Analysis and Interpretation:

I confirm that I have read and understand the introductory letter for the above study and have had the opportunity to ask questions.					
		Frequency	Percentage	Valid %	Cumulative %
Valid	No	1	1.9	1.9	1.9
	Yes	51	98.1	98.1	100.0
	Total	52	100.0	100.0	

Table 1. Descriptive Statistics

98.1% of participants confirmed having read and understood the introductory letter, while 1.9% indicated they had not.

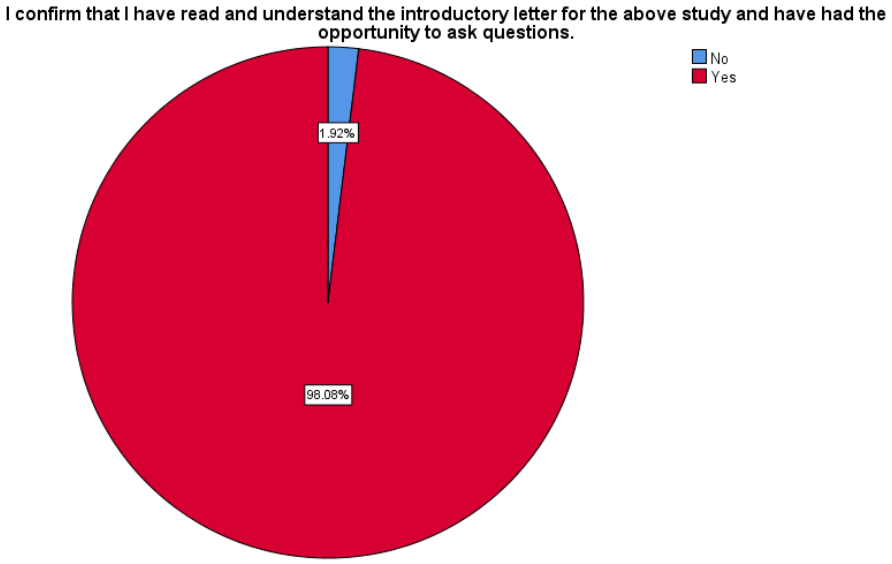

Figure 1. Pie Chart

I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason.					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Yes	52	100.0	100.0	100.0

Table 2. Descriptive Statistics

100% of participants acknowledged their voluntary participation and the freedom to withdraw without providing a reason.

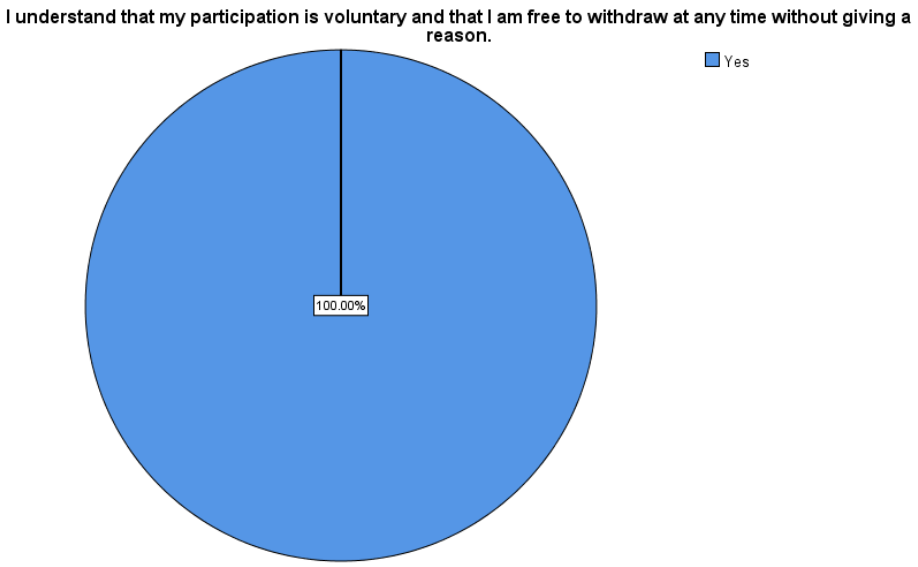

Figure 2. Pie Chart

I agree to take part in the study					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Yes	52	100.0	100.0	100.0

Table 3. Descriptive Statistics

All 52 participants, constituting 100%, agreed to participate in the study, as indicated in the survey data.

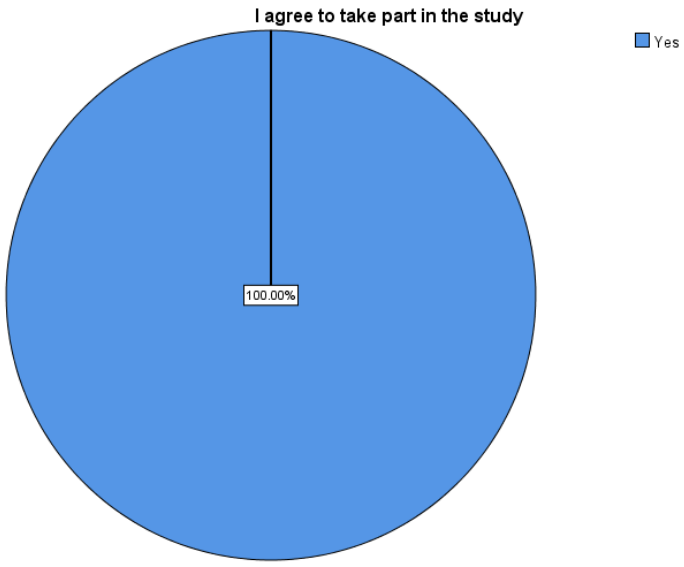

Figure 3. Pie Chart

What is your role in the construction project? (Please select one)					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Project Manager	25	48.1	48.1	48.1

	Contractor	5	9.6	9.6	57.7
	Engineer	16	30.8	30.8	88.5
	Owner	6	11.5	11.5	100.0
	Total	52	100.0	100.0	

Table 4. Descriptive Statistics

In the construction project, 48.1% of respondents held the role of Project Manager, 30.8% were Engineers, 9.6% were Contractors, and 11.5% were Owners, according to the provided survey data.

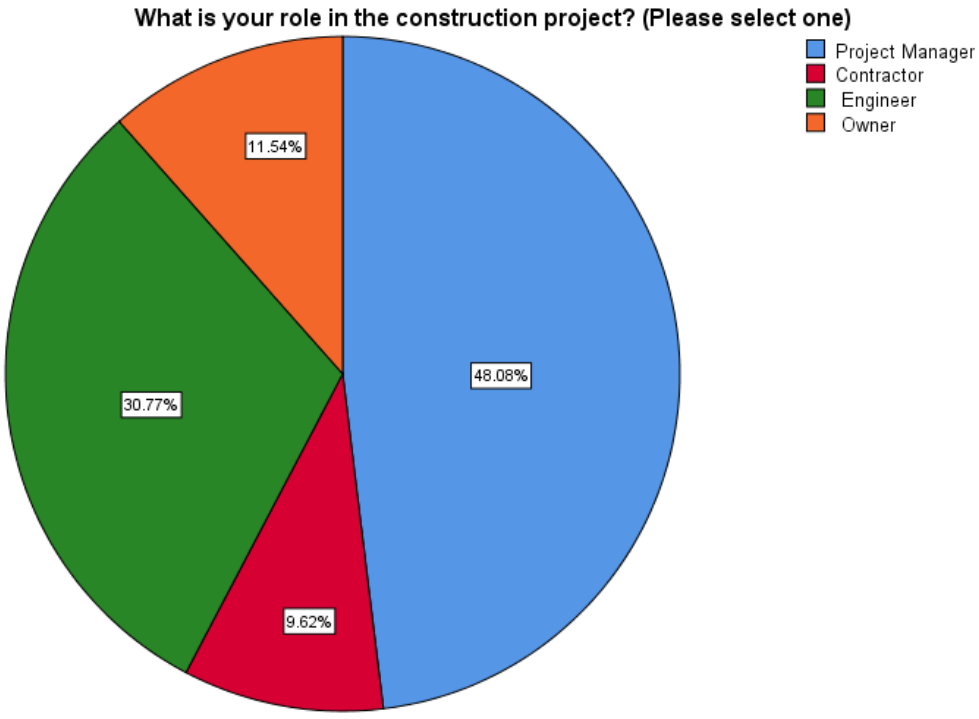

Figure 4. Pie Chart

How actively are you engaged in the development of the Work Breakdown Structure (WBS) of the project?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Very actively engaged	25	48.1	48.1	48.1
	Moderately engaged	13	25.0	25.0	73.1
	Minimally engaged	11	21.2	21.2	94.2
	Not engaged	1	1.9	1.9	96.2
	Not applicable to my role	2	3.8	3.8	100.0
	Total	52	100.0	100.0	

Table 5. Descriptive Statistics

According to the survey results, 48.1% of participants were very actively engaged in the development of the Work Breakdown Structure (WBS) of the project, while 25% were

moderately engaged, 21.2% were minimally engaged, and a smaller percentage either reported not being engaged (1.9%) or found it not applicable to their role (3.8%).

