipment Layout			
			Electrical Equipment List			
			Civil Equipment Layout			
			Civil Leveling Layout			
			Civil Site Survey			
			Mechanical Equipment List			
			Fire Fighting Layout			
	1.1.2	Submission of Base design for Approval	Submission of Electrical Single Line Diagram	Technical Drawing Department	10,000.00	Yes
			Submission of Electrical Equipment Layout			
			Submission of Electrical Equipment List			
			Submission of Civil Equipment Layout			
			Submission of Civil Leveling Layout			
			Submission of Civil Site Survey			
			Submission of Mechanical Equipment List			
			Submission of Fire Fighting Layout			

	1.1.3	Preparation of Detail Design	Electrical schematic Diagram	Technical Drawing Department	10,000.00	yes
			Cable Sizing Calculation			
			Transformer Sizing Calculation			
			Generator Sizing Calculation			
			Cable schedule			
			Steel Structural schedule			
			Architecture drawings			
			HVAC Calculation			
			HVAC Layout			
			Doors Selection drawings			
			Windows selection drawings			
			Overall Layout			
			Fire Fighting Layout			
			Foundation drawings			
			Excavation drawings			
	1.1.4	Submission of Detail design for Approval	Submission of Electrical schematic Diagram	Technical Drawing Department	10,000.00	yes
			Submission of Cable Sizing Calculation			
			Submission of Transformer Sizing Calculation			
			Submission of Generator Sizing Calculation			
			Submission of Cable schedule			
			Submission of Steel Structural schedule			
			Submission of Architecture drawings			
			Submission of HVAC Calculation			
			Submission of HVAC Layout			
			Submission of Doors Selection drawings			

			Submission of Windows selection drawings			
			Submission of Overall Layout			
			Submission of Fire Fighting Layout			
			Submission of Foundation drawings			
			Submission of excavation drawings			
	1.1.5	Preparation of IFC drawings	Electrical schematic Diagram	Technical Drawing Department	10,000.00	yes
			Cable Sizing Calculation			
			Transformer Sizing Calculation			
			Generator Sizing Calculation			
			Cable schedule			
			Steel Structural schedule			
			Architecture drawings			
			HVAC Calculation			
			HVAC Layout			
			Doors Selection drawings			
			Windows selection drawings			
			Overall Layout			
			Fire Fighting Layout			
			Foundation drawings			
			Excavation drawings			
	1.1.6	Issuance of IFC drawings	Electrical schematic Diagram	Technical Drawing Department	5000.00	yes
			Cable Sizing Calculation			
			Transformer Sizing Calculation			
			Generator Sizing Calculation			
			Cable schedule			
			Steel Structural schedule			
			Architecture drawings			
			HVAC Calculation			
			HVAC Layout			

			Doors Selection drawings			
			Windows selection drawings			
			Overall Layout			
			Fire Fighting Layout			
			Foundation drawings			
			Excavation drawings			
1.2	1.2.1	Mobilization	Issue Order for Site Offices and Utility	Civil Department	5000.00	yes
			Shift the Site Offices to the site			
			Issue Order for Site Furniture			
			Shift the Furniture to the site offices			
			Assign the Project team member			
			Mobilize the team member to the site			
			Make the Geotechnical soil test			
	1.2.2	Excavation	Issue Order for Subcontractor	Civil Department	10,000.00	yes
			Mobilize the Subcontractor team to the site			
			Shift all the agreed Equipment to the site			
			Clean the Site			
			Excavate and remove the soil			
			Remove the Rocks			
	1.2.3	Leveling	Make the first layer of the Soil	Civil Department	5000.00	yes
			Test the First Layer of the Soil			
			make the second Layer of the Soil			
			Test the First Layer of the Soil			
			Make the final Layer of the Soil			
			Test the final Layer of the Soil			
	1.2.4	Piling	Pre-drilling the piles		10,000.00	yes

			Lowering the concrete pile into the hole	Survey & Civil Departments		
			Pouring concrete gaps between the pile and the earth			
1.3	1.3.1	Cut-off Piles and Blinding	Laid a weak concrete above a layer of hardcore	Survey & Civil Departments	30,000.00	yes
			Install a thin layer of blinding			
			Sealing in the underlying material and levelling off the surface			
	1.3.2	Formwork & rebar	Marking of foundation layout at site	Survey & Civil Departments	30,000.00	yes
			Placement of reinforcement steel			
			Erection of concrete formworks for footings			
			Placement of concrete and vibrating and levelling of concrete surface			
			Removal of formwork after the concrete has set			
			Backfilling of excavation up to the required depth in the number of layers			
1.4	1.4.1	Erect Steel Frame	Assembly of steel components into a frame on site	Mechanical & Civil Departments	70,000.00	yes
			Lift the frame and placed into the position before they are connected together			
			Check the quality of Installation for the frame			
	1.4.2	Holorib Floors	Lay the sheet of Holorib floors of the steel	Mechanical & Civil Departments	80,000.00	yes

1.5	1.5.1	Cladding	Select the material of cladding	Construction & architecture Dep	50,000.00	yes
			Install the cladding			
			Test the water penetration, or provision of drainage			
	1.5.2	Roofing	Install the drip edge	Construction & architecture Department	50,000.00	yes
			Roll out the underlayment			
			Cover the roof with felt paper			
			Cap the ridge			
			Seal it up			
1.6	1.6.1	Sub-base & Blinding	Create flat horizontal for the floor	Construction & Civil Departments	50,000.00	yes
	1.6.2	Formwork & Concrete	Pure Concrete	Construction & Civil Departments	50,000.00	yes
			Cure and strip forms			
1.7	1.7.1	External Brickwork	Purchase the Brick	Procurement & Construction Dept.	40,000.00	yes
			Install the Brick and fix it in the position			
			Install a waterproofing strip at joints			
	1.7.2	Internal Brickwork	Purchase the Brick	Procurement & Construction Dept.	40,000.00	yes
			Install the Brick and fix it in the position			
			Install a waterproofing strip at joints			
1.8	1.8.1	Plumbing	Installing or maintaining heating systems	Electrical & Mechanical Departments	60,000.00	yes
			Installing of water supply			
			Fitting domestic appliances			
			Install waste system			
			Install HVAC system			
			Install the firefighting system			
	1.8.2	Electrical	Pull the wires			yes

			Install the lighting fixtures	Electrical & Mechanical Departments	100,000.0 0	
			Install the sockets and buttons			
			Install fire alarm system			
1.9	1.9.1	Joinery	Select all the furniture	Architecture Department	100,000.0 0	yes
			fix all the joinery in their locations			
	1.9.2	Plastering	paint all the rooms with first layer	Architecture Department	50,000.00	yes
			paint all rooms with second layer			
	1.9.3	Decorating	arrange the furniture as per the interior design	Architecture Department	150,000.0 0	yes

16- Requirements and objectives

16.1 Identify Requirement traceability matrix

Requirement Traceability Matrix (RTM) is a document that maps and traces user requirements with test cases. It captures all requirements proposed by the client and requirement traceability in a single document, delivered at the end of life cycle. The main purpose of Requirement Traceability Matrix is to validate that all requirements are checked via test cases such that no functionality is unchecked during testing. The Table 61-1 below shows the details related to our RTM.

Table. 16-1 Requirement traceability matrix

Requirements Traceability Matrix								
Project Name		CONSTRUCTION OF TUWAIQ RESORT						
Cost Center		Technical Department						
Project Description		The resort is a self-contained commercial establishment that provides excellent hospitality services, such as food, drink, lodging, sports, entertainment, and shopping on the premises.						
ID	Associate ID	Requirements Description	Goal Objectives, opportunities	Team	Category	Product Design	Specifications	Test Cases
1.1	1.1.1	Prep. Of base design	minimum viable product	office	Required	Finished	Finished	Done
	1.1.2	Submission of BD	revision	on-site	Required	Finished	Finished	Approved
	1.1.3	Prep. of detail design	minimum viable product	office	Required	Finished	Finished	Done
	1.1.4	Submission of DD	revision	on-site	Expected	Finished	Finished	Approved
	1.1.5	Prep of ICF drawing	minimum viable product	Office	Required	Finished	Finished	Done
	1.1.6	Issuance of ICF Drawings	Revision	Office	Required	Finished	Finished	Approved
1.2	1.2.1	Mobilization	MDP	on-site	Required	Finished	Finished	Done
	1.2.2	Excavation	MDP	on-site	Required	Finished	Finished	Done
	1.2.3	Leveling	MDP	on-site	Required	Finished	Finished	Done
	1.2.4	Piling	MDP	on-site	Required	Finished	Finished	Done
1.3	1.3.1	Pile & Blinding	MDP	on-site	Required	Finished	Finished	Done
	1.3.2	Formwork & rebar	MDP	on-site	Expected	Finished	Finished	Done
1.4	1.4.1	Electrical steel Frame	MDP	on-site	Expected	Finished	Finished	Done
	1.4.2	Holorib Floor	MDP	on-site	Required	Finished	Finished	Done
1.5	1.5.1	Cladding	MDP	on-site	Required	Finished	Finished	Done
	1.5.2	Roofing	MDP	on-site	Required	Finished	Finished	Done
1.6	1.6.1	Sub-base & blinding	MDP	on-site	Required	Finished	Finished	Done
	1.6.2	Formwork & Concrete	MDP	on-site	Required	Finished	Finished	Done
1.7	1.7.1	Ex. Brickwork	MDP	on-site	Required	Finished	Finished	Done
	1.7.2	Int. Brickwork	MDP	on-site	Required	Finished	Finished	Done
1.8	1.8.1	Plumbing	MDP	on-site	Required	Finished	Finished	Done
	1.8.2	Electric	MDP	on-site	Required	Finished	Finished	Done
1.9	1.9.1	Joinery	MDP	on-site	Required	Finished	Finished	Done
	1.9.2	Plastering	MDP	on-site	Required	Finished	Finished	Done
	1.9.3	Decorating	MDP	on-site	Expected	Finished	Finished	Done

16.2 To specify the methods used in requirement collection.

The collect requirement is a process that determines, as well as documents and manages the needs and requirements of the stakeholders, to meet the objectives of the Project Management task. and below are examples for the method used to collect the requirements:

- Interviews
- Questionnaires or Surveys
- Workshops
- Brainstorming
- Prototyping

