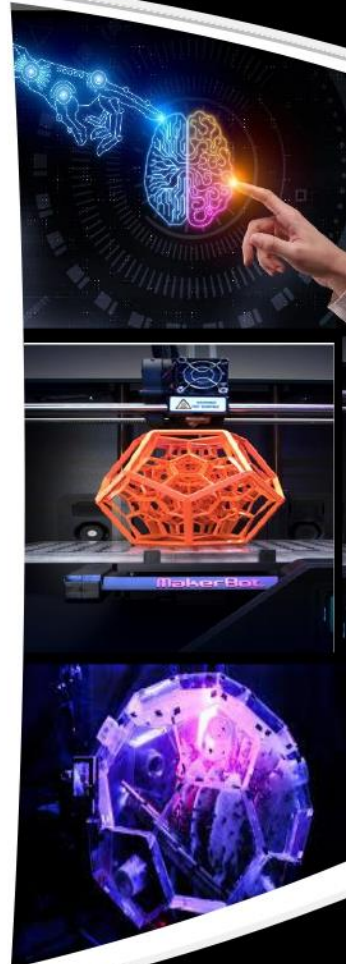


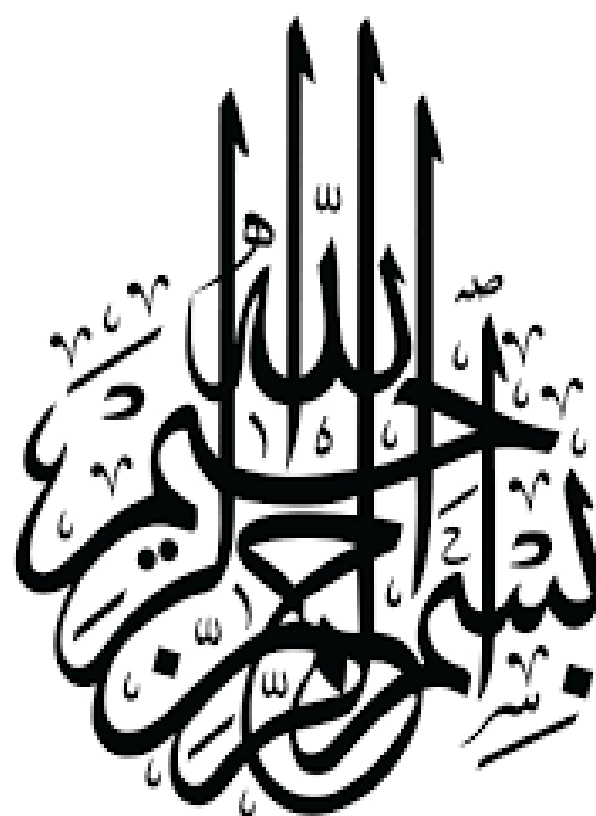
Project Title:

Making a Tourist Experience Through 3D Printers Around KSA



Kingdom Of Saudi Arabia
Vision 2030







PURPOSE OF THIS REPORT:

Throughout The master degree in project management at Everyone's Smart University, the student shall embody a trial of an organization by applying several practical trainings in which the main administrative methods and techniques are used. Each project management practitioner must master these techniques to meet the competencies needed for the project manager following the individuals' competencies standard of IPMA, which is provided through the theoretical lectures. The training of this course includes "25" competencies whose outputs should be included by the student in his final report of the project.

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EXPLORE

Wonderful places in Saudi Arabia



SAUDI ARABIA 2030 VISION

is touching many strategic areas in the country and boosting the economy is one of the strategy's pillars. Tourism is one of the objectives that Saudi Arabia is focusing on and aspires to grow spending on entertainment from 2.9% to 6.0%. The vision should be achieved through key enablers.



Ministry of Tourism

Tourism 2030 Vision aims to use the highest international standards to create attractions following the right steps. Key enablers are going to be applied to reach the goal e.g., improve visa issuance procedures for visitors, develop Saudi historical and heritage sites, and create new cities with appealing concepts. However, there are some requirements in order to realize this aspiration, such as, develop cutting-edge entertainment experiences, launching new entertainment attractions, and hosting world-class events and festivals.

Therefore, it is the perfect timing to start investing in tourism since the vision is encouraging tourist projects where The Tourist Investment Fund has signed an agreement with local banks to finance tourist projects with around 150 billion Saudi riyals. The Tourist Investment Fund is huge since it has been established with a capital of 15 billion SAR.

**TOURISM IN
SAUDI ARABIA**

United Smart Tech Corporation



INTRODUCTION ABOUT THE PROJECT



3D PRINTERS

One way to enhance the experience of tourism in Saudi Arabia is by introducing high and new technologies that aim to make them enjoy their time and print whatever shape of cities they visited in Saudi Arabia by using new types of 3D printers in public places. These types of 3D printers can be used by the end-user through the internet to print the shape of cities they visited.



About The Project

This report represents a new idea for an imaginary project to show the competencies of the team members for planning and managing this imaginary project using the different techniques and tools for project management.

This imaginary project aims to:

- Studying the proper locations for installing 3D printers in tourism places around Saudi Arabia to be used by tourists.
- Proposed the proper 3D printers according to the specifications.
- Inspect and install 15 3D printers.
- Provide training for 3D printers operators.

This imaginary project was assumed to be launched by the ministry of tourism and performed by UST (United Smart Technology) imaginary corporate created by the team members.



PROJECT DISCRIPTION AND EXPECTED OUTCOMES

PROJECT TIMELINE:

From 01/01/2022 to 31/12/2022

01

GOALS:

Enhance the experience of the tourists in the famous places around Saudi Arabia.
Introduce the new technologies in the tourism sector.
Provide a unique service to the tourists in Saudi Arabia.
Attract tourists from the world to visit Saudi Arabia.

02

PROJECT ACTIVITIES AND REQUIRMENTS:

Study the proper and safe location based on a study within the tourist areas for Installing 3D printers.
Receive all the 3D printers and their accessories.
inspect all the 3D printers and their accessories.
Install 15 3D printers in the agreed places.
Test 15 3D printers after installation.
Provide Training for the equipment operators.
Handover the equipment to the ministry

03

PROJECT OUTPUTS:

Provide suitable and famous locations for 15 3D printers to be used by tourists and the public.
Evaluate, assess and Propose the most suitable 3D printers according to the proper requirements and specifications.
15 3D printers installed in different locations.
Training for 3D printers operators.

04

PROJECT EXPECTED OUTCOMES:

Increase tourist satisfaction about tourism in Saudi Arabia.
Increase the number of tourists in Saudi Araba.
Provide unique products and gifts.



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TEAM MEMBERS



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EXPERT TEAM

Let's meet our team members who are professional
and have rich experiences.



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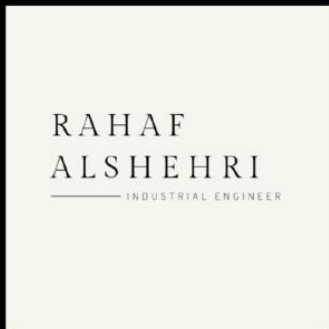
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ABOUT US

United Smart Technology Co. is one of the leading corporates providing Technological project management services in the Kingdom of Saudi Arabia was established in 2021. The corporate provides various types of services such as consultancy and project management for different projects like AI projects, 3D Printers and their technologies, and IoT projects.



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		Identifying Requirement traceability matrix	
		Specifying the methods used in requirement collection.	
		Development the hierarchical structure of the objectives of the project connected to the strategy.	
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		Development, defining and preparing a scope statement (its limits - specifying what it does not include)	
		Develop, define and explain the concepts of scope creep and give an example.	
		Illustration of product analysis management.	
		illustration of the transformation of the work packages in Work Breakdown Structure to activities.	
		Time	
		Development of the functions list or the activities included in each work package in WBS	
		Illustration of the relationships between the activities	

	Development of the logical diagram of the project activities, and identify the critical path	
	Gantt chart and Milestones model.	
	Quality	
	Clarifying Deming model for quality.	
	Develop SIPOC model, and Ishikawa for one of the issues of the project outputs.	
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	Distributing the project resources of equipment and tools.	
	Procurement	
	develop the procurement execution process, and contractor selection.	
	Section 11: Plan and control	
	preparing agenda- Invitation and virtual record of a virtual meeting.	
	Identifying performance measurement course and submit reports, in addition to explaining the reason.	
	Development of Change Request model, including (impact analysis- alternatives analysis- recommendation)	
	Risk and opportunities	
	Identifying Risks (threats) and opportunities, and giving examples.	
	Preparing of Risk register	
	Qualitative Risk Analysis	
	Specifying Risk response strategies.	
	Stakeholder	
	Preparing Stakeholder engagement assessment matrix.	
	Recommendations	
	Conclusion	
	References	
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2

The planning and Scheduling of the tasks from the Group leader

The planning and scheduling for the final project tasks

1- The light blue color under each name will indicate that this person is responsible and accountable for that, the remaining members will monitor the progress of the responsible members and give them their comments and feedback about their work in order to improve it.

2- Every week there will be 2 meetings all the members have to attend the meeting.

3- All members must support each other.

Week	Area	Task	Responsible
1 From 4/9/2021 to 10/9/2021	Preparation and planning	Writing the Purpose of the report	OMAR
		Writing and design introduction about report	Arwa
		Writing and design introduction about project	OMAR
		Planning and scheduling the tasks	
		Design and Creating cover page	
		Creating Table of Content	
		Creating Table Index	
		Creating Figure Index	
		Design and Creating a logo for the corporate	SHAHAD
		Writing the contents of the project report	OMAR
		Writing introduction for the corporate	
		Conducting a weekly meeting	
		Taking Minutes of Meeting	
2 2021\9\11 2021\9\17	Strategy	Mission formulation	ARWA
		Vision formulation	OMAR
		Develop and set goals with the SMART model	
		Develop and define performance or lagging indicators	
		Develop a project charter project.	OMAR
		Develop the organization structure of teams and project work units.	OMAR

3 From 18/9/2021 to 24/9/2021	Governance, Structure and Processes	Determine the practical and scientific foundations that were adopted in the development of the structure	OMAR + SHAHAD
		Determining the most appropriate project office model for project management and specifying the reason	
	Compliance, Standards and Regulations	Design a compliance model for verification prior to receiving project deliverables	
		Develop a Check List form for each of the three phases of the project (initiation and planning - implementation - closing).	
4 From 25/9/2021 to 1/10/2021	Power and Interest	Develop a stakeholder register and form groups for them.	ABDULAZIZ + OMAR
		Develop the two networks: (Strength/Interest) and (Influence/ Strength)	ABDULAZIZ + OMAR
		Use the logical diagrams for the register of the stakeholder.	FATHI + OMAR
		To identify the culture of the organization	FATHI
	Culture and Values	Provide proposals of the organization values that can be adopted.	FATHI + ABDULAZIZ + OMAR
5 From 2/10/2021 to 8/10/2021	Self-reflection and self- management	Specify “3” personal behaviors of the student that can influence on the project.	OMAR + ALI
		Study such behaviors, identify their reasons, and how they can be eliminated.	
		Conduct a self-professional assessment by using SWOT model	
	Personal integrity and reliability	Provide “3” behaviors contradict the moral integrity.	MARAH + OMAR
		Analyze the financial, social, and technical influence, if any, of such behaviors on the works of the project and the relationships.	
	Personal communication	Prepare the register of the stakeholder.	MAHMOUD + OMAR
		Identify the personal communication and the effective communication.	
		Identify the shapes, models, and channels of the personal communication.	

			Establish the communication matrix.	MAHMOUD + RAHAF + OMAR
			Provide 3 wrong scenarios of communication	
		Relationships and engagement	Develop and prepare stakeholder assessment matrix.	
6 From 9/10/2021 to 15/10/2021	Leadership		Describe and identify the leadership model, which is preferred to the project leadership.	MARAH + OMAR
			Specify the reasons for which such model is preferred.	
			Provide “5” proposals for the motivation methods that are compatible with the nature of the project.	
	Teamwork		Design RACI model for 3 administrative measures of the project.	FATHI
			Identify the conflict and crisis	
			Provide 3 expected scenarios of the conflict’s events in the project.	
			Set the optimal strategies to deal with each conflict, and specify the reason of preference.	
			Root Cause Analysis	
7 From 16/10/2021 to 22/10/2021	Resourcefulness		Distribute the human resources on the functions.	ALI + NAIF + OMAR
			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.	
	Negotiation		Develop general rules for the negotiation process.	ABDULAZIZ
			negotiation plans 2 Prepare	
9 From 30/10/2021 to 5/11/2021	Project Design		Triple constraint of the project Identify the	NAIF
			.a list of the project success factors Set up	
			to illustrate it Develop and identify work breakdown structure, in addition to prepare a guide .	
	Requirements and Objectives		Identify Requirement traceability matrix	ARWA
			the methods used in requirement collection Specify strategy the hierarchical structure of the objectives of the project connected to the Develop	

10 From 6/11/2021 to 12/11/2021	Scope	the scope statement (Its limits- and objects that are not included) Develop, identify, and prepare	RAHAF
		identify, and explain the concepts: Scope creep and giving examples ,Develop	
		product analysis management Illustrate	
	Time	activities the transformation of the work packages in Work Breakdown Structure to Illustrate	NAIF
		the activities included in each work package in WBS Develop the functions list or	
		the relationships between the activities Illustrate	
		the logical diagram of the project activities, and identify the critical path Develop	
	Quality	Prepare Gantt chart and Milestones model	SHAHAD
		quality Clarify Deming model for	
11 From 13/11/2021 To 19/11/2021	Finance	SIPOC model, and Ishikawa for one of the issues of the project outputs Develop	Mahmoud
		Structure, and the project balance in accordance with WBS Establish Cost Breakdown	
12 From 20/11/2021 to 26/11/2021	Resources	completion of 50% of Earned Value Management of the project after ending of 20% of its period and Calculate the outputs case-by-case basis	ARWA
		Resource Leveling and Smoothing Explain the concept of	
	Procurement	trained on distributing the project resources of equipment and tool To be	MARAH
		execution process, and contractor selection Develop the procurement	
13 From 17/11/2021 to 3/12/2021	Plan and Control	the comparison model between suppliers and the Scoring Model Develop	RAHAF
		virtual record of a virtual meeting Prepare agenda- Invitation and	
		submit reports, in addition to explaining the reason Identify performance measurement course and	
	Risk and Opportunities	(alternatives analysis recommendation -Develop Change Request model, including (impact analysis	ALI
		and giving examples ,Identify Risks (threats) and opportunities	
		Risk register Prepare	ABDULAZIZ
		Risk Analysis Qualitative	
	Stakeholders	Risk response strategies Specify	SHAHAD
		assessment matrix Prepare Stakeholder engagement	FATHI

Table 1. Distribution of Work

Competence

Being good at what
I do, capable,
effective

Perspective Competences

Section 1

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Vision

To be part of creating environment support that aids the Saudi Ministry of Tourism in achieving 2030 vision by providing tourism experience that contributes to enhancing tourism in the KSA.

Mission

To become one of the main partners for the Saudi Ministry of Tourism to provide a creative, innovative, and exceptional tourism experience while creating a better journey that benefits both our customers and the end-users.

Strategic objectives, SMART objectives & KPIs:

The strategic objectives, SMART objectives, and KPIs for the project including both leading and lagging indicators were created based on five different perspectives:

- Financial/Budgeting.
- Customers/Stakeholders/Vendors/End Users.
- Quality.
- Health and Safety.
- Execution and Effectiveness.
- Learning and Development.

Every perspective were having a score based on their importance from the corporate side to be able to evaluate the success of their projects. The five perspectives are mentioned in the below tables:

PERSPECTIVE	100
Financial/Budgeting	18
Customers/Stakeholders/Vendors/End users	20
Quality	16
health and safety Environment	16
Execution and Effectiveness	15
Learning and Development	15

Table 2. Objectives and KPIs Five Perspectives



Figure 1. Objectives and KPIs Five Perspectives

Financial/Budgeting:

Perspective	Project Strategic Goals	Project SMART Objective	KPI Name	KPI Description	Calculation Methods	Owner	FREQ.	Weight	Unit	INC/DEC Better
FINANCIAL / BUDGETING	Improves the budgetary control over a project expenditure	Complete the project by the end of 2022 by 10% less than the allocated budget. (Acqnotes, n.d.) (The_motley_fool, n.d.)	# Of changes to the cost baseline	This KPI shows the number of the changes to the Cost Baseline	Count	Financial Analyst	Monthly	1%	Number	D
			% Budget spent ratio to the budget allocated	This KPI indicates the percentage of the spent budget over the allocated budget	Budget spent / Budget allocated	Financial Analyst	Quarterly	2%	%	D
			Cost variance	is the process of evaluating the financial performance of your project. Cost variance compares your budget that was set before the project started and what was spent.	((% of work completed x budget)- Actual cost) CV = BCWP – ACWP	Financial Analyst	Quarterly	1%	\$	D
			% Over budget	This KPI shows the percentage of the over budget	(Actual Cost - Allocated budget) / Allocated budget	Financial Analyst	Weekly	1%	%	D

	Monitor effectively all the expenses of work done	Track 100% the cost of the work done through a daily progress report within the system for 1 year.	# Of Budget at Completion (BAC) was reported	as a measure that is often used in earned value management to track the actual cost of a project against its forecasted budget.	Count	Project Coordinator	Semi-Yearly	1%	\$	I
			# Of Actual Cost of work performed (ACWP) were reported	the cost incurred and recorded in accomplishing the work performed within a given accounting period and is accumulated reported over time.	Count	Project Coordinator	Weekly	2%	\$	I
			# Budgeted Cost of Work Scheduled (BCWS) was reported	is the sum of the budget for all work scheduled to be accomplished with a given time period.	(% of work completed x budget) also called Earned value (EV)	Project Coordinator	Weekly	2%	\$	I
			# Of Budgeted Cost of Work Performed (BCWP) was reported	is the budgeted cost of the value of work that has actually been accomplished or completed to date	Count	Project Coordinator	Weekly	2%	\$	I
	Maximize revenues from project	improving Utilizing the	Estimate at Completion (EAC)	is the current expectation of total cost at the end of a project.	EAC = actual costs (AC) + estimate to complete (ETC)	Project Manager	Quarterly	2%	\$	D

	resources of the project by Enhancing the accuracy of the estimation to 95% for the remaining work cost till the end of 2022. (Fichtner, n.d.) (Malik, n.d.) (Team E. , n.d.)			or EAC = actual costs (AC) + budget at completion (BAC) – earned value (EV)					
		Estimate to Complete (ETC)	is the expected remaining cost to complete the project	$ETC = (BAC - EV) / CPI_p$ Formula I – Typical Performance $ETC = (BAC - EV) / CPI$ Formula II – Atypical Performance $ETC = (BAC - EV)$ Formula III $ETC = (BAC - EV) / CPI_p$ while the CPI _p will represent the percentage of the efficiency of the work	Project Manager	Monthly	2%	\$	D
		Cost performance Index (CPI)	The Cost Performance Index (CPI) is a method for calculating the cost efficiency	$CPI = \text{earned value (EV)} / \text{actual cost (AC)}.$	Project Manager	Monthly	1%	\$	I

			and financial effectiveness of a specific project	$CPI = BCWP / ACWP$					
		To Complete Performance Index (TCPI)	It is a measure of the cost performance that is required to be achieved with the remaining resources to meet a specified management goal, expressed as the ratio of the cost to finish the outstanding work to the remaining budget.	$TCPI = (BAC - EV) \div (EAC - AC)$.	Project Manager	Quarterly	1%	Number	D
18%									

Table 3. Financial /Budgeting KPIs

I	Increase is better
D	Decrease is better

Customers/Stakeholders/Vendors/End users:

