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[The Impact of Total Quality Management Practices on Project Contract with the Mediating Role of Transformational Leadership and the Moderating Role of Job Satisfaction]

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ABSTRACT

The current study's primary purpose is to explore the effects of total quality management practices on project contracts with transformational leadership as a mediator and job satisfaction as a moderator. It is necessary to know how Total Quality Management (TQM) practices and transformational leadership are applied to enhance the effectiveness of the project contracts. Moreover, job satisfaction can also reflect in the efficacy of project contracts. It is, therefore, essential to find out how job satisfaction influences the relationship between Quality management and project contracts. The research used a quantitative research methodology, and survey data were obtained from employees of project-based organisations. The data was analysed through correlation, reliability analysis and regression analysis to test the hypothesised relationships. This study's results showed a positive and significant relationship between TQM and project contract. Moreover, it showed transformational leadership mediates relationship between TQM and project contract. The study has also discovered the job satisfaction moderates the relationship between TQM and project contract. The findings of this study offered insights on TQM practices, transformational leadership and job satisfaction in enhancing project contract. In addition, it gave the guide to the organisations on how to enhance the project contract. It also further presented practical implications to organisations on the ways of enhancing the quality of the project by using the TQM practices and transformational leadership styles. Besides, the study emphasised the role of job satisfaction in promoting the effect of TQM practises in project contracts.

Keywords: Total Quality Management (TQM), Project Contracts, Transformational Leadership Style

Introduction

Total quality management (TQM) encourages efficiency and effectiveness in business operations by bringing down the process to a simpler level, cutting down costs, as well as increasing service delivery (Ahmad, 2022). In project based environments especially when dealing with contracts TQM is critical in terms of aligning objectives between the customer and supplier and ensuring deliverables are of agreed standards (Kalogiannidis, 2021). Yet, TQM may not guarantee successful project contract outcomes. Among the factors of the organization such as the leadership and the level of satisfaction of employees, play a key role in ensuring that successful implementation of TQM practices is established.

Transformational leadership has been identified as an important factor in adoption of TQM. It encourages and motivates the employees, encourages innovation and stimulates problem-solving (Bosak et al., 2021). A transformational behaviour exhibited by leaders helps build a quality initiative and continuous improvement environment. Job satisfaction also is an important aspect besides leadership. It indicates the level to which employees are comfortable in jobs and work place. The high level of job satisfaction may result in higher employee engagement, better performance and commitment to quality (Riyanto et al., 2021:Ali & Anwar, 2021).

Although TQM has an increasing body of literature, there is very little literature on how transformational leadership mediates the relationship between TQM practices and project contract performance. In addition, the moderating effect of job satisfaction in this relationship is not well understood. The current research has largely examined the variables in isolation without considering the complex interrelationships that can affect outcomes of a project. This gap reveals the necessity to investigate these relationships in an integrated framework, so as to better understand how leadership and employee attitudes influence the effectiveness of quality management in project environments.

Past studies have revealed that TQM increases organisational performance in terms of operational efficiency, waste reduction and customer satisfaction (Wandie & Muathe, 2022; Sá et al., 2022; Bazrkar et al., 2022). Other scholars hold that leadership is of great importance in the success of TQM because it encourages employee participation and the development of a quality culture (Yadeta et al., 2022). In the same way, job satisfaction is associated with better performance and greater acceptance of quality initiatives (Dodanwala & San Santoso, 2021). However, the ways these factors interact in order to affect project contract success are underexplored.

This study aims to investigate the impact of TQM practices on project contracts, highlighting the mediating influence of transformational leadership and the moderating effect of job satisfaction. It aims to address the subsequent research question: To what extent does the impact of Total Quality Management on project contracts rely on transformational leadership and employee job satisfaction? The study elucidates the influence of internal organisational dynamics on project success through the analysis of these relationships.

The results of this research are to be of both theoretical and practical significance. Theoretically, it adds to the literature by merging leadership and job satisfaction to the TQM-project contract linkage. In practise, it provides a guide to project managers and organisational leaders on how to align leadership styles and employee engagement strategies with quality management goals. This may contribute to enhancing outcomes of projects and to facilitating development of more efficient training and management programs.

Literature Review

Transformational leadership and work environment are well documented as contributing to project success. Transformational leaders' motivation, inspiration, and strategic challenges positively affect the outcomes of projects (Zhao et al., 2021). However, this influence depends on the work environment, positive ones intensify the effects of leadership whereas negative ones dilute it (Rezvani et al., 2016). Total Quality Management (TQM) is a systematic approach that enhances organisational performance through better service quality and greater employee involvement. TQM is from design to delivery, emphasising on customer satisfaction and improvement (Abbas, 2020). Principal pillars are defect prevention, feedback and process optimisation. TQM helps organisations to achieve the customer expectation, especially in the current competitive world.

Project contracts as binding contracts are very important in the implementation of a project. They set roles, responsibilities, deliverables, timelines, and expectations for performance, (Jong et al., 2019; Sjödin et al., 2020). Such contracts can facilitate the implementation of TQM because all stakeholders will be in concurrence with project goals. TQM-based contracts should specify strategies of performance monitoring and cover quality gaps to ensure that the service standards are maintained (Antony et al., 2021). The practices that are likely to bring project success include the adoption of frameworks such as Agile that focus on iterative development and lifecycle adaptability (Bergmann & Karwowski, 2018). TQM is emphasised as a key practice for facilitating positive results with the help of transformational leadership that will align the team and motivate them (De Wilde, 2019). TQM encourages a customer centred, process-driven culture with a constant feedback loop and organisational learning.

Good project management starts with the definition of scope, with milestones and deliverables and with the installation of systems of risk management and assessment (Ali & Johl, 2022). Regular measurement against defined targets enable one to determine the areas of improvement and have timely adjustments. TQM-driven project contracts also help in accurate service provision and goal achievement because it contains measurable and achievable goals in set timelines (Podgórska & Pichlak, 2019). Task identification and description of evaluation strategies enable tracking of progress and correction measures. Milestone reviews guarantee that progress is aligned with expectation and that issues are addressed in time (Zhang et al., 2021). TQM demands for careful planning and stakeholder coordination to increase satisfaction of customers and ensure mutual benefits from project success. This organized approach enables organisations to track progress, realign strategies and align them with objectives. Critically, TQM implementation also affects employee job satisfaction through the development of quality-orientated culture (Podgórska & Pichlak, 2019)Studies indicate a high relation between TQM and employee satisfaction, because of quality oriented practices like training, incentives, audits, feedback mechanisms and recognition systems (Zhang et al., 2021 Iriarte & Bayona, 2020). In addition to improving the quality of service, these practices help create a more active and motivated workforce.