16.3 Develop the hierarchical structure of the objectives of the project connected to the strategy.

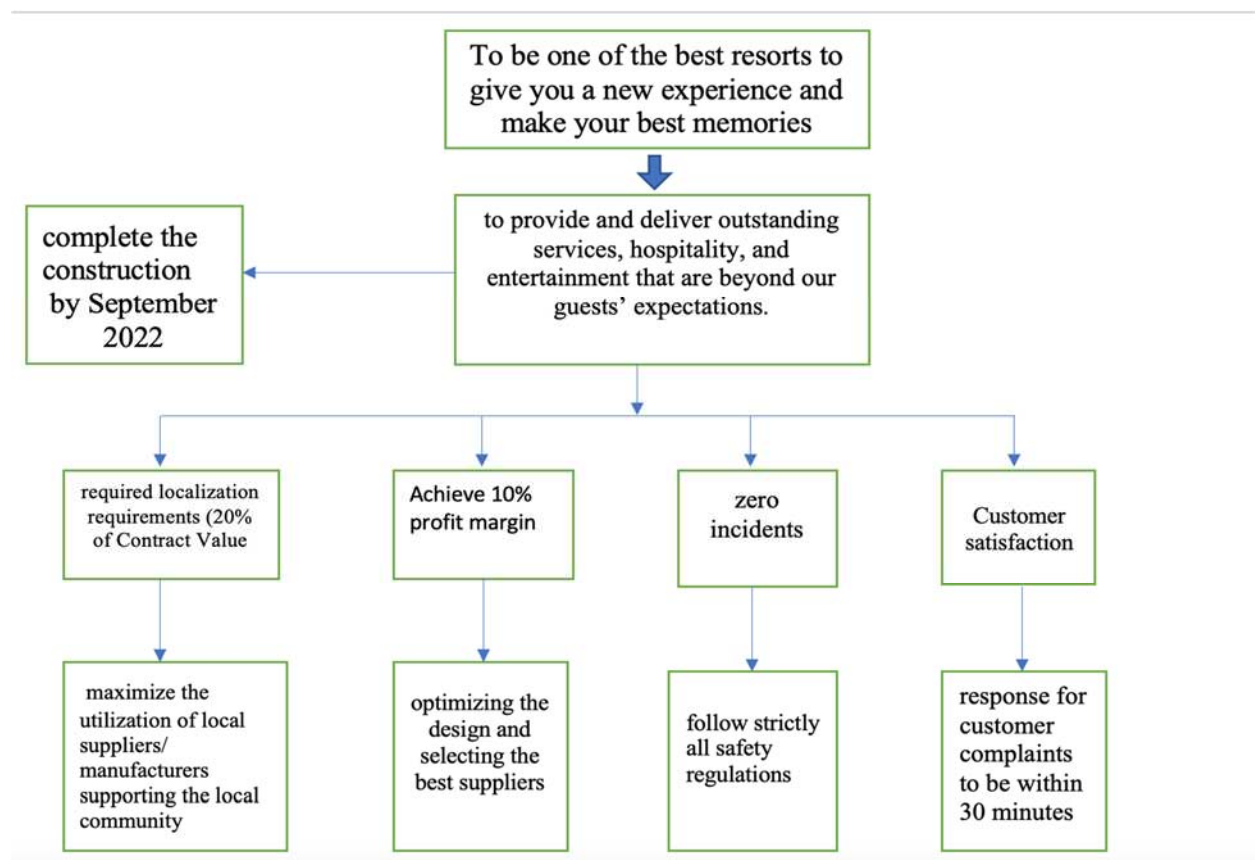


Fig.16-1 Hierarchical structure of the objectives

17- Scope

The scope is defined as the work to be done in a given project. In fact, one of the most significant roles of a project manager is managing the project scope once the project is underway. The scope is defined by understanding the project requirements and the client's expectations.

Project Scope Management refers to the set of processes that ensure a project's scope is accurately defined and mapped. Scope Management techniques enable project managers and supervisors to allocate the right amount of work necessary to successfully complete a project—concerned primarily with controlling what is and what is not part of the project's scope.

(Monnappa, 2021)

17.1 develop, identify, and prepare the scope statement (Its limits-and objects that are not included)

The project scope statement is the description of the project scope, major deliverables, assumptions, and constraints.

The project scope statement documents the entire scope, including project and product scope. It describes the project's deliverables in detail. It also provides a common understanding of the project scope among project stakeholders. It may contain explicit scope exclusions that can assist in managing stakeholder expectations. It enables the project team to perform more detailed planning, guides the project team's work during execution, and provides the baseline for evaluating whether requests for changes or additional work are contained within or outside the project's boundaries.

The degree and level of detail to which the project scope statement defines the work that will be performed and the work that is excluded can help determine how well the project management team can control the overall project scope.

The detailed project scope statement, either directly or by reference to other documents, includes the following:

- **Product scope description.** Progressively elaborates the characteristics of the product, service, or result described in the project charter and requirements documentation.
 - **Deliverables.** Any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project.
- Deliverables also include ancillary results, such as project management reports and

documentation. These deliverables may be described at a summary level or in great detail.

- **Acceptance criteria.** A set of conditions that is required to be met before deliverables are accepted.
- **Project exclusions.** Identifies what is excluded from the project. Explicitly stating what is out of scope for the project helps manage stakeholders' expectations and can reduce scope creep.
- **Assumptions.** (PMBOK® Guide, PMI, 2017, 6th edition)

Table 17-1 PROJECT SCOPE STATEMENT

Project Title:	CONSTRUCTION OF TUWAIQ RESORT	Date Prepared:	<u>17/11/2021</u>
<u>Project Scope Description</u>			
Under this project, a unique resort named as “TUWAIQ RESORT” shall be constructed in the heart of TUWAIQ area which represents the symbol of strength and determination, as our beloved Crown Prince Mohammad bin Salman said “The Saudis’ strength is like that of the Tuwaiq mountain, unbreakable, unless this mountain is leveled and equaled to the ground.” The project shall be performed on LSTK basis, the design, engineering, material procurement, quality management, factory inspection/testing, transport and delivery to site, construction, site inspection, commissioning, operation and facility management for Four years. For Further details, please refer to the Project Charter.			
<u>Project Deliverables</u>			

SN	Description	Qty	Remarks
1	Executive suite	1	
2	Junior suite	3	
3	Double room	10	
4	Single room	5	
5	Admin building	1	
6	Lobby	1	
7	Swimming pool	1	
8	Playing areas	1	
9	Parking lot	1	300 Car
10	Restaurant	1	

Project Acceptance Criteria

- Meet all deliverables within scheduled time and budget tolerances
- Reduce schedule delays by at least 30%.
- Reduce budget overruns by at least 30%.

Project Exclusions

The project is not including the followings:

- Gym
- Conference Room
- Wedding hall

Project Constraints

- Budget/ Time/resources/personnel limitations
- Project manager will only work 75% of billable hours on this project.

Project Assumptions

- Project staff will be dedicated to this project and will not be reassigned
- Project team members will be backfilled as necessary to support this project
- Funding for recommended and approved changes will be provided

17.2 develop, identify, and explain the concepts: Scope creep and giving examples

It's every project manager's dream that the project goes on smoothly from initiation to completion, without delays and exceeding budgets. But, that rarely happens in reality.

Even if the project managers discuss and plan out all the details in advance with all the project stakeholders involved, there's always something that changes the scope of the project during its course. The scope change is fine as far as we control the Scope and ensures all requested changes and recommended corrective or preventive actions are processed through the Perform Integrated Change Control process. By managing the scope of the project, we can document everything required to achieve the project goal and avoid issues like scope creep.

In fact, scope creep is a huge concern for project managers which can be defined as the uncontrolled expansion to product or project scope without adjustments to time, cost, and resources (PMBOK, 2017).

Also, project scope creep, occasionally known as requirement creep or feature creep, refers to the increase of a project requirement as it progresses. A good example is what started as only one deliverable growing to four or five.

There are many reasons why a scope creep is happening we can mention below as example:

- 1) Lack of a Clear and Detailed Scope
- 2) Not Involving the Client Throughout the Project
- 3) Differing Stakeholder Opinions and disagreements.
- 4) Change in project requirements by the key stakeholders
- 5) Internal miscommunication

From above it shows that the project creep as a bad thing, which may not entirely be the case. It often leads to project delays, roadblocks, and even budget expansion, but at times it is for the best. Keep in mind that project delivery is not static, and at times change is inevitable.

A good example of scope creep is altering a project's scope to meet customer's changing needs. It may appear overwhelming at the moment, but it serves a greater purpose. Therefore, before the commencement of a project, we should be open to the possibility of a scope creep and plan for it.

Example of Project Scope Creep:

An excellent example of a project scope creep is a significant delay in completing a project due to clients' consistent change requests, and making too many last-minute changes on a project, causing unseen delays. and the best way to handle such creep by either saying 'no' to unnecessary changes or agreeing on how to handle last-minute change requests at the beginning of the project.

17.3 Illustrate product analysis management

17.3.1 Definition of Product analysis

According to PMBOK 5 edition, Product analysis is an important project management process that is necessary for projects that have products as part of the deliverable. It is a tool that is used to define the scope of the product. It basically means that when analyzing the product through its scope, questions can be asked about it.

Moreover, the project team is also encouraged to formulate answers to describe the characteristics, functions and other relevant to the product that will be manufactured.

Product analysis is an effective tool in project management. It is used in determining whether the product that will be delivered will be effective in drawing in its target client. It is important to take note that each application area has generally more accepted methods to create a good product that can be released to the market but product analysis includes different sets of tools to analyze the product. These techniques include systems analysis, product breakdown, system engineering, requirement analysis, value analysis and value engineering.

All of these are necessary to effectively analyze a particular tangible product and deem it effective in the current market.

17.3.2 Product Analysis Techniques

Product Analysis includes techniques such as

- Product breakdown,
- Systems analysis,
- Requirements analysis,
- Systems engineering,
- Value engineering, and
- Value analysis.

figure 13-1 shows the product analysis for our project.

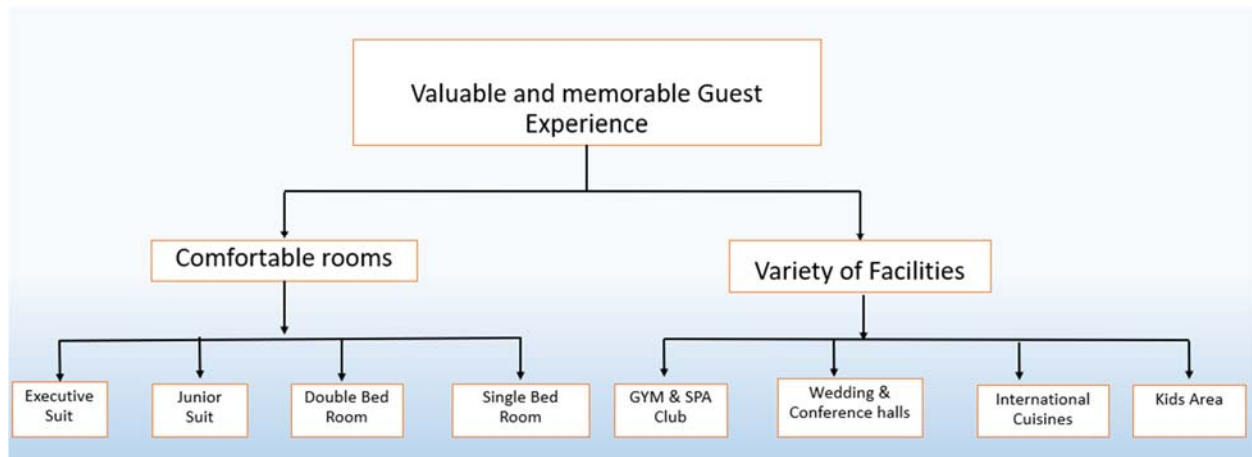


Fig. 17-1 Product analysis

17.4 Illustrate the transformation of the work packages in Work Breakdown Structure to activities.

Work packages are important when preparing the Work Breakdown Structure (WBS) for any project, and it can be defined as the smallest unit of a Work Breakdown Structure. When preparing a Work Breakdown Structure using the decomposition technique, deliverables are generally broken down into smaller, more manageable chunks of work.

This process of deconstruction continues until the deliverables are small enough to be considered work packages. Each of these packages should be small enough to help the Project Manager estimate the duration and the cost. Work packages can be scheduled, cost estimated, monitored, and controlled.