PERSPECTIVE	Project Strategic Goals									
		Project SMART OBJECTIVE	KPI NAME	KPI DESCRIPTION	CALCULATION METHOD	OWNER	FREQ.	WEIGHT	UNIT	INC/DEC BETTER
End Users/CUSTOMER / STAKEHOLDERS / VENDORS	Improve stakeholder's satisfaction	Reduce stakeholders' complaints about the outcomes to 0 and increase their satisfaction to 98% by the end of 2022.	Average stakeholder satisfaction with the outcome of the project	This KPI will enhance the development of the communication with the stakeholders and get the right update of new changes to the requirements	satisfied Stakeholders / unsatisfied stakeholders	Customer Service	Monthly	3%	Number	I
			Average stakeholder satisfaction with project management	This KPI will enhance the development of the project's management of the corporate	satisfied Stakeholders / unsatisfied stakeholders	Customer Service	Monthly	3%	Number	I
			% of stakeholder's acceptance of deliverables	This KPI shows the number of the accepted deliverables and will help us to have continuous improvement	(# of stakeholders accepted deliverables / total number of stakeholders) *100	Customer Service	Quarterly	3%	%	I

			# Of stakeholder's complaints	This KPI will give a sign about the number of complaints about the done work	Count	Customer Service	Monthly	3%	%	D
	Optimizing the communication with vendors	improves the availability of the purchased parts during the execution of the project to 95% by the end of the project 2022.	# Of vendor meeting schedule	This KPI will indicate the number of meetings scheduled with the vendors	Count	Project Coordinator	Monthly	2%	Number	I
	Improve tourists' satisfaction in Saudi Arabia in the tourist areas.	Developed local tourism around the Kingdom and increase the satisfaction of using the 3D printers by tourists more than 90% in the tourist areas at the end 2022 up to the mid of 2023.	# Of End users' complaints	This KPI will indicate the number of complaints of end-users about the installed 3D printers	Count	Customer Service	Yearly	3%	Number	D
			% Of ends user's satisfaction about the installed 3D printers.	This KPI will show the percentage of complaints of end-users about the installed 3D printers	(# of satisfied end users / total number of end-users who used machines) *100	Customer Service	Yearly	3%	%	I
			20%							

Table 4. Customers/Stakeholders/Vendors/End users KPIs

I	Increase is better
D	Decrease is better

Quality:

PERSPECTIVE	Project Strategic Goals	Project SMART	KPI NAME	KPI DESCRIPTION	CALCULATION METHOD	OWNER	FREQ.	WEIGHT	UNIT	INC/DEC BETTER
		OBJECTIVE								
Quality	Increase the quality of the work done	Reduce the rework due to the quality issues of parts to 1 % till the end of 2022.	# Of non-conformities during vendor inspection	This KPI will give a good indication of the specifications of the products and parts that are received from the vendors to prevent the rework.	Count	QA/QC Engineer	Weekly	4%	Number	D
			% Decrease in scrap and rework costs	This KPI will give a good indication if there is a decrease in the scrap and rework work	$((\text{Rework Cost} + \text{Scrap Cost}) / \text{Actual cost of work done}) * 100$	QA/QC Engineer	Monthly	4%	%	D
		Ensure all the installed parts have 100% no defects till the end of 2022.	% Of inspection for the installed parts	This KPI will give a good indication if there is a decrease in the scrap and rework work	$(\text{Number of inspected parts or products} / \text{number of total parts or products}) * 100$	QA/QC Engineer	Weekly	2%	%	I

	Ensure all the received parts have 100% no defects till the end of 2022.	% Of inspection for the received parts	This KPI will give a good indication of the quality of the products and parts that are received from the vendors to prevent the rework.	(Number of inspected parts or products/number of total parts or products) * 100	QA/QC Engineer	Weekly	3%	%	I
		% Of sample failure	This KPI will give a good indication about the percentage of the failure of tested samples	(Number of failure samples / total samples) * 100	QA/QC Engineer	Monthly	3%	%	D
		16%							

Table 5. Quality KPIs

I	Increase is better
D	Decrease is better

Health and safety Environment:

PERSPECTIVE	Project Strategic Goals	Project SMART OBJECTIVE	KPI NAME	KPI DESCRIPTION	CALCULATION METHOD	OWNER	FREQ.	WEIGHT	UNIT	INC/D EC
Health and Safety Environment	Perform the required work in a healthy environment and safe way	Maintain 100 % safe and healthy work area during installing 3D printers till the end of 2022.	# Of safety and health training was provided to the manpower	This KPI will give a good indication about enhancing the awareness of the manpower before the work and during the work about safety	Count	HSE engineer	Weekly	4%	Number	I
			# Of safety toolbox were conducted	This KPI will give a good indication about enhancing the awareness of the manpower before the work and during the work about safety	Count	HSE engineer	Weekly	4%	Number	I
			# Of accident reported	This KPI will give a good indication of the number of injuries were happened	Count	HSE engineer	Monthly	4%	Number	D
			# Of near-miss incidents reported	This KPI will give a good indication of the number of incidents were happening	Count	HSE engineer	Monthly	4%	Number	D
			16%							

Table 6. Health and Safety Environment KPIs

I	Increase is better
D	Decrease is better

Execution and Effectiveness:

PERSPECTIVE	Project Strategic Goals									
		Project SMART OBJECTIVE	KPI NAME	KPI DESCRIPTION	CALCULATION METHOD	OWNER	FREQ.	WEIGHT	UNIT	INC/DEC BETTER
Execution and Effectiveness	Improve the Effectiveness of the work done	Reflect 100% of the achieved progress of the work done till the end of 2022.	% Progress reports submitted as planned	This KPI will give a good indication about the percentage of the submitted reports to the non-submitted reports	$(\text{Submitted reports} / \text{total reports}) * 100$	Project Engineer	Weekly	2%	%	I
			# Of project Milestones Achieved on Time	This KPI will give a good indication about the number of the achieved milestones to the non-achieved milestones	$(\text{Achieved Milestones} / \text{total Milestones}) * 100$	Project Engineer	Monthly	2%	Number	I
			Schedule Variance (SV)	indicates how much a project is ahead or behind schedule.	$\text{Schedule Variance (SV)} = \text{Earned Value (EV)} - \text{Planned Value (PV)}$ $\text{Schedule Variance (SV)} =$	Project Coordinator	Weekly	2%	Number	D

			BCWP – BCWS					
	% Of Milestones Missed	This KPI will give a good indication about the percentage of the Milestones Missed to the non-Missed Milestones	(Missed Milestones / total Milestones) * 100	Project Coordinator	Weekly	2%	%	D
	Increase the resources utilization up to 98% during the work done till the end of 2022.	% Resource utilization versus the plan	Resource utilization = (worked time / available time) *100	Project Engineer	Weekly	2%	%	I
		Average # of people assigned per a project	Count	Project Engineer	Weekly	1%	Number	D
		% of project equipment available on Time	(Number of equipment's available on time / total number of	Project Engineer	Weekly	2%	%	I

				equipment needed) *100					
		% Amount of time lost due to the absence	This KPI will show the percentage of time lost due to the absence	(Total absence hours / Total hours of work for that day) *100	Project Engineer	Weekly	1%	%	D
	Install 15 3D printers in agreed locations by the end of 2022	# of 3D printers were installed	This KPI will show the number of 3D printers were installed	Count	Site Engineer	Monthly	1%	Numb er	I
15%									

Table 7. Execution and Effectiveness KPIs

I	Increase is better
D	Decrease is better

Learning and Development:

PERSPECTIVE	Project Strategic Goals	Project SMART OBJECTIVE	KPI NAME	KPI DESCRIPTION	CALCULATION METHOD	OWNER	FREQ.	WEIGHT	UNIT	INC/DEC BETTER
Learning and Development	Improve the employees' skills and knowledge	Provide more than 20 training courses till the end of 2022.	# Of hours training was conducted	This KPI will indicate the number of hours training	Count	HR Analysts	Monthly	4%	Number	I
			# Training was provided	This KPI will indicate the number of training courses was provided	Count	HR Analysts	Monthly	4%	Number	I
		Provide training to all the employees and get more than 50% of employees certified in different sectors till the end of 2022.	# Of employees were having training	This KPI will indicate the number of employees who get training	Count	HR Analysts	Monthly	3%	Number	I
			% Of employees were passed and get certified after training for every sector	This KPI will indicate the percentage of employees who get certified and pass the exams after the training	(Number of employees who passed the exams / Number of employees those get trained)	HR Analysts	Monthly	4%	%	I
		15%								

Table 8. Learning and Development KPIs

I	Increase is better
D	Decrease is better

Project Charter:

The project charter is a formal document that authorizes the project and the project manager. It is the output of the first initialization processes and has these core elements: *Overview and purpose, Objectives and high-level scope, General approach, Contractual aspects, Schedules, Resources, Personnel, Risk Management, Evaluation methods, High-Level constraints, and assumptions.* (Muhammad Nabeel Mirzaa, 2013)

Elements of Project charter

A. Project Purpose:

The project purpose is part of the project charter and is the center of all subsequent project management activities of developing the project scope (Ryan, 2011). It contains 2 elements which are: Mission statement, Project Purpose statement.

B. Objectives Elements:

The project objectives are part of the project charter and mentioned using the SMART model which is referred to •Specific •Measurable •Achievable •Realistic •Time-based (Richard Larson)

Processes to identify project charter, purpose, objectives, and scope:

The processes will display the ways of developing and identifying each of the project charters, purpose, objectives, and scope by fulfillment the inputs and using the proper tools and techniques.

Project charter identification Processes:

The charter requires some inputs and using some recommended tools and techniques to be generated as shown in the below chart. (Project Management Institute, 2017)



Figure 4-2 (Guide). Develop Project Charter: Inputs, Tools & Techniques, and Outputs
 A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition. ©2017 Project Management Institute, Inc. All rights reserved.

Figure 2. Develop Project Charter

Expert judgment is considered as one of the most important tools and techniques for developing the project charter among other tools and techniques. According to (Szwed, 2014) for the expert judgments there must be:

- Adoption of the systematic process for elicitation to improve the produced judgments.
- A way should be developed like mapping of elicitation methods to come up with the best possible judgment.
- Sufficient selection and training for the expert must be in place using the latest techniques.
- Using an appropriate method from the latest science to systematically elicit Judgments.

Project Purpose, Goals, and objectives identification process:

The below picture shows the suggested processes for identifying the project purpose and its formal decomposition into goals and objectives using an iterative process according to a study. (Ryan, 2011)

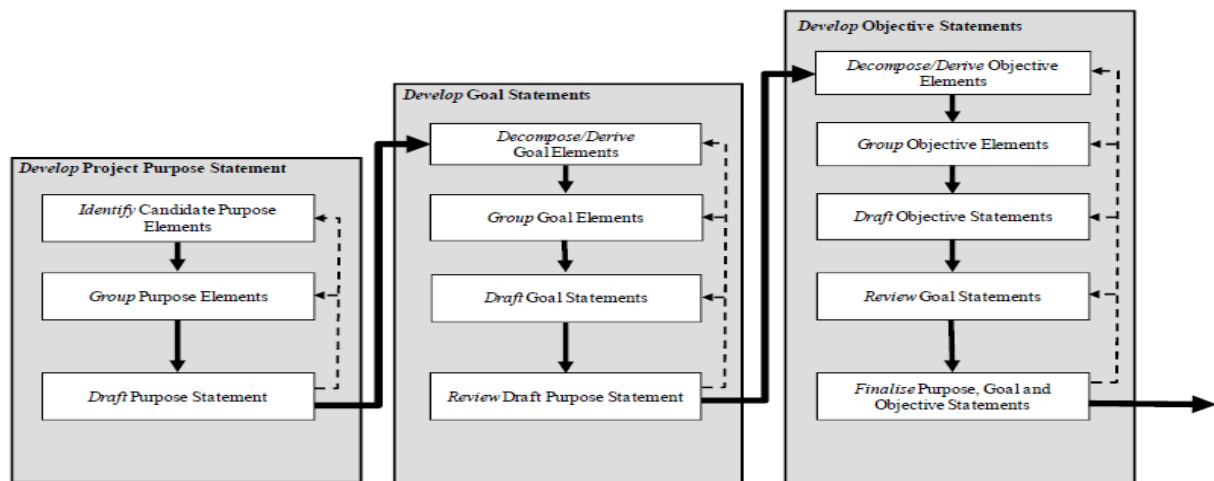


Figure 3. The development of project purpose statement, goals, and objectives for a system.

Figure 3. The development of project purpose statement, goals, and objectives for a system.

Another tool that offers structural guidance for writing objective statements using a SMART goal framework called OITT refers to • The outcome • Its indicator • Target level and • Time frame. As mentioned in the above figure. (Ogbeiwi, 2017)

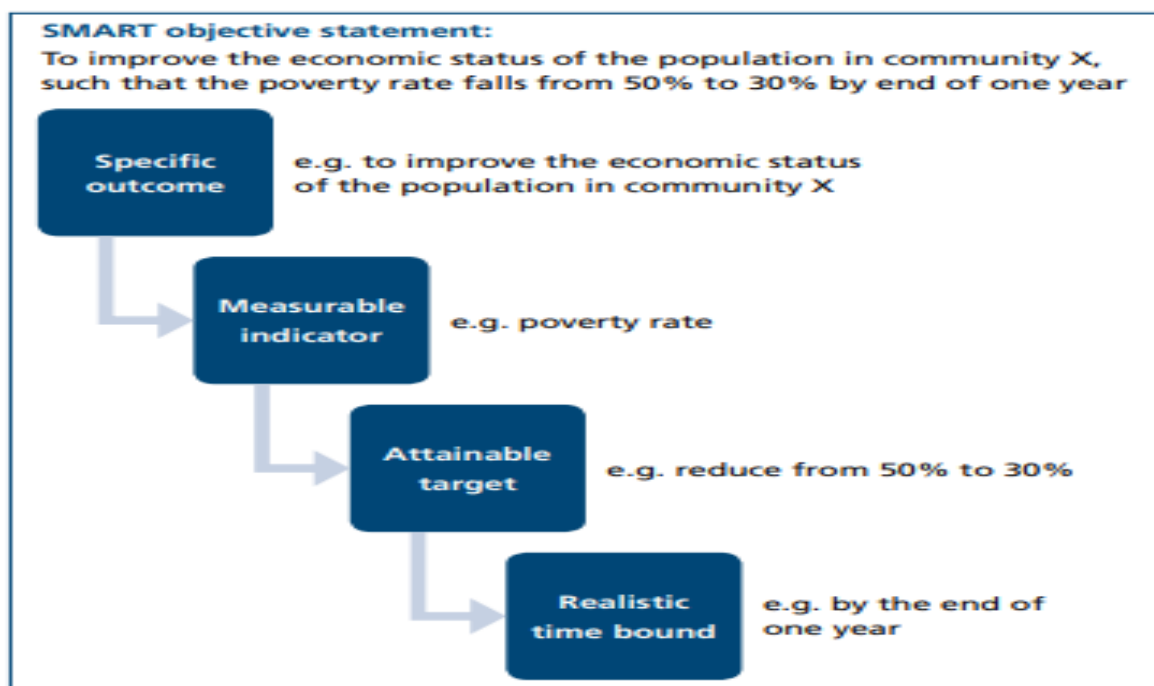


Figure 3. OITT framework of an objective statement

Figure 4. OITT framework for objective statement

PROJECT CHARTER

Project Name: Making a Tourist Experience Through 3D Printers Around KSA		Project Number: 3
Date Prepared: 01/01/2022		Revision Number: 0
1. PROJECT ESTIMATED COST		
5,000,000 SAR		
2. PROJECT PURPOSE		
The Purpose of the project is to improve tourists' experience in some famous areas in Saudi Arabia through using 3D printers.		
3. PROJECT HIGH-LEVEL DESCRIPTION		
intend to plan, construct and implement a structured plan to buy and install 3D printers in different locations around Saudi Arabia to be used easily by the tourists and visitors. The installed 3D printers will support the tourists to print a souvenir when they visit the famous tourists' places.		
4. DELIVERABLES		
- Provide the proper and safe locations based on a study within the tourist areas for Installing 15 3D printers. - Install 15 3D printers in the agreed places. - Testing 15 3D printers. - Training all 15 3D printers operators.		
5. BOUNDARIES:		
The project will be only within the Kingdom of Saudi Arabia in the famous areas, having more tourists, safe, suitable for 3D printers, and approved by the ministry of tourism. All other locations are out of scope.		
6. HIGH-LEVEL REQUIREMENTS:		
1-Study the proper and safe location based on a study within the tourist areas for Installing 3D printers. 2-Receive all the 3D printers and their accessories. 3-inspect all the 3D printers and their accessories. 4-Install 15 3D printers in the agreed places. 5-Test 15 3D printers after installation. 6-Provide Training for the equipment operators. 7-Handover the equipment to the ministry.		
7. SCOPE DEFINITION		
The project will include: -Propose a suitable place for installing 3D printers. -Inspect all the 15 3D printers and their accessories as per Spec. -Install The 15 3D printers in agreed places.		The project will not include: -Buying 3D printers and theirs items. -All required work for preparing the place for installing 3D printers. -Relocation of the 3D printers after installing.
8. PROJECT OBJECTIVES AND SUCCESS CRITERIA		
SMART Objectives		Success Criteria
Complete the project by the end of 2022 by 10% less than the allocated budget.		Budget of completion < by 10% of the allocated budget
Track 100% of the cost of the work done through a daily progress report within the system for 1 year.		Zero missing cost report for the work done
Improving Utilizing the resources of the project by Enhancing the accuracy of the estimation to 95% for the remaining work cost till the end of 2022.		Providing 4 updated reports quarterly
Reduce stakeholders' complaints about the outcomes to 0 and increase their satisfaction to 98% by the end of 2022.		Zero Stakeholders compliant
Improve availability of the purchased parts during the execution of the project to 95% by the end of the project 2022.		Zero-time deal from vendors for equipment's and accessories
Developed local tourism around the Kingdom and increase the satisfaction of using the 3D printers by tourists more than 90% in the tourist areas at the end of 2022 up to mid-2023.		Zero Complaints from tourists
Reduce the rework due to the quality issues of parts to 1 % by the end of 2022.		Less than 1% rework

Ensure all the installed parts have 100% no defects till the end of 2022.	Zero defects for installed parts
Ensure all the received parts have 100% no defects till the end of 2022.	Zero defects for received parts
Maintain 100 % safe and healthy work area till the end of 2022.	Zero accidents and incidents
Reflect 100% of the achieved progress of the work done till the end of 2022.	Zero missing reports for the work done
Increase the resources utilization up to 98% during the work done till the end of 2022.	Utilization >=98%
Provide more than 20 training courses till the end of 2022.	Provided Training >= 20
Provide training to all the employees and get more than 50% of employees certified in different sectors till the end of 2022.	No. of certified employees >= 50% of company employees
4. HIGH-LEVEL PROJECT MILESTONES	
Form Project Team / Preliminary Review / Scope	15/01/22
Finalize Project Plan / Charter / Kick Off	25/03/22
Study, analyze, and propose the proper locations for installing 3D printers	31/04/22
Receiving equipment's and their accessories	28/06/22
Inspect equipment's and their accessories	12/07/22
Install 3D printers in the agreed locations	16/11/22
Project Summary Report and Close Out	20/12/22
5. ASSUMPTIONS, CONSTRAINTS & DEPENDENCIES	
ASSUMPTIONS: -The project is following a Six Sigma DMAIC approach. The corporate has limited experience in doing projects according to this methodology. This project assumes that all stakeholders will understand and accept the six sigma-related work products and deliverables. -All the 3D machines will be delivered by the supplier with their needed accessories. CONSTRAINTS: Resources will be constrained to 40 full-time personnel. The Agency does not have the budget to fund any additional resources for this project.	
6. RISKS	
1. Changes to Project Scope - The project needs to stay focused on the agreed project scope with good communication with all stakeholders. 2. Bad Quality for the received equipment and their accessories- The received equipment and their accessories may get damaged during shipment or have some issues. 3-changing the location after taking	
7. PROJECT ORGANIZATIONAL STRUCTURE	
All personnel assigned to Developmental Projects, including Project Managers, Project coordinator, Financial Analyst, Project Planners and Schedulers, Project engineer. All personnel who provide leadership support above the project level.	
8. PROJECT AUTHORIZATION	
Approved by: Sponsor Mr. Mohammed Al-Ghamdi 	CEO Omar Ali Al-Ghamdi  Project Manager Rahaf Al-Shehri  Date 20/12/2021 Date 20/12/2021

Figure 5. Project Charter

Organization structure of teams and project work units:

The corporate structure of teams and project work units is a Strong matrix organization chart (a hybrid chart that combines functional and project-based structures) as shown in the below Picture.