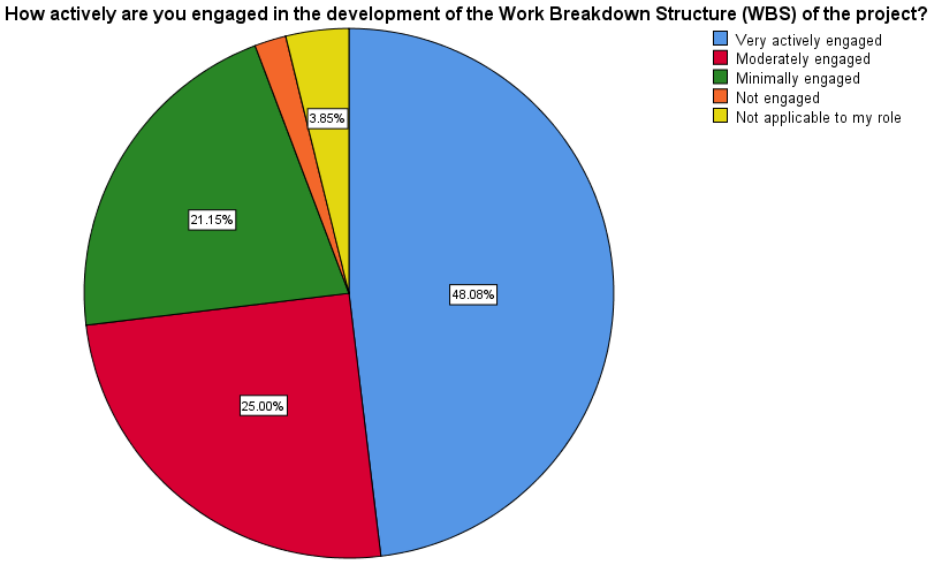

Figure 5. Pie Chart

On a scale of 1 to 5, how satisfied are you with the efficiency of the current WBS development process?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Very dissatisfied	1	1.9	1.9	1.9
	Dissatisfied	1	1.9	1.9	3.8
	Neutral	18	34.6	34.6	38.5
	Satisfied	30	57.7	57.7	96.2
	Very satisfied	2	3.8	3.8	100.0
	Total	52	100.0	100.0	

Table 6. Descriptive Statistics

According to the data, 57.7% of respondents reported being satisfied with the efficiency of the current Work Breakdown Structure (WBS) development process. Additionally, 34.6% felt neutral about it, while smaller percentages indicated being very satisfied (3.8%), dissatisfied (1.9%), or very dissatisfied (1.9%).

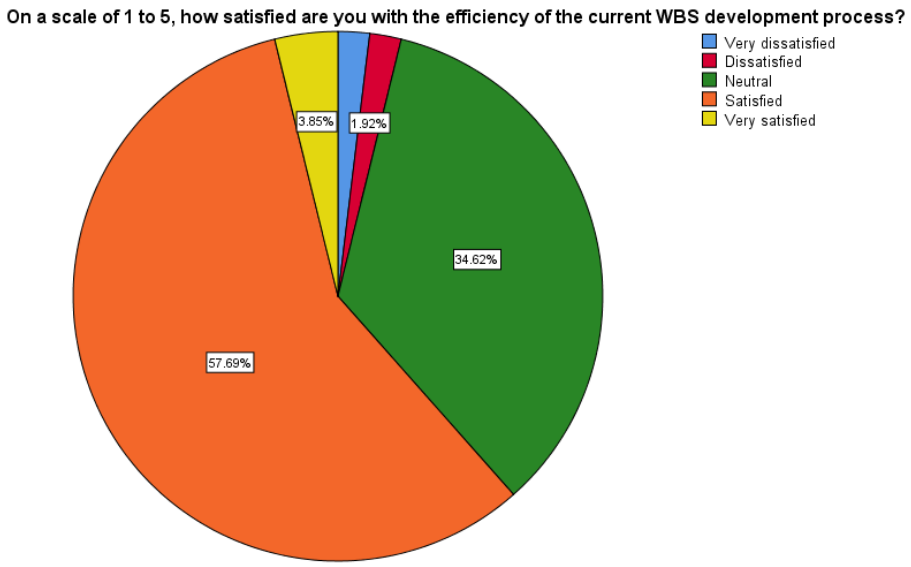

Figure 6. Pie Chart

Have you actively participated in the requirement analysis phase of the project?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	No	8	15.4	15.4	15.4
	Yes	44	84.6	84.6	100.0
	Total	52	100.0	100.0	

Table 7. Descriptive Statistics

According to the data, 84.6% of participants actively participated in the requirement analysis phase of the project, while 15.4% did not engage in this phase.

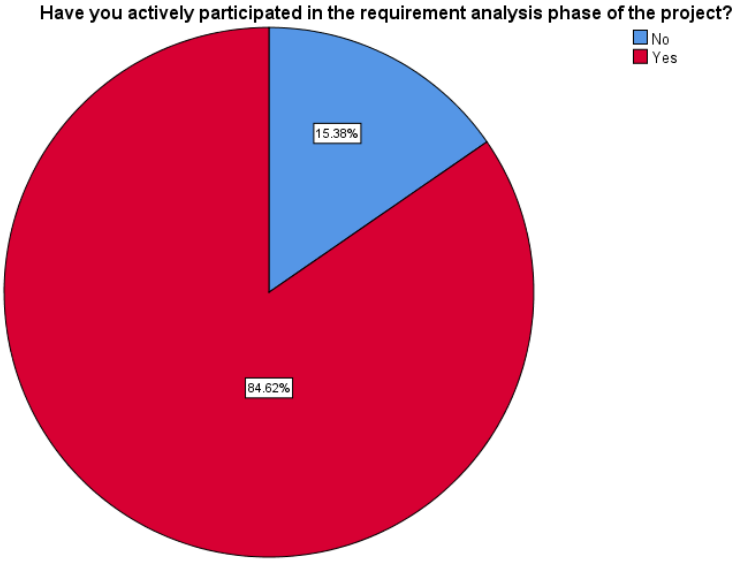

Figure 7. Pie Chart

If yes, how would you rate the extent of your involvement in the requirement analysis phase?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Extensively involved	16	30.8	30.8	30.8
	Moderately involved	24	46.2	46.2	76.9
	Minimally involved	12	23.1	23.1	100.0
	Total	52	100.0	100.0	

Table 8. Descriptive Statistics

Based on the responses, 46.2% of participants rated their involvement in the requirement analysis phase as moderately involved, 30.8% were extensively involved, and 23.1% were minimally involved.

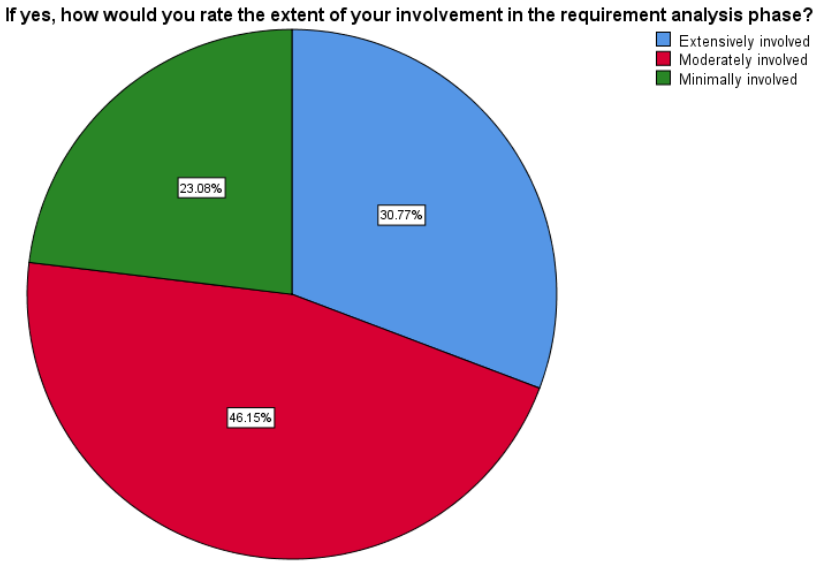

Figure 8. Pie Chart

If no, please specify the reasons for not participating in the requirement analysis phase.					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Not applicable to my role	19	36.5	36.5	36.5
	Lack of invitation or communication	8	15.4	15.4	51.9
	Time constraints	14	26.9	26.9	78.8
	Involved	11	21.2	21.2	100.0
	Total	52	100.0	100.0	

Table 9. Descriptive Statistics

In the survey results, reasons for not participating in the requirement analysis phase varied: 36.5% indicated it was not applicable to their role, 26.9% cited time constraints, 15.4% reported lack of invitation or communication, and 21.2% did not specify any reason.

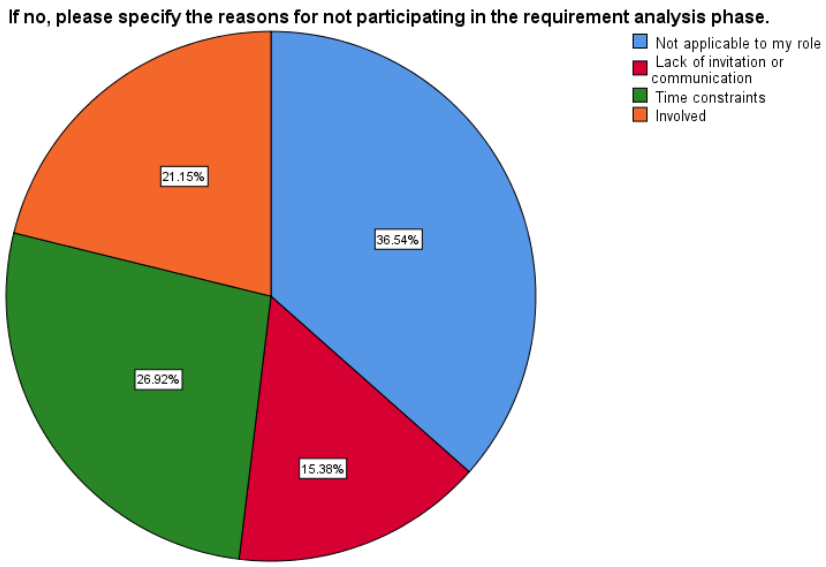

Figure 9. Pie Chart

How involved are you in the process of determining the scope of the construction project?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Highly involved	30	57.7	57.7	57.7
	Moderately involved	13	25.0	25.0	82.7
	Minimally involved	6	11.5	11.5	94.2
	Not applicable to my role	3	5.8	5.8	100.0
	Total	52	100.0	100.0	

Table 10. Descriptive Statistics

According to the data, 57.7% of participants reported being highly involved in determining the scope of the construction project, 25.0% were moderately involved, 11.5% were minimally involved, and 5.8% mentioned it was not applicable to their role.