17.4.1 How to Prepare a Work Package

When breaking a WBS down to the level of work packages, the WBS nodes could be decomposed to extremely granular levels, wasting time and actually making the project difficult to understand, manage, and change. There are many things to be considered when deciding how far to decompose the WBS or how best to create a work package, but a few important factors to consider are:

1. Work Packages should be small enough to be estimated for time and cost.
2. The project manager and the project team should be satisfied that the current level of detail at the work package level provides enough information to proceed with subsequent activities.
3. Work packages should be small enough to be assigned to a single person or a group who can be held accountable for results.
4. Although this may differ from project to project, most project managers concur that the 8/80 rule can be applied to measure a work package. This rule says that no work package should be less than 8 hours and greater than 80 hours.
5. Work packages can lie at different levels in the WBS hierarchy. Project managers should not artificially force their WBS into a structure where all the work packages lie at the same level in the WBS hierarchy. This results in problems as the project progresses, like forced detail -where you could have monitored and controlled specific parts of the work at a higher level- or not enough scrutiny where you really need it.

18- Time

18.1 To develop the functions list or the activities included in each work package in WBS

Table 18-1 Activities included in each work package in WBS

Work Package and Activity list	Coding
Engineering	1.1
Preparation of base design	1.1.1
Electrical Single Line Diagram	1.1.1.1
Electrical Equipment Layout	1.1.1.2
Electrical Equipment List	1.1.1.3
Civil Equipment Layout	1.1.1.4
Civil Leveling Layout	1.1.1.5
Civil Site Survey	1.1.1.6
Mechanical Equipment List	1.1.1.7
Fire Fighting Layout	1.1.1.8
Submission of Base design for Approval	1.1.2
Submission of Electrical Single Line Diagram	1.1.2.1
Submission of Electrical Equipment Layout	1.1.2.2
Submission of Electrical Equipment List	1.1.2.3
Submission of Civil Equipment Layout	1.1.2.4
Submission of Civil Leveling Layout	1.1.2.5
Submission of Civil Site Survey	1.1.2.6
Submission of Mechanical Equipment List	1.1.2.7
Submission of Fire Fighting Layout	1.1.2.8
Preparation of Detail Design	1.1.3
Electrical schematic Diagram	1.1.3.1
Cable Sizing Calculation	1.1.3.2
Transformer Sizing Calculation	1.1.3.3
Generator Sizing Calculation	1.1.3.4

Cable schedule	1.1.3.5
Steel Structural schedule	1.1.3.6
Architecture drawings	1.1.3.7
HVAC Calculation	1.1.3.8
HVAC Layout	1.1.3.9
Doors Selection drawings	1.1.3.10
Windows selection drawings	1.1.3.11
Overall Layout	1.1.3.12
Fire Fighting Layout	1.1.3.13
Foundation drawings	1.1.3.14
Excavation drawings	1.1.3.15
Submission of Detail design for Approval	1.1.4
Submission of Electrical schematic Diagram	1.1.4.1
Submission of Cable Sizing Calculation	1.1.4.2
Submission of Transformer Sizing Calculation	1.1.4.3
Submission of Generator Sizing Calculation	1.1.4.4
Submission of Cable schedule	1.1.4.5
Submission of Steel Structural schedule	1.1.4.6
Submission of Architecture drawings	1.1.4.7
Submission of HVAC Calculation	1.1.4.8
Submission of HVAC Layout	1.1.4.9
Submission of Doors Selection drawings	1.1.4.10
Submission of Windows selection drawings	1.1.4.11
Submission of Overall Layout	1.1.4.12
Submission of Fire Fighting Layout	1.1.4.13
Submission of Foundation drawings	1.1.4.14
Submission of excavation drawings	1.1.4.15
Preparation of IFC drawings	1.1.5
Electrical schematic Diagram	1.1.5.1
Cable Sizing Calculation	1.1.5.2

Transformer Sizing Calculation	1.1.5.3
Generator Sizing Calculation	1.1.5.4
Cable schedule	1.1.5.5
Steel Structural schedule	1.1.5.6
Architecture drawings	1.1.5.7
HVAC Calculation	1.1.5.8
HVAC Layout	1.1.5.9
Doors Selection drawings	1.1.5.10
Windows selection drawings	1.1.5.11
Overall Layout	1.1.5.12
Fire Fighting Layout	1.1.5.13
Foundation drawings	1.1.5.14
Excavation drawings	1.1.5.15
Issuance of IFC drawings	1.1.6
Electrical schematic Diagram	1.1.6.1
Cable Sizing Calculation	1.1.6.2
Transformer Sizing Calculation	1.1.6.3
Generator Sizing Calculation	1.1.6.4
Cable schedule	1.1.6.5
Steel Structural schedule	1.1.6.6
Architecture drawings	1.1.6.7
HVAC Calculation	1.1.6.8
HVAC Layout	1.1.6.9
Doors Selection drawings	1.1.6.10
Windows selection drawings	1.1.6.11
Overall Layout	1.1.6.12
Fire Fighting Layout	1.1.6.13
Foundation drawings	1.1.6.14
Excavation drawings	1.1.6.15
Site Preparation	1.2

Mobilization	1.2.1
Issue Order for Site Offices and Utility	1.2.1.1
Shift the Site Offices to the site	1.2.1.2
Issue Order for Site Furniture	1.2.1.3
Shift the Furniture to the site offices	1.2.1.4
Assign the Project team member	1.2.1.5
Mobilize the team member to the site	1.2.1.6
Make the Geotechnical soil test	1.2.1.7
Excavation	1.2.2
Issue Order for Subcontractor	1.2.2.1
Mobilize the Subcontractor team to the site	1.2.2.2
Shift all the agreed Equipment to the site	1.2.2.3
Clean the Site	1.2.2.4
Excavate and remove the soil	1.2.2.5
Remove the Rocks	1.2.2.6
Leveling	1.2.3
Make the first layer of the Soil	1.2.3.1
Test the First Layer of the Soil	1.2.3.2
make the second Layer of the Soil	1.2.3.3
Test the First Layer of the Soil	1.2.3.4
Make the final Layer of the Soil	1.2.3.5
Test the final Layer of the Soil	1.2.3.6
Piling	1.2.4
Pre-drilling the piles	1.2.4.1
Lowering the concrete pile into the hole	1.2.4.2
Pouring concrete gaps between the pile and the earth	1.2.4.3
Pile Caps/Ground Beams	1.3
Cut-off Piles and Blinding	1.3.1
Laid a weak concrete above a layer of hardcore	1.3.1.1
Install a thin layer of blinding	1.3.1.2

Sealing in the underlying material and levelling off the surface	1.3.1.3
Formwork & rebar	1.3.2
Marking of foundation layout at site	1.3.2.1
Placement of reinforcement steel	1.3.2.2
Erection of concrete formworks for footings	1.3.2.3
Placement of concrete and vibrating and levelling of concrete surface	1.3.2.4
Removal of formwork after the concrete has set	1.3.2.5
Backfilling of excavation up to the required depth in the number of layers	1.3.2.6
Structural Steel	1.4
Erect Steel Frame	1.4.1
Assembly of steel components into a frame on site	1.4.1.1
Lift the frame and placed into the position before they are connected together	1.4.1.2
Check the quality of Installation for the frame	1.4.1.3
Holorib Floors	1.4.2
Lay the sheet of Holorib floors of the steel	1.4.2.1
External	1.5
Cladding	1.5.1
Select the material of cladding	1.5.1.1
Install the cladding	1.5.1.2
Test the water penetration, or provision of drainage	1.5.1.3
Roofing	1.5.2
Install the drip edge	1.5.2.1
Roll out the underlayment	1.5.2.2
Cover the roof with felt paper	1.5.2.3
Cap the ridge	1.5.2.4
Seal it up	1.5.2.5

Floor Slab	1.6
Sub-base & Blinding	1.6.1
Create flat horizontal for the floor	1.6.1.1
Steel Columns	1.6.1.2
Beams	1.6.1.3
Formwork & Concrete	1.6.2
Installation of Plywood	1.6.2.1
Stress and Deflection of Plywood	1.6.2.2
Install Concrete	1.6.2.3
Brickwork	1.7
External Brickwork	1.7.1
Purchase the Brick	1.7.1.1
Install the Brick and fix it in the position	1.7.1.2
Install a waterproofing strip at joints	1.7.1.3
Internal Brickwork	1.7.2
Purchase the Brick	1.7.2.1
Install the Brick and fix it in the position	1.7.2.2
Install a waterproofing strip at joints	1.7.2.3
M & E Services	1.8
Plumbing	1.8.1
Installing or maintaining heating systems	1.8.1.1
Installing of water supply	1.8.1.2
Fitting domestic appliances	1.8.1.3
Install waste system	1.8.1.4
Install HVAC system	1.8.1.5
Install the firefighting system	1.8.1.6
Electric	1.8.2
Pull the wires	1.8.2.1
Install the lighting fixtures	1.8.2.2
Install the sockets and buttons	1.8.2.3

Install fire alarm system	1.8.2.4
Finishes	1.9
Joinery	1.9.1
Select all the furniture	1.9.1.1
fix all the joinery in their locations	1.9.1.2
Plastering	1.9.2
paint all the rooms with first layer	1.9.2.1
paint all rooms with second layer	1.9.2.2
Decorating	1.9.3
Arrange the furniture as per the interior design	1.9.3.1
Replace the defect material	1.9.3.2
Test and Clean	1.9.3.3

18.2 To illustrate the relationships between the activities

Every activity except the first and last should be connected to at least one predecessor and at least one successor activity with an appropriate logical relationship. Logical relationships should be designed to create a realistic project schedule.

there are many techniques to show the relationships between the activities, and one of this activities is the precedence diagramming method (PDM) which is a technique used for constructing a schedule model in which activities are represented by nodes and are graphically linked by one or more logical relationships to show the sequence in which the activities are to be performed.

These relationships are defined below and are illustrated in Figure 18-2:

- Finish-to-start (FS). A logical relationship in which a successor activity cannot start until a predecessor activity has finished.
- Finish-to-finish (FF). A logical relationship in which a successor activity cannot finish until a predecessor activity has finished.
- Start-to-start (SS). A logical relationship in which a successor activity cannot start until a predecessor activity has started.
- Start-to-finish (SF). A logical relationship in which a successor activity cannot finish until a predecessor activity has started.