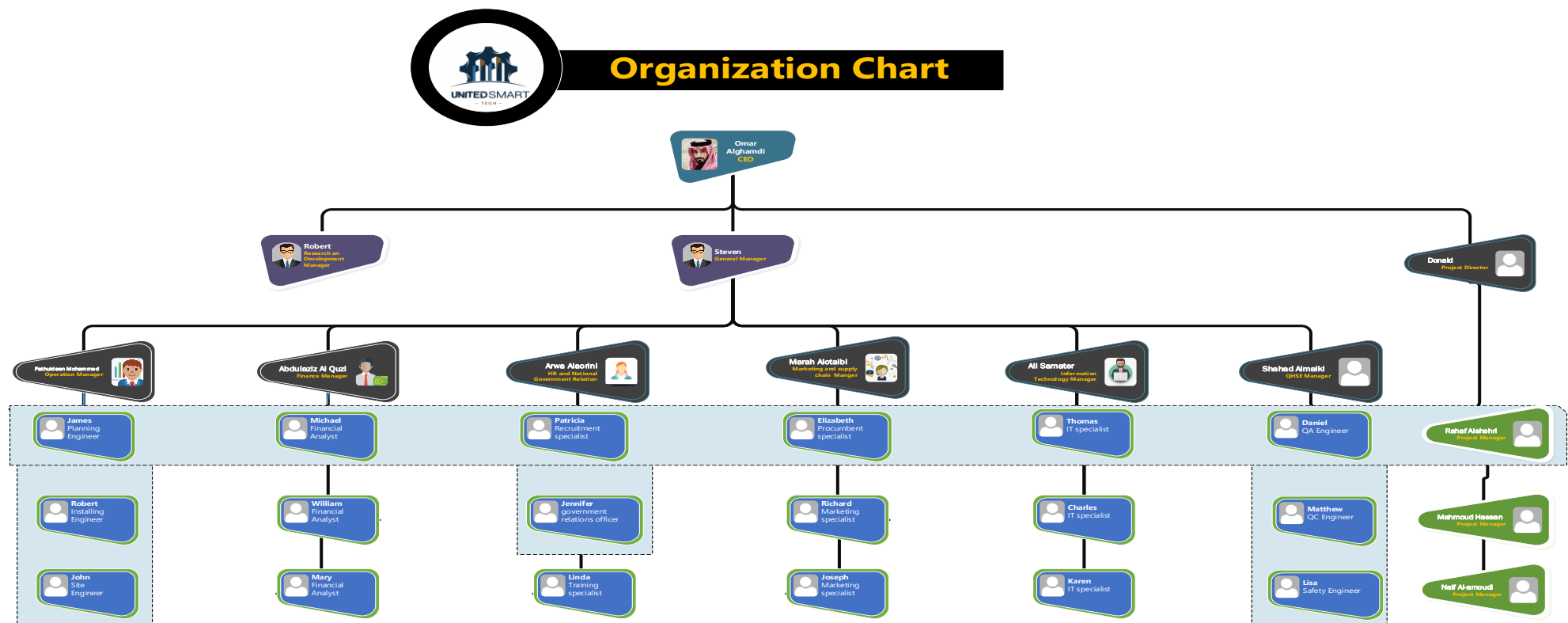


Figure 6. Organization Structure

Practical and scientific bases, which adopted in developing the structure:

United smart Tech. Corporate has 4 levels within its structure. Every level has its level of authority, control, and power as shown in the pyramid.

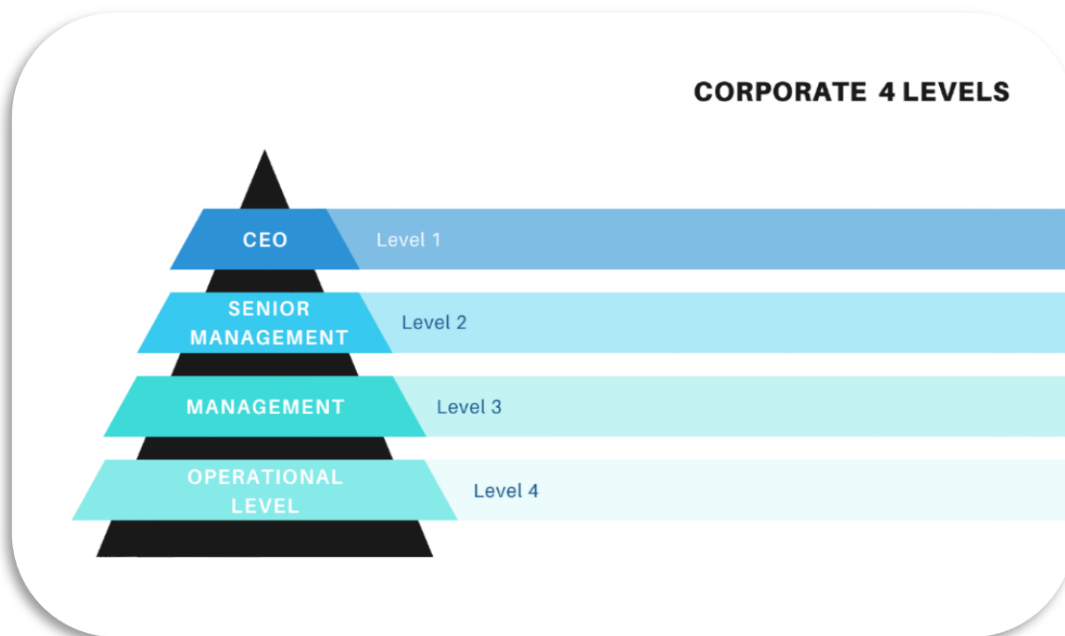


Figure 7. Corporate Levels

The development of organizational structure was based on different bases and factors which are (Team I. E., Matrix Organizational Structure: Advantages and Disadvantages, n.d.) (Herrick, n.d.):

- The long-term plan of the corporate in the future and what we want to provide to our customers.
- The authority and responsibility of the employees at every level.
- The integration among the divisions and departments and employees.
- The effectiveness and efficiencies of employees and their skills and experiences.

-The best way to Increase communication efficiently among the different departments.

-Enhance teamwork and improve employees' development with different responsibilities outside their area of specialization.

-Increasing utilization of resources usage within the corporate.

Project's office model, most appropriate to manage the project and the reason:

For every company that seeks professional control for its projects, it must have a PMO (Project Management Office). The responsibilities of PMO can vary from following processes, managing the project by ensuring they are providing the required product or services in an efficient way to reduce the cost and close the projects within time. There are three different types of projects (Williams, n.d.):

-Supportive PMO's

-Controlling POM's

-Directive POM's

United Smart Tech. Corporate has Directive POM's since it is relying on the projects for its business and need a high level of consistency of practice across all projects to (institute, n.d.) (Rastogi, n.d.):

- Implement a common methodology for all projects.
- Standardize terminology to increase the level of efficiency and consistency.
- Introduce effective repeatable project management processes.
- Provide common supporting tools for all projects.
- Ultimately, the objective is to improve levels of project success within the organization.

Check compliance model before delivering the project outputs:

It's important for every project to have a clear compliance work plan, to avoid the compliance risk and delays in the agreed project delivery date. Below compliance model covers five of the most important compliance areas.

General Compliance for Project:

Project Name		Making a Tourist Experience Through 3D Printers Around KSA		Owner		Ministry of Tourism	Main Contractor		United Smart Tech	
Date		1/1/2022		Day		Sunday	Ref		01-Rev03	
Requirements						Compliance				
No.	Compliance Area	Goal / Deliverable	Due Date	Responsible	Details of Deliverables	Goal / Deliverable	Compliant (Yes/No/NA)	Compare to Expectations (Low / Normal / High)	Remarks	
1	Governmental	Commercial Registration	3/1/2022	National Government Relation Officer	Avoid Penalties and Delays in starting the project	Issue and obtain				
		Business License	5/1/2022			Issue and obtain				
		Municipal License	7/1/2022			Issue and obtain				
		File with General Authority of Zakat & Tax	9/1/2022			Issue and obtain				

		File with General Organization for Social Insurances (GOSI)	11/1/2022			Issue and obtain			
		File with Ministry of Labor and Social Development	13/1/2022			Issue and obtain			
2	Operational	Installation and construction permit from each organization around KSA	15/2/2022	Operation Manager & HR and National Government Manager	Smooth implementation	Issue and obtain			
		Drawings and designs approval	25/2/2022			Issue and obtain			
		Import certificates for the Custom Clearance regulations for the 3D printers (SABER, IEEE, COC..etc..)	1/3/2022			Issue and obtain			
3	Quality Assurance	ISO 9001 Certificate	15/2/2022	QSHE Manager	Prevent mistakes and defects process at every stage	Issue and obtain			
		Test Reports	25/2/2022			Issue and obtain			
		Maintain the Approved Supplier List	1/3/2022			Issue and obtain			
		Audit & inspection reports	112/7/2022			Issue and obtain			
4	Health & Safety Standard	ISO 45001 Certificate	15/2/2022	QSHE Manager	Workplace Health and Safety Standards will help	Issue and obtain			
		Measurement and Monitoring of Safety (MMS)	25/2/2022			Issue and obtain			

5	Human Resources	Audit Reports	1/4/2022		organizations meet their legal obligations and protect staff	Issue and obtain			
		Health & Safety Plan	11/2/7/2022			Issue and obtain			
		Saudization	3/2/2022	HR and National Government Manager	Maintain productive & trained manpower	Issue and obtain			
		Residency Permits	25/2/2022			Issue and obtain			
		Training Program	1/12/2022		Meet Saudi employment regulation	Issue and obtain			

Table 9. General Compliance for Project

Specific Compliance for Project output:

The below compliance model describes all the required technical specifications for the 3D printers. The results represent that all the specifications are compiled to the requirements and for those which don't comply they are exceeding the expected outcome.

Project Name	Making a Tourist Experience Through 3D Printers Around KSA	Owner	Ministry of Tourism	Main Contractor	United Smart Tech		
Date	1/1/2022	Day	Sunday	Ref	01-Rev03		
Requirements				Compliance			
No.	Goal / Deliverable	Responsible	Details of Deliverables	Goal / Deliverable	Compliant (Yes/No/NA)	Compare to Expectations (Low / Normal / High)	Remarks
1	High technical specification of the 3D printer	Operation Dep	The X-Y resolution r of the 3D printer should be between 15-80 μm	The X-Y resolution provided 15 μm and its adjustable			
2	High technical specification of the 3D printer	Operation Dep	The Z resolution r of the 3D printer should be between 0.781μm	0.781μm			
3	High technical specification of the 3D printer	Operation Dep	Typical printing speed: 120 mm/s	Typical printing speed: 130 mm/s			

4	High technical specification of the 3D printer	Operation Dep	Print Multi colors	Print Multi colors			
5	High technical specification of the 3D printer	Operation Dep	Have a smart interface screen that is easy to use	Have a smart interface screen that is easy to use			
6	PLA filament	Operation Dep	The material used for printing should be PLA 1.75mm	The material used for printing should be PLA 1.75mm			
7	Maintenance	Operation Dep	The contractor should provide a minimum of 2 years of operation maintenance of the printer after installing	The 3D printers are provided with 5 years insurance and maintenance policy from the supplier			
8	Follow Health & Safety standards	QHSE Dep	The printers should be safe for public use (Flameless, High-temperature warning)	The printers should be safe for public use (Flameless , High-temperature warning (			

9	Productive manpower	Operation Dep	Training program for the staff who will be handling the 3 d printers after launching	3 months training program will be provided for the staff who will be handling the 3 d printers after launching			
---	---------------------	---------------	--	--	--	--	--

Table 10. Specific Compliance for Project output

Check List model for the three stages of the project (Start- Plan- Achieve- Close):

A project checklist is an important tool that represents the activities required for each phase of the project and the completion status. The below checklist was built to ensure that all the deliverables and documentation are completed.

Eff Date: 15-Jan-22
 Doc Code : ES-FM-16 (5)
 Page: 1 of 4
 Owner: USTC / Projects
 Issue date:

PROJECT DOCUMENTATION CHECKLIST

CUSTOMER NAME & LOCATION		PROJECT CLASSIFICATION			
Ministry of Tourism of Saudi Arabia – Saudi Arabia		☐ BULK INSTALLATION ☐ ENGINEERING & INSTALLATION E & I ☐ SPECIAL PROJECTS ☐ OTHERS (pls. specify)			
PROJECT TITLE	Making a Tourists Experience Through 3D Printers Around KSA				
ASSIGNED PE		COMPLETION DATE	31/12/2022		
Phase		Status	Due Date	Responsible	
Initiation	☐	Scope Review and sign-off	Done		
	☐	Set Project Goal and Objectives	Done		
	☐	Determine the Project deliverables	Done		
	☐	Budget Approval	Done		
	☐	Identify the roles and constraints	Done		
	☐	Identify Stakeholders and make stakeholders register	Done		
	☐	Resource's requirements	Done		
	☐	Establishing Project Charter	Done		

Note: This checklist should be attached in front of project files and will serve as a Table of Content

Figure 8. Initiation Project checklist

PROJECT DOCUMENTATION CHECKLIST

Eff Date: 15-Jan-22
 Doc Code : ES-FM-16 (5)
 Page: 2 of 4
 Owner: USTC / Projects
 Issue date:

CUSTOMER NAME & LOCATION		PROJECT CLASSIFICATION			
Ministry of Tourism of Saudi Arabia – Saudi Arabia		☐ BULK INSTALLATION ☐ ENGINEERING & INSTALLATION E & I ☐ SPECIAL PROJECTS ☐ OTHERS (pls. specify)			
PROJECT TITLE	Making a Tourists Experience Through 3D Printers Around KSA				
ASSIGNED PE		COMPLETION DATE	31/12/2022		
Phase		Status	Due Date	Responsible	
Planning	☐	Identify Technical and Functional requirements of the 3D printers			
	☐	Study the proper and safe location in the tourist areas for Installing 3D printers			
	☐	Develop work breakdown structure			
	☐	Develop project schedule and identify the milestones			
	☐	Create Communication plan			
	☐	Develop a risk assessment plan			
	☐	Develop Resources management plan			
	☐	Develop Quality Plan			
	☐	Hold “Kick-off” meeting			

Note: This checklist should be attached in front of project files and will serve as a Table of Content

Figure 9. Planning Project checklist

Eff Date: 15-Jan-22
 Doc Code : ES-FM-16 (5)
 Page: 3 of 4
 Owner: USTC / Projects
 Issue date:

PROJECT DOCUMENTATION CHECKLIST

CUSTOMER NAME & LOCATION		PROJECT CLASSIFICATION			
Ministry of Tourism of Saudi Arabia – Saudi Arabia		☐ BULK INSTALLATION ☐ ENGINEERING & INSTALLATION E & I ☐ SPECIAL PROJECTS ☐ OTHERS (pls. specify)			
PROJECT TITLE	Making a Tourists Experience Through 3D Printers Around KSA				
ASSIGNED PE		COMPLETION DATE	31/12/2022		
Phase		Status	Due Date	Responsible	
Execution	☐	Develop status reports and manage sponsor expectation			
	☐	Perform Quality Assurance / Testing			
	☐	Procurement document package			
	☐	Address risk/ Corrective action			
	☐	Change Requests			
	☐	Install 3D printers in the agreed locations			

Note: This checklist should be attached in front of project files and will serve as a Table of Content

Figure 10. Execution Project

Eff Date: 15-Jan-22
 Doc Code : ES-FM-16 (5)
 Page: 4 of 4
 Owner: USTC / Projects
 Issue date:

PROJECT DOCUMENTATION CHECKLIST

CUSTOMER NAME & LOCATION		PROJECT CLASSIFICATION			
Ministry of Tourism of Saudi Arabia – Saudi Arabia		☐ BULK INSTALLATION ☐ ENGINEERING & INSTALLATION E & I ☐ SPECIAL PROJECTS ☐ OTHERS (pls. specify)			
PROJECT TITLE		Making a Tourists Experience Through 3D Printers Around KSA			
ASSIGNED PE		COMPLETION DATE		31/12/2022	
Phase			Status	Due Date	Responsible
Closure	☐	Confirm with the sponsor that success factors are met			
	☐	Resources are released			
	☐	Hold project Close-out meeting			
	☐	The final project closure report is assembled and distributed			
	☐	Submitting Lessons Learned for all phases of the project			

Note: This checklist should be attached in front of project files and will serve as a Table of Content

Figure 11. Close Project checklist

Stakeholder register and form groups for them:

Stakeholders' management is a very important discipline for project managers during project management.

➤ **Summary**

A project is successful when it achieves its objectives and meets or exceeds the expectations of the stake-holders. Considering that in the organization or business, it's easy to get swept up in the day today. It is likely juggling new projects, customers, clients, services, technologies, objectives, and outcomes. Thus, it's important to realize that the success of day-to-day activities depends on one thing, people. In other words, the stakeholders. (Bdaiwi, n.d.) (Project, 2021)

So, in our project, we do realize and talk more about the importance of our stakeholders, how our stakeholders might be, what are their impact in our project whether is positive and negative.

➤ **Identifications of our Stakeholders**

Stakeholders have a defining role in any project because they can negatively and positively influence it. Therefore, it's essential for the project's success that you can recognize your project stakeholders and understand their expectations during project initiations. So, basically Identifying the stakeholders is the first step toward effectively managing them and using them to steer our project towards successful execution. (Usmani, 2021)

How to identify stakeholders in a project



Figure 12. How to identify Stakeholders in a project

There has to be a significant effort toward identifying project stakeholders early on. This involves prioritizing stakeholders according to the interests of our client and other stakeholders in the project as well as their overall impact and influence on the project.

So, as we have all this information, we are in a step of identifying our stakeholders, it is also significant to have all the right steps to go through stakeholders' interests and how to deal with them in the right way. Considering that managing all the different stakeholders is perhaps the most critical part of the project. Managing stakeholders effectively. (Team, n.d.)