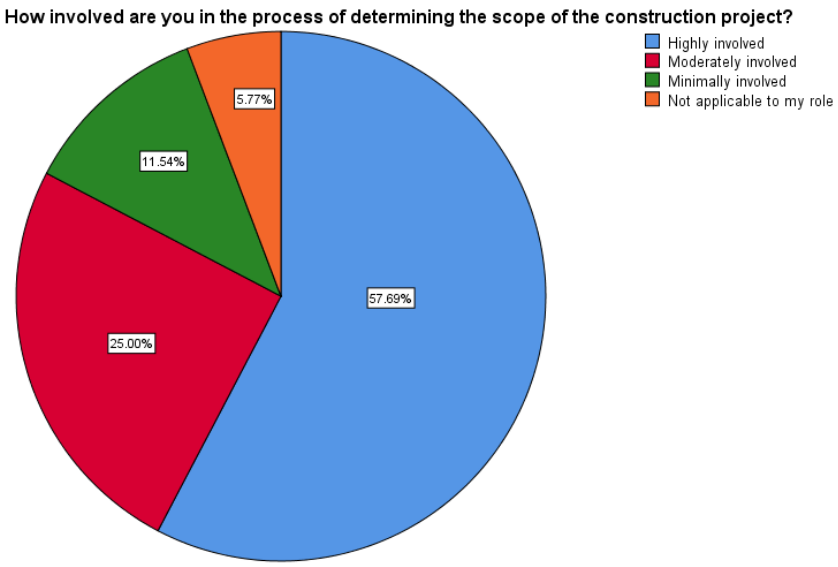

Figure 10. Pie Chart

On a scale of 1 to 5, how satisfied are you with the current approach to scope management?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Very dissatisfied	5	9.6	9.6	9.6
	Dissatisfied	2	3.8	3.8	13.5
	Neutral	14	26.9	26.9	40.4
	Satisfied	27	51.9	51.9	92.3
	Very satisfied	4	7.7	7.7	100.0
	Total	52	100.0	100.0	

Table 11. Descriptive Statistics

As per the survey results, 51.9% of respondents indicated being satisfied with the current approach to scope management, with 26.9% feeling neutral, and smaller percentages expressing being very satisfied (7.7%), dissatisfied (3.8%), or very dissatisfied (9.6%).

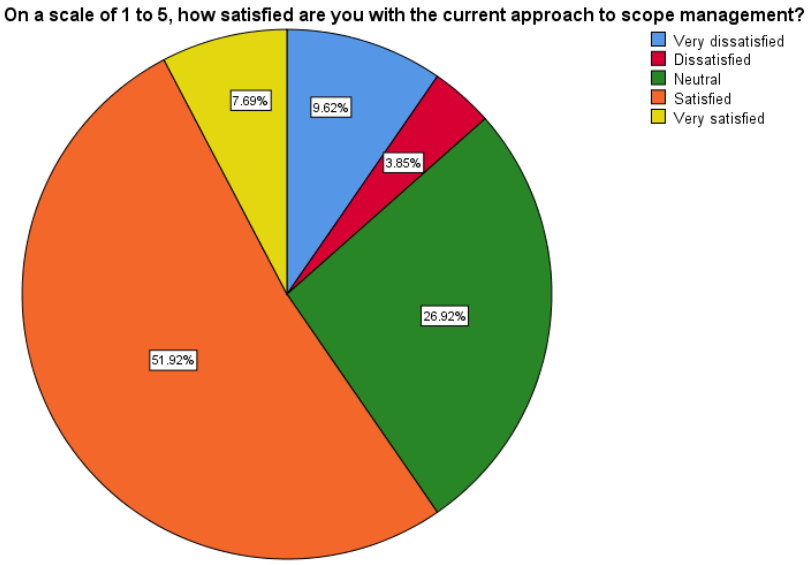

Figure 11. Pie Chart

Do you have any suggestions or ideas to improve the scope management process?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	No	20	38.5	38.5	38.5
	Yes	32	61.5	61.5	100.0
	Total	52	100.0	100.0	

Table 12. Descriptive Statistics

According to the data, 61.5% of participants provided suggestions or ideas to improve the scope management process, while 38.5% did not offer any suggestions or ideas for improvement.

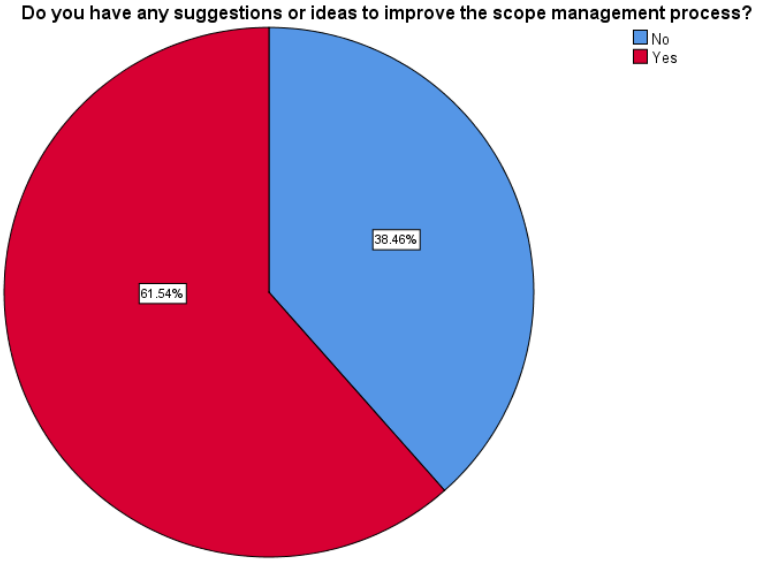

Figure 12. Pie Chart

If yes, have you communicated your suggestions to the project management team?

		Frequency	Percentage	Valid %	Cumulative %
Valid	No	20	38.5	38.5	38.5
	Yes	32	61.5	61.5	100.0
	Total	52	100.0	100.0	

Table 13. Descriptive Statistics

Based on the survey results, 61.5% of respondents communicated their suggestions regarding scope management process improvements to the project management team, while 38.5% did not communicate their suggestions.

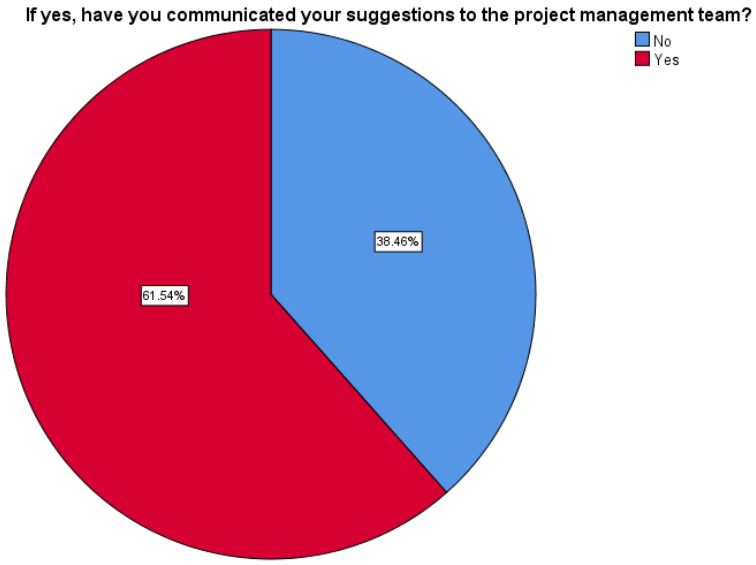

Figure 13. Pie Chart

How frequently do you attend scope management meetings?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Regularly	32	61.5	61.5	61.5
	Occasionally	14	26.9	26.9	88.5
	Rarely	5	9.6	9.6	98.1
	Never	1	1.9	1.9	100.0
	Total	52	100.0	100.0	

Table 14. Descriptive Statistics

According to the data, 61.5% of participants attended scope management meetings regularly, 26.9% attended occasionally, 9.6% attended rarely, and 1.9% never attended such meetings.

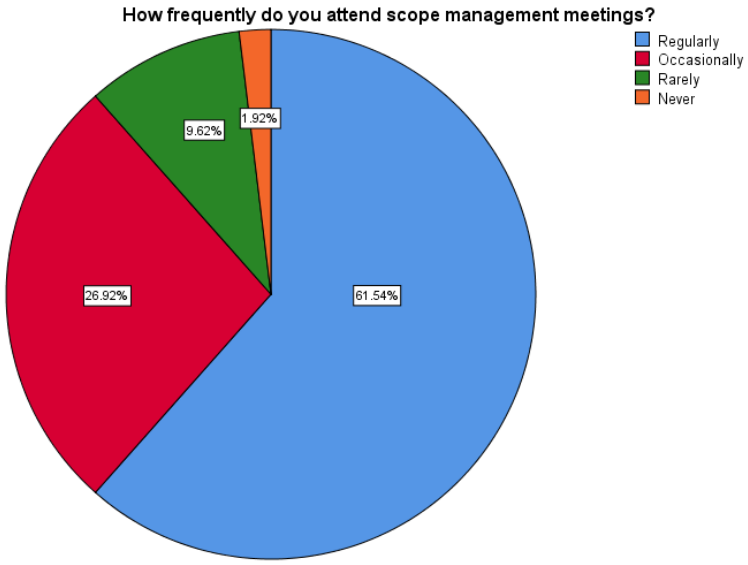

Figure 14. Pie Chart

How effectively do you think scope changes are communicated to all stakeholders in the project?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Very effectively	17	32.7	32.7	32.7
	Moderately effectively	34	65.4	65.4	98.1
	Not applicable to my role	1	1.9	1.9	100.0
	Total	52	100.0	100.0	

Table 15. Descriptive Statistics

Based on the survey results, 65.4% of respondents perceived scope changes to be communicated moderately effectively to all stakeholders, while 32.7% considered it to be very effective. One participant (1.9%) mentioned it was not applicable to their role.