The construction industry is naturally complex, with numerous stakeholders and complex processes that tend to bring up some management problems. Inefficiencies such as material wastage, delayed delivery, and non-value-adding activities that occur in the supply chain cause low productivity and cost overruns according to Babalola, Ibem, and Ezema (2019). These problems are common, studies indicate that delays impact almost 70% of projects, cost overruns can vary from 14% of contracts and overall waste might represent around 10% of the total resource consumption of a project. In turn, Total Quality Management (TQM) has been identified as a useful structure for increasing project efficiency. It enables the detection of problems, the application of innovative solutions, ongoing performance evaluation, and bettering project results.

TQM is very important in the management of design and build (D&B) projects whereby contractors are given freedom in designing the projects. Although this flexibility can help to make construction timelines more streamlined, it can also limit the client's involvement in visibility and control of design quality which makes evaluation challenging

(Lee, Jallan, & Ashuri, 2020; Park & Kwak, 2016). These challenges emphasise the need to have proactive quality roles assigned to D&B teams for better quality results. Nevertheless, Othman, Ghani and Choon (2019) point out that a major concern problem facing current quality management systems is that they are poorly structured, and in most cases, contractors lack motivation to prioritise improvement of quality in such projects.

Project contracts with TQM principles facilitate timely delivery and service of high quality. According to Podgórska & Pichlak (2019), contracts are legal agreements between involved parties; they dictate the manner in which projects are completed, yet they ensure that all parties of interest are served. Zhang et al. (2021) underline the need of integrating approaches of evaluating into contracts in order to track down progress, detect weak points that require improvement and take corrective action. Continual milestone review ensures that potential problems are identified and addressed early ensuring that the overall project is a success.

Besides, TQM has also been associated with job satisfaction. Podgórska and Pichlak (2019) define TQM as a strategic, structured process of policy development, operation deployment, monitoring and fine-tuning to achieve organisational objectives. Zhang et al. (2021) note the good effect that TQM practices have on employee morale and in the workplace in general. Iriarte and Bayona (2020) back this up by naming TQM factors like training of the employees, incentive systems, regular audits, and customer feedback and quality efforts recognition as part of a more motivated workforce. Combined, these practices do not only enhance the project outcomes but also ensure more employee engagement and satisfaction. From above discussion following hypothesis has been derived:

H1: TQM practices positively and significantly influence project contract

Studies have always pointed to a very strong correlation between employee job satisfaction and TQM practises. According to Iriarte and Bayona (2020), job satisfaction levels of employees determine the likelihood of them improving TQM practises in projects leading to timely delivery and improved results. They also highlighted the role that staff training plays as a very important aspect in enhancing effectiveness of TQM. In a similar way, Willumsen et al. (2019) agreed with the perspective that TQM and job satisfaction are related stating that a culture of reward, appreciation, teamwork, and strong organisational values are the enablers of this relationship. They also noted that initiatives like employee training, incentive scheme, regular auditing, active feedback mechanisms etc. are responsible for job satisfaction and are responsible for driving TQM in project settings.

Demirel et al. (2019) also reported a positive relationship between TQM practices and that of job satisfaction, which is to say the more satisfied the employees are the more they are likely to use the TQM tools. This means that the companies should incorporate such practises to ensure a more engaged workforce and a more productive one. Pellerin and Perrier (2019) made the importance of TQM as a popularised management approach in different sector more of a priority by highlighting its effectiveness in providing quality services and satisfying clients. According to Jajuli et al. (2022) there is a strong positive correlation between TQM and job satisfaction which

strengthened this relationship.

Ahmed and Idris (2020) claimed that TQM develops an environment that is supportive to the employees feeling valued and therefore higher satisfaction results. Oluwafemi and Okon (2018) also indicated that TQM intitatives like recognition and incentive go a long way in making the performance and satisfaction of the employee increase. However, Sader et al. (2019) warned against the fact that the success of TQM initiatives relies on their successful implementation and organisational culture. They reached a conclusion that it is necessary to develop a culture of trust and respect in which TQM can bring the full benefits in the form of employee satisfaction. From above discussion following hypothesis has been derived:

H2: There is a significant impact of job satisfaction as moderator on the relationship between Total Quality Management Practices and Project Contract

The impact of transformational leadership in the implementation of Total Quality Management (TQM) has recently been broadly studied, especially in educational and industrial environments. Sawaean (2020) established empirical evidence for the positive effect of transformational leadership traits on TQM practises in higher education. Similarly, Odeh (2021) brought the connection between transformational leadership and better educational outcomes into the limelight and its compatibility with key TQM principles, including strategic management, stakeholder focus and workforce development. Kumar and Sharma (2017) analysed several management problem-solving strategies and found that different CEO personalities critically influence innovation and growth in TQM strategies. A later study by Kumar & Sharma (2018) identified various leadership styles- transformational, servant, adaptive, logical and kinaesthetic; which were associated with effective TQM practises, especially in Indian manufacturing firms.

Anuntarumporn (2022) reinforced this connexion by showing that good leadership skills are essential for effective TQM implementation in the Thai manufacturing industry. Dahlgaard-Park (2018) also based on 618 Dutch managers data pointed out that transformational leadership and active managerial involvement were essential determinants of successful control systems and TQM implementation. Chen (2020) created a conceptual model that combines the transformational leadership traits of innovation and dedication, and teamwork with TQM practises, which suggests that this leadership encourages employee loyalty and increases policy implementation.