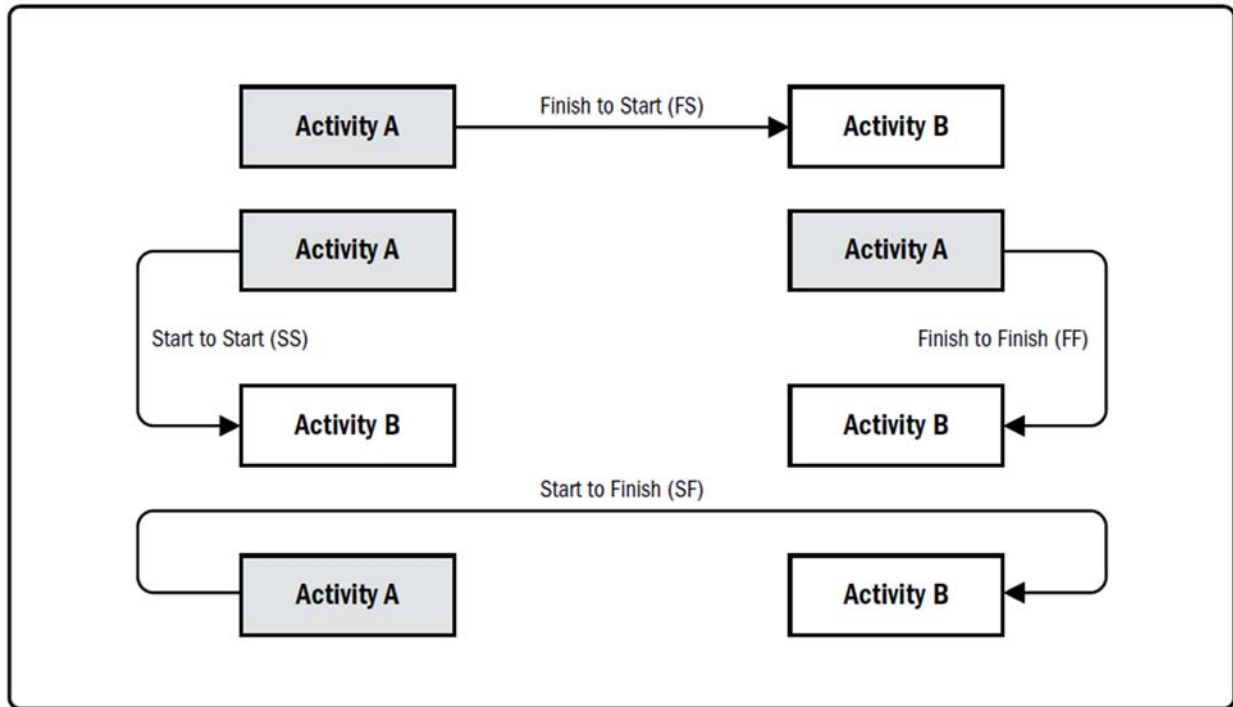


Fig 18-2: Precedence Diagramming Method (PDM) Relationship Types

18.3 To develop the logical diagram of the project activities, and identify the critical path

Based on the below fig. 18-3 we can see that the critical path is the path which contain (A B Z M R Q)

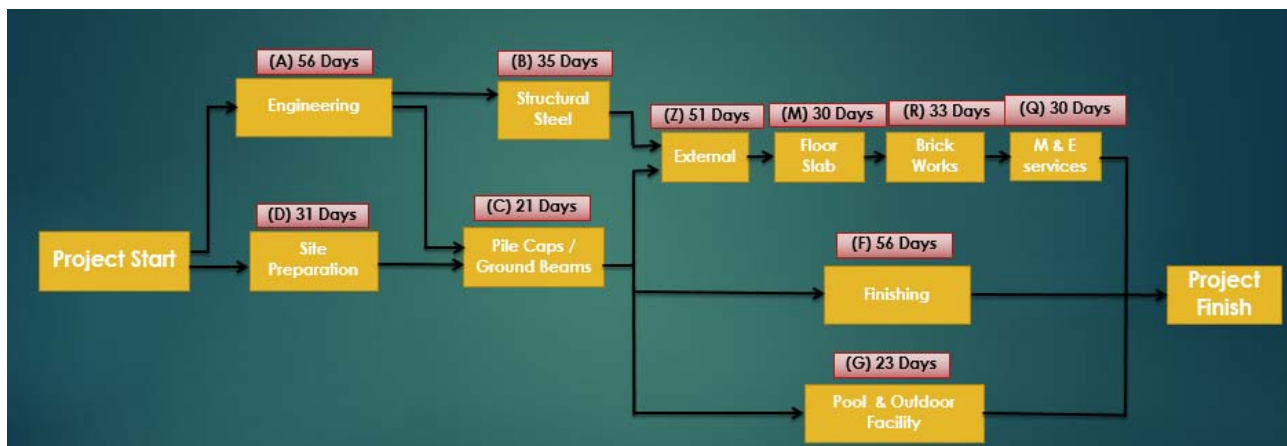
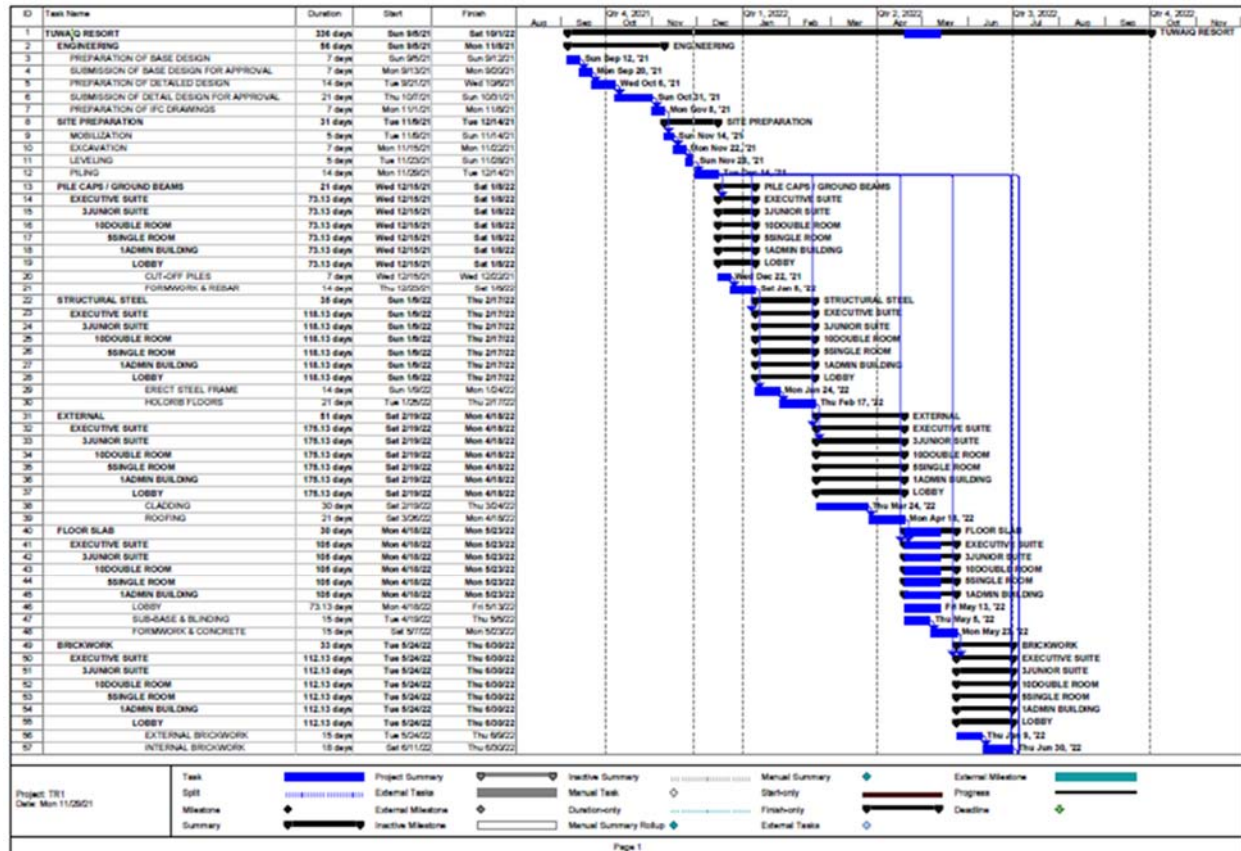


Fig. 18-3 Logic Diagram

18.4 To prepare Gantt chart and Milestones model.

A Gantt chart is a type of bar chart that illustrates a project schedule, named after its popularizer, Henry Gantt (1861–1919), who designed such a chart around the years 1910–1915. Modern Gantt charts also show the dependency relationships between activities and the current schedule status. you may refer to the Gantt chart for our project below fig 18.4. (Wikipedia contributors, 2021)



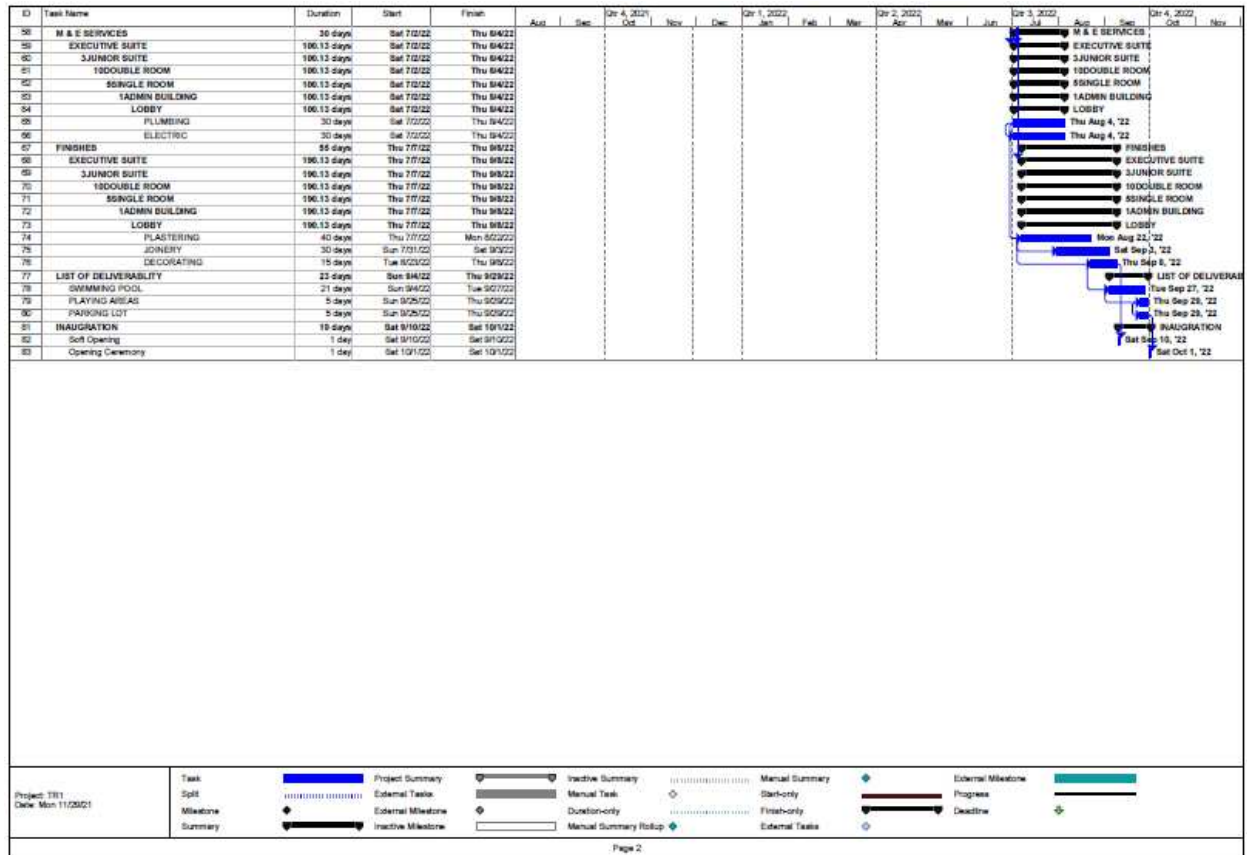


Fig. 18.4 Gantt Chart

The Fig 18-5 below Shows the Milestone Model for the project

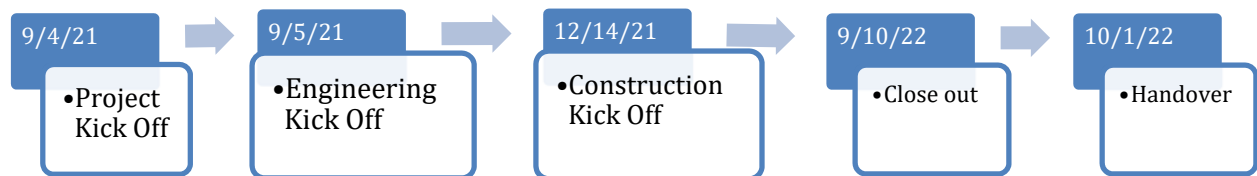


Fig. 18.5 Milestone Model

19- Quality

19.1 To clarify the Deming model for quality.

The Plan-Do-Check-Act (PDCA) cycle, also known as the Deming wheel or the Deming cycle, is an iterative method for continual improvement of processes, products, or services and is a key element of lean management.