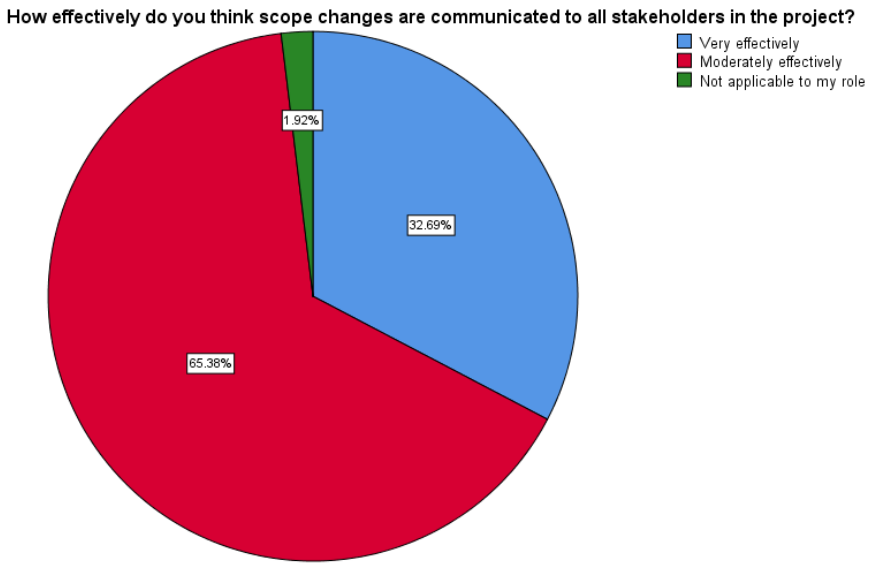

Figure 15. Pie Chart

To what extent do you participate in constructing the project schedule?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Actively participate	23	44.2	44.2	44.2
	Occasionally participate	19	36.5	36.5	80.8
	Rarely participate	6	11.5	11.5	92.3
	Do not participate	2	3.8	3.8	96.2
	Not applicable to my role	2	3.8	3.8	100.0
	Total	52	100.0	100.0	

Table 16. Descriptive Statistics

According to the survey data, 44.2% of respondents actively participate in constructing the project schedule, 36.5% occasionally participate, 11.5% rarely participate, and smaller percentages either do not participate (3.8%) or find it not applicable to their role (3.8%).

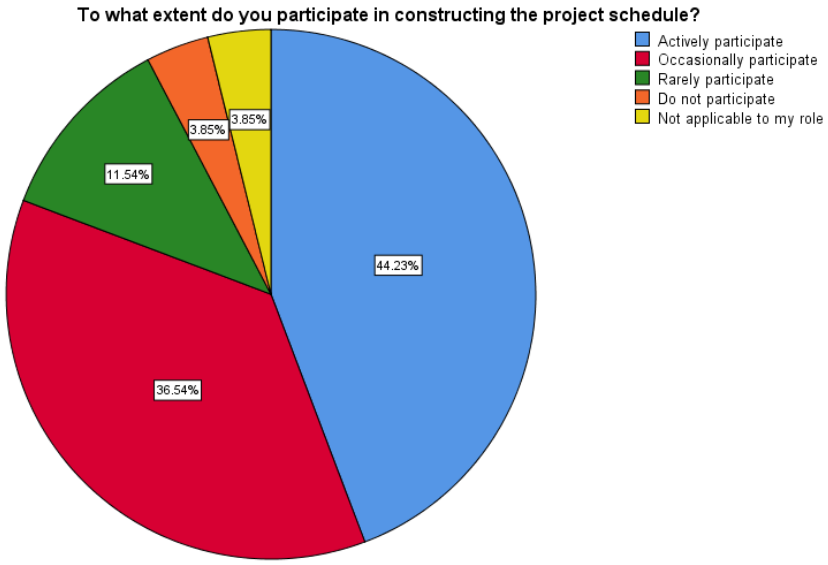

Figure 16. Pie Chart

On a scale of 1 to 5, how satisfied are you with the current approach to schedule management?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Very dissatisfied	4	7.7	7.7	7.7
	Dissatisfied	2	3.8	3.8	11.5
	Neutral	11	21.2	21.2	32.7
	Satisfied	27	51.9	51.9	84.6
	Very satisfied	8	15.4	15.4	100.0
	Total	52	100.0	100.0	

Table 17. Descriptive Statistics

Based on the survey responses, 51.9% of participants expressed satisfaction with the current approach to schedule management, while 15.4% were very satisfied. Additionally, 21.2% felt neutral, and smaller percentages indicated being dissatisfied (3.8%), very dissatisfied (7.7%), or provided no response.

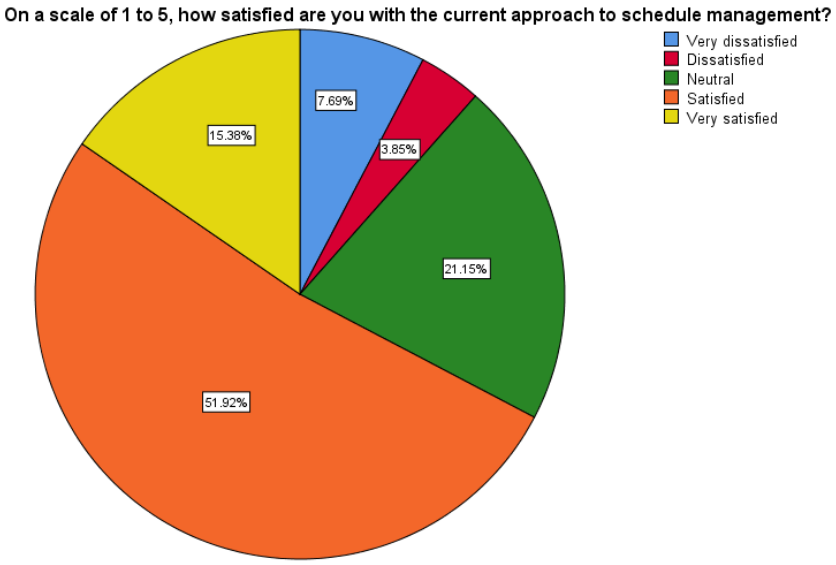

Figure 17. Pie Chart

If applicable, do you have suggestions for improving the schedule management process?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	No	17	32.7	32.7	32.7
	Yes	35	67.3	67.3	100.0
	Total	52	100.0	100.0	

Table 18. Descriptive Statistics

According to the data, 67.3% of respondents provided suggestions for improving the schedule management process, while 32.7% did not offer any suggestions.

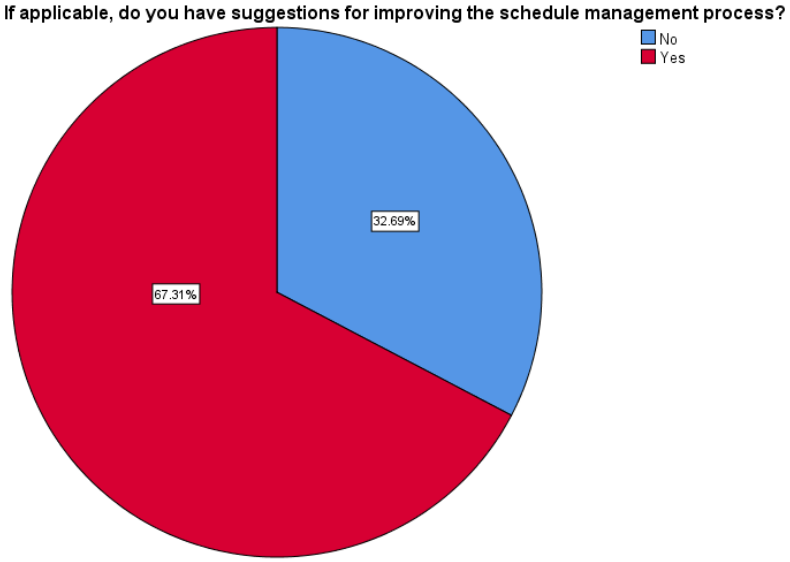

Figure 18. Pie Chart

If yes, have you communicated your suggestions to the project management team?

		Frequency	Percentage	Valid %	Cumulative %
Valid	No	20	38.5	38.5	38.5
	Yes	32	61.5	61.5	100.0
	Total	52	100.0	100.0	

Table 19. Descriptive Statistics

From the survey results, 61.5% of participants communicated their suggestions for improving the schedule management process to the project management team, while 38.5% did not communicate their suggestions.

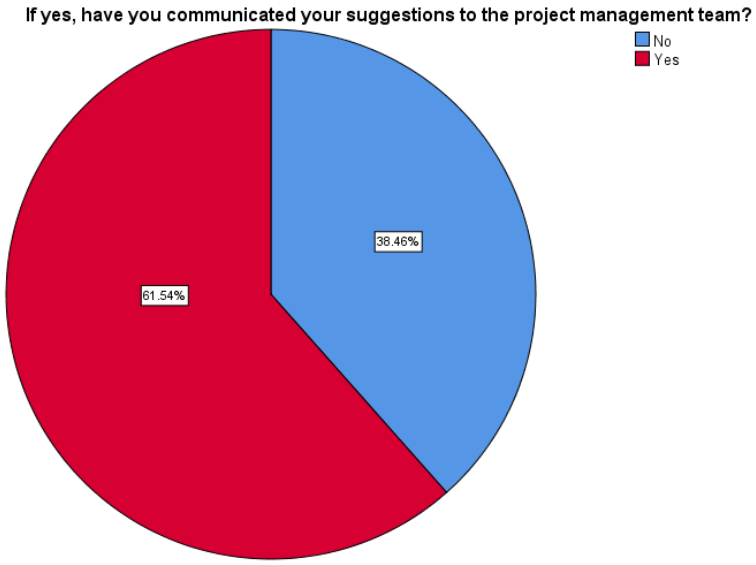

Figure 19. Pie Chart

How frequently do you receive updates on changes to the project schedule?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Regularly	30	57.7	57.7	57.7
	Occasionally	15	28.8	28.8	86.5
	Rarely	7	13.5	13.5	100.0
	Total	52	100.0	100.0	

Table 20. Descriptive Statistics

According to the data, 57.7% of participants receive regular updates on changes to the project schedule, while 28.8% receive occasional updates, and 13.5% receive updates rarely.