According to Arifin (2019), aspects of performance appraisal especially cognitive engagement and team management have a great effect on service quality in a TQM framework. Bouranta (2020) compared US and Chinese firms and found differences in culture as concerns the influence of transformational and transactional leadership styles on TQM. Transformational leadership benefited TQM in US firms, but had a more complex relationship in Chinese organisations, indicating that national culture influences optimal leadership style for TQM. In general, the literature reveals that transformational leadership is an important enabler of success with TQM, but that its effectiveness can be moderated by cultural and organisational context. From above discussion following hypothesis has been derived:

H3: There is a significant impact of transformational leadership as mediator on the relationship between Total Quality Management Practices and Project Contract.

After reviewing above literature review this study makes the conceptual framework. The importance of TQM practises in project execution has been stressed in the literature. In order to assess the effects of total quality management methods on project contracts, the conceptual framework for the study was created, with job satisfaction acting as a moderator and transformational leadership as a mediator.

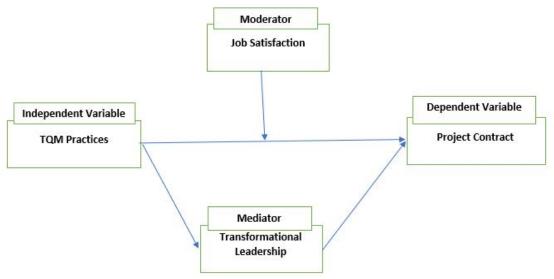


Figure 1: Conceptual Framework

Methodology

Building on this philosophical stance, the study employs a deductive approach, which begins with theoretical assumptions and develops hypotheses that are subsequently tested through data analysis. The deductive method allows for the structured exploration of how TQM practices influence project outcomes and how transformational leadership and job satisfaction operate as mediating and moderating variables, respectively. This approach enhances the research's ability to produce predictive insights and empirically supported conclusions, making it particularly valuable for managerial applications and academic contributions.

To operationalize the research objectives, a quantitative design was implemented. Quantitative methods enable systematic measurement and statistical analysis of the variables under investigation. This design allows for the application of tools such as multiple regression analysis, which is essential for assessing the mediating effect of transformational leadership between TQM practices and project contracts, as well as determining the moderating effect of job satisfaction. The use of quantitative methods provides a reliable foundation for establishing the strength and direction of these relationships, contributing to a deeper understanding of how internal organizational practices influence project performance.

Primary data was collected through a structured questionnaire survey, which is well-suited for gathering standardized responses from a broad participant base. Surveys offer efficiency in data collection and are particularly beneficial for studies aiming to analyse large-scale organizational behaviours. The questionnaire was designed to capture perceptions and practices related to TQM, leadership styles, and job satisfaction, as experienced by employees in the construction sector. Target participants included

project managers, site managers, engineers, and other staff engaged in project execution, providing a comprehensive view of operational dynamics within construction projects.

To reach this population, convenience sampling was used. This non-probability sampling technique was selected for its practicality and speed of implementation. Although it may introduce limitations in terms of representativeness, convenience sampling was appropriate for the exploratory nature of this study and enabled the inclusion of a diverse set of respondents. The final sample consisted of 200 construction professionals, and survey questionnaires were distributed among them to gather the necessary data.

Once data was collected, it was analysed using SPSS software, allowing for robust statistical evaluation. The analytical process included frequency analysis to describe the dataset, reliability analysis to assess internal consistency, descriptive statistics to summarize the responses, and both correlation and regression analyses to explore relationships among variables.

Throughout the research process, strict ethical standards were maintained. Responses were kept confidential and stored securely, with no unauthorized access or disclosure. Data integrity was preserved, and the researcher refrained from altering or fabricating any information. Furthermore, academic integrity was upheld by properly citing all sources and ensuring transparency in the reporting of results.

Result and Discussion

Data collection was made from distinct professionals, who were employed at well-reputed the managers and employees of the construction companies. A total number of 300 questionnaires have been promulgated via several different channels including soft and hard copies, Google forms through emails, in accordance with the participants' requirements. Majority of the participants were chosen via convenient sampling, because of the underlying time restrictions of research since the findings were to be concluded by the researcher.

Table 1: Turnover of the Total Questionnaires

Data Collection	Total	Received	Valid	Invalid	
Phase	350	245	215	35	

It is observed from the table 1 that a total number of 350 questionnaires have been promulgated for the research study. From the total 350 questionnaires, the study received a total of 245 responses, out of which 215 were well-thought-out to be used while the rest 35 were cancelled since for the reason that they were not appropriately answered. In particular, the findings of the data response have been additionally explained within the graphic and diagram form for constructing an easy and clear comprehension.

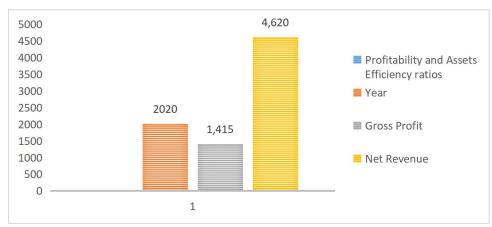


Figure 2 the Turnover of the Total Questionnaires

It can be illustrated from the figure 2 that there was a total of 350 questionnaires that were promulgated to different respondents. Out of the total 350, only 245 responses were received and further only 215 responses were considered to be valid.



Figure 3 Turnover Percentage of Questionnaire

It is examined from the figure 3 that the turnover percentage of the questionnaire or responses is such that there were approximately 70% of the respondents who responded to the questionnaire and only 30% were those who didn't answer.

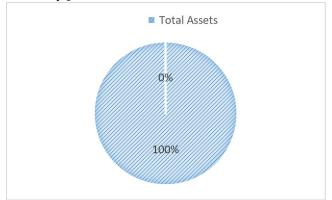


Figure 4 Turnover Percentage of Valid Questionnaire

It is examined from the figure 4 that from the total received reposes, there were about 13% of the responses that were invalid. However, the rest responses of about 87% were considered to be valid. Only the valid responses were used for further study as well as employed for testing different analysis in accordance with the research requirement.

Demographic Analysis

The demographic analysis of this study includes gender, qualification, designation, and experience. As illustrated above the total number of participants of the research study were about 200.