Thus, based on these four steps, we identify our project stakeholders:

1. Project Charter
2. Reviewing the Enterprise Environmental Factors
3. Interviewing the influencers

4. Asking questions

There are also five ways which help us toward efficient management of project stakeholders:

1. Involve stakeholders throughout the project
2. All stakeholders must agree on the deliverables
3. Define mechanisms that govern changes
4. Effective communication is key
5. Try to see things from their perspective

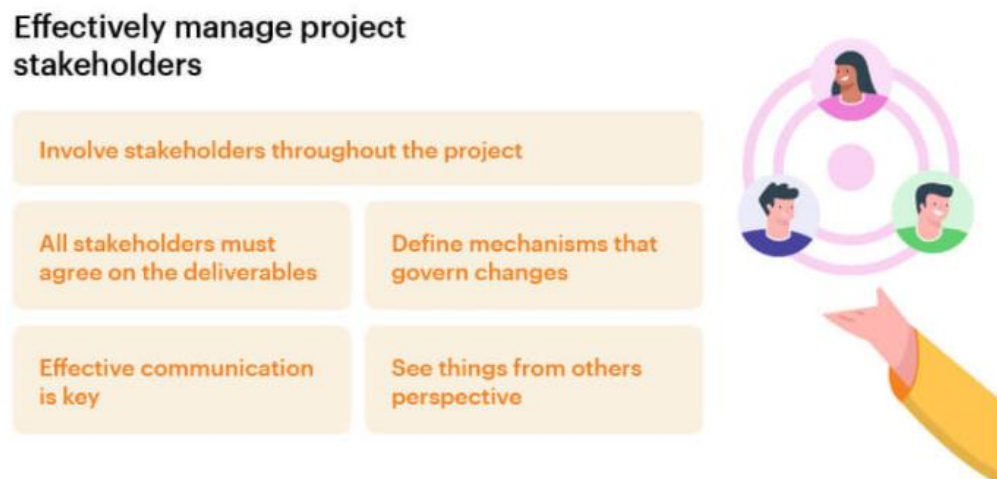


Figure 13. Effectively manage project Stakeholders

The importance of the stakeholders:

Project stakeholders are probably the most critical people who play a role in the project's success.

As mentioned above, any project's success depends on the satisfaction of our stakeholders. Understanding the needs and expectations of our stakeholders is very

important for successful project execution. Therefore, the role of stakeholders in our project is important because of the following reasons:

They bring experience to the table

Stakeholders often provide invaluable expertise about the project. They have a sound understanding of the relevant process and how things work in the industry. Based on their experience, they can provide clear deliverables and identify project constraints that our project manager might not be aware of. (Team, n.d.)

They help identify risks

The only way to mitigate risks is to first identify them. This is where our stakeholders can offer valuable insights. They might also raise concerns at the beginning of the project and might want to discuss potential risks. So, identifying risks at the beginning can allow us to prepare accordingly and prepare contingency plans. (Team, n.d.)

They help increase the chances of success

Engaging with stakeholders helps to have a clear view of the project expectations right from the start. It also helps keep them on the same page regarding their expectations of the project, especially as the project progresses. Taking continuous input from stakeholders might increase their interests and stakes in our project. This can increase the chances of our project success dramatically.

Furthermore, our project stakeholders are grouped into two categories which are as follows:



Figure 14. Internal and External Stakeholders

Internal stakeholders

These individuals or organizations are involved in the project from within the organization. They include (but are not limited to):

The project team: United Smart Tech Co, Project Management Team

The project manager: The project manager of United Smart Tech Co,

The sponsor: Ministry of Tourism

Functional Managers: Other Managers/Teams or departments of United Smart Tech Co,

External stakeholders

External stakeholders are affected by the project's outcome even though they are not involved in the project directly. They include but are not limited to:

The external clients (Ministry of Tourism)

The end-user (The Tourists)

The subcontractors (if there is)

The government/Services providers (Ministry of Tourism, Municipalities, Saudi Electric Co, Ministry of transportation)

The supplier (Vendors of the 3D printers, Vendors of other facilities).

Thus, the stakeholders' aspect is considered a major factor of project success, and behavior is one of the majors that drive successful project management. as today's world virtual project teams often not co-located are commonplace. In this environment, it is essential that behavior, emotions, and culture be well understood by our project manager and the project team members (Team, n.d.).

However, we all know that projects are considered successful only when they are completed within the boundaries of scope, time, cost, and quality (when achieve there are objectives). Poor project management is detrimental and can be very difficult to deal with – especially large projects that exceed there is own allocated budget.

Hence, there are several ways that we will use to make the required identification, prioritizing, and requirements of our stakeholder engagement and some essential tools to help us to get it all done. The below table is showing the Stakeholder register and form groups (Team, n.d.).

Stakeholder register and form groups for them:

Stakeholder	Stakeholder role	Organization or Group	Requirements	Expectations	Stakeholder Analysis Group	Internal / External	Classification	Power (H/L)	Interest (H/L)	Influence (H/L)
Ministry of Tourism	Partner	Saudi Government	1-Study the proper and safe location based on a study within the tourist areas for Installing 3D printers. 2-Receive all the 3D printers and their accessories. 3-inspect all the 3D printers and their accessories. 4-Install 15 3D printers in the agreed places. 5-Test 15 3D printers after installation. 6-Provide Training for the equipment operators. 7-Handover the equipment to the ministry.	Finish project on time Finish project with Budget Update the progress of the project frequently	Meet their need	External	Primary	High	Low	Low
General Authority of Civil Aviation	Partner	Saudi Government	documents Submitting all needed	Communicate with them	Keep informed	External	Primary	Low	High	High
Omer Alghamdi	CEO	United Smart Company	Following the Corporate strategies and rules policies	Finish project on	Key player	Internal	Primary	High	Low	Low

Steven	General Manager	United Smart Company	Commitment on work
Robert	Research and development manager	United Smart Company	Professionalism on work
Donald	Project Director	United Smart Company	Keep Customer Satisfied
Rahaf Alshehri	Project Manager	United Smart Company	
Fathuldeen Mohammed	Operation Manager	United Smart Company	
Abdulazi Al Quzi z	Finance Manager	United Smart Company	
Arwa Alaorini	HR and National Government Relation	United Smart Company	
Mahmou Hassan d	Project Manager	United Smart Company	
Marah Alotaibi	Marketing	United Smart Company	

time	Key player	Internal	Primary	High	Low	Low
Finish project with Budget or less	Key player	Internal	Primary	Low	Low	Low
Update the progress of the project frequently	Key player	Internal	Primary	High	Low	Low
	Key player	Internal	Primary	High	High	High
	Key player	Internal	Primary	High	High	High
	Key player	Internal	Primary	High	High	High
	Key player	Internal	Primary	High	High	High
	Key player	Internal	Primary	High	High	High
	Key player	Internal	Primary	High	High	High

	Manager									
Ali Samater	Information Technology Manager	United Smart Company			Key player	Internal	Primary	High	High	High
Shahad Almalki	QHSE Manager	United Smart Company			Key player	Internal	Primary	High	High	Low
Al- Naif amoudi	Project Manager	United Smart Company			Key player	Internal	Primary	High	High	High
Team Members	Member	United Smart Company			Key player	Internal	Primary	High	High	High
Ahmad	Site security manager	Police	Room Provide Car and	Fast delivered	Keep informed	External	Secondary	High	Low	Low
D3 printer Vendors	Supplier	Company	Features of 3D printers All Specifications and	To be clear and fast delivered	Keep Communicate	External	Secondary	Low	High	High
Tourists	End users	Public	printers Ease of use and fast 3D	Accessible with affordable price	Meet their need	External	Secondary	Low	High	High
Subcontractors	Other activities related	Company	All requirements from main contractor	To be clear and fast delivered	Keep Communicate	External	Secondary	Low	High	High

Saudi Electric Co	Other activities related	Company	D printers are specified3 the The locations of	The locations of D 3 the printers are specified	Keep Communicate	External	Secondary	Low	High	High
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Table 11. Stakeholder register and form groups

Two networks: (Strength/Interest) and (Influence/ Strength):

(Strength/Interest):

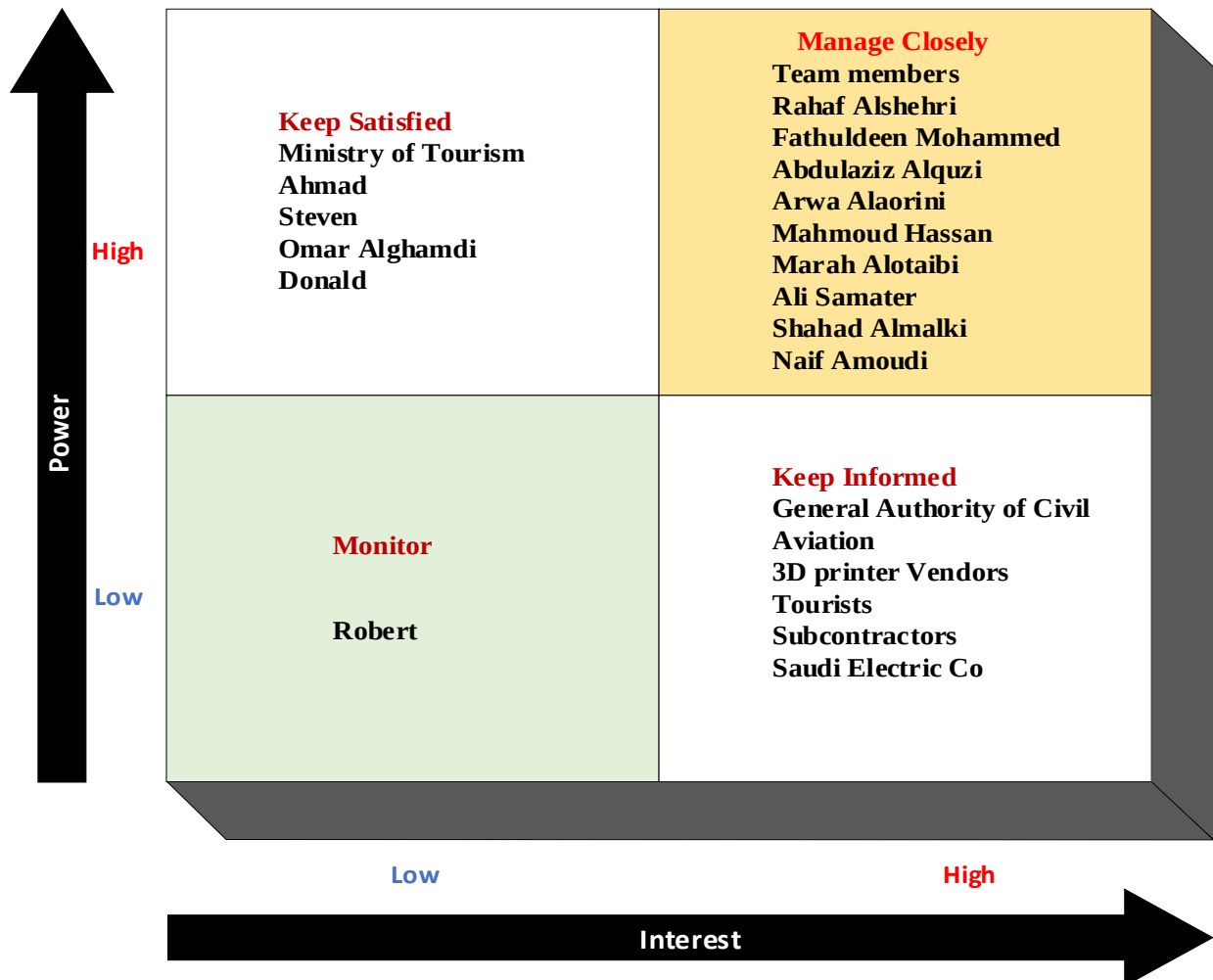


Figure 15. Strength/ Interest Network

(Strength /Influence):

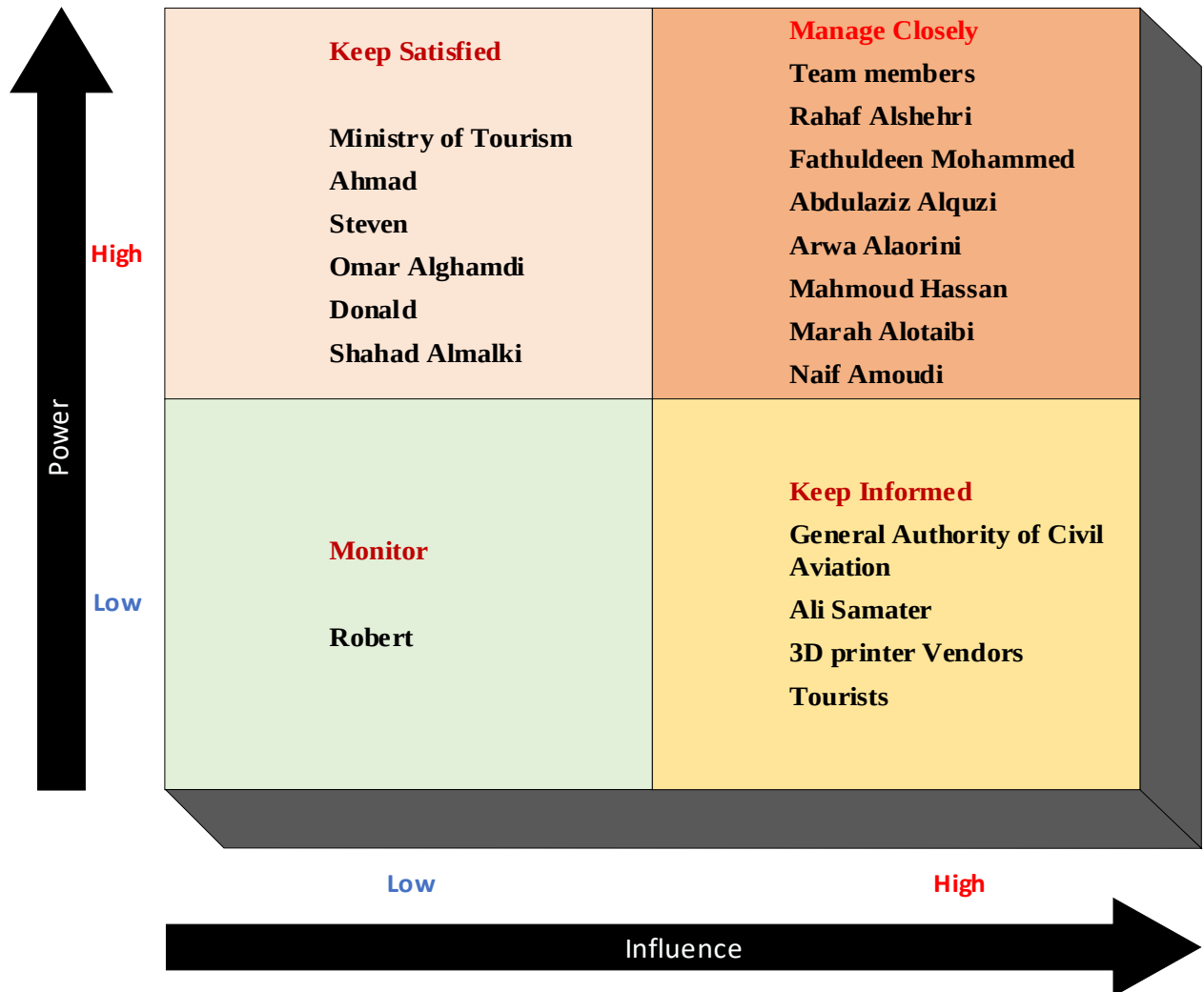


Figure 16. Strength/ Influence Network

Logical diagrams for the register of the stakeholder:

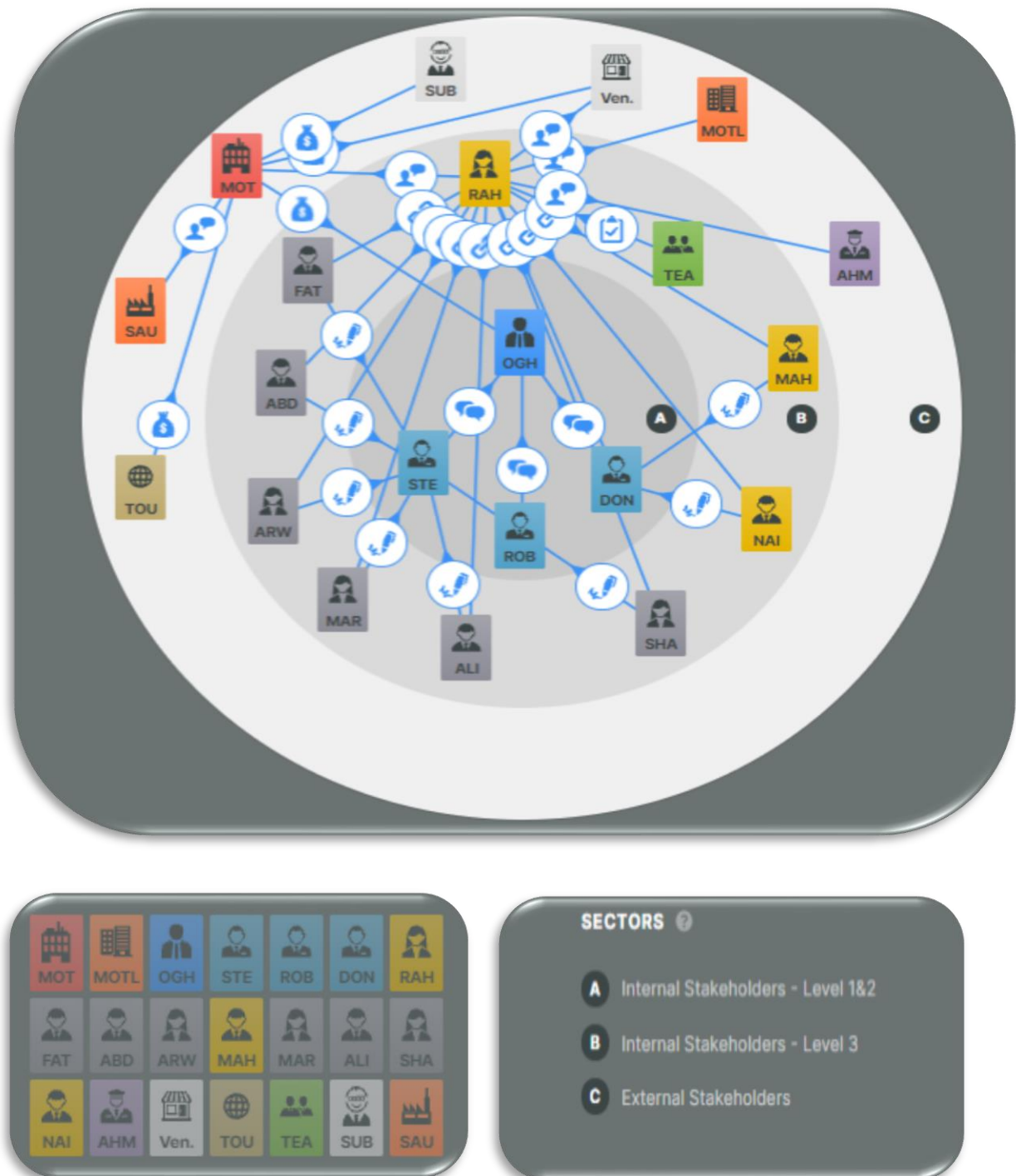


Figure 17. Logical diagrams for the register of the stakeholder.



Figure 18. Key Players within Level 1 & 2 in top management.



Figure 19. Internal Communication and reporting Directly for this specific Project between level 3 and 4.



Figure 20. Direct Communication and reporting between internal and external stakeholders.



Figure 21. Internal reporting between level 2 & 3.



Figure 22. Money Transaction.

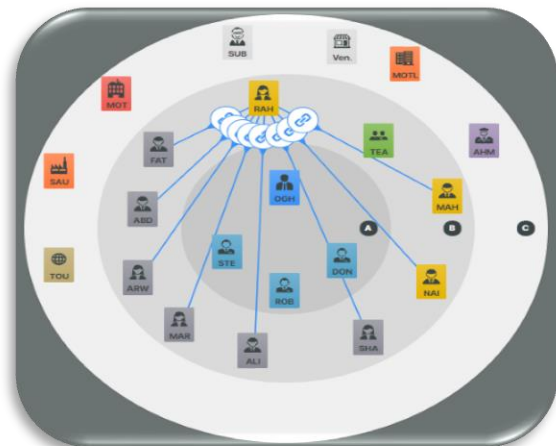


Figure 23. Follow up between departments Managers and Project Managers.