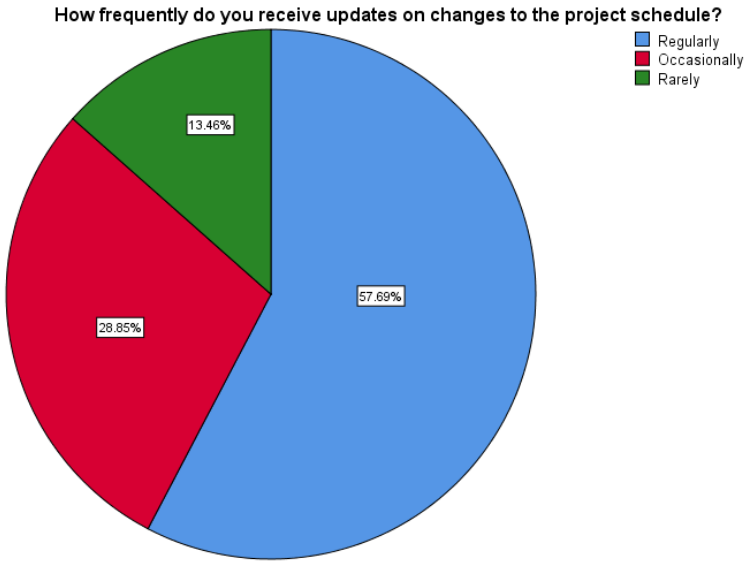

Figure 20. Pie Chart

How well does the current schedule management process accommodate unexpected delays or changes?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Very well	16	30.8	30.8	30.8
	Moderately well	35	67.3	67.3	98.1
	Not applicable to my role	1	1.9	1.9	100.0
	Total	52	100.0	100.0	

Table 21. Descriptive Statistics

According to the survey results, 67.3% of respondents believed that the current schedule management process moderately accommodates unexpected delays or changes. Additionally, 30.8% perceived it to accommodate very well, while 1.9% considered it not applicable to their role.

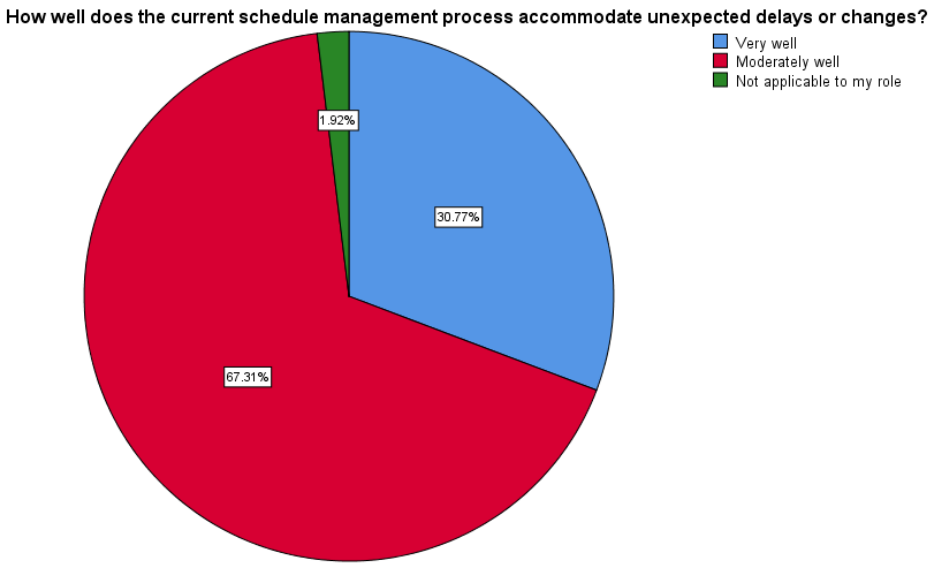

Figure 21. Pie Chart

How do you believe your role and contributions impact the overall success of the project?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Significantly	47	90.4	90.4	90.4
	Moderately	5	9.6	9.6	100.0
	Total	52	100.0	100.0	

Table 22. Descriptive Statistics

According to the collected data, 90.4% of participants believed that their role and contributions significantly impact the overall success of the project, while 9.6% considered their impact to be moderate.

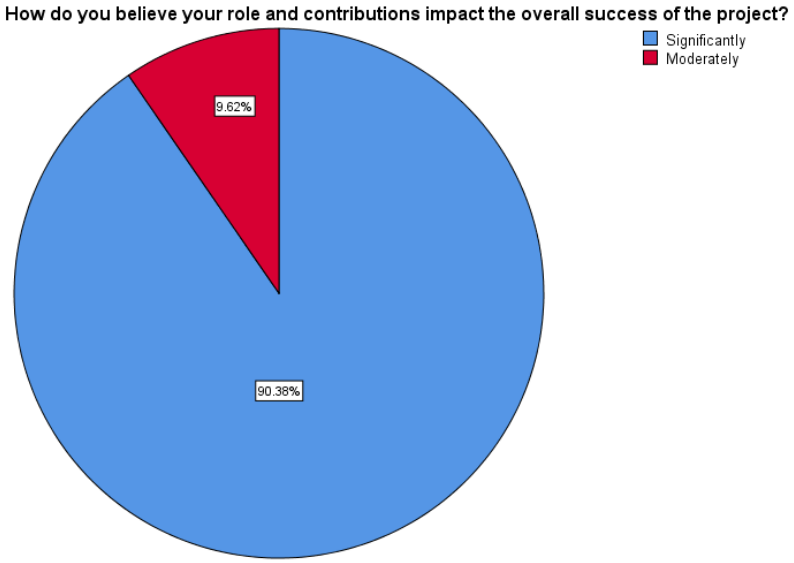

Figure 22. Pie Chart

How do you handle conflicts or differences of opinion with other stakeholders to ensure the project stays on track?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Effective communication and negotiation	45	86.5	86.5	86.5
	Escalating the matter to project management	6	11.5	11.5	98.1
	Avoiding conflicts altogether	1	1.9	1.9	100.0
	Total	52	100.0	100.0	

Table 23. Descriptive Statistics

Based on the survey responses, 86.5% of participants handle conflicts or differences of opinion with other stakeholders by utilizing effective communication and negotiation strategies. Additionally, 11.5% escalate the matter to project management, while 1.9% prefer to avoid conflicts altogether.

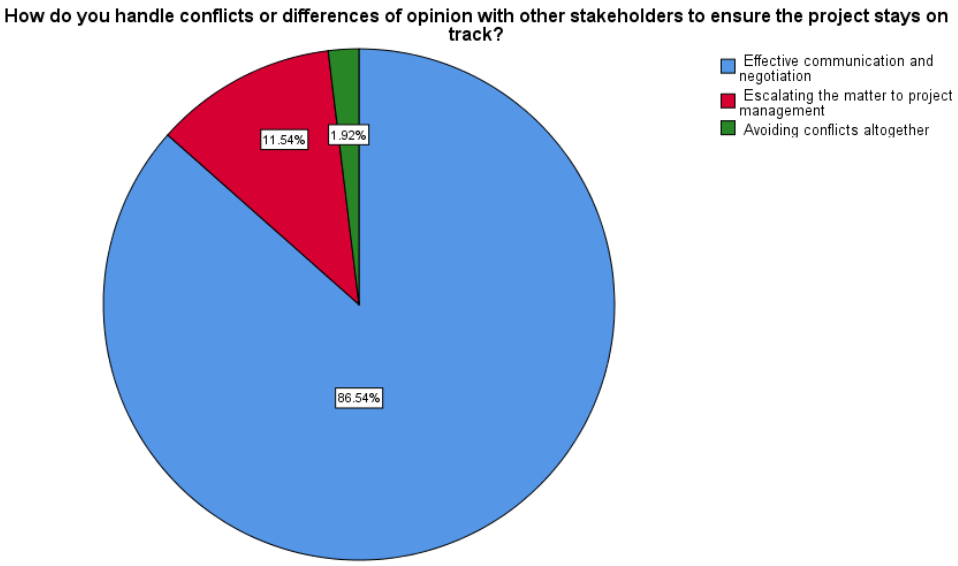

Figure 23. Pie Chart

How do you ensure that your responsibilities align with the project's overall objectives and requirements?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Regularly communicating with project management	28	53.8	53.8	53.8
	Reviewing project documents and updates	15	28.8	28.8	82.7
	Participating in project planning meetings	9	17.3	17.3	100.0

	Total	52	100.0	100.0	

Table 24. Descriptive Statistics

According to the data, 53.8% of respondents ensure their responsibilities align with the project's overall objectives and requirements by regularly communicating with project management. Additionally, 28.8% review project documents and updates, while 17.3% participate in project planning meetings for alignment purposes.