Table 2: Gender of the Respondents

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	125	62.5	62.5	62.5
	Female	75	37.5	37.5	100.0
	Total	200	100.0	100.0	

The above table 2, illustrates the frequency and percentage of gender of the respondents. It is illustrated that there were about 62.5% of the men, implying that the 125 males participated in the questionnaire survey. In addition, it is also observed from the table 4.2 and above figure that there were about 37.5% of the women, implying that only 75 females participated in the questionnaire survey.

Table 3: Qualification of Respondents

Highest Qu	ualification
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		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor	65	32.5	32.5	32.5
	Masters	73	36.5	36.5	69.0
	MS/M.Phil.	38	19.0	19.0	88.0
	PHD	24	12.0	12.0	100.0
	Total	200	100.0	100.0	

The above table 3, illustrates the frequency and percentage of highest qualification of the respondents. It is observed that about 32.5% of the participated respondents were having Bachelor degree, implying that the 65 employees were having Bachelor's degree. In addition, there are about 36.5% of the participated respondents were having Master degree, implying that the 73 employees were having Master's degree. Moreover, there are about 19% of the participated respondents were having M.S or MPhil degree, implying that the 38 employees were having M.S or MPhil's degree. Lastly, there are only 12% of the participated respondents were having PhD degree, implying that the 24 employees were having PhD's degree.

Table 4: Designation of the Respondents

Designation					
		Frequency	Percent	Valid Per	cent Cumulative Percent
Valid	Employee	67	33.5	33.5	33.5
	Supervisor	65	32.5	32.5	66.0
	Project Manager	68	34.0	34.0	100.0
	Total	200	100.0	100.0	

The above table 4, demonstrates the frequency and percentage of the respondents'

designation. It is observed that about 33.5% of the participated respondents were employee, implying that the 67 respondents were employees. Additionally, there are about 33.5% of the participated respondents who have a designation of supervisor, implying that the 65 employees were supervisors. Furthermore, there are about 34% or a total of 68 participated respondents who have a designation of project manager.

Table 5: Age of the Respondents

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20 - 28	57	28.5	28.5	28.5
	29 - 36	63	31.5	31.5	60.0
	37 - 44	42	21.0	21.0	81.0
	45 - 52	27	13.5	13.5	94.5
	above 52	11	5.5	5.5	100.0
	Total	200	100.0	100.0	

The above table 5, demonstrates the frequency and percentage of the respondents' age. It is observed that about 28.5% or a total of 57 participated respondents were having an age of 20 to 28. Additionally, there are around 31.5% or a total of 63 participated respondents were having an age of 28 to 36. Moreover, there are approximately 21% or a total of 42 participated respondents were having an age of 37 to 44. Furthermore, there are about 13.5% or a total of 27 participated respondents were having an age of 45 to 52. Lastly, there are about only 5.5% or a total of 11 participated respondents who were having an age of 52 and above.

Table 6: Descriptive Statistics

	Mean	Std. Deviation	
TQM	3.883	0.332	
Transformation Leadership	3.828	0.606	
Job Satisfaction	3.865	0.343	
Project Contract	3.980	0.499	

The above table 6 demonstrates the descriptive statistics including mean and standard deviations of the respondents. It is observed from the table that the mean value of TQM has the mean value of 3.88 with standard deviation of 0.33. It shows that the average response for the TQM is obtained to be Agree. The second variable, Mean Transformation Leadership has the mean value of 3.828 with standard deviation of 0.606. It shows that the average response for the Transformation Leadership is inclined toward agree. The third variable, Mean Job Satisfaction has the mean value of 3.865 which inclined toward agree. Lastly, the variable mean Project Contract has the value of mean as 3.9 which inclined toward agree.

Validity and Reliability Test

Cronbach's alpha

Cronbach's alpha has been referred as the measure of examining the internal consistency of the statistical data (Ravinder and Saraswathi, 2020). It is the most frequently employed tool for ascertaining the extent to which the set of items are closely linked with the group. Typically, Cronbach's alpha is regarded as the measure of scale reliability and thus, is utilised when a questionnaire or survey has several different Likert questions

(Schrepp, 2020). The value of about 0.7 is often used as the Cronbach's alpha benchmark value. This implies that at 0.7 and higher level, the data is likely to be adequately consistent, signifying that the measure is reliable (Hayat et al., 2021). Usually, the values close to 0.7 are likely to be marginally adequate; however, not ideal. For the examination of the situation, this study has formulated a 67-item questionnaire including impact of TQM practices (i.e., customer focus, internal/external cooperation, continuous improvement, employee fulfilment, learning, and process management), mediating impact of transformational leadership (consideration and initiation), with moderating role job satisfaction.

Table 7: Validity Test

Case Proces	Case Processing Summary				
		N	%	_	
Cases	Valid	200	100.0		
	Excluded	0	.0		
	Total	200	100.0		

In the current research each question regarding Total quality management, transformational leadership, and project contract were based on 5-point Likert scale 1 "strongly disagree" to 5 "strongly agree", and questions regarding job satisfaction were based on 5-point scale 1 "Very Satisfied" to 5 "Very Dissatisfied". However, to evaluate the validity of the questions validity test was performed as shown in above table 7. It revealed that total number of observations are 200 that are correctly measured, and valid for analysis.

Reliability Analysis

This study has performed using SPSS. In particular, the findings of all the selected variables analysis are presented below, both collectively and separately. As the value of Cronbach's Alpha for all the concerned variables are higher than 0.7, this implies the validity and reliability of the questionnaire for its variable (Abu-Bader, 2021).

Table 8: Reliability Test (combined all Items)

Cronbach's Alpha	N of Items
.913	67

From the above table 8, it can be seen that value of Cronbach's Alpha value for all 67 items that were included in questionnaire of different variables was estimated to be .913 which is greater than 0.70. Thus, it indicated that all items of the questionnaire are extremely valid and reliable for statistical analysis

Table 9: Reliability Test (Individual Item)

Variables	Cronbach's Alpha	N of Items
Total Quality Management	.819	25
Transformation Leadership	0.88	8
Job Satisfaction	0.830	21
Project Contract	0.920	13

Further, above table 9 also shows Cronbach's alpha value of each variable included in the current survey questionnaire. It can be seen that Cronbach's value of all variables are found to be greater than 0.7 which suggested that all variables constructed in the current

survey are found to be extremely reliable and valid for analysis.

