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TASK PRIORITIZATION UNLEASHED: A PRACTICAL APPROACH USING EXCEL AND 2D MATRICES

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Introduction:

In the domain of project management, the ability to effectively plan and prioritize tasks is dominant for successful execution. One powerful tool that aids in this process is the 2D priority matrix or 2-D relationship matrix. This matrix not only helps organize tasks but also align them with specific departments. Additionally, it incorporates crucial input data or specifications required to carry out these tasks, contributing to a holistic approach to project planning.

Background of study:

The case company is involved in handling turn-key projects of ethanol producing plants starting from 30klpd to 250 klpd capacities. The company manufactures equipment required for ethanol plant. These equipment are transported to the sites for erection, piping and commissioning purpose. The main responsibility is to execute various activities smoothly within stipulated time period within targeted estimated project cost by satisfying the agreement, tangible and intangible requirements of the clients

2-D Matrix structure:

The matrix itself is a simple yet dynamic representation. Its rows typically represent different departments and the tasks to be executed, related to those departments. And the columns represent the input data/specifications /drawings required foreffective execution of the tasks. The structured approach provides the visual map of responsibilities, dependencies and priorities across different segments of the project.

Input Data/Specifications:

Each task within the matrix is accompanied by a set of input data/specifications necessary for its execution. For instance, for the preparation of operation and maintenance manual, the project department must need P& ID, Pump list, cable layout, Instrument list and specifications.Similarly, for the preparation of plant layout blue print, the design department must have the firefighting plan details, individual equipment layout details, illumination details and cable routing details.

These various input data/specifications are to be obtained either from the clients (if that task is in client's scope), from industry standards, from company standards, from outside consultants, from engineering department of the company. Thus, the specifications need to be precise for smooth execution of the tasks. Also these input data need to be provided within the stipulated time period, to avoid delay in total project completion time, planned in Gantt chart.

Populating the matrix in excel:

Excel, a widely accessible spreadsheet tool, serves as an excellent platform for creating and utilizing this 2D matrix. The process involves, putting the tasks, assigning the relationship of task with the input data as strong/medium/weak. Then find the relative weightage of each. Similarly we can populate 2-D matrix, to obtain the dependencies of input data/specifications across each other.



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							Fig.1: Relationship Matrix (2-D Matrix)																
							PROJECT N	AME:	PROJT.NO- (GRAINBASED)									Date:					
		Task V/s Input Matrix																					
				I	1	1	r	I		INPUT/	SPECIFIC	CATION REQU	IREMENTS	S FOR EX	ECUTION O	F TASKS	1	1	1	-	1	1	
Importance	TASKS TO BE EXECUTED					Pumn	Civil	LIGI /Plint	Storm water	Gutter	l Itility	TOPP	fire	Cable	MCC detailing	Instru.List	Instru Eivi	Individual	Inculator	SS and	lighting	Cable	Cable
			GA	P & ID	Motor List	List	Input	h Marking	drainage line	line,pit,etc	Piping	steel/Cement	fighting	Layout	chart	Specification	ng Drg	Layout	details	detailing	details	routing	rating
	Marketing	ation of																	Ì				
8	customer enquiry						0								0								
	Technical Evaluation	on of									_			-	-	_		_					
	customer enquiry		U		0	0	Ŭ				0			U	U	L L		0	0				
8	Bid submition	orcial Offor		0	0							•	0								0	0	
8	Finalization of offe	er	U			0					0	+ •	0									0	
6	PO checked & Vali	date			•											0		0					
6	ком												0										
	Importance rating sum				50	32	32				40	27	46	16	24	20		28	16	18	16	18	
	Project					1		_		_	_												
,	Project Planning(E	Bar chart)	•	•	0		0		0	L	0	U U	0	•		L	•	•	0	0	•	0	
5	Price break up		0	0		-	0						0	0				0	0	0			-
	Purchase Requisition of		0		1	-												0	U				
6	bought out(pump	index,motor	0	•	0	•			0	0	0		0	0		•		0	0				
6	Raw m/t ordering	for site work																•		0			
8	Line sizing and BO	M	0	٠	•	٠					٠					•		0	0				
8	Data sheet of equi	pment(Nozzle		•	•	•	0				0					0		0		0			
5	PPC																						
5	Dispatch advise																						
8	Technical Clearance	ce	•	0			0				0		0										
8	Release Note for d	lispatch			0							0											
8	requirement		٠	0			0					0			•	0		•		0			
5	Finalizing Contract	or																0					
6	Drawing requistion	n	0	•			0		•								•	•				0	
6	Loading Layout & Transportation		n nlan	0		0												0					
	Ordering of pre-re	quisite	piari	Ŭ																			
6	material required	at site		0		0			0			0	0	0		0		0	0				
8	8 Raw m/t ordering for shop floo		0															0		0			
6	Statutory Approva	I Indexing & 1	•	•	0				•		•	•	•		0	0		0	0	0		0	0
6	Preperation of Ope	erartion and I	0	•	0	•			•	•	•		•	•	0	•			0			•	•
	Importance rating	Importance rating sum 185 249 12		123	108	102	23	127	74	159	92	132	85	60	151	59	224	103	110	33	85	48	
	Design		1					1	1	1			1						1				
6	Technical Review of	of enquiry		•			0				0					0		0		0			
8	Plant Layout and b	olue print	•	•	0		•	0	0	0	0		•					•			•	•	
9	Detail Engineering		0	•	•	•	0		0		0			0		0	0	0	0			0	•
6	6 Release Drawings															0		0		٠	0		
6	Purchase Requisiti	on of bought	out	•	•	•			•		0	0		•	0	•		0	•		0	0	
	Importance at		42	69	61	52	54	22	52	16	58	21	24	36	12	60	q	78	36	30	48	54	27
	Purchase	sum	74	55		55			52	10	50		-7	50	14	50	,	70	50	30	-10		L''
6	Request for Quota	tion		•	•	•					0	•		•	0	•			0		0	0	0
8	Techno-commercia	al comparsion		0	0																		
	Importance rating	sum		34	34	18					12	18		18	12	18			12		12	12	12
	Production		_																				
6	Release Note					-												0					
8	Loading Layout				0	-	-			-								0					
9	Packing List Commissioning		_	•		+	-				•			•		0		0	0	0		0	•
	Importance rating sum			27	16	+					33			27		18		64	36	18		18	45
													1										
● Strong 3																							
							1																
–	O Medium				2		4																
🗆 Weak					1																		