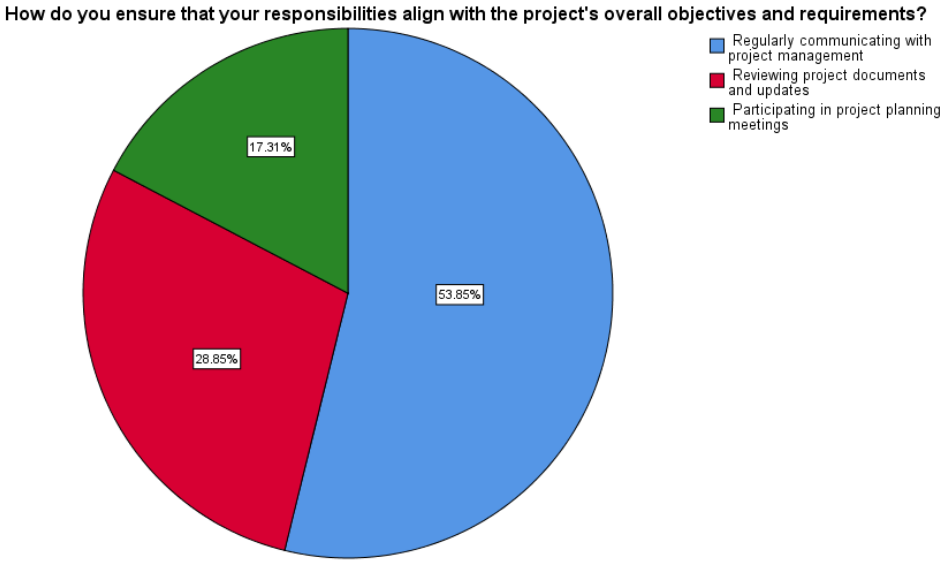

Figure 24. Pie Chart

Do you have any suggestions on how communication and cooperation among stakeholders could be improved to enhance project success?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	No	22	42.3	42.3	42.3
	Yes	30	57.7	57.7	100.0
	Total	52	100.0	100.0	

Table 25. Descriptive Statistics

According to the survey findings, 57.7% of participants provided suggestions on improving communication and cooperation among stakeholders to enhance project success, while 42.3% did not offer any suggestions for improvement in this regard.

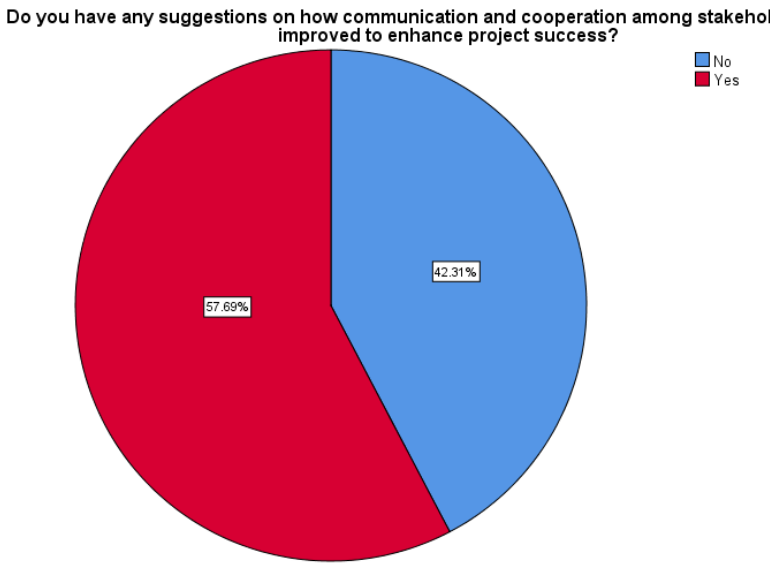

Figure 25. Pie Chart

In your opinion, what potential negative consequences can arise if a key stakeholder is not actively involved in the project planning process? Select Multiple Options					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Project delays;	3	5.8	5.8	5.8
	Increased costs;	3	5.8	5.8	11.5
	All the above	45	86.5	86.5	98.1
	Not applicable to my role;	1	1.9	1.9	100.0
	Total	52	100.0	100.0	

Table 26. Descriptive Statistics

According to the survey results, 86.5% of participants identified that if a key stakeholder is not actively involved in the project planning process, potential negative consequences could include project delays, increased costs, or both. Additionally, 5.8% indicated either project delays or increased costs, and 1.9% found it not applicable to their role.

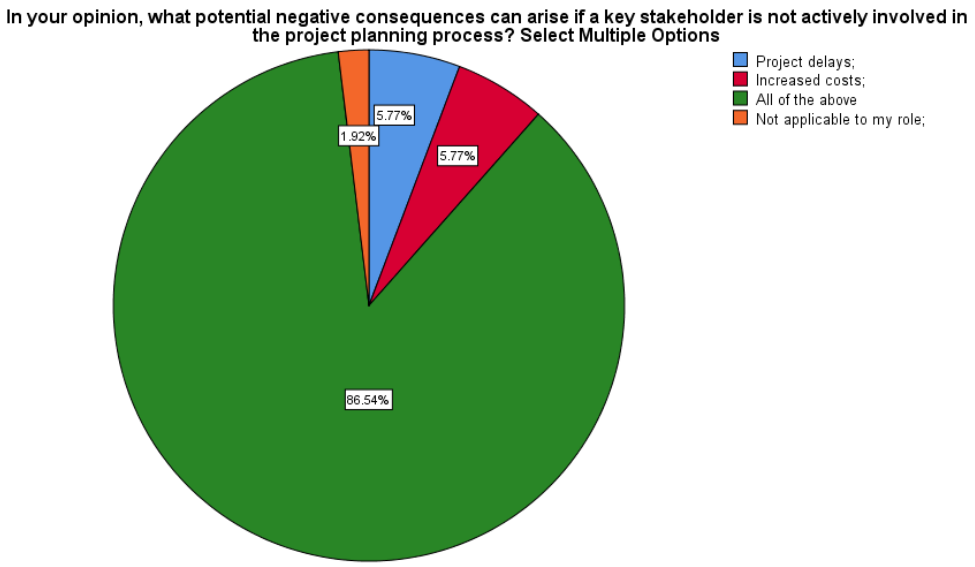

Figure 26. Pie Chart

What challenges have you faced in involving stakeholders during the planning phase of a construction project? Select Multiple Options					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Lack of communication;	3	5.8	5.8	5.8
	Resistance to change;	4	7.7	7.7	13.5
	Conflicting interests;	4	7.7	7.7	21.2
	Limited resources;	1	1.9	1.9	23.1
	All the above	2	3.8	3.8	26.9
	Not applicable to my role;	34	65.4	65.4	92.3
	Total	4	7.7	7.7	100.0

Table 27. Descriptive Statistics

According to the survey responses, challenges faced in involving stakeholders during the planning phase of a construction project varied: 65.4% found it not applicable to their role, while among the challenges mentioned, 7.7% highlighted each of the following: lack of communication, resistance to change, conflicting interests, limited resources, and 3.8% mentioned experiencing all the challenges.

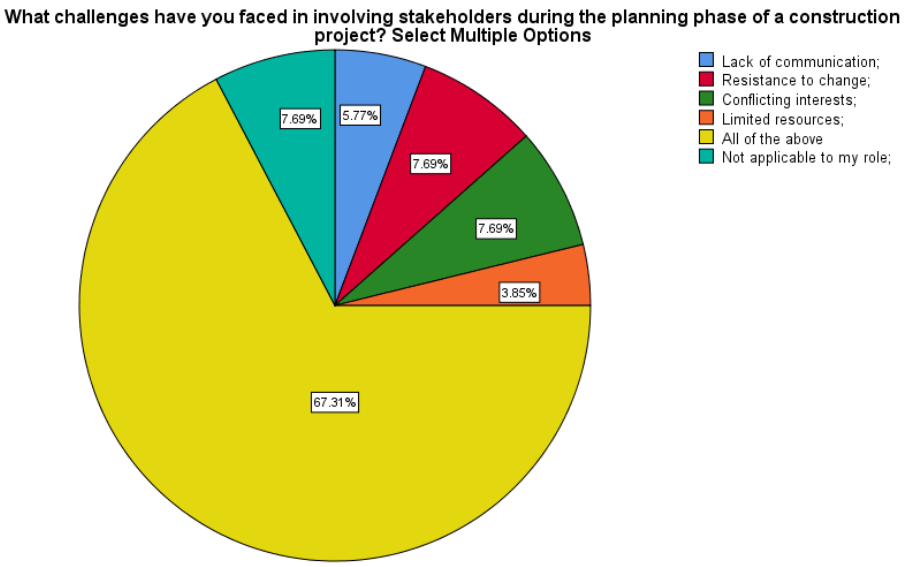

Figure 27. Pie Chart

How do you see the potential benefits of actively engaging stakeholders during the planning phase of the construction project?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Improved project understanding and alignment	22	42.3	42.3	42.3
	better risk identification and mitigation	15	28.8	28.8	71.2
	Enhanced project support and commitment	13	25.0	25.0	96.2
	Not applicable to my role	2	3.8	3.8	100.0
	Total	52	100.0	100.0	

Table 28. Descriptive Statistics

According to the collected data, actively engaging stakeholders during the planning phase of a construction project offers several potential benefits: 42.3% noted improved project understanding and alignment, 28.8% mentioned better risk identification and mitigation, and 25.0% highlighted enhanced project support and commitment. Additionally, 3.8% found it not applicable to their role.