Organizational culture:

Our behavior is what defines us – as a company, as employees, as people. Everything we do is anchored by our corporate values: **Safety**, **Accountability**, **Excellence**, and **Integrity**. By living our values and sound business practices, we consistently achieve high levels of performance and efficiency – delivering value not only for our company but for our customers, partners, and the communities in which we operate.

Excellence:

United Smart Tech Corporation, excellence translates into all aspects of our workplace. It is our personal and group commitment to doing what we do well. We drive for the best results and are agile in addressing new challenges.

As a business, we drive excellence by setting challenging goals, rewarding top performance, committing ourselves to develop our people, encouraging innovation, creativity, and diversity of thought, and fostering teamwork and open communication.

Accountability:

Accountability means all employees at USTC take responsibility for their actions in meeting corporate objectives. Accountability for achieving the company's overarching business objectives starts with the goals and objectives outlined by the president & CEO for the company's business lines and pervades through the entire company.

Our employees place authority where responsibility lies, deliver on commitments, and seek and provide constructive feedback.

Safety:

Safety is an integral part of USTC culture. We are committed to providing a safe and respectful working environment for all with the appropriate safety procedures and policies in place onsite and within the community.

We define Safety as protecting ourselves, protecting others, and protecting our future.

Integrity:

The integrity of business at USTC is based on the ethical standards of our employees in our everyday operations. Integrity is a precious asset; it is our reputation and the foundation of corporate integrity is personal integrity.

We treat people with fairness and respect, we embrace diversity and accept differences.

Proposals of the organization values that can be adopted:

There are some professional values that can be adopted by the organization as showing in the below picture:

-INNOVATION.

-RELIABILITY.

-COMMITMENT.

-EMPOWERMENT.

-ADAPTABILITY.

Proposals of the organization values that can be adopted



Figure 24. Proposal for Organization Values that can be adapted

Competence

Being good at what
I do, capable,
effective

People Competences

Section 2

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“3” personal behaviors of the Stakeholders that can influence on the project and study such behaviors, identify their reasons, and how they can be eliminated:

As a technological company that is responsible for such a huge project (Making tourists experience through 3D printers around K.S.A). Undoubtedly, we have a tremendous of stakeholders as identified above.

Furthermore, it is significant to highlight the behaviors that we might encounter with our stakeholders during the project lifecycle. Considering that the Stakeholder Analysis is one of the significant steps in the Project Management Lifecycle, it is also an important process that successful people use to win support from others. In addition, managing stakeholders will help us to ensure our project succeeds. (Team, n.d.).

External Stakeholders behaviors:

No	Stakeholders of the project	External/Internal Stakeholders	Negative Behaviors/Impact	Reasons for Negative Behaviors	Impact (High/Medium/Low)	Likelihood (High/Medium/Low)	Result	Elimination of Negative Impact
1	Ministry of Tourism	External	Delay provision of agreed services providers. SOW changes due to new requirements from the project sponsor	• Due to unavailability resources and overcommitted	High	Medium	High to medium likelihood	Strong Communication between USTC-PMT & Other stakeholders Top management agreement.
2	Subcontractors	External			High	High		
3	General Authority of Civil Aviation	External			High	High		
4	Vendors	External			High	High		
5	Saudi Electrical Company (SEC)	External	Delay to delivery of materials from suppliers/vendors resulting from the project sponsor	• Changes of the SOW is usually due to new requirements from the project sponsor	Medium	Low	Medium to a low likelihood	Understanding the project requirements & needs early on. Transform USTC-PMT experience to other stakeholders
6	The Tourists (End-user)	External	Delay to delivery of materials from suppliers/vendors resulting from EEF, or economic changes	Due to Environmental Enterprise	Medium	Low	Medium to a low likelihood	Understands of

			Factor (EEF), or economic changes			likelihood	the project importance
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Table 12. Analysis of External Stakeholders behaviors

Internal Stakeholders behaviors:

No	Stakeholders of the project	External /Internal Stakeholders	Negative Behaviors/Impact	Reasons for Negative Behaviors	Impact (High /Medium /Low)	Likelihood (High /Medium/ Low)	Result	Elimination of Negative Impact
1	United Smart Tech Co, (Human Resource)	Internal	Change of Stakeholders' awareness and interest.	Unclear of project objectives and strategic	High	High	High to the medium likelihood	Enhancing to be committed to the Core Team values & concepts.
2	United Smart Tech Co, (Finance)	Internal	Uncontrolled project funds & Lack of commitment to core team values and concepts	- Uncontrolled scope creep - Unclear of Team charter	High	High		Launch training programs of Project Management ethics
3	United Smart Tech Co (PMT)	Internal	Resources availability to internal enterprise factors and unawareness of HR functional.	Due to internal enterprise factors and unawareness of HR functional.	Medium	Medium	Medium to a low likelihood	Early preparation of internal enterprise factors and HR functionals

Table 13. Analysis of Internal Stakeholders behaviors

Self-professional assessment by using SWOT model

Many suggest the **SWOT** (**Strength**, **Weaknesses**, **Opportunities**, **Threats**) system as an analytical tool that should be used to categorize essential environmental factors that are both internal and external to the organization or project.

However, **SWOT** Analysis is a technique that is used in organizations for strategic planning and strategic management. In order to develop organizational strategy, it can be also used effectively during the project lifecycle. (Usmani, 2021)

Furthermore, the method covers four areas in two dimensions. It has four parts: **Strengths**, **Weaknesses**, **Opportunities**, **Threats**. Strengths and Weaknesses are internal factors, and the organization's features, opportunities, and threats are external environmental factors and it is explained as follows (Usmani, 2021):

Strength:

- The organization's manpower and staff are professional and have very good and long experiences in the same field.
- The organization software is updating frequently to the latest one and using the latest technology.
- The project team is dealing with the project based on an Agile mindset and having good background.
- Great deals with sponsors and stockholders.
- Reachable for the target market.
- The reputation of the organization is very good and has a good market share internationally.

Weaknesses:

- Many of the project team members talk only in one language.
- The average old of team members are more than 50 years old and some of them are past 60 years old.
- Some of the team members are working online and virtual due to still their country being locked down.
- Marketing methods are still under improvement and have not reached the latest marketing methods, strategies, and techniques.
- The company structure is complex and there are too many levels and communication channels.
- The company debts are considered a little high and should be covered as per schedule without any delay.

Opportunities:

- Create more creative making campaigns.
- Making the most of the sponsors' deals and involve in the Saudi 2030 vision projects and be a part of the Saudi vision 2030.
- More improvement of market methods, and targeting new customer and place as well as gaining marketing experiences.
- Increase the availability, productivity of credit, and investment potential for the company and other company investors.
- Expanding the company projects and businesses which helps the company to grow more and for sustainability.

Threats:

- One of the threats is negative employee approach and resistance to change employee approach which leads to badly damage the company project and make the company environment unhealthy for work.
- Moreover, the negative employee threat is overconfidence employee threat who doing the job without considering the small issue and those small issues may lead to disaster.
- When the company uses the latest technology in different sectors, they are facing cyber and phishing attack threats.
- Environmental and social threats toward the company projects.

“3” behaviors contradict the moral integrity:

The rise of the Internet has contributed to rapid access to knowledge and to keeping pace with technological innovations. Every educational organization must keep pace with these rapid developments by integrating technology into the educational process in a way that contributes to the higher-level thinking and critical thinking skills of the learner (Manufactur3dmag, 2021), with a view to achieving educational output. Despite the importance of traditional educational trips, they face many challenges and difficulties, the most important of which is the fear of teachers and parents about security and safety procedures during the trip, or the lack of financial support to implement such trips, hence the need to implement virtual trips through 3D experience.

These experiences need care and keeping the liability to come out with the best results and benefits, so we are about to explain personal integrity and liability.

Personal integrity and liability:

Integrity means conducting one's private affairs in the same manner as one's public affairs. It is as important to develop confidence between parties as it is to maintain integrity (Caldwell, 2018). When it comes to human relationships, Ryan Hamm reminds us that "integrity or a lack thereof" can occur at any time. Integrity necessitates adherence to accepted ethical ideals and the norms of behaviours that go along with them (Schöttl, 2015).

In terms of personal integrity, a distinction is frequently made between personal and moral integrity when using the term integrity. As opposed to moral integrity, which indicates a person's commitment to moral values and principles, personal integrity denotes a person's dedication to personal values and principles that they consider important (Crosby, 1991).

There are behaviours that don't comply with personal integrity. By applying those unethical behaviours to the experience through 3D tourism, we can find that these actions have a major effect on many aspects. Following, we are about to mention those immoral behaviours on many career progressions. There are numerous ways in which unethical behaviours might present itself. There are several examples of unethical behaviours in the 3D experience; therefore, we've compiled a few below:

Misleading communications: Falsely representing a product or service by leaving out information that is relevant;

Deceitful marketing methods that inflate expectations beyond reality

Inflating prices in order to use a fake promotion or discount later;

Anti-competitive activity: Competitive price-fixing; Discussion and fixation of consumer price charges with competitors.

(Agreeing with competitors on the markets and clients each will target) Market sharing; Sharing of information that could reduce competition (for example, prices, stocks, markets, and plans);

Not complying with the regulations: committing a behavior against the rules (Unethical behavior in the workplace: Definition, examples, and statistics, n.d.).

The impact of the previous behavior on the project if found

Perspective	Misleading communications	Anti-competitive activity	Not complying with the regulations
Financial impact	It won't be harmful to marketing except after the tourist tries for the first time and realize that he was deceived, this would be bad advertising to the experience.	Leads to major financial loss.	Causes harm due to losses that could happen due to breaking the laws.
Technical impact	Causes confusion	Will affect future outcomes due to shortage of finance.	Failure to follow the rules of one of them may lead to stumbling and destroying the part of the technical side
Social impact	Bad advertising and reputation	Bad advertising as this experience is deceitful.	Part of the experience is destroyed and will take time to be fixed leaving a bad impression and Putting down the reputation of the experience

Table 14. Impact of 3 behaviors contradict the moral integrity on the Project

Preparation of the register of the stakeholders:

A Stakeholder is any person or entity that can influence the success of a project in a negative or positive manner. A Stakeholder Register is a document that contains a list of external and internal project stakeholders (Crosby, 1991).

Register of the stakeholders:

Stakeholder	Stakeholder role	Organization or Group	Requirements	Expectations	Stakeholder Analysis Group	Internal / External	Classification	Power (H/L)	Interest (H/L)	Influence (H/L)	Address	Phone numbers	Email address	Communications sent to date
Ministry of Tourism	Partner	Saudi Government	1-Study the proper and safe location based on a study within the tourist areas for Installing 3D printers. 2-Receive all the 3D printers and their accessories. 3-inspect all the 3D printers and their accessories.	Finish project on time Finish project with Budget	Meet their need	External	Primary	High	Low	Low	KSA-Riyadh City	118808855	Info@mt.gov.sa	Letters

			4-Install 15 3D printers in the agreed places. 5-Test 15 3D printers after installation. 6-Provide Training for the equipment operators. 7-Handover the equipment to the ministry.	Update the progress of the project frequently										
General Authority of Civil Aviation	Partner	Saudi Government	Submitting all needed documents	Communicate them with	Keep informed	External	Primary	Low	High	High	KSA-Riyadh City	118744444	Info@mot.gov.sa	Letters
Omer Alghamdi	CEO	United Smart Company	Following the Corporate strategies and policies rules	Finish project on time	Key player	Internal	Primary	High	Low	Low	KSA-Riyadh City	555511111	Omar@unitedsmart.com	Phone calls
Steven	General Manager	United Smart Company	Commitment on work	Finish project Budget or with less	Key player	Internal	Primary	High	Low	Low	KSA-Riyadh City	555511122	Steven@unitedsmart.com	Phone calls
Robert	Research and development manager	United Smart Company	Professionalism on work	Update the progress of the	Key player	Internal	Primary	Low	Low	Low	UAE-Dubai City	555511133	Robert@unitedsmart.com	Phone calls and Letter

Donald	Project Director	United Smart Company	Keep Customer Satisfied	project frequently	Key player	Internal	Primary	High	Low	Low	KSA-Riyadh City	555511144	Donald@unitedsmart.com	Phone calls
Rahaf Alshehri	Project Manager	United Smart Company			Key player	Internal	Primary	High	High	High	KSA-Riyadh City	555511155	Rahaf@unitedsmart.com	Phone calls
Fathuldeen Mohammed	Operation Manager	United Smart Company			Key player	Internal	Primary	High	High	High	KSA-Riyadh City	555511166	Fathuldeen@unitedsmart.com	Phone calls
Abdulaziz Al Quzi	Finance Manager	United Smart Company			Key player	Internal	Primary	High	High	High	KSA-Riyadh City	555511177	Abdulaziz@unitedsmart.com	Phone calls
Arwa Alaorini	HR and National Government Relation	United Smart Company			Key player	Internal	Primary	High	High	High	KSA-Riyadh City	555511188	Arwa@unitedsmart.com	Phone calls
Mahmoud Hassan	Project Manager	United Smart Company			Key player	Internal	Primary	High	High	High	KSA-Riyadh City	555511199	Mohmoud@unitedsmart.com	Phone calls
Marah Alotaibi	Marketing Manager	United Smart Company			Key player	Internal	Primary	High	High	High	KSA-Riyadh City	555511110	Marah@unitedsmart.com	Phone calls
Ali Samater	Information Technology Manager	United Smart Company			Key player	Internal	Primary	High	High	High	KSA-Riyadh City	555511111	Ali@unitedsmart.com	Phone calls
Shahad Almalki	QHSE Manager	United Smart Company			Key player	Internal	Primary	High	High	Low	KSA-Riyadh City	555511112	Shahad@unitedsmart.com	Phone calls

Al- Naif amoudi	Project Manager	United Smart Company			Key player	Internal	Primary	High	High	High	KSA-Riyadh City	555511113	Naif@unitedsmart.com	Phone calls
Team Members	Member	United Smart Company			Key player	Internal	Primary	High	High	High	KSA-Riyadh City	555511114	Workforce@unitedsmart.com	Phone calls
Ahmad	Site security manager	Police	Provide Car Room and	Fast delivered	Keep informed	External	Secondary	High	Low	Low	KSA-Riyadh City	555511115	Ahmad@xxx.com	Phone calls and letter
printer D3 Vendors	Supplier	Company	All Specifications Features and of 3D printers	To be clear and fast delivered	Keep Communicate	External	Secondary	Low	High	High	KSA-Riyadh City	555511115	Dtechn@3xxx.com	Phone calls and letter
Tourists	End users	Public	Ease of use and fast 3D printers	Accessible with affordable price	Meet their need	External	Secondary	Low	High	High	Around KSA	NA	NA	NA
Subcontractors	Other activities related	Company	All requirements from the main contractor	To be clear and fast delivered	Keep Communicate	External	Secondary	Low	High	High	KSA-Riyadh City	555511115	Dtechn@3xxx.com	Phone calls and letter
Saudi Electric Co	Other activities related	Company	The locations D 3 the of printers are specified	The locations D 3 of the printers are specified	Keep Communicate	External	Secondary	Low	High	High	KSA-Riyadh City	555511115	Dtechn@3xxx.com	Phone calls and letter

Table 15. Register for Stakeholder

Stakeholder Analysis:

Stakeholder	Stakeholder role	Organization or Group	Stakeholder Analysis Group	Phase	Importance				Success Priorities. Most to least important for the stakeholder				Describe if success priority is "Other"
					Stakeholder Impact on Project	Project Impact on Stakeholder	Stakeholder Rating	Level of Support	Time	Cost	Scope	Other	
Ministry of Tourism	Partner	Saudi Government	Meet their need	All Phases	Low	High	3	Medium	3	1	3		
General Authority of Civil Aviation	Partner	Saudi Government	Keep informed	Project Execution	High	Low	3	Low	3	1	2		
Alghamdi Omer	CEO	United Smart Company	Key player	Project Monitoring and Controlling	Low	High	3	Low	3	3	3		
Steven	General Manager	United Smart Company	Key player	All Phases	Low	High	3	Medium	2	3	2		
Robert	and Research development manager	United Smart Company	Key player	Project Monitoring and Controlling	Low	Medium	2	Low	1	2	2		
Donald	Project Director	United Smart Company	Key player	All Phases	Low	High	3	High	3	3	3		
Alshehri Rahaf	Project Manager	United Smart Company	Key player	All Phases	High	High	3	High	2	3	2		
Fathuldeen Mohammed	Operation Manager	United Smart Company	Key player	Project Planning	High	Medium	6	Medium	2	3	2		
Al Quzi Abdulaziz	Finance Manager	United Smart Company	Key player	Project Planning	High	Medium	6	Medium	2	3	2		

Alaorini Arwa	HR and National Government Relation	United Smart Company	Key player	Project Planning	High	Medium	6	Medium	2	3	2		
Hassan Mahmoud	Project Manager	United Smart Company	Key player	Project Planning	High	Medium	6	Medium	2	3	2		
Alotaibi Marah	Marketing Manager	United Smart Company	Key player	Project Initiation	High	Medium	6	Medium	2	3	2		
Samater Ali	Information Technology Manager	United Smart Company	Key player	Project Planning	High	Medium	6	Medium	2	3	2		
Almalki Shahad	QHSE Manage	United Smart Company	Key player	Project Planning	Low	Medium	2	Medium	2	3	2		
Al-amoudi Naif	Project Manager	United Smart Company	Key player	Project Monitoring and Controlling	High	Medium	6	Medium	2	3	2		
Members Team	Member	United Smart Company	Key player	Project Execution	High	High	9	High	2	1	3		
Ahmad	Site security manager	Police	Keep informed	Project Execution	Low	Low	1	High	2	1	3		
printer Vendors D3	Supplier	Company	Keep Communicate	Project Execution	High	Medium	6	Medium	2	3	3		
Tourists	End users	Public	Meet their need	Project Closeout	High	High	9	Low	3	2	2		
Subcontractors	Other activities related	Company	Keep Communicate	Project Execution	High	Low	3	Medium	2	3	3		
Electric Co Saudi	Other activities related	Company	Keep Communicate	Project Execution	High	Low	3	Low	2	3	3		

Table 16. Stakeholders Analysis

Identification of personal communication and effective communication:

Communication Management Plan

Personal communications:

It is the way that two personnel are sharing the information and discussion on a certain topic, the communication could be direct and indirect, Direct communication is the best way to exchange the information and get the team involved, either it is face to face or through a tool, direct communication supported by the body language and the tone of voice that are all necessary to provide the correct message to the other party,

Personal communications include:

- telephone conversations
- interviews or notes that are not recoverable
- emails
- private letters
- non-archived discussion groups

Personal communication should as well consider the following communication barriers such as

- Language
- Culture
- time zones

Effective communications

It is defined as the communication and feedback, ensuring that the message has been conveyed and understood correctly and the other party sends the feedback of the same understanding and the same level of information.

