

Table 1 (A) Factors scores for QIPPP

Category	Code	Factor	Measure Unit	Factor Limitation	Score	
Company	F1	1.The financial capacity	Cash flow of company as a percentage from the estimating step	Lower limit	Upper limit	
				0	0	
				> 0	< 20 %	1
				20	< 40 %	2
				40	< 60 %	3
				60	< 80 %	4
	F2	2.Select team members	Availability of project manager, site engineers and labor before starting the project as a percentage from the estimating step	80	100 %	5
					or more	
				Lower limit	Upper limit	
				0	0	
				0	< 20 %	1
				20%	< 40 %	2
	F3	3.Resource capacity	The company resource availability as a percentage from the estimating step	40%	< 60 %	3
				60%	< 80 %	4
				80%	100 %	5
					or more	
				Lower limit	Upper limit	
				0	0	
Project	F4	4.Project scope definition	Availability of a complete drawing and specification	Incomplete drawings and specifications.	0	
				Complete drawings and specifications.	5	
	F5	5. Project Complexity.		Project constructed in country under a state of war	0	
				Tunnel under seas and bridges over seas.	1	
				Road tunnels and bridges.	2	
				Malls and huge government buildings.	3	
				Roads.	4	
				Residential and administrative buildings.	5	
	F6	6. Past experience from last similar projects.		0 projects	0	
				≤ 2 projects.	1	

			2-5 projects.	2		
			5-10 projects.	3		
			10-15 projects.	4		
			≥ 15 projects.	5		
Engineer staff	F7	7.Financial analysis	project financial analysis as a percentage of company financial capacity	Lower limit	Upper limit	
				> 100 %	0	
				80%	≤100 %	1
				60%	<80 %	2
				40%	<60 %	3
				20%	<40 %	4
				< 20 %		5
	F8	8. Clear understanding of the project scope.	The percentage depends on engineer understanding.	Lower limit	Upper limit	
				0	0	
				> 0	<20 %	1
				20%	<40 %	2
				40%	<60 %	3
				60%	<80 %	4
			80%	100%	5	
F9	9. Accurate work flow planning	complete work breakdown structure	Incomplete work breakdown structure	0		
			Complete work breakdown structure	5		
F10	10. Clear process of project control	Availability of agreements to apply project control	Unavailability of agreements to apply project control.	0		
			Availability of agreements to apply project control.	5		
F11	11. Clear change request protocol	Availability of agreements to apply change requests	Unavailability of agreements to apply change requests.	0		
			Availability of agreements to apply change requests.	5		
F12	12. Experience and intuition of the project team members	planning engineer years of experience	Lower limit	Upper limit		
			0	0		
			> 0	<1year	1	
			1 years	<5 years	2	
			5 years	<10 years	3	
			10 years	<20 years	4	
			≥ 20 years.		5	
Site conditions	F13	13. Resource availability	Ensuring that the assumption of estimated amount of resources is available in company resource pool	Didn't make check to confirm that the assumptions are correct.	0	

		Made check to confirm that the assumptions are correct.	5
F14	14. Late material delivery.	Ignoring late material delivery.	0
		Considering late material delivery.	5
F15	15. Bad weather conditions.	Ignoring bad weather conditions.	0
		Considering bad weather conditions.	5