Correlation Analysis

Correlation analysis has been a well-known tool of statistics that assists in examining the extent to which two variables are linked with one another (Paresashvili et al., 2021). The value closer to +1 or -1 indicate strong correlation, value in between 0.3 to 0.6 shows moderate while value closer to 0 shows weak correlation (Mat Roni and Djajadikerta, 2021).

Table 10: Correlation Analysis

	[TQM]	[TL]	[JS]	[PC]
Total Quality Management	1	0.091	·359 **	.500**
Transformational Leadership	0.091	1	.550**	0.06
Job Satisfaction	·359 **	.550**	1	·397 **
Project Contract	.500**	0.06	·397 **	1
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^{**.} Correlation is significant at the 0.01 level (2-tailed).

The above table 10 has illustrated the findings of the correlation analysis. It is observed that all the variables that have (**) are considered to be significant at the 0.01 significance level. In particular, it is observed that the variable TQM and transformational leadership tends to have the correlation coefficient value as 0.091 showing weak but positive relationship between the variables. Furthermore, TQM and job satisfaction has correlation coefficient of 0.359 showing moderate and significant relationship. TQM and project contract has correlation coefficient of .500 reflecting moderate and significant relationship. Thus, it is observed that the variables TQM holds a substantial link with transformational leadership, Job Satisfaction, and Project Contract.

Regression Analysis

Regression analysis is a technique of statistics that assists in identification of the associations amongst the under observed variables instigating within the data (Sarstedt and Mooi, 2019). Within the regression analysis, it is observed that one variable is likely to be the dependent one and other ones are the explanatory or independent ones. Specifically, the coefficient of regression is employed for estimating the functional association at average amongst the variables and also estimates the degree of a variable's dependence upon another(s) (Astivia and Zumbo, 2019) If the value of the regression coefficient is positive then it implies that if there is an increase in the independent variable's value then the dependent variable' mean is also likely to be increased. Whereas, if the value of the regression coefficient is negative then it implies that if there is an increase in the independent variable's value then the dependent variable's value then the dependent variable' mean is likely to be decrease (Hu, 2020).

However, following equation has been used to estimate the impact of TBQ on project contract:

 $Y = \alpha + \beta X....$ (Equation 1)

'Y' is the dependent variable (project contract)

'X' is the independent variable (Total quality management)

'α' is intercept

β is coefficient value

Thus, the following regression equation is likely to be used for the regression analysis;

Project Contract = $\alpha_0 + \beta_1 TQM$ Practices + ϵ_0

Table 11: Impact of TQM on Project Contract

	<u> </u>	,		
	Coeff	SE	Т	Р
Constant	1.061***	0.360	2.943	0.004
TQM	0.752***	0.092	8.130	0.000
R-Squared	0.50			
Sig-Value	0.000			

From the above table 11 of model summary, the value of R-square has been used to evaluate the changes in dependent variable due to changes in independent variable. It is noteworthy that value of R-square is found to be 0.50 which implies that 50% changes in Project contract will result from a change in total quality management.

The above table represents ANOVA test that are used for the significance and validity of the model using P value. However, it can be seen that sig value in above table is found to be less than threshold of 0.05 which indicated that above model is valid and significant for analysis. Furthermore, from the above table coefficient and sig value have been used to analyse the influence of TQM on project contract. It can be seen that coefficient value of TQM is found to be 0.752, and P value is 0.000 < 0.05. This connection between TQM and Project contract can also be explained through using a linear regression equation, as shown below.

Y= 1.061+ 0.75X

Thus, above table shows that there is significant and positive influence of TQM on project contract. Therefore Hypothesis "H1" formulated in chapter 2 has been found to be correct.

Moderation Analysis

Moderation analysis is such a technique of statistics that is employed for analysing whether the implications of an explanatory variable upon the explained one is likely to be similar across distinct levels of moderator (i.e., other independent variable) (Montoya, 2019). More precisely, the major emphasis is upon the significance of interaction term, while making interpretation of the findings of a moderation analysis. When the value of the interaction term has a significant impact upon the endogenous construct then it is implied that the moderator variable induces a substantial and moderating impact upon the underlying association amongst the dependent and independent variables (Memon et al., 2019).

The estimated regression equation can be written as follows:

PC = 1.547 + 0.272 (TQM) + 0.092 (TQM*JS)..... (Equation 2)

Table 12: Moderating Role of Job Satisfaction

	Coeff	SE	T	P
Constant	1.547	0.371	4.166	0.000
TQM	0.272*	0.155	1.758	0.08
Job satisfaction* TQM	.092***	0.024	3.807	0.000
R-Squared	0.54			
Sig-Value	0.000			

From the above table 12, it can be seen that the value of R-square is found to be 0.54 which implies that 54% changes in Project contract will result from a change in total

quality management. Thus, it revealed that there is only a minor change in the value of R-square with moderator. Furthermore, it can be seen that sig value is estimated to be 0.000 < 0.05 which indicated that above model is valid and significant for analysis.

From the above table 4.12, it can be seen that coefficient value of TQM is found to be 0.272 which implies that total quality management has a positive influence on project contract. Moreover, coefficient value of TQM with moderating effect of job satisfaction is also found to be positive which suggested that Total quality management moderating with job satisfaction has a positive influence on job contract. Furthermore, sig value of both variables are found to be 0.000 < 0.01 which implies that null hypothesis have been rejected, and alternative hypotheses are correct.

Mediation Analysis

Mediation analysis is the technique of statistics that measures the degree to which the variables take part within the transmission of variation from a basis to its implications (Nguyen et al., 2021). In simple words, the analysis examines the implications of independent variable on the dependent one, which goes through a mediator variable (M). When there exists a mediation effect, then it implies that the implications of independent variable on the dependent one would fade (at least weaken) in case the mediator variable (M) is contained within the regression (Rijnhart et al., 2019). However, when the implications of independent variable on the dependent entirely disappears then it implies that there is full mediation or the mediator variable (M) completely mediates most independent and dependent variable.