Identification of the shapes, models, and channels of the personal communication:

Effective communication model

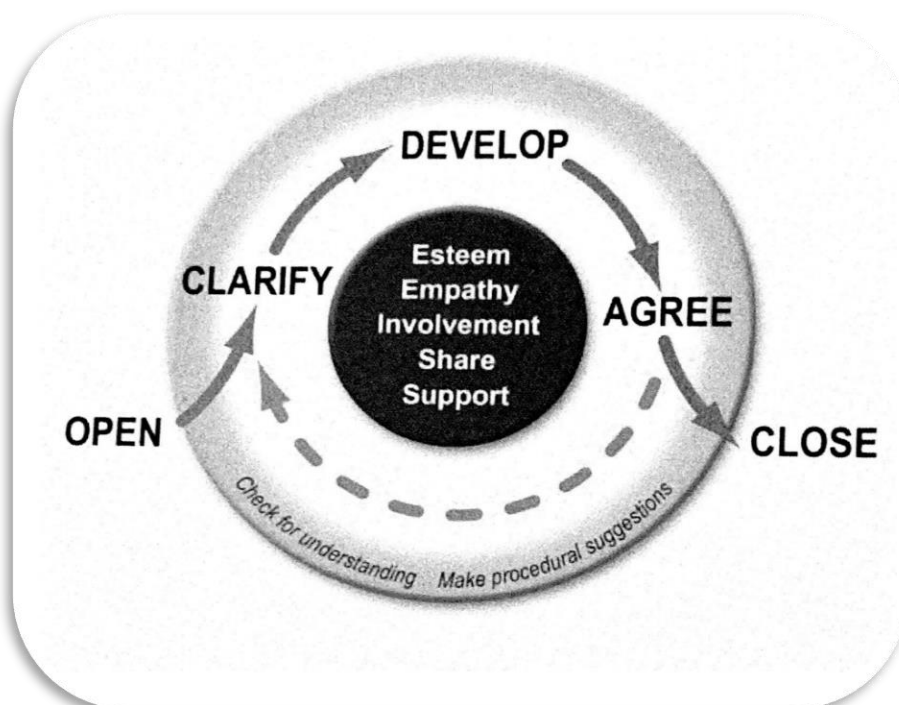


Figure 25. Effective Communication strategy

Effective communication strategy focus on two approaches:

1. Business approach: Open, Clarify, develop, agree, and close
2. Human approach: Esteem, empathy, involvement, share, and support



Figure 26. Effective Communication Approaches

The business approach included opening the issue and clarifying the problem and developing the potential solution and agreeing on it then closing the topic while implementing the human approach meanwhile showing empathy and esteem is a key behavior and doing the necessary involvement and sharing and supporting the ideas.

Effective communication difficulties sometimes appear to be a challenge such as

1. Communication technology
2. Communication methods
3. Communication skills such as
 - Active listening
 - Conflict management
 - Cultural awareness

- Meeting management
- Networking
- Political awareness

To make sure you communicate in the most effective manner possible, you need to know what are the 7 principles of communication. Therefore, the below list of the 7Cs of communication, also known as the 7 principles of communication, will provide you with a useful checklist to ensure good communication in the workplace.

1. Concrete:

When the message that you want to convey is concrete – not liable to have fallen, your audience (team or clients) will have a clear picture of what you're trying to tell them. It will only be concrete when it has suitable data that backs it up. Your argument should be supported by factual material that includes data and figures, leaving no space for the audience to imagine the things.

2. Coherent:

The whole point behind your message will be useless when you are not coherent. You need to have a good understanding of what goes where and what comes when. Coherent communication is logical. It is a well-planned, logical, and sequential manner of communication. There should be a good connection with the main topic and the flow should be consistent.

3. Clarity

The purpose of your message should be clear so that the reader doesn't head up scratching his/her head to understand what you mean. Be clear of what format do

you want to say it in. Be clear about your goal or purpose. Your readers shouldn't have to make assumptions regarding what you're trying to say. For example, the sentences should be short, prefer the active voice and state it in separate bulleted points.

4. Commitment

Commitment is a major part of workplace communication skills. It simply measures one's dedication and the degree to which one communicates surety in the argument. It convinces the prospects kindly. A well-committed message will leave a greater impact and increase your morale.

5. Consistency

The choice of words matters when you are communicating at work. Your words shouldn't leave your team confused. You need to communicate your message in the least possible words, have the consistency of tone, voice, and content so that you can save time. There is no room for repetition. Try to use short sentences and short words.

6. Completeness

Never leave your sentences incomplete. Each message must have a logical conclusion. People shouldn't be left wondering if there is more to come. Make sure you communicate completely that includes the need to be informed and take action.

7. Courteous

Let's keep it positive. Your argument should make the other person respectful. Try your best that in your communication you're honest, respectful, open, and polite. Say it with proper care and it will be perfectly effective and important. Offensive words can put people off.

Establishment the communication matrix:

This section will explain the project communication plan and the purpose of a communication plan is to define who needs to be aware of and informed about the project, how and how often information will be distributed, and who will be responsible for the distribution. Which is a part of the overall Project Management Plan.

It acts as a guiding tool for the process of internal and external communication between parties and works to ensure that you're reaching out to your stakeholders and constituencies effectively. (Juliana Raupp, 2012). The communication matrix was created to clarify the people involved, the methods of effective communication, and the means used to transmit information among them with high efficiency and quality to achieve sound outputs. (Charity Rowland, 2010) Moreover, these communications have been documented and included in the appendix.

Communication matrix:

SUMMARY:

Pinpoint exactly how an individual is communicating and provide a framework for determining logical communication goals.

GOALS:

To clarify the relationships between audiences, messages, channels, activities, and materials.

To include stakeholder input in the communications process.

To ensure that you're reaching out to your stakeholders and constituencies effectively.

NUM BER	TYPE OF COMM	Level of Urgency for RECIPIENTS (1-4)	OBJECTIVES	METHOD OF COMM	FREQUENCY	RECIPIENTS	PERSON RESPONSIBLE	DELIVERABLE	Due Date
1	Kickoff Meeting	4	Introduce project. Review objectives and goals.	F2F	Quarterly	Project Team	Project Manager	● Agenda ● Set Milestones ● Project Scope	25/03/2022
		3				Project Sponsor			
		3				Stakeholders			
2	Project Plan	4	Review Project Plan	F2F	Monthly	Project Team	Project Manager	● Agenda ● Project Charter	25/03/2022
		3				Project Sponsor			
		2				Stakeholders			
3	Technical Requirem ents	4	Determine all the technical requirements that the project needs	Conference call	As needed	Project Team	Information Technology Manager	● Technical Requirements ● Technical Issues ● Technical solution	15/01/2022
		3				Project Sponsor			
		4				Stakeholders			
4	Quality Assurance	4	Fitness to use and conformance to requirements	Conference call	Weekly	Project Team	QHSE Manage	● Quality Standard Checklist	12/7/2022
		2				Project Sponsor			
		3				Stakeholders			
5	Risk Managem ent	4	Identify risks and control threats	F2F/E-mail	Quarterly	Project Team	Operation Manager & QHSE Manage	● Risk Register ● Risk Matrix	25/03/2022
		4				Project Sponsor			
		3				Stakeholders			

6	Performance Update	4	Monitor performance and progress of project phases	Conference call/Virtual Platform	Monthly	Project Sponsor	Project Manager & Project Team	● Performance Report (Phases) ● Dashboard Progress (Phases)	20/12/2022
		4				Stakeholders			
7	Cost Review	2	Monitor expenditures and anticipate needs	Conference call/E-mail	Bi-Monthly	Project Team	Finance Manager	● Financial Report ● Budget Analysis	20/12/2022
		4				Project Sponsor			
		3				Stakeholders			
8	Status Report	4	Review the project progress	In-person/Virtual Platform	Quarterly	Project Sponsor	Project Manager & Project Team	● Progress Report (Overview) ● Dashboard Progress (Overview)	20/12/2022
		4				Stakeholders			

Table 17. Communication Matrix

3 Wrong scenarios of communication:

Communication Challenges

Good communication is an essential skill to manage the success of any project and arguably the most common root cause of problems in any organization and during any project is “lack and/or incorrect communication”. Poor and/or wrong communication is the cause of most conflicts in projects management.

As per the study, one out of five projects is unsuccessful due to ineffective communications. (Pattnaik, 2017).

The process of managing communication through cross-functional teams is not an easy duty that requires leadership, analytical and human skills. However, it may occur some wrong communication during the project phases, and here are the three most prominent scenarios of wrong communication and the consequences of that and how to solve it.

[Scenario 1 \(Weekly meeting vs one-on-one conversations\)](#)

Most project managers give a lot of importance to weekly status meetings. These meetings are important for understanding project progress, providing project updates, and understanding whether all team members are on the same page in terms of understanding project requirements. (Brown, 2020). But it takes a lot of time and effort to prepare in return for delaying the completion of some other tasks, which delays the scheduling of work. Moreover, a lot of changes and decisions will be taken which means many inputs/adjustments in a short period of time.

[Solution](#)

It should be short and direct. Also, to resolve any deeper issues with any team member, you should focus on having one-on-one conversations with your team to find out their problems. They may not be comfortable bringing up their problems during weekly case meetings with everyone present.

Scenario 2 (Emotional Outbursts)

Work pressure, complexity, a large number of technical problems, and conflicts will generate emotional outbursts and cause difficulties and obstruction in the progress of the project in general, which will directly affect the project outputs.

Solution

The project manager should have good listening skills and the ability to read the body language of his team so that he can discover the problem before it escalates. (Mark, 2015)

Regular personal meetings with team members to review their progress on a personal level and discuss their problems, if any, work great to solve many other problems.

Hiring a professional team leader will help resolve 60% of internal conflicts. (Luthra, 2015)

Scenario 3 (Lack of stakeholder engagement)

It is estimated that 1 in 3 projects fail due to poor stakeholder engagement. Stakeholders are critical to project success; failure to communicate regularly with stakeholders can result in project closure sometimes. Lack or weakness of effective planning for all aspects of the project, including managing the expectations of stakeholders and identifying ways of communicating with them, causes major problems in the project. (Alqaisi, 2016)

Solution

A regular meeting should be conducted with stockholders in order to know what the customer wanted. Moreover, to ensure project success, it helps that you know all of the key stakeholders on your project, how they prefer to communicate, what their needs are, and what the acceptable end results are. (Widman, 2020)

Development and preparation of stakeholder Engagement assessment matrix:

The Stakeholder Engagement Matrix is a very useful tool, and it is mapping current stakeholder engagement levels with the desired levels of engagement required for successful project delivery. (Jaansoo, 2019)

There are five different levels at which we can measure stakeholder participation as follows:

Legends:

● High

Desired

● Low

Current

Development and preparation of stakeholder Engagement assessment matrix:

Ministry of Tourism	Power	Interest	Unaware	Resistant	Neutral	Supportive	Leading
Ministry of Tourism	●	●				<u>CD</u>	
General Authority of Civil Aviation	●	●			<u>C</u>	<u>D</u>	
Alghamdi Omer	●	●			<u>C</u>	<u>D</u>	
Steven	●	●					<u>CD</u>
Robert	●	●			<u>C</u>	<u>D</u>	
Donald	●	●					<u>CD</u>
Alshehri Rahaf	●	●					<u>CD</u>
Mohammed Fathuldeen	●	●					<u>CD</u>
Al Quzi Abdulaziz	●	●		<u>C</u>		<u>D</u>	
Alaorini Arwa	●	●					<u>CD</u>
Hassan Mahmoud	●	●					<u>CD</u>
Alotaibi Marah	●	●					<u>CD</u>
Samater Ali	●	●					<u>CD</u>
Almalki Shahad	●	●		<u>C</u>			<u>D</u>
Al-amoudi Naif	●	●					<u>CD</u>
Members Team	●	●					<u>CD</u>
Ahmad	●	●					<u>CD</u>
printer Vendors D3	●	●		<u>C</u>		<u>D</u>	
Tourists	●	●	<u>C</u>			<u>D</u>	
Subcontractors	●	●		<u>C</u>		<u>D</u>	
Electric Co Saudi	●	●	-	<u>C</u>		<u>D</u>	

Table 18. Stakeholders Engagement assessment matrix

Describing and identification of the leadership model, which is preferred to the project leadership:

Leadership models

According to career coach Kathleen Brady, "true leadership is the ability to influence individuals to create a better result for an organization or group. Employee satisfaction, a healthy bottom line, an innovative culture, and social transformation are just a few examples of how a leader's influence may be seen in the workplace. For instance, research reveals that managers have a significant impact on 70% of employee engagement (Helena Cooper-Thomas, 2011), which is measured by how committed and connected an employee feels to their company.

Not all leadership possibilities are found in the business. At every level of an organization, there are leaders and managers who lead modest departmental projects to those who supervise large worldwide initiatives. It's a good idea to familiarize yourself with the leadership model that works best for you before applying for a new leadership position.

What is truly a leader?

A leader is someone who uses their own actions and behaviors to influence or guide others. This could refer to someone who is in charge of a specific division or department inside a company. To be clear, though, seniority isn't a necessity.

Even if you're not in charge of a team on a daily basis, you may need to assume leadership responsibilities from time to time. It's possible you're in charge of a crucial cross-functional project or are required to organize a gathering.

Those are chances for you to take on a leadership role and be held up as an example to the rest of the group. These are also the times when your personal leadership style

and qualities will shine through. So, if you don't hold a C-suite position, don't discount these tactics as irrelevant to you (12 Leadership Models That Can Define Your Style, 2021) (Helena Cooper-Thomas, 2011).

What is a leadership model?

In theory, a leadership model outlines the ideal ways to lead and manage personnel. It often implies a manner of reaction to organizational and employee demands that has worked well under that model of leadership.

Leadership models give you a framework for defining the management strategies that are best suited to your working style and personality. You can make modifications and improvements to maximize your efficacy and influence by knowing your personal approach to leadership—both where it came from and where you want to go with it. Despite the fact that there is no such thing as a standalone leadership model, you can take aspects from multiple models and apply them in different contexts or throughout time (12 Leadership Models That Can Define Your Style, 2021).

Despite the fact that leadership models and leadership styles are similar, they are two wholly different things. A leader's style is the pattern of leadership actions they exhibit in pursuit of greatness while the model acts as the intellectual framework to describe what makes a leader great (12 Leadership Models That Can Define Your Style, 2021).

Because of this, leadership models are constantly evolving, even though they go back to ancient times when philosophers were debating whether or not Julius Caesar was the right man to govern (Boogaard, n.d.).

1. Transformational

Integrity and vision are fundamental attributes of transformational leaders. As a transformational leader, you will achieve your goals through open lines of

communication with staff, exhibiting your integrity and the respect you hold for your people's expertise and knowledge. This reciprocal regard leads to advances in staff satisfaction and employee retention, both demonstrated to improve overall patient care and safety (12 Leadership Models That Can Define Your Style, 2021).

Once you share your vision for a project, you will need to motivate others to make it a reality. However, you risk ignoring the requirements of individual staff members in pursuit of completing your broader objective.

You Might Be a Transformational Leader If...

You examine every single existing process with a discerning eye and a strong sense that it should be better.

You're always urging others to step outside their comfort zones and challenge their own limitations.

You might burst with pride anytime you witness a team member achieve something that was previously thought to be impossible (Boogaard, n.d.).

2. Transactional

Transactional leadership is a basic rewards-based strategy. It works off the premise that an employee's own interests (as opposed to corporate interests) are the major elements pushing them to accomplish an assigned task or reach a performance level. If you're a transactional leader, you will set performance goals for staff, promise a reward, and offer that reward upon their successful accomplishment of the goal—or impose a consequence if employees don't fulfill their goals. This kind of leadership can be very effective for getting work done, but it fails to give space for creating connections at work and inspiring staff to submit new ideas (Boogaard, n.d.) (team, 2021).

The transactional model is one of the most prominently adopted in the medical business. It can be a beneficial technique for defining and attaining short-term targets, such as performing specified tasks, achieving quantified patient satisfaction goals, and successfully following all safety regulations.

You Might Be a Transactional Leader If...

You commonly use the prospect of having to stay late when you need to encourage your employees.

You're constantly planning inventive methods to acknowledge great work—your team can't wait to see what you come up with after last month's taco party.

3. Servant

While a servant leader, you will balance selflessness with an emphasis on the greater needs of others as your team works to accomplish your goal. You get insight into your own life and work purpose, the meaning of their leadership activities, and your personal character via self-reflection and awareness. By mentoring your employees, you may help them achieve greater success, thereby enhancing morale and the bottom line.

The interdisciplinary nature of healthcare necessitates the collaboration of a variety of professionals. This is consistent with the servant leader's commitment to collaborate and promote team members in the name of patient care improvement.

You Could Be a Servant Leader If...

You're well-known for asking, "How can I assist?" daily, at least three times.

You place a premium on removing impediments and assisting others in completing tasks.

You never hesitate to assist when asked—because you know that your own to-do list will still be waiting for you when you return.

4. Autocratic

When making choices, autocratic leaders do not consult or consider others' perspectives. You decide on a plan of action and communicate your thoughts with the full assumption that personnel would carry out your instructions without inquiry. This leadership style is effective in situations that necessitate rapid decision-making.

Doctors, nurses, and other senior healthcare professionals must be able to make split-second choices in times of crisis. However, the autocratic leader must bear in mind that if employees and patients are handled in ways that disrespect their needs, they may feel invisible, neglected, and potentially mistreated.

You May Be an Autocratic Leader If...

You believe that group talks and brainstorming just serve to slow down the process and that it is better to make critical decisions alone.

You despise it when staff cast doubt on your decisions—once you've made a statement, it's final.

5. Democratic

Democratic leadership commonly referred to as "participative leadership," is the polar opposite of autocratic leadership. As a democratic leader, you will solicit feedback and views from your staff, even if the final decision is ultimately yours. Utilizing cooperation and conversation effectively can result in an increase in creativity and innovation. However, you may encounter difficulties in situations requiring you to juggle a variety of divergent opinions and ideas.

Certain leadership decisions in healthcare involve input from personnel and brainstorming in order to discover a novel solution to an ongoing problem. The

democratic leadership paradigm significantly contributes to employee engagement in problem-solving.

You Might Be a Democratic Leader If...

You think the finest meetings are indeed the ones where everyone has an equal chance to consider.

You can't recall the last time you made a significant decision without receiving advice from at least just one person.

6. Bureaucratic

Following the rules is the secret to bureaucratic leadership success. In this most formulaic of leadership styles, you have a defined job title, a set of tasks, and a pre-existing method for responding to urgent requirements. Requiring such stringent adherence to established norms and protocols can produce a rigid and hostile workplace for employees.

You Might Be a Bureaucratic Leader If...

You regularly find yourself wondering how your predecessor handled particular scenarios—you want to be sure that you're following the recognized process. You always request assurance that you're doing things right anytime you're charged with something new (Boogaard, n.d.).

Why Is it Important to Understand Your Leadership model?

Before we delve right into the deep gritty, there's one important question that has to be answered: Why do leadership models and styles matter?

"Understanding how you lead and desire to lead can offer you a stronger sense of control over the extent and scope of your reach and impact," adds Joyel Crawford, a Muse career coach, and leadership development consultant (Boogaard, n.d.).

"By increasing your awareness, you can take ownership and responsibility,"

Tara Padua, executive coach, entrepreneur, and startup advisor add. "Our leadership style is a vortex of our values, natural abilities, and capabilities, [as well as] our beliefs and experiences. Understanding your leadership style can assist you in aligning that whirlpool with your vision, goals, and even the purpose and vision of your firm."

Simply put, in order to have an influence as a leader, you must be effective. And in order to be productive, you must first comprehend your starting point—as well as your destination. Knowing your present strategy establishes a baseline from which you can discover areas for improvement.

Specifying the reasons for which such model is preferred:

For our project, I prefer the model servant as I will explain the reason next. Servant leaders live by the adage, "Serve first, lead second" (Martinuzzi, 2021).

Rather than considering how they may inspire others to follow their lead, they devote the majority of their energy to assisting others. They put the needs of others ahead of their own.

Despite their inherent leadership abilities, persons who practice servant leadership do not attempt to keep a white-knuckle grip on their own status or power. Rather than that, they place a premium on elevating and developing those who follow them.

Pro: This approach boosts morale and fosters trust, resulting in improved employee performance and an overall more favorable workplace culture.