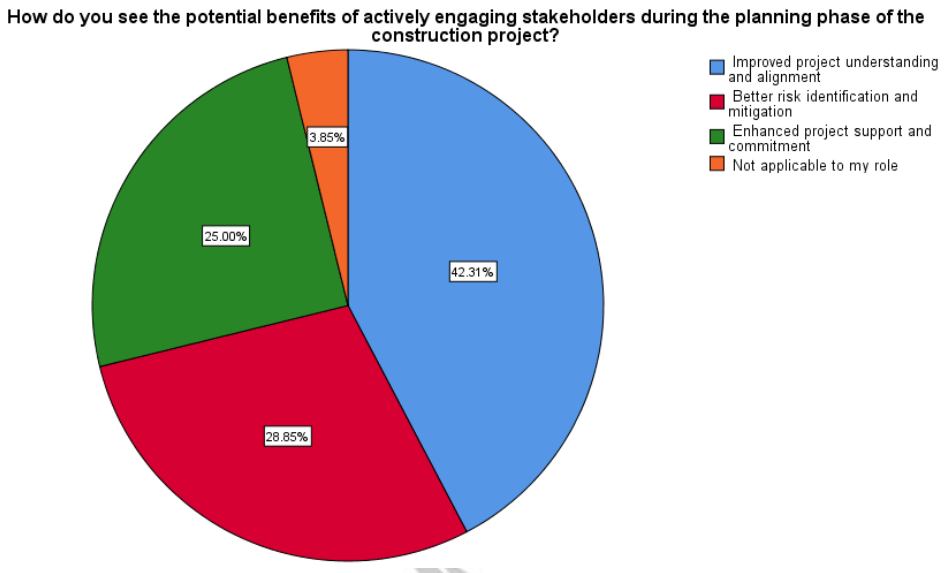

Figure 28. Pie Chart

What actions can be taken to address the challenges in stakeholder involvement and ensure successful project outcomes?					
		Frequency	Percentage	Valid %	Cumulative %
Valid	Establishing clear communication channels	25	48.1	48.1	48.1
	Regular stakeholder engagement meetings	21	40.4	40.4	88.5
	Providing training and resources to stakeholders	6	11.5	11.5	100.0
	Total	52	100.0	100.0	

Table 29. Descriptive Statistics

As per the survey responses, suggested actions to address challenges in stakeholder involvement for successful project outcomes include establishing clear communication channels (48.1%), holding regular stakeholder engagement meetings (40.4%), and providing training and resources to stakeholders (11.5%).

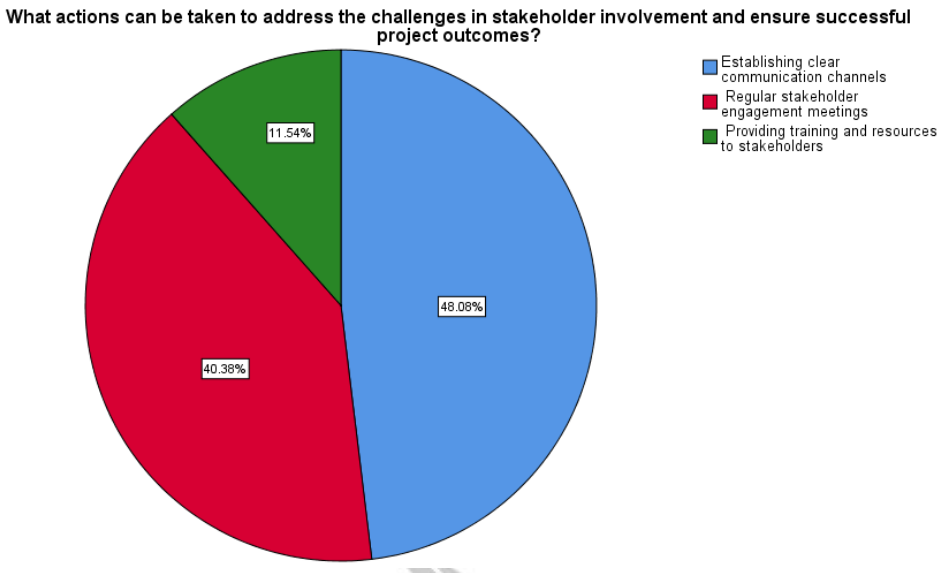

Figure 29. Pie Chart

Thematic analysis of Q#26:

Improving stakeholder communication and cooperation involves:

1. Establishing regular communication channels through meetings and progress updates.
2. Emphasizing early stakeholder involvement and identification in the project.
3. Creating a transparent and clear communication plan.
4. Encouraging active engagement and involvement of all stakeholders.
5. Utilizing technology for real-time updates and joint platforms for effective communication.
6. Conducting regular technical meetings to address challenges promptly.
7. Maintaining historical stakeholder data and transparency in decision-making processes.

Involvements of the different stakeholders:

1. How actively are you engaged in the development of the Work Breakdown Structure (WBS) of the project?

How actively are you engaged in the development of the Work Breakdown Structure (WBS) of the project?								
					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
Project Manager	25	1.88	1.130	.226	1.41	2.35	1	5
Contractor	5	2.00	1.000	.447	.76	3.24	1	3
Engineer	16	1.88	1.147	.287	1.26	2.49	1	5

Owner	6	1.83	.753	.307	1.04	2.62	1	3
Total	52	1.88	1.060	.147	1.59	2.18	1	5

Table 30. Descriptives

How actively are you engaged in the development of the Work Breakdown Structure (WBS) of the project?					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.084	3	.028	.024	.995
Within Groups	57.223	48	1.192		
Total	57.308	51			

Table 31. ANOVA

Dependent Variable: How actively are you engaged in the development of the Work Breakdown Structure (WBS) of the project?						
Tukey HSD						
(I) What is your role in the construction project? (Please select one)	(J) What is your role in the construction project? (Please select one)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Project Manager	Contractor	-.120	.535	.996	-1.54	1.30
	Engineer	.005	.350	1.000	-.93	.94
	Owner	.047	.496	1.000	-1.27	1.37
Contractor	Project Manager	.120	.535	.996	-1.30	1.54
	Engineer	.125	.559	.996	-1.36	1.61
	Owner	.167	.661	.994	-1.59	1.93
Engineer	Project Manager	-.005	.350	1.000	-.94	.93
	Contractor	-.125	.559	.996	-1.61	1.36
	Owner	.042	.523	1.000	-1.35	1.43
Owner	Project Manager	-.047	.496	1.000	-1.37	1.27
	Contractor	-.167	.661	.994	-1.93	1.59
	Engineer	-.042	.523	1.000	-1.43	1.35

Table 32. Multiple Comparisons

The analysis of variance (ANOVA) conducted to assess the levels of engagement in developing the Work Breakdown Structure (WBS) among different roles in the construction project indicated no statistically significant differences between the groups (Project Manager, Contractor,

Engineer, and Owner) regarding their involvement in WBS development (F(3, 48) = 0.024, p = .995). Post-hoc Tukey's HSD comparisons also affirmed the absence of significant differences between any pair of roles, highlighting similar engagement levels across all roles in the WBS development process (all p > .05).

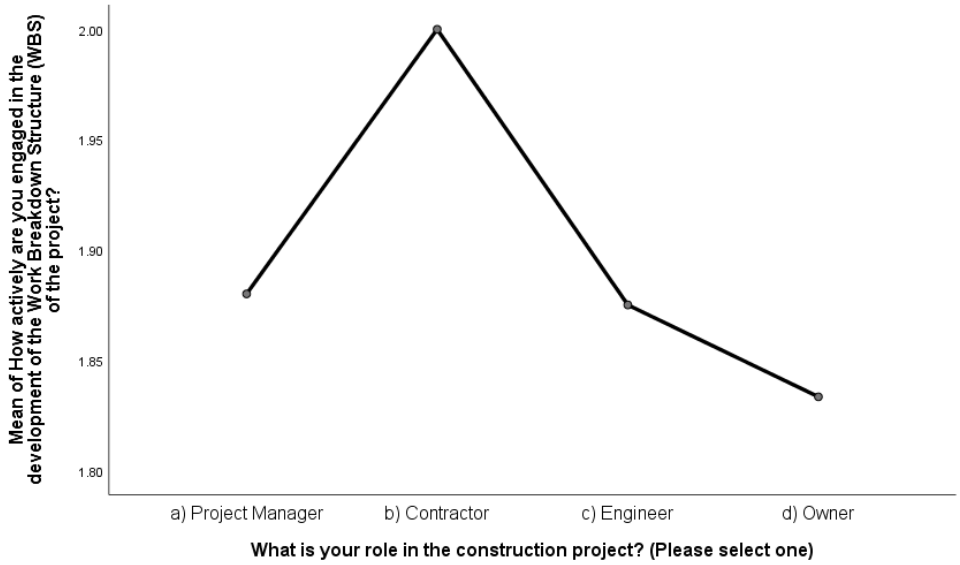

Figure 30. Line Graph

2. Have you actively participated in the requirement analysis phase of the project?

Have you actively participated in the requirement analysis phase of the project?								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
a) Project Manager	25	1.84	.374	.075	1.69	1.99	1	2
b) Contractor	5	1.60	.548	.245	.92	2.28	1	2
c) Engineer	16	1.88	.342	.085	1.69	2.06	1	2
d) Owner	6	2.00	.000	.000	2.00	2.00	2	2
Total	52	1.85	.364	.051	1.74	1.95	1	2

Table 33. Descriptives

Have you actively participated in the requirement analysis phase of the project?					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.459	3	.153	1.164	.333

Within Groups	6.310	48	.131		
Total	6.769	51			

Table 34. ANOVA

Dependent Variable: Have you actively participated in the requirement analysis phase of the project?						
Tukey HSD						
(I) What is your role in the construction project? (Please select one)	(J) What is your role in the construction project? (Please select one)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
a) Project Manager	b) Contractor	.240	.178	.536	-.23	.71
	c) Engineer	-.035	.116	.990	-.34	.27
	d) Owner	-.160	.165	.767	-.60	.28
b) Contractor	a) Project Manager	-.240	.178	.536	-.71	.23
	c) Engineer	-.275	.186	.457	-.77	.22
	d) Owner	-.400	.220	.276	-.98	.18
c) Engineer	a) Project Manager	.035	.116	.990	-.27	.34
	b) Contractor	.275	.186	.457	-.22	.77
	d) Owner	-.125	.174	.889	-.59	.34
d) Owner	a) Project Manager	.160	.165	.767	-.28	.60
	b) Contractor	.400	.220	.276	-.18	.98
	c) Engineer	.125	.174	.889	-.34	.59

Table 35. Multiple Comparisons

The analysis revealed no significant differences ($F(3, 48) = 1.164$, $p = .333$) among the roles (Project Manager, Contractor, Engineer, and Owner) regarding their active participation in the requirement analysis phase. Post-hoc Tukey's HSD comparisons confirmed no significant distinctions between any pairs of roles (all $p > .05$), indicating relatively similar levels of involvement across all roles in the requirement analysis phase of the construction project.