Table 13: Mediating Role of Transformational Leadershi	ıble 13:	Mediating Role of Transformational Leadersh
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			Confiden Interval			
	Direct	Indirect	Upper	Lower	T-	
	Effect	Effect	Bound	Bound	Statistics	Conclusion
TQM>Transformational						
leadership>Project ontract	0.7482	0.0020	0.931	0.564	8.03	Mediation

In table 4.13 mediation analysis value of coefficient has been used to analyse the direct and indirect influence of independent variable on dependent variable. However, referring to the direct effect, it can be seen that TQM has a positive and significant influence on project contract as B = 0.748 and P = 0.000 < 0.05. Further, while referring to the indirect effect, it is pertinent to bear in mind that if o lies in the limit of BOOT LLCI and ULCI it suggested that mediation does not exist (Alfons, Ateş and Groenen, 2022). Hence, it can be seen that zero does not lies in between the bootstrapping LLCI and ULCI values. Which implies that transformation leadership mediate the relationship between TQM and project contract.

Table 14: Summary of all Hypotheses

Serial #	Hypothesis	Status
H1	TQM practices positively and significantly influence project contract	Accepted

There is a significant impact of job satisfaction as moderator on the relationship between Total Quality Accepted Management Practices and Project Contract.

There is a significant impact of transformational leadership as mediator on the relationship between Total Accepted Quality Management Practices and Project Contract.

The operational model below represents the moderating relationship and mediation relationship between variables.

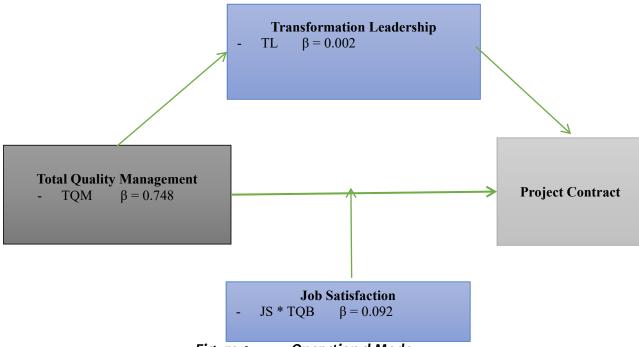


Figure 4: Operational Mode

The operational model illustrates the moderating and mediating relationships among the variables. It shows that job satisfaction moderates the relationship between the dependent variable, Total Quality Management (TQM), and the independent variable, project contract. This means that when job satisfaction is amplified in combination with TQM there is a higher probability of implementing a successful project contract. Furthermore, the model shows that transformational leadership mediates the relationship between TQM and project contract, implying that the existence of transformational leadership contributes to the successful translation of TQM practises into project contract delivery.

The first aim of this research is to determine the effect of Total Quality Management practises on project contracts. The findings imply that project management procedures help enhance overall organisational performance and service quality in the application of TQM. Total Quality Management entails a range of organisational functions from developing and designing products up to the desired goal of increasing customer satisfaction and employee motivation. According to Abbas (2020), TQM enhances the quality of outputs especially through raising the level of work produced by employees. TQM focuses on prevention rather than inspection and is designed to minimise waste,

remove defects and improve process performance constantly. On the other hand, therefore, project contracts act as legal contracts between both parties and this will ensure that both parties understand expectations and deliverables, thus achieving a successful project outcome (Sjödin et al., 2020). The regression analysis shows R-value 0.50, which means strong correlation between TQM and project contract success.

Besides, De Wilde (2019) stressed that successful project management practises and leadership strategies are key to project success. From Sjödin et al. (2020), the TQM practises included continuous evaluation of customer needs, feedback mechanism, and resource optimization which collectively led to enhanced project outcomes. A TQM based contract should provide clear strategies, goals and outcomes to avoid confusion for all team members and make them be a part of the project vision (Antony et al., 2021). Such contracts also require, performance monitoring policies, and contingency plans for correcting service quality gaps. In addition resource planning is critical which entails proper identification of staff needs, tools and budget allocation prior to starting development activities. The team should be informed of the project scope at the beginning to set success criteria (Ali & Johl, 2022).

Podgórska and Pichlak (2019) define project contracts as legally binding agreements entered into by two or more parties who are engaged in the completion of a project. TQM has a goal to enhance customer satisfaction by process improvements and the use of quality management standards. Early stages of a project include scope determination, briefing of staff and setting specific objectives. Tasks to be carried out to completion must be identified together with responsible personnel and deadlines. This is followed by research and design and allocation of such resources as technology, staff and finances. The results of this research also highlight the role of risk management in reducing the likelihood of potential problems throughout the life of the project. TQM is an organised way for continuously improving quality by coming up with strategies, implementing them and adjusting methods to achieve organisational goals. Interestingly, TQM practises are related to higher employee job satisfaction. Zhang et al. (2021) emphasize the possible association between TQM and employee satisfaction and discuss the way quality-oriented management practices add to this kind of work environment. In their opinion, Iriarte and Bayona (2020) state that such factors are relevant: staff training into quality processes, incentive systems deployment, frequency of audits, use of customer feedback, and quality performance recognition.

Quantitative results suggest that transformational leadership mediates the relationship between TQM practises and project contracts. Zhang's et al. (2021) and Zhao's et al. (2021) scholarly studies, confirm that TQM can successfully be applied in project settings because of the presence of transformational leaders who promote collaboration and facilitate change. TQM, as a comprehensive approach, involves tools, techniques and practise based on effective leadership. Despite scholars' disagreement on the definition of TQM, most of them concur that organisational leadership plays an important role in facilitating the implementation of TQM. Transformational leadership, therefore, is considered an essential enabler of TQM success. The lack of supportive leadership or transformational characteristics has been named as one of the main reasons for TQM failure (Yadeta et al., 2022). The quality of the leadership has a direct

effect on the TQM results, and leadership style is integral in implementation. In the last few years, transformational leadership has received attention in the context of TQM. This form of leadership encourages individuals to go beyond performance expectation through the display of vision, empathy, intellectual stimulation and personal regard (Willumsen et al., 2019). It fits nicely with the philosophy of TQM, where both employees' involvement and an ongoing improvement process and shared vision for quality are emphasised. The effectiveness of transformational leadership in increasing employee commitment, a pre-requisite for TQM success is evidenced by empirical studies.