Cons: It's difficult. Constantly putting your own needs and priorities on hold is not something that comes naturally to the majority of US (team, 2021).

“5” proposals for the motivation methods that are compatible with the nature of the project.

It is critical to motivating your project team in order to achieve the greatest results. Consider the characteristics of team members, the breadth of their function, and their out-of-office obligations when devising a strategy to engage them individually and collectively. While you cannot control how each person is feeling about their work, there are ways available to motivate and excite your staff.

1. Establish attainable goals

While this may seem self-evident, it is occasionally worthwhile to re-evaluate your project objectives and ensure they are practical and attainable.

Beginning a new project is exciting, and it's tempting to overestimate your own and your team's capabilities. Naturally, you want to work as hard as possible and attain the finest outcomes possible but be careful not to overdo it.

2. Be unambiguous and direct

Once you've established a timeline and some achievable goals for the project, ensure that everyone is aware of their workload and deadlines and that you communicate this clearly to them.

You should develop an environment that encourages your employees to speak up about any concerns they have about the work they have been assigned. For instance, you may believe you've established an attainable deadline, but your staff member may disagree.

3. Make contact with your team members

Conduct a weekly or monthly catch-up session to check in on your team members' progress.

If they understand that they must demonstrate improvement each week, they will be more driven to adhere to deadlines and work regularly. Additionally, it will foster chances for conversation and collaboration, as well as address issues as they emerge.

4. Praise someone on a job well done.

Maintain a steady flow of positive reinforcement for modest accomplishments to keep your team motivated and respected.

Compliment employees that go above and above, and be sure to do it in front of your team so that other employees are inspired and see the consequences of their efforts.

5. Emphasize adult training

Keep your coworkers updated on any short courses or seminars they might attend to enhance and refine their abilities. Constant learning inspires personnel to push themselves and achieve more within the team, thus funding an outlet to enhance this is a sensible investment.

Management seminars are useful for individuals wishing to progress into higher positions. Gaining an insight into the everyday expectations of a manager is vital not only for broadening your team members' horizons, but may also provide them an insight into why you are making certain decisions day-to-day (Sabel, n.d.).

Designing RACI model for 3 administrative measures of the project:

Administrative measures	Project procedure	Project manager	Consultant	Site Engineer	Contractor	Client
1	Assess risks	A	R	I	C	I
2	Define performance requirement	A	R	I	I	I
3	Approve construction work	I	I	C	C	R

R= RESPONSIBLE A= ACCOUNTABLE C= CONSULTED I= INFORMED

Table 19. RACI model for 3 administrative measures of the project

Identifying of the conflict and crisis:

Conflict in project management is inevitable. The potential for conflict in information systems development projects is usually high because it involves individuals from different backgrounds and orientations working together to complete a complex task. The cause of conflict in team projects can be related to differences in values, attitudes, needs, expectations, perceptions, resources, and personalities. Proper skills in dealing with conflict can assist project managers and other organization members to handle and effectively resolve conflicts which can lead to a more productive organization as a whole. Conflict is "a situation of competition in which the parties are aware of the incompatibility of potential future positions and in which each party wishes to occupy a position which is incompatible with the wishes of the other (Ohlendorf, 2001).

Most project managers dread the thought that one day they may wake up to find that their well-managed project is now front-page news due to an overnight catastrophe. Job descriptions aside—the project manager just became a crisis Team Communication (Sawle, 1991).

3 expected scenarios of the conflict's events in the project, Optimal strategies to deal with each conflict, and specify the reason of preference and Root Cause Analysis:

Scenarios	Strategies Used	Root Cause Analysis
Poor Communication: a lack of communication can be the most costly for people working in construction. By far, a lack of communication will do the most damage to a construction project. Giving wrong or unclear instructions can set a project back. As a project manager, you have to communicate with each worker what needs to be done, when it needs to be done, and how they should go about completing it. A project manager that fails to communicate in a clear way will set up the project for failure. A lack of communication can delay a project by a lot of time and will increase costs as a result. Communicating with your workers is crucial. It gives the project manager the ability to oversee how the project is developing and also gives them insight into some of the problems happening onsite. (Hojati, 2018)	Collaborating is an effective technique to manage conflict when a project situation is too important to be compromised. (Admin, 2018)	Many times, it so happens that team members work in silos and are not aware of the progress of each other's tasks. This lack of communication can stall the progress of projects . Clear communication is a must to avoid confusion and to keep everyone on the same page. With each individual clear about his tasks, the chances of task duplication are reduced to a minimum.
Managing Stakeholders: Often there is more than one major stakeholder in the project. An increase in the number of stakeholders adds stress to the project and influences the project's complexity level . stakeholders can lose track of what's going on in your project, as they may be splitting their time between multiple concerns or are simply unclear about how things are developing. (Solera, 2009)	Smoothing, or accommodating, is an appealing approach. It involves emphasizing areas of agreement while avoiding points of disagreement. Smoothing is appropriate to keep harmony and avoid outwardly conflictive situations. (Admin, 2018)	When managing a project, it is vital to keep all participants up to date on what is going on - especially the stakeholders. Keeping the stakeholders informed is an oft-neglected but vital part of running a successful project. There are many ways to inform stakeholders - from using collaborative software that informs clients of the project status, to creating status reports, to having daily or weekly meetings.

Additional Work:

When proponent requests additional work, and this request is out of our scope of work.

Forcing (using power or dominance)

implies the use of position power to resolve the conflict. It involves imposing one viewpoint at the expense of another and is characterized by a win-lose outcome in which one party overwhelms the other.

This approach is appropriate when quick decisions are required. (Admin, 2018)

At the beginning of a project, the scope is established in documents like the scope statement. It clarifies the work and deliverables of a project, setting out the expectations for both parties. If a client asks for another feature or service to be included, this can be considered to be “out of scope”.

Table 20. 3 expected scenarios of the conflict's events in the project, Optimal strategies to deal with each conflict, and specify the reason of preference and Root Cause Analysis

Allocating of human resources to tasks:

➤ What are the human resources in the project and why it is important?

Project Human Resource Management of our company/project includes the processes that organize, manage, and lead the project team. The project team is comprised of the people with assigned roles and responsibilities for completing the project. However, the human Resources in our project focus on Project Team recruitment, organization and management until the end of a given project. Its role starts from defining core competencies which are going to be needed, to team building and motivation. The interest is to understand how an executive function can impact Project Management. It is as interesting as Human Resource is a function for which we feel a particular affection. The link between our Human Resource Management and Project Management is strategic (Lewis, 2016). Both of them are useful for the company competitiveness. Human Resources are the key of every work done within our company in this particular project as they represent people. We ensure in our project that the project management is measured by the different project success that can represent benefit, innovation or any improvement. It appears that project success require success in team project management, which is the HR function. Three main processes are taken into account: selecting, training and managing. Furthermore, the knowledge is composed of the following processes (Lewis, 2016):

Plan Human Resource Management—The process of identifying and documenting project roles, responsibilities, required skills, reporting relationships, and creating a staffing management plan (team, n.d.).

Acquire Project Team—The process of confirming human resource availability and obtaining the team necessary to complete project activities.

Develop Project Team—The process of improving competencies, team member interaction, and overall team environment to enhance project performance.

Manage Project Team—The process of tracking team member performance, providing feedback, resolving issues, and managing changes to optimize project performance.



(source (team, n.d.))

Figure 27. The process of identifying and documenting project roles

➤ **How to plan and manage HR projects within our project:**

As we are all aware that today's human resources teams don't just handle payroll, onboarding, and offboarding. They're also responsible for a wide range of projects and internal processes to ensure the success of every employee. But without a central system for managing work and priorities, HR teams struggle to keep up with everything on their plate. Fortunately, we have set up a clear process for a work management tool which can help our HR teams track work progress, scale processes (Demilliere, 2014), and stay aligned with less effort. and the following method are

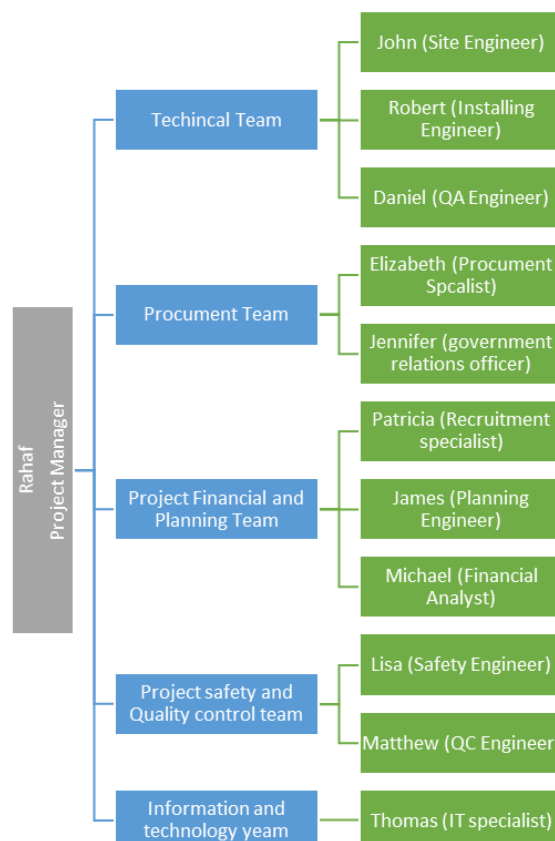
the main concept of our process towards the recruiting and the distribution of the functioning in our project (team a. , n.d.).

Streamline recurring work. We establish repeatable processes for common HR workflows—such as quarterly planning or review cycles—so we can spend less time planning work and more time getting it done. (team a. , n.d.).

Set team priorities. We always make sure that everyone knows which tasks are mission-critical, and which are nice-to-haves, by defining and prioritizing goals across our team.

Communicate progress. Track and share updates in one place to keep everyone on the same page without the endless email threads (team a. , n.d.).

- Flow Chart of Project Team



- **Figure 28.** Flow Chart of Project Team

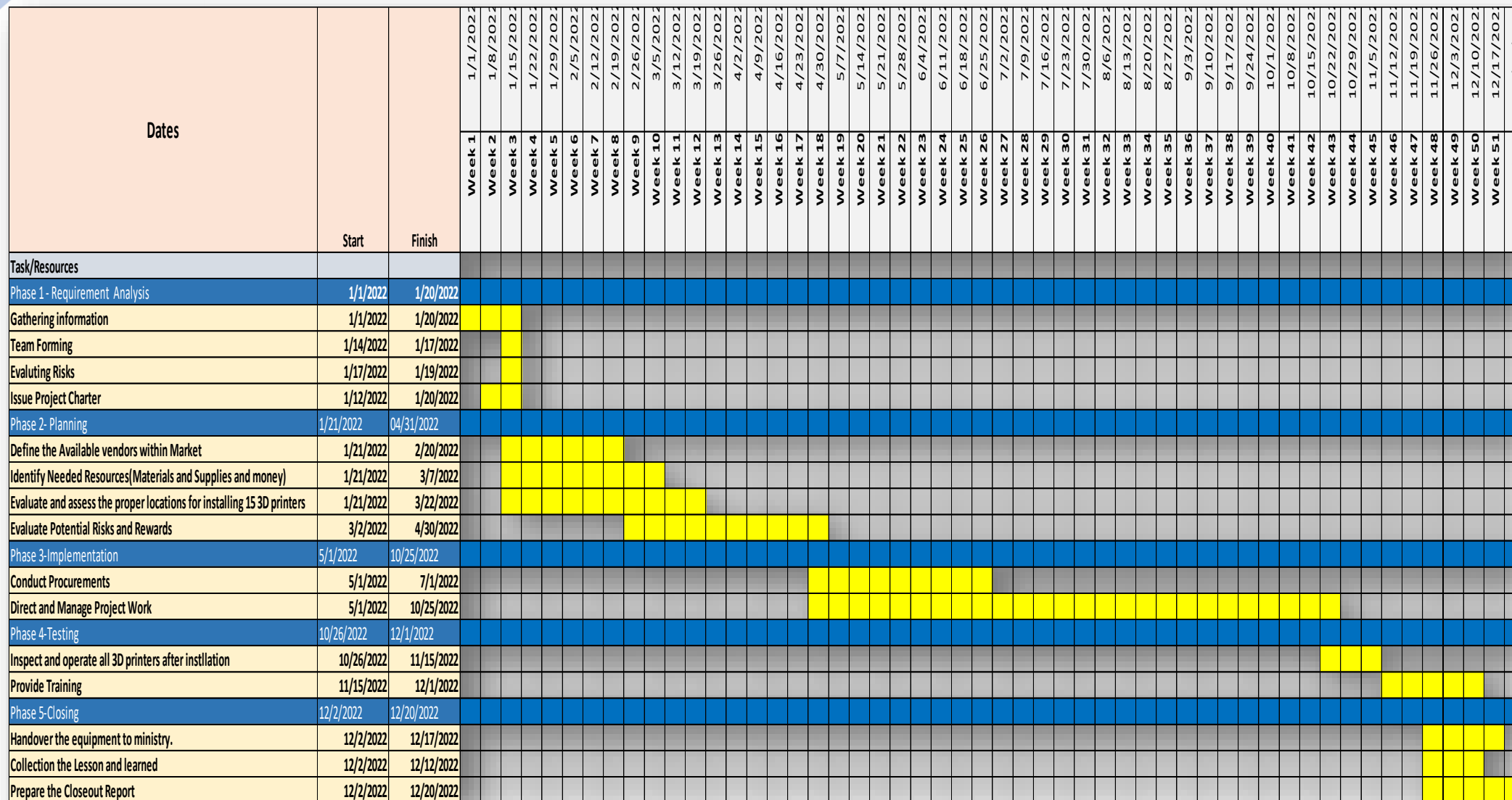


Figure 29. Allocating of human resources to tasks

Tasks	Phase 1 - Requirement Analysis	Assigned to who	No. Of Resources	No. of Days	Start date 1/1/2022	End date 1/20/2022
			13	20		
Main task	Gathering information		5	10	1/1/2022	1/20/2022
Sub tasks	Collect Information for the Requirements	PMT	2	4	1/1/2022	1/5/2022
	Define internal requirements	PMT	2	3	1/5/2022	1/8/2022
	Identify available skills, information and support	PMT	2	2	1/8/2022	1/10/2022
	Identify the stakeholders	PMT	2	2	1/10/2022	1/12/2022
	Identify needed resources	PMT	2	2	1/12/2022	1/14/2022
	Identify project Estimated Cost	PMT	2	3	1/14/2022	1/17/2022
	Identify High level project Milestones	PMT	2	3	1/17/2022	1/20/2022
Main task	Team Forming		1	3	1/14/2022	1/17/2022
	Form Project Team	PMT	1	3	1/14/2022	1/17/2022
Main task	Evaluating Risks		3	3	1/17/2022	1/19/2022
	Determine financial requirements	PMT	1	1	1/17/2022	1/17/2022
	Assess needed resource availability	PMT	1	1	1/17/2022	1/18/2022
	Review personal suitability	PMT	1	1	1/18/2022	1/19/2022
Main task	Issue Project Charter		3	4	1/12/2022	1/20/2022
	Conduct meeting with all stakeholders	PMT	2	1	1/12/2022	1/13/2022
	Confirm decision to proceed	PM	1	1	1/13/2022	1/14/2022
	Review all requirements	PM	1	2	1/14/2022	1/16/2022
	Develop Project Charter	PM	1	4	1/16/2022	1/20/2022

Table 21. Allocating of human resources to tasks for phase 1

Tasks	Phase 2- Planning	Assigned to who	No. Of Resources	No. of Days	Start date 1/21/2022	End date 04/31/2022
			32	100		
Main task	Define the Available vendors within Market		5	30	1/21/2022	2/20/2022
	Access available information	PMT	2	5	1/21/2022	1/26/2022
	Create procurement analysis plan	PMT	2	10	1/26/2022	2/5/2022
	Implement procurement analysis plan	PMT	2	3	2/5/2022	2/8/2022
	Identify potential vendors	PMT	2	7	2/8/2022	2/15/2022
	Summarize the potential vendors	PMT	2	2	2/15/2022	2/17/2022
	Identify Vendors market niche	PMT	2	3	2/17/2022	2/20/2022
Main task	Identify Needed Resources (Materials and Supplies and money)		12	45	1/21/2022	3/7/2022
	Develop Project Management Plan	PMT	3	3	1/21/2022	1/24/2022
	Plan Scope Management	PMT	4	2	1/24/2022	1/26/2022
	Collect Requirements	PMT	3	3	1/26/2022	1/29/2022

	Define Scope	PMT	3	2	1/29/2022	1/31/2022
	Create WBS	PMT	2	3	1/31/2022	2/3/2022
	Validate Scope	PMT	3	2	2/3/2022	2/5/2022
	Plan Schedule management	PMT	3	2	2/5/2022	2/7/2022
	Define Activities	PMT	3	2	2/7/2022	2/9/2022
	Sequence Activities	PMT	3	1	2/9/2022	2/10/2022
	Estimate Activity Durations	PMT	3	2	2/10/2022	2/12/2022
	Identify management staff resources	PMT	3	1	2/12/2022	2/13/2022
	Identify staffing requirements	PMT	3	2	2/13/2022	2/15/2022
	Identify needed raw materials	PMT	3	1	2/15/2022	2/16/2022
	Identify needed utilities	PMT	3	3	2/16/2022	2/19/2022
	Develop Schedule Management	PMT	3	1	2/19/2022	2/20/2022
	Plan Cost Management	PMT	2	2	2/20/2022	2/22/2022
	Estimate Costs	PMT	2	2	2/22/2022	2/24/2022
	Determine Budge	PMT	2	2	2/24/2022	2/26/2022
	Summarize operating expenses and financial projections	PMT	2	1	2/26/2022	2/27/2022
	Plan Quality Management	PMT	2	2	2/27/2022	3/1/2022
	Plan Resource Management	PMT	2	2	3/1/2022	3/3/2022
	Estimate Activity Resources	PMT	2	1	3/3/2022	3/4/2022
	Plan Communications Management	PMT	2	1	3/4/2022	3/5/2022
	Plan Stakeholder Engagement	PMT	2	1	3/5/2022	3/6/2022
	Plan the delivery method for the received 3D printers to the agreed location	PMT	2	1	3/6/2022	3/7/2022
Main task	Evaluate and assess the proper locations for installing 15 3D printers		10	60	1/21/2022	3/22/2022
	Assess all famous and suitable locations for tourists around KSA	PMT	3	20	1/21/2022	2/10/2022
	Create locations analysis plan	PMT	4	10	2/10/2022	2/20/2022
	Implement locations analysis plan	PMT	5	10	2/20/2022	3/2/2022
	Identify potential locations	PMT	4	10	3/2/2022	3/12/2022
	Summarize the potential locations	PMT	3	10	3/12/2022	3/22/2022
Main task	Evaluate Potential Risks and Rewards		5	60	3/2/2022	4/30/2022
	Assess needed resources availability	PMT	2	5	3/2/2022	3/7/2022
	Identify Risks	PMT	1	7	3/7/2022	3/14/2022
	Perform Qualitative Risk Analysis	PMT	2	6	3/14/2022	3/20/2022
	Perform Quantitative Risk Analysis	PMT	1	7	3/20/2022	3/27/2022
	Plan Risk Responses	PMT	2	5	3/27/2022	4/1/2022
	Plan Risk Management	PMT	1	8	4/1/2022	4/9/2022
	Forecast financial returns	PMT	2	6	4/9/2022	4/15/2022
	Review and modify the Risk plan	PMT	2	5	4/15/2022	4/20/2022
	Confirm decision to proceed	PMT	2	10	4/20/2022	4/30/2022

