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# The Impact of Transformational Leadership on Project Success: The Mediating Role of Teamwork Quality in Construction Industry in Egypt

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**Abstract** The construction industry in Egypt faces numerous challenges that demand effective leadership and cohesive teamwork to ensure project success. Multiple studies have emphasized the substantial significance and influence of construction on the Egyptian economy in many aspects. Recently, teamwork quality and leadership style have been the focus of many studies because of their pivotal role in the project's success. This study investigates the impact of transformational leadership on project success, with a particular focus on the mediating role of teamwork quality. Drawing on existing literature, which underscores the significant impact of leadership styles on organizational outcomes, this research extends these findings to the construction field. The empirical study conducted to test the hypotheses regarding the effect of transformational leadership on project success with the mediating effect of TWQ using data from 357 professional team members in the construction industry in Egypt demonstrates that transformational leadership has a strong direct effect on project success. Moreover, the quality of teamwork acts as a critical mediator, further enhancing project outcomes. The results indicate that transformational leadership not only directly contributes to project success but also indirectly affects the fostering of high-quality teamwork. These findings provide valuable insights for construction industry practitioners and highlight the importance of adopting transformational leadership practices to achieve superior project performance. This study advises companies in the construction sector in Egypt to enhance the leadership styles of project managers to achieve optimal project outcomes and improve the cooperation quality of project teams.

***Keywords:*** *Transformational leadership, Teamwork quality, Project success, construction, Egypt*

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## 1. Introduction

Transformational leadership (TL) and teamwork quality (TWQ) are important determinants of project success (PS) in many domains. Transformational leadership is a leadership style that refers to a consistent and enduring pattern of behavior demonstrated by a leader in their interactions with employees to reach the required performance [1]. Project teamwork partially mediates the Transformational leadership and project success relationship in higher education projects [2]. In the construction sector, team performance was proven to mediate the effect of Transformational leadership and project success [3]. Construction projects entail intricate activities that necessitate synchronization, cooperation, and effective communication among team members [4]. Team-building practices and teamwork quality (TWQ) serially mediate the relationship between TL and PS in information system development projects [5]. Given the results of these studies, we can conclude the importance of Transformational leadership in enhancing project success through improved teamwork quality through its six dimensions communication, coordination, and cohesion, effort, balance of member contribution and mutual support, highlighting the need for project managers to the best of their ability adapt the four dimensions of transformational leadership, idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration.

Extensive research consistently demonstrates the significant influence of project success on the overall success of companies operating in the construction industry. [6] conducted a study that identified project quality, cost control, and client satisfaction as crucial factors determining the relationship between project success and company success. These elements directly impact the reputation and profitability of construction firms.

In addition to these factors, [7] emphasized the importance of contractors' attributes in determining project success. Safety practices, past performance, and effective resource management were identified as key

attributes that contribute to successful project outcomes. These qualities not only enhance project delivery but also foster positive relationships with clients and stakeholders. Effective materials management was identified as a critical factor by [8] for achieving project success.

Teamwork quality is the main pathway where leadership can be transformed into project success [9]. Research consistently supports the idea that teamwork quality plays a crucial role in the relationship between leadership and project success. Several studies have provided evidence in support of this notion. For instance, [9,5] both found that project teamwork partially mediates the relationship between transformational leadership and project success. This indicates that the quality of teamwork within a project team can influence the extent to which transformational leadership leads to successful project outcomes. Additionally, [10] found that team-building, which is a key aspect of teamwork, partially mediates the effect of transformational leadership on project success. This suggests that the leader's ability to foster a cohesive and collaborative team environment can enhance the likelihood of project success. The quality of teamwork is widely recognized as a critical factor in the success of various projects, including those with innovative undertakings [11]. This relationship proves that effective teamwork plays a pivotal role in achieving project objectives. Factors such as trust, value sharing, and coordination of expertise have been found to significantly influence team performance in projects [12]. For example, in the healthcare sector, specifically in urgent care services, effective teamwork is essential for delivering high-quality and safe care to patients. The complexity of healthcare environments necessitates close collaboration and coordination among healthcare professionals to ensure optimal patient outcomes.

Effective teamwork in the construction industry continues to be a critical factor for project success, and recent research has shed light on various aspects of collaborative work. The success of construction projects relies on the quality of teamwork, emphasizing mutual improvement and project excellence [13]. Traditional hierarchical management structures can hinder effective teamwork, underscoring the need for team-building strategies and a commitment to change [14]. Clear objectives, trust, cohesiveness, interdependency, and enthusiasm are recognized as key characteristics of effective teamwork in construction [9]. These factors foster improved communication, coordination, and problem-solving among team members, leading to enhanced project performance.

Existing literature on project management emphasizes the critical role of project leadership in achieving project success [15]. An organization's ability to establish a supportive project culture, where information is shared, collaboration is encouraged, and conflicts are resolved promptly, fosters effective teamwork and enhances overall project outcomes [16]. Contract and technical aspects also play a significant role in project success. Well-defined contracts that clearly outline project objectives, scope, deliverables, and performance expectations provide a foundation for successful project execution.