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					Fig.2	2 DEPENDANCY MATRIX OF PROJECT DEPARTMENT FOR A PROJECT															
	GA	P & ID	Motor List	Pump List	4 : Civil Input	UGL/Pli nth Marking	5 7 Storm water drainage line	Gutter line,pit,etc	B ! Utility Piping	TORR Steel & Cement	Fire Fighting Drg	1 Cable Layout	2 1: MCC detailing chart	s 14 Instru.List and Specificatio n	15 Instru.Fixin g Drg	16 Individual Layout	insulaton details	7 1: SS and MS Tank detailing	Lighting details	9 2 Cable routing	Cable rating
GA																					
P & ID																					
Motor List		•																			
Pump List		٠																			
Civil Input	0		٠																		
UGL/Plinth Marking	•				•																
Storm water drainage line details					•	•															
Gutter line,pit,etc					•	0	•														
Utility Piping details	0	٠	٠	•	0	0															
TORR steel/Cement details					•		0	0													
Fire fighting Drg	0			0	0	0		0	0	0											
Cable Layout details	0	0	0	•	0			0			0										
MCC detailing chart		0	٠	•					0		0	٠									
nstru.List and Specification		٠	0	0					•			0	•								
Instru.Fixing Drg			0		0				0			٠		٠							
ndividual Layout		0	0	0	•	•	0	0	٠	•	•	•	0	•	•						
nsulaton details		0		0					•		•	0			•						
SS and MS Tank detailing			0	0	0	0			٠	0	0			0	0	0					
Lighting details											0	•		٠	•	•	٠				
Cable routing details		0	0										0	٠	•	•				_	
Cable rating		٠		0							0	•	0	0	0	0			0	0	

Spnge dependance

• Medium dependance

Weak dependance

Interpretation from the matrices:

From fig.1 and 2:

1. We can focus on those Input data/specifications with higher importance relationship score and take it on first priority.For example P&ID, Individual layout, motor list and pump list, GA drawing etc. have higher scores and need to take on priority.

2. Tasks requiring the same type of input data/specification/drawing having strong relationship can be planned to start simultaneously. For example, P& ID is required for Training & handover and Operation & Maintenance manual. Hence both these tasks can be run simultaneously.

3. From 2-D matrix, we can allocate resources effectively, Identify which of the departments are responsible for critical tasks and allocate resources accordingly.

4. Fig.2 shows dependencies of input data/specifications clearly, showing the need to work out those specification/drawings in collaboration. For example storm water line layout work should be done in collaboration with gutter line & pit layout work.

Conclusion:

The 2-D matrices, coupled together with simplicity of excel, forms a robust framework for microplanningin project management. It streamlines task organization, enhances departmental collaboration and provides a visual guide for effective decision making for successful project management.