The PDCA model was developed in the 1950s by William Deming as a learning or improvement process based on the scientific method of problem-solving.

The Plan-Do-Check-Act cycle helps break organizations out of stagnancy and transition to a system of continuous improvement.

The Plan-Do-Check-Act model is a helpful tool that can be used for a number of applications:

- Exploring and testing multiple solutions in a small, controlled trial
- Avoiding waste by catching and adapting ineffective solutions before rolling them out on a large scale
- Implementing change and continuous improvement
- Implementing Total Quality Management or Six Sigma initiatives
- Developing or improving a process

What is great about the PDCA cycle is that it can be applied across industries and organizational types.

1. Plan

The planning stage is for mapping out what you are going to do to try to solve a problem or otherwise change a process. During this step, you will identify and analyze the problem or opportunity for change, develop hypotheses for what the underlying issues or causes are, and decide on one hypothesis to test first.

As you plan, consider the following questions:

What is the core problem we need to solve?

Is this the right problem to work on?

What information do we need to fully understand the problem and its root cause?

Is it feasible to solve it?

What resources do we need?

What resources do we have?

What are some viable solutions?

What are the measures of success?

How will the results from a small trial translate to a full-scale implementation?

During this stage, an affinity diagram can help us and our colleagues organize a large number of ideas into groups. Once we have determined our course of action, write down our expected results. We will check our results against our hypothesis and expectations in the “Check” stage.

2. Do

The next step is to test hypotheses (i.e., proposed solution). The PDCA cycle focuses on smaller, incremental changes that help improve processes with minimal disruption.

Test hypothesis with a small-scale project, preferably in a controlled environment, so we can evaluate the results without interrupting the rest of our operation. We might want to test the solution on one team or within a certain demographic.

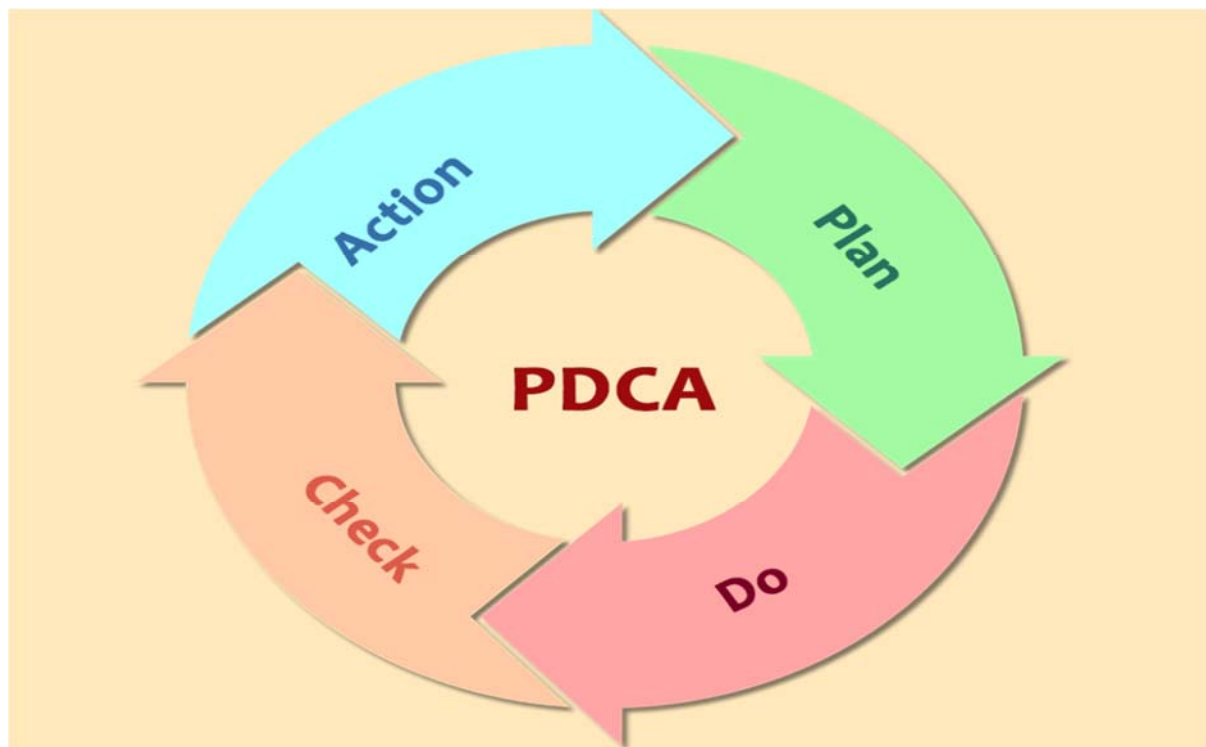


Fig. 19.1 The PDCA Cycle

3. Check

Once we have completed our trial, it's time to review and analyze the results. This stage is important because it allows us to evaluate our solution and revise our plans as necessary. Did the

plan actually work? If so, were there any hiccups in the process? What steps could be improved or need to be eliminated from future iterations?

Our evaluation at this stage will guide our decisions in the next step, so it is important to consider our results carefully.

4. Act

Finally, it is time to act. If all went according to plan, we can now implement our tried-and-tested plan. This new process now becomes our baseline for future PDCA iterations.

Consider the following questions before we act:

What resources do we need to implement the solution at full scale?

What training is needed for successful implementation and adoption?

How can we measure and track the performance of the solution?

What opportunities are there for improvement?

What have we learned that can be applied to other projects?

If the plan did not pan out as expected, we can cycle back to the planning stage to make adjustments and prepare for a new trial.

19.2 To develop SIPOC model, and Ishikawa for one of the issues of the project outputs.

SIPOC is a robust model that helps analyze organizational processes at a high-level. Each process is documented in its own unique SIPOC document as a table. This makes it easy to understand the critical elements of each process at a glance. The key components of the SIPOC model - S [Suppliers] - I [Inputs] - P [Process] - O [Outputs] - C [Customers]

SIPOC diagrams originated in the 1980s as a part of Total Quality Management (TQM). TQM focuses on ensuring quality through adherence to standards. SIPOC is also used these days as part of Six-Sigma. Six-Sigma is different from TQM as it concentrates on improving quality by removing the number of defects.

A SIPOC table, or a SIPOC diagram, presents an excellent opportunity for teams, the higher management, and all stakeholders to troubleshoot process-related issues, and accordingly, develop appropriate strategies for improvements.

To prepare a SIPOC table, process teams must be capable of mapping the entire operation. They must be able to identify different elements of the process, including who the suppliers are, the inputs required for process execution, the final output, and the customer.

SIPOC model example of air-conditions repair facility:

Table 19.2: SIPOC Model

Supplier	Input	Process	Output	Customer
Repair kit suppliers	Requisition for repair	Problem diagnosis	Repair recommendation	air-conditions owner
Spare parts suppliers	The air-conditions for repair	Spare parts sourcing	Cost estimates	
Original Equipment Manufacturer	Work order to proceed	Performing repairs	Delivery time and date	Customer representative
	Approved parts for repairs	Service completion notification	Repaired air-conditions	
			Text message / email / Telephone to inform the responsible	

Fishbone diagram

Ishikawa or fishbone diagram is one such diagram to detect the causes and effects of various imperfections, failures, or defects in the business. Managers mostly use the Ishikawa diagram or the cause-and-effect diagram as a tool in finding out the deviations that are necessary to detect for business expansion. The layout is similar to a fish's skeleton. It depicts the problem at the head and the causes at the spine. After all the issues have been identified using the Ishikawa diagram, the manager can take further steps to improve upon the situations.

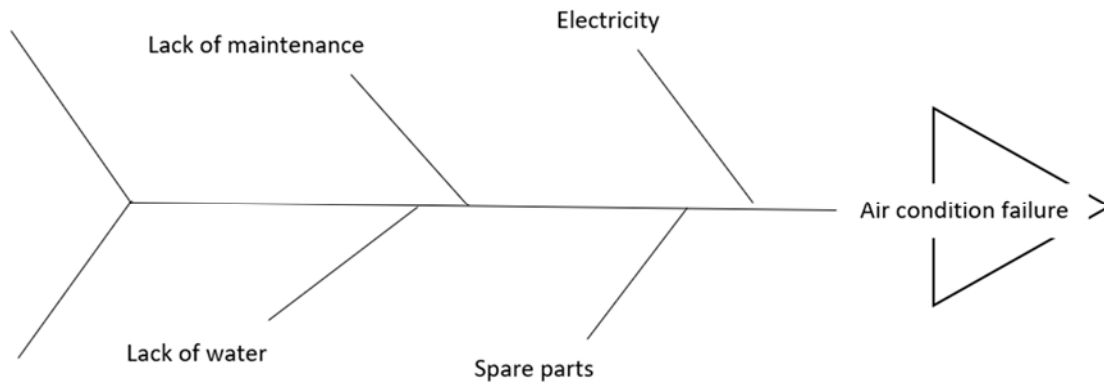


Fig. 19- 2 Fishbone diagram

20- Finance

20.1 To establish Cost Breakdown Structure, and the project balance in accordance with WBS.



Fig 20-1 Cost Breakdown Structure

20.2 To calculate Earned Value Management of the project after the end of 20% of its period and completion of 50% of the output case-by-case basis.

As per the requirement below are the analysis of the project at 20% of its period and at the completion 50% of project output:

20.2.1 Earned Value Management of the project after ending of 20%:

As per the schedule shown in the Gantt chart the 20% of the project is at the third month, so our calculation being done accordingly:

- The Planned Value (PV) at 20% of project progress = 50,000 SAR
- The Actual Value (CV) at 20% of the project progress = 148,750 SAR
- The Earned Value (EV) at 20% of the project progress = 170,000 SAR

The Table 20-1 shows the analysis of above information:

Table. 20-1 Project Performance Metrics after ending of 20%

Earned Value Analysis	Value
Cost Variance (CV = EV - AC)	21,250 SAR
Schedule Variance (SV = EV - PV)	120,000 SAR
Cost Performance Index (CPI = EV/AC)	1.14
Schedule Performance Index (SPI = EV/PV)	3.40

Based on the above analysis, after 20% is ending the project will be progressing under budget and ahead of schedule.

20.2.2 Earned Value Management of the project completion of 50% of the Outputs:

As per the schedule shown in the Gantt chart the project completion of 50% of the outputs will be happened in the ninth month, so our calculation being done accordingly:

- The Planned Value (PV) at completion of 50% of the outputs = 520,000SAR
- The Actual Value (CV) at completion of 50% of the outputs = 207,750 SAR
- The Earned Value (EV) at completion of 50% of the outputs = 240,000SAR

The Table 20-2 shows the analysis of above information:

Table. 20-2 Project Performance Metrics after Completion of 50% of the outputs

Earned Value Analysis	Value
Cost Variance (CV = EV - AC)	32,250 SAR

Schedule Variance (SV = EV - PV)	-280000 SAR
Cost Performance Index (CPI = EV/AC)	1.16
Schedule Performance Index (SPI = EV/PV)	0.46

Based on the above analysis, after completion of 50% of the outputs will be progressing under budget but behind the schedule.

Overall, as per below S-curve our project is working under budget but unfortunately it is behind the schedule.