TQM is a contract administration management approach to detecting, solving and evaluating issues. It enhances different project stages such as software development, framework design, detailed specifications, construction and hand over. In a construction environment where speed of completion often comes at the expense of quality, TQM ensures quality remains high as a key objective (Rajaratnam, Jayawickrama, and Perera, 2021). Outcomes of high quality are essential to planning, designing and delivering successful projects. Enterprising management practises should be adopted by design and construction firms in order to maintain quality standards. Project contracts that incorporate TQM lead to timely delivery and high quality service. TQM is designed to improve customer satisfaction through systematic process improvement. Project initial stages include project definition and objectives, briefing of staff and the establishment of the clear timeline with milestones and deadlines. These elements facilitate in the control of individual roles and responsibilities in the course of the project. In the same vain, Abbas (2020) also highlighted the fact that transformational leadership mediates the relationship between TQM and project success through effective task management and coordination. Project contracts, according to Jong et al. (2019), offer a template for establishing expectations among all levels of personnel, thereby promoting cohesive performance and support of project aims.

Conclusion and Policy Implications

The goal of this research was to determine the effect of Total Quality Management (TQM) practises on project contract outcome in particular, the mediating role of transformational leadership and the moderating role of job satisfaction. The results show a strong positive relationship between the practise of TQM and performance of project contracts. Specifically, the organisations that are able to effectively use TQM principles (customer focus, continuous improvement, teamwork, employee development), perform better in terms of project performance and profitability.

The study went further to show that transformational leadership acts as the mediator between TQM practises and project contracts. Transformational leaders are very important in creating a quality and innovation oriented culture that improves project results. These leaders assist organisational goals with the employees' values and encourage the staff to a higher performance level and therefore, the positive effect of TQM practises is strengthened. Moreover, it was found that job satisfaction moderates the relationship between TQM practises and performance of project contracts. With a happy workforce, worker engagement, motivation and commitment to the success of projects increase with positive outcomes. Thus, job satisfaction becomes a vital element of TQM initiatives' effectiveness maximisation.

The findings of the study indicate that TQM practises have a significant impact on project contract success, and transformational leadership and job satisfaction are key enablers in the relationship. Organisations are encouraged to promote a TQM culture, encourage transformational leadership and drive employee satisfaction to reap the full benefits of TQM in terms of project performance.

Creating a culture that supports TQM and making managerial personnel understand basic principles and applications to TQM. There is an opportunity for training and development, and there are supportive policies to improve the internal business environment. Using the TQM practises that focus on customer focus, continuous improvement and teamwork, which thus, reflect the organisation's commitment to quality. Implications of the study are significant for theory and practise. For organisations, the adoption of TQM into project management strategies may enormously increase the satisfaction of contracts and overall performance. Organizations should focus on developing an environment that is positive and eliminate key factors that determine employee satisfaction in an effort to effect successful implementation of TQM. Practically, project managers can use these findings as a means of guiding integration of TQM practises and a transformational leadership approach in project teams. This dual focus will help improve outcome of contract, and it will drive long term success of the project.

For the future research, it is suggested to examine the effects of TQM practises in different organisational contexts and draw conclusions with large sample sizes. Longitudinal studies or experimental designs may give stronger evidence of causal relationships between the outcome and the intervention. In addition, the use of qualitative methods like interviews and focus-group discussions may generate deeper insights into the ways in which TQM, leadership, and satisfaction combine in actual projects. Further replication of this research in other contexts would further validate and generalise the findings. Longitudinal studies or designs of experiments might be far more productive in terms of the evidence of the causal relationships. Furthermore, qualitative techniques like interviews of focus groups might provide more rotor blade regarding how TQM, leadership and satisfaction work together in such a real world project. Further validation and generalisation of the findings would be achieved if this research is replicated in other settings

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Appendix A

Section 1	Section 1													
Demographics (Sarantakos, S. (1993))														
Gender: Male F				Female	male									
Highest Qualificat	Highest Inter Qualification:			Bachelors Masters			PhD							
Designation	Designation: Site Sup		te Sup	ervisor		Supervisor		Project Manager		Administration			Other	
Age:	20-2	8		29-36		37-44		45-52		Above		52		
Experienc	:e:	01-	05		06-	10 11-15		5		16-20		Above 20		
Company Name:														
No. Employees:		of	Less	than 50		50-99	100-49	99		500-999	1,000-4	,999	500	o or more

Appendix B

Survey Questionnaire

Please tick the right option.

Sarantakos, S. (1993) and then Adapted with additions including the employee size Question.

Quest						
Sectio	n 2					
	Quality Management (Chen (2020))					
	s a management approach that seeks to optimize the	•	-		_	
produ	cts and services by involving all its members in a contir	nuous	impro	oveme	nt pr	ocess.
I	check the right option according to your understar	_				
1 = Str	ongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree,	5 = S	trong	ly agre	ee	
	Statement	1	2	3	4	5
Custor	ner Satisfaction					
CS01.	Our activities are centred on satisfying our customers.					
CSo2.	Satisfying our customers, and meeting their expectations, is the most important thing we do.					
CSo3.	Senior executives behave in ways that lessen the importance of customers.					
	Internal/External Cooperation					
IC04	Leader emphasizes activities that lead to a lack of cooperation between units and our suppliers.					
ICo5	Managers, supervisors and employees from different departments work independently to achieve their own department's goals.					
ICo6	In my company, teamwork is commonplace—the expected way of doing business.					
ICo7	Employees are hesitant to voice their opinions, make suggestions or inquire about any of the activities of the organization.					
ICo8	In my company, everyone participates in improving our products, services and processes					
	Continuous Improvement					
Clog	Employees usually do not get an opportunity to suggest changes or modifications to the existing processes					
Cl10	The organization encourages continual study and improvement of all its products, services and processes					
CI11	The organization has received recent compliments and recognition for improving its products/services/processes.					