Table 22. Allocating of human resources to tasks for phase 2

Tasks	Phase 3-Implementation	Assigned to who	No. Of Resources	No. of Days	Start date 5/1/2022	End date 10/25/2022
			38	177		
Main task	Conduct Procurements		5	112	5/1/2022	7/1/2022
	Contact the vendors	Procurement Team	2	5	5/1/2022	5/6/2022
	Collect the offers	Procurement Team	2	10	5/6/2022	5/16/2022
	Review the offers	Procurement Team	5	5	5/16/2022	5/21/2022
	Negotiation for Price, Delivery and warranty	Procurement Team	2	7	5/21/2022	5/28/2022
	Follow UP with Vendor	Procurement Team	2	14	5/28/2022	6/11/2022
	Receive the Printers	Procurement Team	3	10	6/11/2022	6/21/2022
	Close the contract with Vendors	Procurement Team	3	10	6/21/2022	7/1/2022
Main task	Direct and Manage Project Work		33	177	5/1/2022	10/25/2022
	Manage Team	PM+PMT	33	177	5/1/2022	10/25/2022
	Manage Communications	PMT	5	177	5/1/2022	10/25/2022
	Implement Risk Responses	PMT	5	177	5/1/2022	10/25/2022
	Manage Stakeholder Engagement	PMT	3	177	5/1/2022	10/25/2022
	Monitor and Control Project Work	PMT	5	177	5/1/2022	10/25/2022
	Perform Integrated Change Control	PMT	3	177	5/1/2022	10/25/2022
	Control Scope	PMT	2	177	5/1/2022	10/25/2022
	Control Schedule	PMT	3	177	5/1/2022	10/25/2022
	Control Costs	PMT	2	177	5/1/2022	10/25/2022
	Control Quality	PMT	5	177	5/1/2022	10/25/2022
	Control Resources	PMT	3	177	5/1/2022	10/25/2022
	Monitor Communications	PMT	2	177	5/1/2022	10/25/2022
	Monitor Risks	PMT	2	177	5/1/2022	10/25/2022

Table 23. Allocating of human resources to tasks for phase 3

Tasks	Phase 4-Testing	Assigned to who	No. Of Resources	No. of Days	Start date 10/26/2022	End date 12/1/2022
			15	36		
Main task	Inspect and operate all 3D printers after installation		15	35	10/26/2022	11/15/2022
	Inspect the all installed 15 3D printers	PMT	5	20	10/26/2022	11/15/2022
	Ensure all the installed 3D printers are worked properly	PMT	5	35	10/26/2022	11/30/2022
	Confirm the quality of installation and operation for all 15 3D printers	PMT	5	20	10/26/2022	11/15/2022
Main task	Provide Training		15	16	11/15/2022	12/1/2022
	Provide Training for the equipment operators.	PMT	15	16	11/15/2022	12/1/2022

Table 24. Allocating of human resources to tasks for phase 4

Tasks	Phase 5-Closing	Assigned to who	No. Of Resources	No. of Days	Start date	End date
			4	18	12/2/2022	12/20/2022
Main task	Handover the equipment to ministry.	PMT	2	15	12/2/2022	12/17/2022
Main task	Collection the Lesson and learned	PMT	1	10	12/2/2022	12/12/2022
Main task	Prepare the Closeout Report	PMT	1	18	12/2/2022	12/20/2022

Table 25. Allocating of human resources to tasks for phase 5

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

There are basically two techniques that can be used to shorten the project duration while maintaining the project scope. These techniques are Fast Tracking and Crashing.

Crashing: Crashing is a process of adding resources to one's project so as to be able to finish faster. It has a cost Impact.

Fast tracking: First Tracking On the other hand is the process of performing tasks in parallel so as to be able to finish the project sooner. It does not any cost Impact but it has a risk.

We prefer to go with fast tracking technique first and last choice will be crashing.

Crashing:

Dates	Start	Finish	1/1/2022	1/8/2022	1/15/2022	1/22/2022	1/29/2022	2/5/2022	2/12/2022	2/19/2022	2/26/2022	3/5/2022	3/12/2022	3/19/2022	3/26/2022	4/2/2022	4/9/2022	4/16/2022	4/23/2022	4/30/2022	5/7/2022	5/14/2022	5/21/2022	5/28/2022	6/4/2022	6/11/2022	6/18/2022	6/25/2022	7/2/2022	7/9/2022
			Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26	Week 27	Week 28
Task/Resources																														
Phase 1 - Requirement Analysis	1/1/2022	1/20/2022																												
Gathering information	1/1/2022	1/20/2022																												
Team Forming	1/14/2022	1/17/2022																												
Evaluating Risks	1/17/2022	1/19/2022																												
Issue Project Charter	1/12/2022	1/20/2022																												
Phase 2- Planning	1/21/2022	2/25/2022																												
Define the Available vendors within Market	1/21/2022	2/7/2022																												
Identify Needed Resources(Materials and Supplies and money)	1/21/2022	2/13/2022																												
Evaluate and assess the proper locations for installing 15 3D printers	1/21/2022	2/18/2022																												
Evaluate Potential Risks and Rewards	1/21/2022	2/25/2022																												
Phase 3-Implementation	2/26/2022	5/14/2022																												
Conduct Procurements	2/26/2022	7/1/2022																												
Direct and Manage Project Work	2/26/2022	5/14/2022																												
Phase 4-Testing	5/21/2022	6/17/2022																												
Inspect and operate all 3D printers after installation	5/21/2022	6/3/2022																												
Provide Training	6/4/2022	6/17/2022																												
Phase 5-Closing	6/25/2022	7/9/2022																												
Handover the equipment to ministry.	6/25/2022	7/9/2022																												
Collection the Lesson and learned	6/25/2022	7/2/2022																												
Prepare the Closeout Report	6/25/2022	7/9/2022																												

Figure 30. Crashing

Fast tracking: Performing tasks in parallel so as to be able to finish the project sooner.

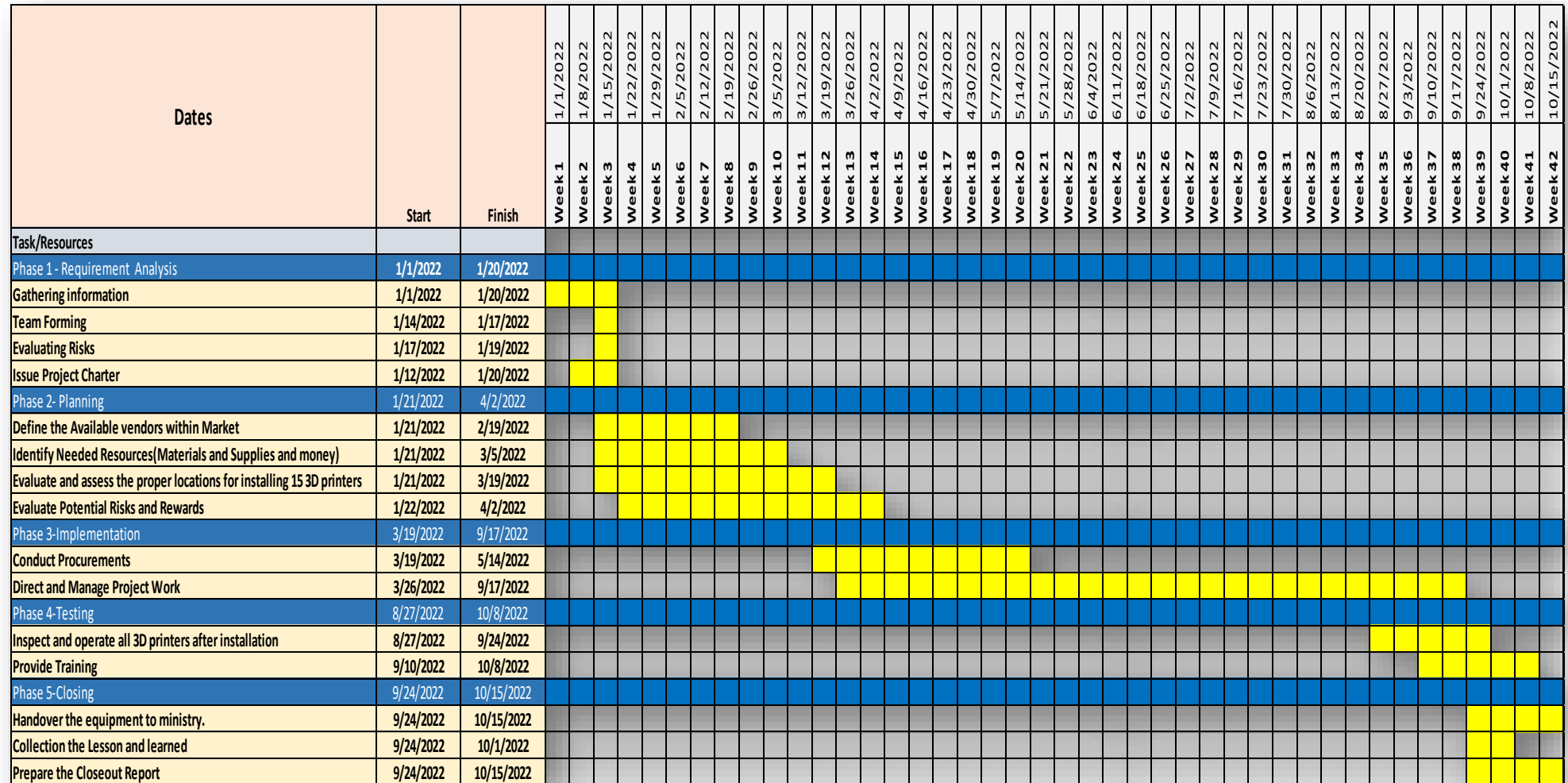
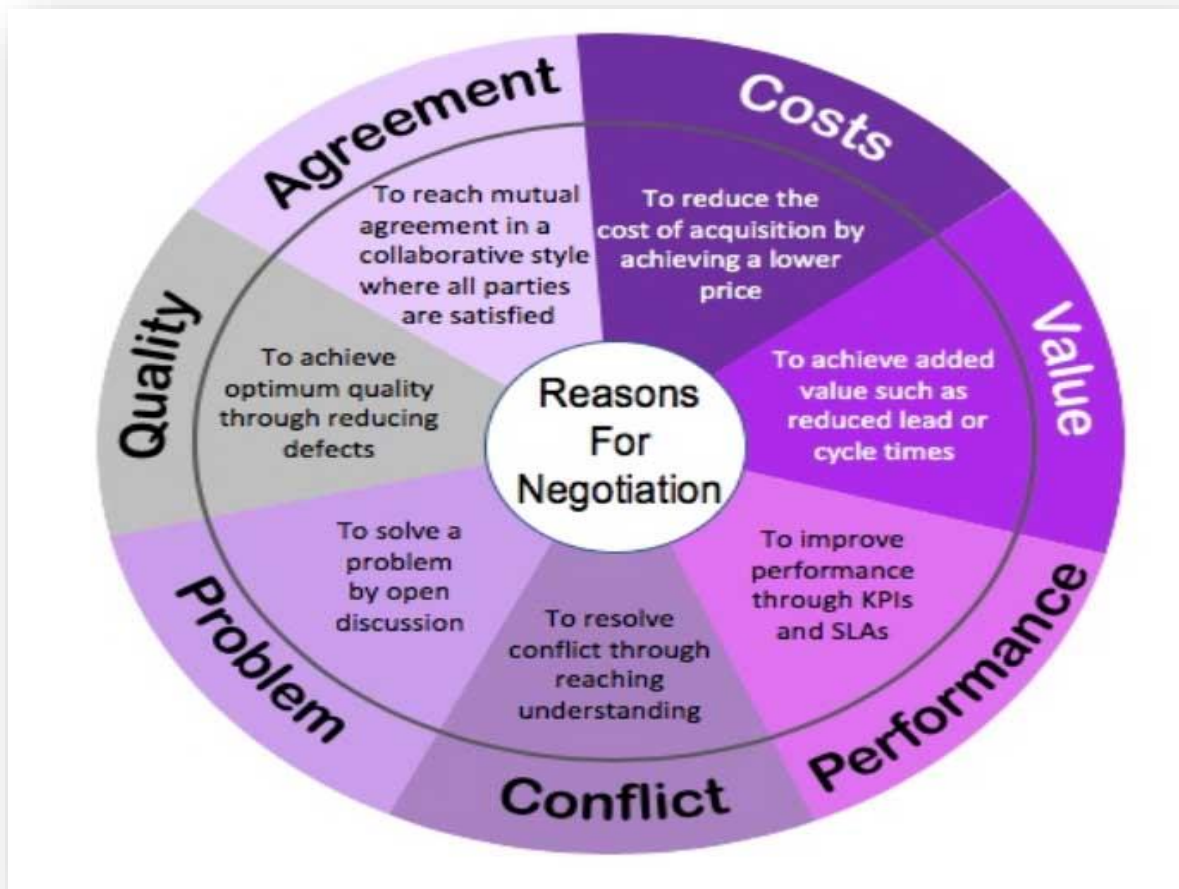


Figure 31. Fast tracking

Development of general rules for the negotiation process:

Negotiation General Rules for Organisation:

There are many reasons for Negotiation even inside or outside the organisation, the below figure shows the main reason:



(Source: Jarvis-Grove, 2020)

Figure 32. Reasons for Negotiation

For 3D printer project, we agreed on the below rules of Negotiation:

- **Clear realistic objectives:**

- To consider the criteria for success. Also consider the output to be achieved as well as thinking the output achievement when cannot achieve
What to do? (team, n.d.)
- **Develop your game plan:**
Know the negotiator position it is strong or weak or in between to think and analysis what to deal so it is very important to make the negotiation success (team, n.d.).
- **Research your opposition:**
It is important to study the other parties in negotiation and know their style, objectives, goals, what their interest also to communicate effectively (team, n.d.).
- **Win-Win:**
The most important results for all parties in negotiation is win-win agreement or deal and that will build good relationship. The on goal of the organization is to be sustained and keep good relationships with the stockholders for growth and sustain, so should deal fairly and consider that win-win deal is most important than win-lose (team, n.d.).
- **Active Listening:**
In the communication, the listening to other parties during negotiation and pay good attention playing important roles to understand well the consternation of the other parties and what is matter for them as well as know what motivate them and then asking good specific questions to make the negotiation success and reach to win-win deal (team, n.d.).
- **Build Trust:**
Building trust is key to a negotiation. The trust to be built for all other parties and that will help to sustain the good relationship.
- **Focus on Value:**

The value of our organization or other party organization should be considered very well in negotiation and that will lead to a win-win deal.

As 3D printer project, we agreed on the below main Stages of Negotiation:

1. Preparation:

It is the most important step. It includes the research, analysis, understanding underlines and looking for other alternatives which is also called BATNA (Best Alternative to a Negotiated Agreement) in negotiation to reach the best outcome (team, n.d.).

2. Opening:

It is better to start with an ice-breaker to allow all parties to feel free and comfortable in explaining their interest as a result of coming to a great deal.

3. Testing:

In this stage, it is the best for all parties to have effective communication skills to use and each party tries to understand the other and what is important and matters as well as the listening with body language skills play a very important role to read the underlining from other parties (team, n.d.).

4. Proposing:

This is where each party puts their words and what they are looking for to reach and what they like to achieve for their own good.

5. Bargaining:

In this stage we can call it offering stage because of each party put their offers to see the reaction of other party and counter offers in return and no issue to do it many times with other offers (team, n.d.).

6. Agreement:

Once bargaining has been completed it is seeming that agreement can be made. When all parties reach to agreement then it is necessary to written the acceptance in legal forms to keep all rights (team, n.d.).

7. Closure:

This is the final stage. It is actually documentation stage whether that is a contract or written agreement. Without the documentation the agreement is consider still the negotiation open and not completed (team, n.d.).

"2" two negotiating plans:

Negotiation Plans:

Plan-1:

The effective negotiation is to reach to win-win deal or agreement. That better to accept the good outcome for all parties and be open for different alternative to achieve the best agreement. Intentional influencing does not have to result in winners and losers, or be characterized as manipulation, conflict, or competition, so the below for all stakeholders should be consider and planned (Englund, 2010):

- Study the stakeholders and their interests with the impact to them.

- When negotiation start, better to start asking for their expectation and thoughts then listen very carefully to their feedback and responses after that analysis deeply.
- It expected that the problems will arise, so it is better to consider in this point to mitigate the problem or think about what might make it worth the extra trouble.
- Take some times for thinking and analysis and then offer something of value in exchange that which feel is fear for all parties and bringing the good feedback to all.
- Ask for acceptance and counter offer, if still not all parties accepted then again ask question and repeat the process until achieve the acceptance for all parties.

Plan-2:

Step 1: Work Out What You Want:

First, we need to work out what it is that we are actually after. What does the best possible outcome look like for us? Think about what you must get out of this negotiation and what we would like to have. Use different tools like mini question and answer to create a list of everything we want and rank the prioritizes for our organization with the objective and should be align with organization strategy to make the negotiation value and win. That will give to negotiator good idea of how should manage and control the negotiation and give step ahead of what the negotiation will go to (Harrin, 2016).

Step 2: Establish What we are Prepared to Give Up:

Think about what concessions us as organization which prepared to make and result to be achieved. The negotiator might have to have prior discussion with his/her boss or project sponsor to ensure that the negotiator know what he/she is prepared to sacrifice during the negotiation. Preparation time and carefully reviewing are the most important in this plan and that will give the organization good chance to achieve grate deal in limit time because many ideas discussed and reviewed with the subject matter of experts (Harrin, 2016).

Step 3: Clarify Authority Limits:

Before start negotiation and represent the organization or someone, the negotiator should ensure having clear authorization and the boundary as well of authority with limited time or subject. The negotiator works out and confirm with the line manager the authority limit and what to do also not to do. With understand and clarify the authority given, the negotiator will offer must suitably offer and making the good deal or agreement. Furthermore, the authority will tell to the negotiator about the situation which help to through to suitable conclusion (Harrin, 2016).

Step 4: Do Your Homework:

Here the negotiator should spend more time to make the negotiation worth. Gather different information on the market and strategy value of similar deals and what is the outcome. Research about similar deals happened with different companies in different projects either internally or externally and what was the wrong as well as which condition to be put to make the negotiation successful. The information find out from the Reacher will help to identify what's reasonable in organization situation. It gives organization a benchmark and helps the negotiator to see what's fair given the terms of organization own situation. It assures the negotiator is going into the discussion not asking for something wildly inappropriate (Harrin, 2016).

Step 5: Decide on What Techniques to Use:

Think about what techniques would be useful in this negotiation. This involves planning a great location for the discussion and the time for negotiation which the attention of all parties increases and be more concentrate with clear mind.

Also think about which approach is going to use and how to use in the negotiation as well as which information to tell first and which information to be hold until the end with draw different scenarios about the negotiation. There is a range of tactics and techniques you can use for negotiating but it's important to choose ones that feel right (and ethical) to negotiator and organization (Harrin, 2016).

Below are ten main negotiating techniques:

1. Make the pie bigger
2. Use humor
3. Show your strength
4. Ask a question
5. Review your preparation (privately)
6. Breathe deeply
7. Name hard-line tactics
8. Take a break
9. Use silence (after your proposal)
10. Reframe an issue.

Specific suggestions for negotiating in the project environment for 3D printer project include:

- ✚ Ensure the project is chartered well and sponsored.

- ✚ Consider the organization and project priorities and escalate to management to get support.
- ✚ Specified the project result with the organizational priorities.
- ✚ Alignment the project goals and result to supporting overall business strategy.
- ✚ Well consider the resource requirements.
- ✚ Clearly define and vividly illustrate the tasks required to reach project goals.
- ✚ Trust to be built through honest communication with considering the planning and schedules.
- ✚ Analysis the risk and look forward to how to deal with risks.
- ✚ Consider the cost. In case of delay.
- ✚ Consider the cost of quality and resources required.

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