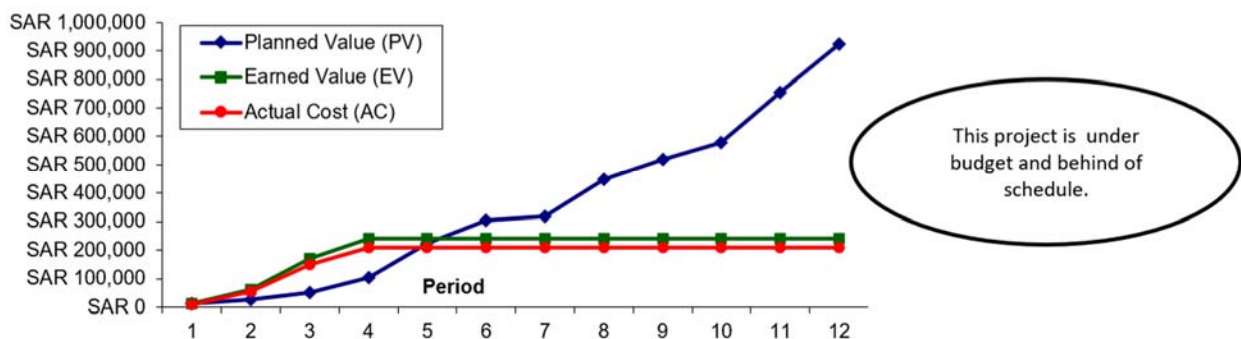


Fig. 20-2 S-curve

21- Resources

21.1 Explain the concept of Resource Leveling and Smoothing.

Resource smoothing and resource leveling are two resource optimization techniques which, if used in any project, increase the chance of completing the project within the approved cost and schedule baselines. Resource leveling is used to balance the demand and supply of resources and resource smoothing helps ensure uniform resource utilization. These techniques are also used due to statutory or regulatory requirements. Either way, these techniques help you optimize your resources in your project.

21.1.1 Resource levelling

Resource levelling is used when you have limited resources and you may extend the schedule.

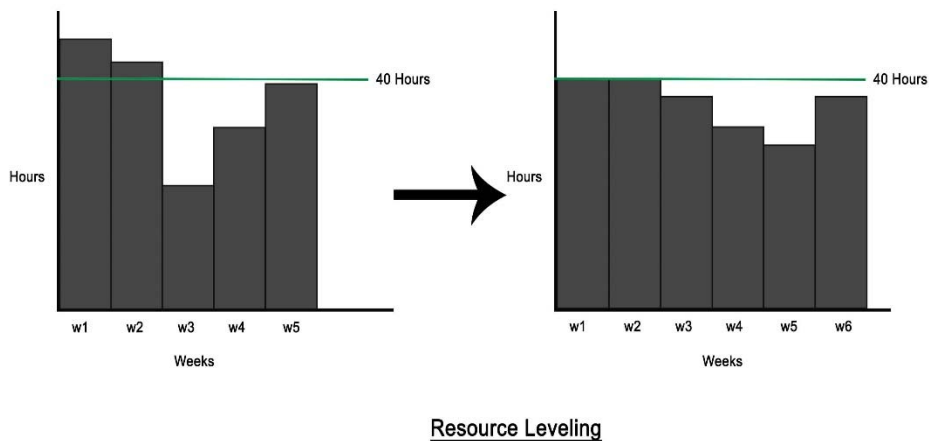


Fig 21-1 Resource Leveling

Resource leveling is used when:

- A critical resource may not be available for a certain duration;
- A critical resource may not be available at a certain point of time;
- You have to share a resource with another project;
- The demand for a resource exceeds the supply.

You also use this technique when you must keep some resource usage at a constant level. In resource leveling, you are asked to optimize the limited resources given to you. Here the schedule is not fixed.

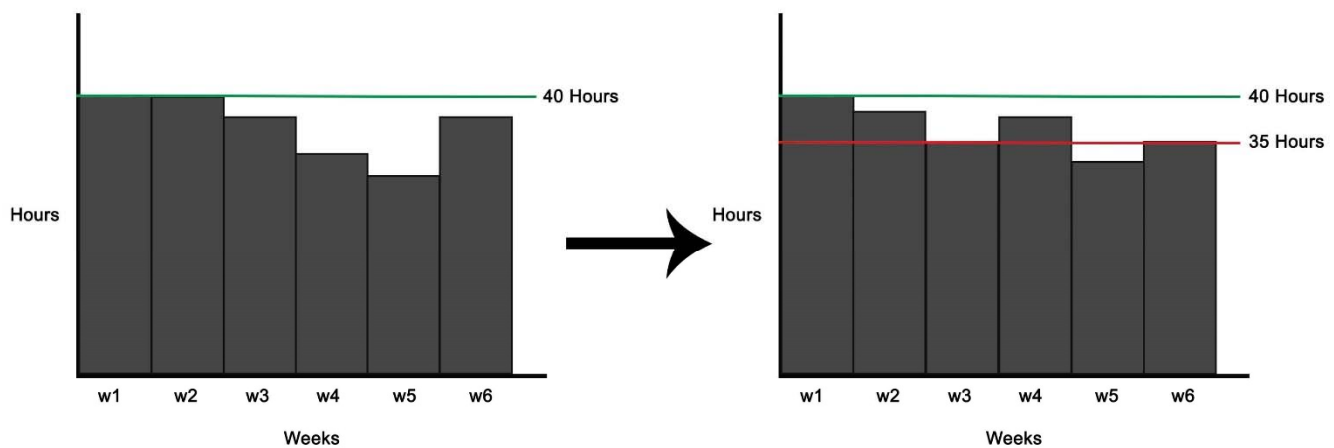
Resource leveling answers the question of when you will be able to complete the project with the given resources.

Resource leveling is sometimes called resource constrained scheduling (RCS). If resources are not available, the project duration may change.

21.1.2 Resource Smoothing

You use resource smoothing when you have to optimize the resources and you cannot extend the schedule.

Since you cannot extend the schedule, the project completion date and the critical path will stay the same. Here the activities cannot be delayed more than their total and free float.



Resource Smoothing

Fig 21-2 Resource Smoothing

Using float in this technique will cause you to lose some flexibility from your path; however, the schedule will be optimized, efficient and cost effective.

In resource smoothing, you must be careful to avoid any delay in activity as it may affect your critical path.

Time is the main constraint here. You have a fixed schedule and are asked to optimize resources.

Resource smoothing is also known as time constrained scheduling (TCS). The project end date cannot be changed, and you have to optimize resources within the float. (Usmani, 2018)

The fig. 21-3 shows the difference between both techniques

Resource Leveling	Resource Smoothing
• Main constraint is resource availability. You extend the project duration as required. • Project End date may change. • Overall Project can be delayed. Consequently, costs may be increased. • Can be done to activities on the critical path. • Changes are allowed to critical path. • Used when resources are over-allocated. • Resource Constrained Scheduling (RCS)	• Main constraint is time. Project Duration is fixed. • Project End date will not change. • Overall project will not be delayed, but Activities may only be delayed with in their free or total float. • Cannot be done to activities on the critical path. • changes are not allowed to critical path. • Used when resources are unevenly allocated. • Time Constrained Scheduling (TCS)

Fig 21-3 Resource Leveling Vs Resource Smoothing

21.2 To be trained on distributing the project resources of equipment and tools:

Below are list of Equipment and tools used in our project but not limit to:

- | | |
|----------------------|------------------|
| 1- HVAC system | 5- Concert mixer |
| 2- Diesel generators | 6- Cranes |
| 3- Compactors | 7- AUTOCHD |
| 4- Loader | 8- 3D Model |

The below fig 1-1 Organization Chart shows the Manpower available in the project which had been discussed previously.

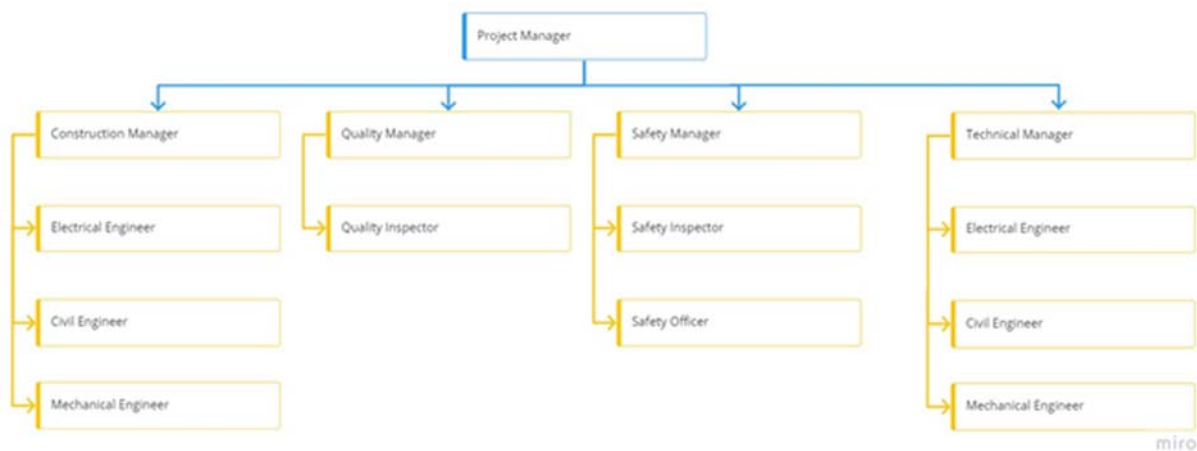


Fig 1-1 Project organization structure – Construction phase

Job description for each member in the organization chart as below:

Project Manager:

- Assign duties or responsibilities to project personnel.
- Communicate with key stakeholders to determine project requirements and objectives.
- Confer with project personnel to identify and resolve problems.
- Create project status presentations for delivery to customers or project personnel.
- Develop or update project plans including information such as objectives, technologies, schedules, funding, and staffing.

Construction Manager:

- Plan, schedule, or coordinate construction project activities to meet deadlines.
- Prepare and submit budget estimates, progress reports, or cost tracking reports.
- Interpret and explain plans and contract terms to representatives of the owner or developer, including administrative staff, workers, or clients.
- Direct and supervise construction or related workers.
- Prepare contracts or negotiate revisions to contractual agreements with architects, consultants, clients, suppliers, or subcontractors.

Electrical Engineer:

- Perform engineering duties for electrical scope in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation,

maintenance, and repair of equipment such as centralized heat, gas, water, and steam systems.

Civil Engineer:

- Perform engineering duties for civil scope in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of equipment such as centralized heat, gas, water, and steam systems.

Mechanical Engineer:

- Perform engineering duties for mechanical scope in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of equipment such as centralized heat, gas, water, and steam systems.

Quality Manager:

- Collect and analyze production samples to evaluate quality.
- Analyze quality control test results and provide feedback and interpretation to production management or staff.
- Stop production if serious product defects are present.
- Monitor performance of quality control systems to ensure effectiveness and efficiency.
- Communicate quality control information to all relevant organizational departments, outside vendors, or contractors.

Quality Inspector:

- Conduct routine and non-routine analyses of in-process materials, raw materials, environmental samples, finished goods, or stability samples.
- Interpret test results, compare them to established specifications and control limits, and make recommendations on appropriateness of data for release.
- Calibrate, validate, or maintain laboratory equipment.
- Ensure that lab cleanliness and safety standards are maintained.
- Perform visual inspections of finished products.