	Employee Fulfilment	
EF12	My work duties and responsibilities contribute little to satisfying my need to create quality products/services.	
EF13	I like my job because I'm doing what I want to do.	
EF14	Employees in the organization are dedicated to their jobs.	
	Learning	
LT15	Managers and supervisors ensure that all employees receive training that helps	
LT16	them understand how and why the organisation does what it does.	
LT17	Managers and supervisors participate in specialized training on how to conduct business, whether dealing with employees or external customers.	
LT18	Many employees in the organisation do not possess sufficient knowledge about the basics of our industry.	
LT19	Few employees in the organisation understand the basic processes used to create our products/services	
	Process Management	
PM20	Preventing defective products/services from occurring is a strong attitude in the organisation.	
PM21	The processes used in the organisation do not include in-process measures of quality.	
PM22	The processes for designing new products/service in the organisation ensure quality.	
PM23	Explaining the variation in processes is rarely used as an analysis technique in the organisation.	
PM24	Senior executives look at the organisation costs of products and service, including indirect and overhead costs.	
PM25	Managers and supervisors understand how to motivate employees and encourage them to perform at their highest levels.	

Adopted from Chen (2020) and then adapted

	ed from Chen (2020) and their adapted					
	n 3 F ormational Leadership (Chen (2020)) Formational leadership is a leadership style in which	lead	ers in	spire a	nd m	otivate
	ollowers to achieve their full potential and reach com			•		
	check the right option according to your understa	•	-			
1 = Str	ongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree	, 5 = 5	stron	gly agr	ee	
Statement 1 2 3 4 5						
	How Frequently does each item below describe the Leader of your Organisation?		•	·	•	·
	Consideration					
CT01.	The leader talks about shared values with the team.					
CTo2.	The leader has an optimistic outlook.					
СТоз.	The leader shows enthusiasm when communicating with the team.					
	Initiation					
ITo4.	The leader clearly communicates the importance of tasks.					
ITo5.	The leader considers the moral implications of decisions.					
ITo6.	The leader presents a compelling vision for the team.					
ITo7.	The leader emphasizes the collective mission of the team.					
ITo8.	The leader exudes confidence in their decisions.					

Adopted from Chen (2020) and then adapted

Section 4

Job Satisfaction (Nailissaadah (2022))

Job satisfaction refers to an employee's overall sense of fulfilment and satisfaction with their job, including aspects such as pay, working conditions, and opportunities for advancement.

Please check the right option according to your understanding

1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree

	Statement	1	2	3	4	5
JS01.	Able to use your abilities at work?					
JSo2.	Do you feel you are making progress in your work?					
JSo3.	Do you feel that your job is active and fast-paced?					
JS04.	Do you feel there is opportunity for growth and advancement in your job?					
JS05.	Do you feel you have enough authority to do your job effectively?					
JSo6.	Are company policies fair and consistent?					
JS07.	Do you feel you are paid fairly for the work you do?					
JSo8.	Do you feel you have good relationships with your co-workers?					
JSog.	Are you able to be creative in your job?					
JS10.	Do you feel there is opportunity for growth and advancement in your job?					
JS11.	Do you feel you have enough freedom to do your job the way you want to?					
JS12.	Do you feel that your job aligns with your personal values?					
JS13.	Do you feel appreciated and recognized for your work?					
JS14.	Do you feel a sense of responsibility and ownership in your job?					
JS15.	Do you feel secure in your job?					
JS16.	Do you feel respected and valued by others in your job?					
JS17.	Do you feel that your job contributes to the betterment of society?					
JS18.	Do you feel your supervisor treats you with respect and kindness?					
JS19.	Do you feel your supervisor provides effective technical support and guidance?					

JS20.	Do you feel that your job is diverse and challenging?			
11571	Are the working conditions in your job favourable and comfortable?			

Adopted from Nailissaadah (2022) and then adapted

Does transformational

PC13.

	1 \ \ /					
Section	5					
Project	Contract					
A proje	ct contract is a formal agreement between the p	roject	stakeh	older	s, inc	luding the projec
manage	r, customer, and any other parties involved, outlin	ing the	e scope	e, bud	get, a	nd timeline of the
project.						
Please o	check the right option according to your understa	nding				
ı = Stro	ngly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree	, 5 = S	trongly	agre	e	
		1	2	3	4	5
PCo1.	Does project contract support TQM in meeting deadlines, costs, outputs, conflict resolution?					
PC02.	Does project contract implement TQM practices?					
PCo3.	Does project contract reflect customer focus?					
PCo4.	Does project contract align with continuous improvement process in TQM?					
PCo5.	Does project contract involve all stakeholders?					
PCo6.	Does project contract measure key performance indicators for TQM?					
PCo7.	Does project contract foster teamwork and collaboration in TQM?					
PCo8.	Does project contract support process-oriented approach in TQM?					
PCog.	Does project contract ensure accountability for TQM standards and requirements?					
PC10.	Is project contract aligned with TQM leadership principles?					
PC11.	Are you satisfied with alignment of project contract with TQM approach?					
PC12.	Does job satisfaction enhance TQM and project contract performance?					

"The survey questions are self-developed by the researcher specifically for the purposes of this study."

positively

leadership

contribute to project contract in improving

relationships, customer satisfaction, staff skills?

Appendix C

List of Organizations of Data Collection

Public and Private organization of Islamabad and Rawalpindi are where data was collected are as under: -

1. GOVERNMENT ORGANIZATION

- a. MOC
- b. ARMED FORCES

2. PRIVATE ORGANIZATION

- a. BLUE WORLD HOUSING SOCIETY
- b. AISHA STEEL MILLS LIMITED
- c. ALBARAKA BANK PAKISTAN LTD
- d. BSS
- e. AIS
- f. BARCHESTER CARE COMPANY UK
- g. CARE CLOUD
- h. DIGITAL WORLD PAKISTAN PVT LTD
- i. EY FORD RHODES CHARTERED ACCOUNTANTS
- j. EMIRATES TRANSPORT
- k. FFBL
- I. GAS ERGFACILITIES LTD
- m. GENETCO
- n. GLOBAL RAIL CONSTRUCTION
- o. HAMID COMPUTERS
- p. IT-FRANFURT GERMANY
- q. IFFCO
- r. INSIGHT TECHNOLOGY
- s. JINNUO PROPERTIES
- t. MEDZNMORE
- u. S&P GLOBAL
- v. SENDAN (ARAMCO PROJECT)
- w. SM GRENN GOC
- x. SALINI AUSTRALIA
- y. STELLA TECHONOLGY
- z. ZONES INTERNATIONAL