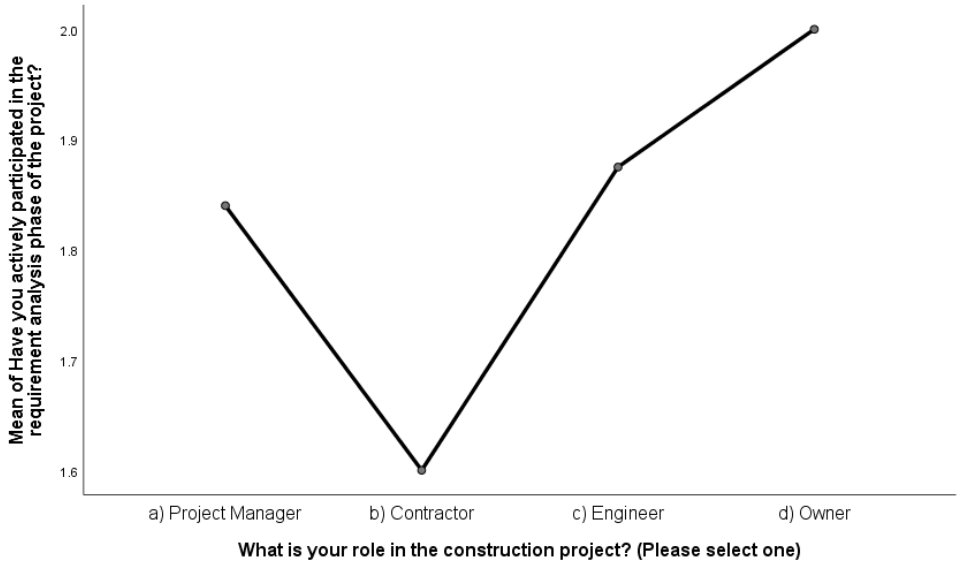

Figure 31. Line Graph

3. How involved are you in the process of determining the scope of the construction project?

How involved are you in the process of determining the scope of the construction project?								
					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
a) Project Manager	25	1.44	.712	.142	1.15	1.73	1	3
b) Contractor	5	2.60	1.517	.678	.72	4.48	1	4
c) Engineer	16	1.75	.931	.233	1.25	2.25	1	4
d) Owner	6	1.50	.548	.224	.93	2.07	1	2
Total	52	1.65	.905	.125	1.40	1.91	1	4
Table 36. Descriptives								

How involved are you in the process of determining the scope of the construction project?					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.909	3	1.970	2.637	.060
Within Groups	35.860	48	.747		
Total	41.769	51			
Table 37. ANOVA					

Dependent Variable: How involved are you in the process of determining the scope of the construction project?						
Tukey HSD						
(I) What is your role in the construction project? (Please select one)	(J) What is your role in the construction project? (Please select one)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
a) Project Manager	b) Contractor	-1.160*	.423	.041	-2.29	-.03
	c) Engineer	-.310	.277	.679	-1.05	.43
	d) Owner	-.060	.393	.999	-1.11	.99
b) Contractor	a) Project Manager	1.160*	.423	.041	.03	2.29
	c) Engineer	.850	.443	.234	-.33	2.03
	d) Owner	1.100	.523	.167	-.29	2.49
c) Engineer	a) Project Manager	.310	.277	.679	-.43	1.05
	b) Contractor	-.850	.443	.234	-2.03	.33
	d) Owner	.250	.414	.930	-.85	1.35
d) Owner	a) Project Manager	.060	.393	.999	-.99	1.11
	b) Contractor	-1.100	.523	.167	-2.49	.29
	c) Engineer	-.250	.414	.930	-1.35	.85
*. The mean difference is significant at the 0.05 level.						
Table 38. Multiple Comparisons						

The ANOVA results showed a marginally significant difference ($F(3, 48) = 2.637$, $p = .060$) in involvement among different roles (Project Manager, Contractor, Engineer, and Owner) in determining the construction project's scope. Post-hoc Tukey's HSD comparisons indicated a significant difference in involvement between Project Managers and Contractors (mean difference = -1.160, $p = .041$), implying higher engagement by Contractors compared to Project Managers in this aspect. Other pairwise comparisons were not statistically significant ($p > .05$).

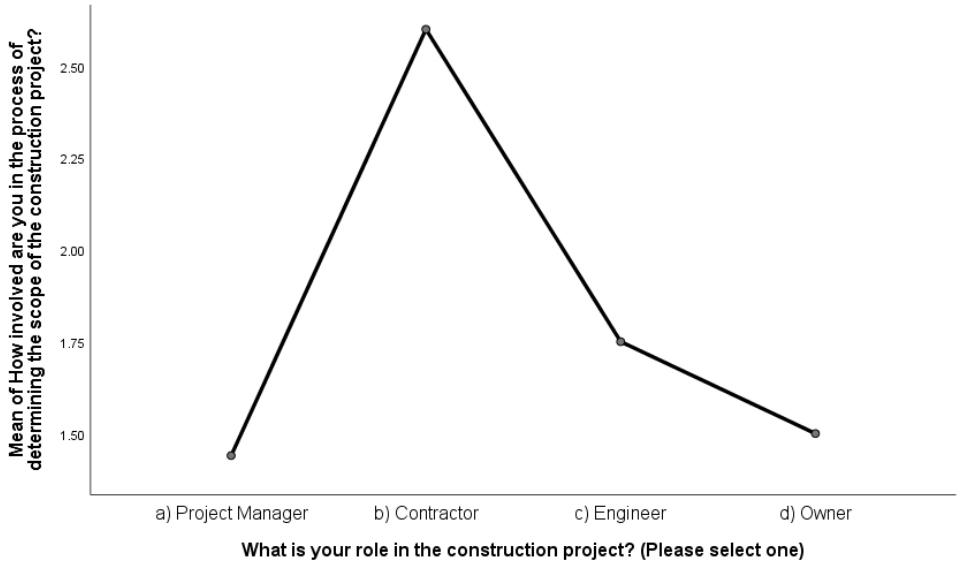

Figure 32. Line Chart

4. How frequently do you attend scope management meetings?

How frequently do you attend scope management meetings?								
					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
a) Project Manager	25	1.40	.577	.115	1.16	1.64	1	3
b) Contractor	5	2.00	1.225	.548	.48	3.52	1	4
c) Engineer	16	1.75	.856	.214	1.29	2.21	1	3
d) Owner	6	1.00	.000	.000	1.00	1.00	1	1
Total	52	1.52	.754	.105	1.31	1.73	1	4

Table 39. Descriptives

How frequently do you attend scope management meetings?					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.981	3	1.327	2.548	.067
Within Groups	25.000	48	.521		
Total	28.981	51			

Table 40. ANOVA

Dependent Variable: How frequently do you attend scope management meetings?
Tukey HSD

(I) What is your role in the construction project? (Please select one)	(J) What is your role in the construction project? (Please select one)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
a) Project Manager	b) Contractor	-.600	.354	.336	-1.54	.34
	c) Engineer	-.350	.231	.437	-.96	.26
	d) Owner	.400	.328	.618	-.47	1.27
b) Contractor	a) Project Manager	.600	.354	.336	-.34	1.54
	c) Engineer	.250	.370	.906	-.73	1.23
	d) Owner	1.000	.437	.115	-.16	2.16
c) Engineer	a) Project Manager	.350	.231	.437	-.26	.96
	b) Contractor	-.250	.370	.906	-1.23	.73
	d) Owner	.750	.345	.146	-.17	1.67
d) Owner	a) Project Manager	-.400	.328	.618	-1.27	.47
	b) Contractor	-1.000	.437	.115	-2.16	.16
	c) Engineer	-.750	.345	.146	-1.67	.17

Table 41. Multiple Comparisons

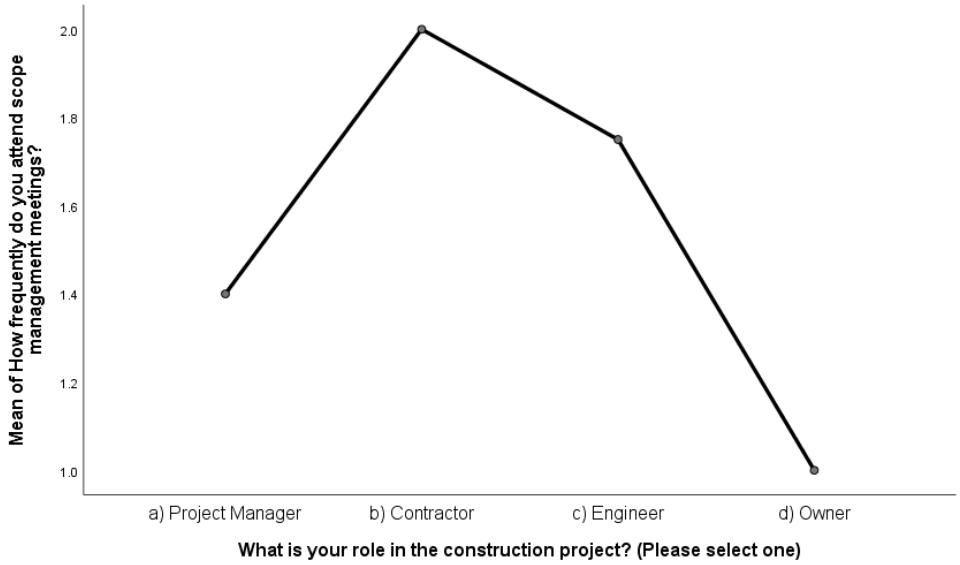

Figure 33. Line Chart