Safety Manager:

- Recommend measures to help protect workers from potentially hazardous work methods, processes, or materials.
- Order suspension of activities that pose threats to workers' health or safety.
- Investigate accidents to identify causes or to determine how such accidents might be prevented in the future.
- Inspect or evaluate workplace environments, equipment, or practices to ensure compliance with safety standards and government regulations.
- Collaborate with engineers or physicians to institute control or remedial measures for hazardous or potentially hazardous conditions or equipment.

Safety Inspector:

- Investigate industrial accidents, injuries, or occupational diseases to determine causes and preventive measures.
- Conduct research to evaluate safety levels for products.
- Evaluate product designs for safety.
- Conduct or coordinate worker training in areas such as safety laws and regulations, hazardous condition monitoring, and use of safety equipment.
- Maintain and apply knowledge of current policies, regulations, and industrial processes.

Safety Officer:

- Analyze and evaluate safety operations to identify risks or opportunities for improvement through auditing, review, or assessment.
- Assess risks to mitigate potential consequences of incidents and develop a plan to respond to incidents.
- Attend meetings, professional seminars, or conferences to keep abreast of changes in executive legislative directives or new technologies impacting safety operations.
- Communicate safety status, updates, and actual or potential problems, using established protocols.
- Conduct physical examinations of property to ensure compliance with safety policies and regulations.

Technical Manager:

- Modify, maintain, or repair electronics equipment or systems to ensure proper functioning.
- Replace defective components or parts, using hand tools and precision instruments.
- Set up and operate specialized or standard test equipment to diagnose, test, or analyze the performance of electronic components, assemblies, or systems.
- Read blueprints, wiring diagrams, schematic drawings, or engineering instructions for assembling electronics units, applying knowledge of electronic theory and components.
- Identify and resolve equipment malfunctions, working with manufacturers or field representatives as necessary to procure replacement parts.

We shall use the RACI table 21-2 below to show the distribution of manpower against the equipment and tools

Table 21-2 RACI for Manpower Vs Equipment and Tools

Equipment	Project Manager	Construction Manager	Electrical Engineer	Civil Engineer	Mechanical Engineer	Quality Manager	Quality Inspector	Safety Manager	Safety Inspector	Safety Officer	Technical Manager
HVAC System	I	A	IC		R	I	I	I	I	I	
Diesel Generators	RI	AR	R	I	C	I	I	I	I	C	C
Compactors	CI	AR	I	R				I	R		
Loader	IC	AR		R							
Concrete mixer	I	A		R		c	R				
Cranes		A	C	C	R	C	R	I	I	I	
AUTOCAD	I	C	R	R	R						A

3D Model	I	C	R	R	R						A
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22-Procurement

22.1 To develop the procurement execution process, and contractor selection.

22.1.1 To develop the procurement execution process

The procurement starts by receiving the Material requisition by procurement team then they send Request for Quotation (RFQ) / Invite to Tender (ITT) base on material requisition (MR) and the RFQ/ITT should be guided suppliers to proposed offer corresponding five rights of acquirement.

Negotiation after forming comparison sheet as per project approval of item budget.

Bargaining for more discount and final proposal upon particular supplier for closing. After preparation of the final purchase order from procurement department it shall be forwarded to engineering and Quality departments for technical/ quality review and confirmation. After reviewed technically, then the P.O shall forward to procurement for final release.

Procurement targets and investigation of the acquisition work are regularly set against the **five rights** of acquirement: **Right Quality, Right Quantity, Right Place, Right time, Right Price.**

The above was given high level of the procurement execution process, however the below flow chart shows full procurement execution process:

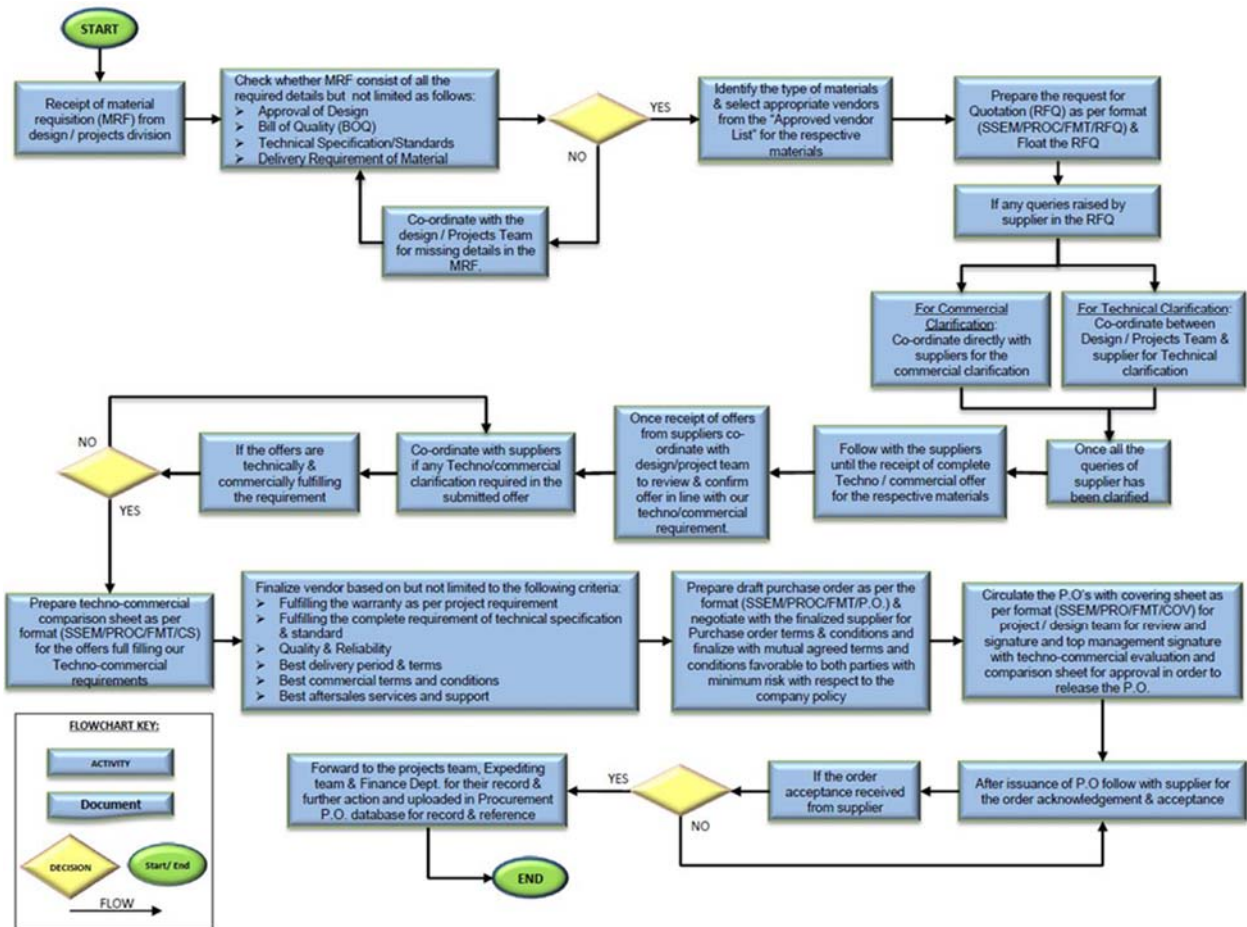


Fig 22-1 Full Procurement Execution Process

22.1.2 Vendor and contractor selection factors:

Generally, the vendors shall be selected as per the nominated and approved vendors list by the project client in case there is more than one vendor for the same materials in the approved vendor list or there is no nominated vendor for particular material then the selection of the vendors shall be based on the following factors:

- Technical capability
- Quality assessment
- Organization/ Supplier Profile
- Previous experience for similar scope
- List of manpower and equipment owned by the supplier/ subcontractor whom will be dedicated for the project.
- The last three years of their financial statement with an endorsement letter from the bank

- Previous client's approval and appreciation letters.
- Delivery time.
- Supplier and Manufacturer Location.
- Saudi Vendor/Supplier is preferable if available for the same scope of supply
- One hundred percent compliance to the project specifications and requirements and no deviation to the project specification or requirements
- Finally, the selected vendors/ subcontractors shall be submitted to the client for final approval.

22.2 To develop the Scoring Model:

Consider options in terms of the meeting structure and the order of the agenda and how can you change the running order to your advantage.

Each section within the statement of requirements is allocated a weighting dependent upon its importance such as below:

- Political Impacts that may affect the business environment (Tax / Duty & Tariffs)
- Inflation Rates (Inflation Rates & Interest Rates)
- Cultural Trends (Population Analytics & Demographic)
- Innovations (Automation & Research and Development)
- Consumer Laws (Safety Standards & Labour Laws)
- Climate (Weather & Geographical Location)

Fixed pricing can be very useful when the items an organization is procuring are impacted / controlled by something outside of the control of the supplier. The price is controlled and will move with the market.

The service levels need to be agreed during the sourcing stage. Different service levels can have a huge impact on the cost to serve.

Table 22-1 Score Weight Value and Criteria

Criteria	Section Weighting	Criteria	Section Weighting
Operational / Time	20%	Technology	15%
Effort	10%	Procurement / Supply	10%
Financial	15%	Quality	10%
Risk	15%	Health & Safety	5%
Total (sum of above)	100%		

The value comes from the actions triggered from understanding the gap. The reporting mechanism must be as maintenance free as possible. You need your resources focused on the action side of the improvement cycle.

Understand and agree what needs to be measured and why it needs to be measured and what is going to provide the most value.

Scores are given based on a scoring image. This helps maintain consistency through the process define evaluation criteria for example, the allowable scores, without being a showstopper*, are 1,2 and 3

Table 22-2 Scoring

Evaluation														
supplier	%	TOTAL	Assessment	Question	Scoring Image			Supplier Name						
	Age	27	Category		3	2	1	A	B	C	D	E	F	G
A	85%	23	Finance	Turnover	>10M	5-10M	< 5M	3	1	2	1	3	1	2
B	33%	9		Payment Terms	Credit / LC	On Delivery	Advance	3	1	2	3	2	2	1

C	67%	18		Registered Business	Yes	In Progress	No	2	1	1	3	1	3	1
D	81%	22	operation	mood of delivery	supply & installation ,T&C	supply	Ex-Work	3	1	2	2	2	3	1
E	74%	20		Lead Time	< 2 months	2 - 4 months	>4 months	2	1	3	3	3	3	2
F	78%	21		Location	In-Kingdom	GCC	Worldwide	3	1	2	3	3	3	2
G	63%	17	quality	Warranty	+ 3 Years	1-3 Years	< 1 Year	2	1	1	2	3	3	2
				Help Desk	24/7	limited Hours	No	2	1	2	3	2	2	3
				approval	Yes	In Progress	No	3	1	3	2	1	1	3

Behind every question, there needs to be a scoring image. The scoring image is what makes the assessment model objective. Without a scoring image, it would be subjective. Once again, the scoring images need to be built in conjunction with the relevant members of the organization Supplier is awarded a score for the question which helps maintain consistency through the process.

- The allowable scores are 1,2 and 3
- All questions are weighted to allow for their relative importance. The allowable weightings are 1, 3 and 5
- Weighted scores for questions range from, showstopper, 1,2,3,5,6,9,10,15

Table 22-3 Example of Long List to Short List

Source	No. Suppliers
Internet	5
Business team recommendation	3
Prequalification	4
Suppliers Identified	12

Notes
 -Weights 5,3,1
 -Scores be 3,2,1,0

Key Questions	WEIGHT 5,3,1	3	2	1	0
Interested	5	Yes	-	-	No
Average Response Time	1	1 Business Day	2 Business Days	3 Business Days	> 3 Business Days
Operating Location Available	3	KSA	GCC	MENA	WorldWide
Previous Similar Work Experience (years)	5	12 or more	8 to 12	5 to 8	5 or less
Yrs in Business	3	+15	5 to 14	2 to 5	<2

Supplier	Interested	Average Response Time	Operating Location Available	Previous Similar Work Experience (years)	Yrs in Business	Total Unweighted	Interested	Average Response Time	Operating Location Available	Previous Similar Work Experience (years)	Yrs in Business	Total Weighted Score	Weighted Score (%)
	5	1	3	5	3	51	Weighted						
SEC	3	2	2	3	3	13	15	2	6	15	9	47	92.16%
Albawani	3	2	1	2	3	11	15	2	3	10	9	39	76.47%
Nesma	3	1	1	2	3	10	15	1	3	10	9	38	74.51%
Alsaif	3	0	2	2	3	10	15	0	6	10	9	40	78.43%
Faisal Est	3	1	2	3	3	12	15	1	6	15	9	46	90.20%
Alfanar	0	2	1	2	2	7	0	2	3	10	6	21	41.18%
Riyadh cable	3	2	0	2	0	7	15	2	0	10	0	27	52.94%
Al mousa Co	3	2	3	3	3	14	15	2	9	15	9	50	98.04%
Abonayyan	3	2	1	2	2	10	15	2	3	10	6	36	70.59%
Electrichouse	0	0	1	2	2	5	0	0	3	10	6	19	37.25%
SMEH	0	0	0	2	3	5	0	0	0	10	9	19	37.25%
Techno	0	0	0	2	3	5	0	0	0	10	9	19	37.25%

23- Plan and Control

23.1 To prepare an agenda- Invitation and virtual record of a virtual meeting.

The Agenda

1. To discuss and select the type of tiles for lobby
2. To discuss and select the type of finishing floor room

Invitation to be sent to the followings

1. Project manager
2. Construction manager
3. Civil Engineer
4. Client
5. RAS tiles supplier

The fig below shows the invitation which had been sent.



Fig 23-1 Meeting Invitation

Table 23-1 Minutes of Meeting:

Finishing materials					
Date	16/12/2021	Meeting time	9.00 AM	Location	Site office
Meeting called by		Mohammad Abdul Raziq			
Type of meeting		Decision-making Meetings			
Facilitator		Attalla			
Note taker		Abdullah			
Timekeeper		Mohammad Mayyaleh			
Attendees		1. Project manager 2. Construction manager 3. Civil Engineer 4. Client 5. RAS tiles supplier			
Type of tiles for lobby					

Discussion	There is some type for finishing ground floor lobby 1. marble 120X120 2. marble 60X60 3. porcelain 80X80		
Conclusions	Marble 120x120. Shop drawing for finishing ground floor lobby	Deadl ine	15/11/2021
Type of finishing floor room			
Discussion	There is two choice 1. porcelain 60x60 2. carpet		
Conclusions	Carpet Prepare sample of carpet	Deadline	15/12/2021

23.2 To identify a performance measurement course and submit reports, in addition to explaining the reason.

Performance measurement is a process where valuable information about the performance of a system, group, individual, or organization is gathered, analyzed, and reported. It is a useful tool used to estimate and track the progress which has been made in the organization.

If we are looking for a performance measurement definition by authors, then one of the most important ones is

The process of evaluating how well organizations is managed and the value they deliver for customers and other stakeholders – Moulin

Performance measurement

If we are looking for an answer to how do we track the progress of the strategy we've put in place, then our answer is through a method known as performance measures.

The concept of measuring performance is considered a strategic practice where organizations have to evaluate, respond, and align a set of measures to get anything constructive and valuable

around them. As the name suggests, the method deals explicitly with the measurement of performance.

The performance measures are quantitative indicators that have to be put in specific places to track the progress which is made in the organization. It will show whether the organization, individual, or group will achieve and accomplish their objectives and goals.

The information that performance measures drive is considered very informative and helpful. It becomes possible to create valuable reports around it and share the information with important stakeholders for future growth and development. These measures include a broad range of criteria like

- People measures
- Process measures
- Customer measures
- Financial measures

performance measurement

1. Involve people in leadership positions in the process. When they become part of a measurement process, it becomes easy to convey the facts and information to people working under them
2. Make sure that everyone is championing the process because half-hearted attempts will not take it very far
3. Include talks about performance measures in meetings so that every stakeholder is aware of its importance
4. Align the budgeting process to the business strategy
5. Communicate the key measures to everyone in the organization so that every member can achieve the desired goals.

performance measurement techniques

1. Create a mission statement
2. Create both a short-term and a long-term performance plan
3. Create different levels of objectives
4. Define who is responsible for every goal
5. Know the critical factors to the success of CSFs
6. Look at the market and economic conditions

7. Evaluate and re-evaluate goals

Advantages

1. It can improve and boost individuals' and groups' productivity and the organization. It creates clear goals with the help of specific standards to measure success, and the workforce now finds it easier to move forward and achieve them
2. It helps to recognize the individuals who have proved their worth by becoming top performers. Individualized metrics identify these individuals so that the organization can know about their best talent and take steps to retain them at any cost
3. It can easily identify both the individuals and the teams that are not performing at required levels by comparing the outputs of one against another using the same chart.
4. It improves and increases the level of communication. Accurate measurement metrics have proved a blessing in most cases as they are outlined with specific instructions that help to avoid any confusion in communication
5. It provides a clear chain of command where every employee has a specific role to play in the bigger picture. The defined space ultimately eliminates any confusion, and every employee can now fulfill his responsibility to the best of his abilities.

Table 23-2 Shows Example of Performance Measurement

	KPI	Unit	Last month	Date	This month Target	Actual now	Cumulative Target	Planned Target
1	By September, 2022, complete the construction of the Resort and handing over to the Client.	%	7%	30 Nov 2021	10%	17%	17%	18%

23.3 To develop Change Request model, including (impact analysis- alternatives analysis- recommendation)

A change request is a formal proposal to modify any document, deliverable, or baseline. When issues are found while project work is being performed, change requests can be submitted, which may modify project policies or procedures, project or product scope, project cost or budget, project schedule, or quality of the project or product results. Other change requests cover the needed preventive or corrective actions to forestall negative impact later in the project. Any project stakeholder may request a change. (PMBOK 6th)

Table 23-3 Change request

Change Request	
Project Name: CONSTRUCTION OF TUWAIQ RESORT	
Request #: A-1211	Date of Request: 30/11/2021
Requested By: Ahmad	
Request Description:	
changing bathroom door to be moisture resistance more than wood door	
Reasons for this Change Request:	
<i>Moisture will attract bathroom door so have to change to better than wood door</i>	
Options considered to implement the change:	
<i>Glazed door</i> <i>Aluminum door</i>	
Impact of each option (Cost, Scope, Schedule, Quality):	
Cost is same Scope is same Schedule will extar one week Quality will get high quality	
Alternatives (Cost, Scope, Schedule, Quality):	
Cost is higher Scope is same Schedule will extar three weeks Quality will get high quality	

Recommendation
<i>Glazed door</i>
Approval Signature(s) and Date(s):
Abdullah 2/12/2021

24- Risk and Opportunities

24.1 To identify Risks (threats) and opportunities, and giving examples.

There are many definitions of risk from many sources. One of them is The Institute of Risk Management (IRM) defines risk as the combination of the probability of an event and its consequence. Consequences can range from positive to negative.

If it's positive impact it will be an opportunity and if it's negative impact it will be threats.

In this project we identify the following risks:

- 1) Construction material market price change.
- 2) Global Pandemic restrictions
- 3) Lack of manpower resources
- 4) Changes in regulation and laws

24.2 To prepare a Risk register.

A Risk Register is a document use to record all of project identified risks, the likelihood and impact of risk occurring and the action taking to reduce or eliminate the impact if its threats and also increase their impact if it's opportunities. Also, its explain who is responsible for managing each risk.

Here will explain the risk register that we have in this project

Table 24-1 Risk Register

Risk Id	Risk Description	Risk Owner	Probability	Risk Categories	Impact	Response
1	Construction material market	procurement manager	Medium	Budget	Medium	Mitigate

	price change					
2	Global Pandemic restrictions	Project Manager	High	External	High	Accept
3	Lack of manpower resources	Construction Manager	Medium	Technical	High	Transfer
4	Changes in regulation and laws	Project department	Low	External	Medium	Accept compliance

24.3 Qualitative Risk Analysis

Here will explain qualitative risk analysis:

Table 24-2 Probability and Impact Analysis

Risk Id	Risk Description	Probability	Impact
1	Construction material market price change	0.4	0.69
2	Global Pandemic restrictions	0.8	1
3	Lack of manpower resources	0.5	0.7
4	Changes in regulation and laws	0.2	0.4

Probability	0.7-1	high	high	medium
	0.3-0.69	high	medium	low
	0-0.29	medium	low	low
		0.7-1	0.3-0.69	0-0.29
		Impact		

Fig 24-1 Probability Vs Impact

Table 24-3 Qualitative Risk Analysis

Risk Id	Risk Description	Risk Owner	Probability	Risk categories	Impact	Response	Priority
1	Construction material market price change	procurement manager	Medium	Budget	Medium	Mitigate	3
2	Global Pandemic restrictions	Project Manager	High	External	High	Accept	1
3	Lack of manpower resources	Construction Manager	Medium	Technical	High	Transfer	2

4	Changes in regulation and laws	Project department	Low	External	Low	Accept compliance	4
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24.4 To specify Risk response strategies.

Table 24-4 Risk Response Strategies

Risk Id	Risk Description	Risk Owner	Probability	Risk Categories	Impact	Response	Priority	Response Strategy
1	Construction material market price change	procurement manager	Medium	Budget	Medium	Mitigate	3	To have emergency budget for such threat
2	Global Pandemic restrictions	Project Manager	High	External	High	Accept	1	Prepare for Distance work / Online work
3	Lack of manpower resources	Construction Manager	Medium	Technical	High	Transfer	2	Hire a subcontractor
4	Changes in regulation and laws	Project department	Low	External	Low	Accept compliance	4	Monitor changes and determine whether they are threat or opportunities

25- Stakeholders

25-1 To prepare a Stakeholder engagement assessment matrix.

Table 25-1: Stakeholder Engagement Matrix

Owner	Power / interest	Unaware	Resistant	Neutral	Supportive	Leading
Ahmad	High / High	C			D	
Saleh	High / low			C	D	
Ali	Medium / low				D C	
Sami	High / medium			C		
Saad	Medium / medium				D C	
Abdullah	Medium / High				C	D
Bandar	Medium / low	C				
Foti	Low / Medium			C	D	
Fahad	Medium / Medium			C		
Hamad	Low/low		C			

26- Recommendations:

- 1- We advise using a prototype for the resort during the KOM in order to make sure that all key stakeholders are on the same page and understanding the outputs.
- 2- Hiring an interface manager at the beginning of the project would be very useful in order to coordinate all the activities with external stakeholders.
- 3- Availability of a well experienced project manager as well as construction manager at the start of the project shall assure a success for the project.
- 4- Ensuring availability of a backup plan for project resources to avoid slippage of the progress in case of any disturbance for the available one.

27- Conclusion:

In light of above below are the conclusions for our project:

- 1) The project is working under budget but behind the schedule.
- 2) The success of avoiding Colden plate helped us to avoid scope creeping.
- 3) The corporation and the harmony within the team assure the success of the project.
- 4) Using software in the project such as Gantt Chart helped us to monitor the progress and avoid slippage of the project.

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