While the impact of leadership on project success and management is well-recognized in leadership literature, there exists a limited understanding of its implications for project-based organizations [17]. In the field of project management, the role of leadership has been extensively studied and recognized as a critical factor influencing project success [18]. However, limited attention has been paid to the implications of leadership for project-based organizations (PBOs) as a whole. PBOs are characterized by their unique structures and operating models, emphasizing the temporary nature of projects and the need for effective leadership throughout the organization. Numerous studies have established a positive relationship between leadership and project success. Effective leadership practices, such as clear communication, goal setting, and team empowerment, have been associated with improved project outcomes [18]. However, the specific implications of leadership within the unique context of PBOs remain relatively unexplored. PBOs face distinct challenges that necessitate effective leadership. The temporary nature of projects, frequent team restructuring, and diverse stakeholder management demand adaptive leadership approaches [20]. In PBOs, leaders must navigate complex team dynamics, foster collaboration, and ensure alignment between project objectives and organizational goals.

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Over the past three decades, there has been growing interest among researchers and practitioners in exploring the psychological dynamics between employees and success of projects in the organizations [21]. Consequently, there is a need for research to delve into the underlying mechanisms by which leadership styles influence the success of construction projects.

Moreover, given the variable nature of human factor, a specified study for the effect of Transformational leadership (TL) and teamwork quality (TWQ) on project success (PS) in Egypt is crucial in order to enhance the competitiveness of the industry. Considering that the construction sector is regarded as one of the most significant factors impacting the Egyptian economy [5], a localized study can provide valuable insights into the unique dynamics at play and help tailor leadership and teamwork strategies accordingly.

The objective of this research is to investigate the correlation between transformative leadership and project success in the construction industry in Egypt, and to investigate the mediating role of teamwork quality in this relationship. The study seeks to offer valuable insights and contribute to the existing body of knowledge in this field. Specifically, the study aims to:

Assess the main constructs of the research which are transformational leadership, teamwork quality, and project success. Firstly, the research aims to assess the extent to which transformational leadership practices are employed by project leaders in the construction industry in Egypt. This involves evaluating the leadership behaviors and characteristics exhibited by project leaders, such as inspiring and motivating their teams, fostering a shared

vision, and promoting individual development. Secondly, the study aims to measure the level of project success achieved in construction projects in Egypt. This involves evaluating various dimensions of project success, including meeting project objectives, adhering to budget and schedule constraints, and achieving high-quality deliverables. Thirdly, the research aims to explore the quality of teamwork within construction project teams in Egypt. This involves assessing the effectiveness of team collaboration, communication, coordination, and problem-solving within the context of construction projects.

The study also seeks to investigate the relationship between transformational leadership and project success in the construction industry in Egypt. This involves analyzing the extent to which transformational leadership practices positively influence project success outcomes, the mediating role of teamwork quality in the relationship between transformational leadership and project success. This involves understanding how the quality of teamwork within construction project teams mediates the influence of transformational leadership on achieving successful project outcomes and the key dimensions of transformational leadership and teamwork quality that significantly contribute to project success in the construction industry in Egypt. This involves analyzing specific leadership behaviors and teamwork attributes that have a significant impact on project success.

Finally, the research aims to provide practical recommendations for project managers and stakeholders in the construction field in Egypt to enhance project success through the promotion of transformational leadership and teamwork quality. These recommendations may include strategies for developing and fostering transformational leadership practices, as well as methods for improving teamwork quality within construction project teams.

By addressing the research objectives, this study aims to understand the effect of transformational leadership and teamwork quality on project success in the context of the construction domain in Egypt. By addressing this research problem, the construction industry in Egypt can potentially improve and be competitive in the global market.

# 2. Method

## 2.1. Population and Sample

The sample chosen is professionals who were team members involved in construction project management in consultant offices, construction companies, and owner agencies in Egypt. These teams are employed by enterprises involved in the development of projects for residential, commercial, and institutional buildings, infrastructure projects, and industrial facility construction. This study is project-specific, meaning the data represent the levels of leadership and teamwork on projects (rather than organization-wide). As such, the data collection tool collects project-based information.

As the population size is not known for this study, the sample size will be calculated using the Sample Size Formula for Estimating Proportions. A confidence level of 95% and a proportion (p) of 0.5 will be used in the study leading to a target sample of 384. The research questionnaire was published digitally through Google Forms and released through professional networks on the Internet. The survey remained open for 40 days before it was closed. Then the collected data were analyzed. A total of 392 responses were returned, of which 357 were complete and valid for use, representing a completion rate of 95.6%. The responses returned were adequate for the nature of this study.

## 2.2. Data Collection Tools and Procedures

This study relied on primary data collected by a survey instrument measure to test the relationship between Transformational leadership, teamwork quality, and project success on projects in the Egyptian construction industry, data were collected through an online questionnaire. The data collection tool was developed based on variables used in previous studies. A questionnaire using a Likert scale was used to measure the quality of transformational leadership (TL), teamwork quality (TWQ) and Project success. Study participants were first asked to identify a recent project they were familiar with for assessment. For the subject project, the survey then asked participants to assess the project manager's leadership style, teamwork quality, and final performance for that project.

## 2.3. Questionnaire Design

The survey will be composed of five sections: 1) personal information, 2) project information, 3) project manager's transformational leadership, 4) teamwork quality, and 5) Project success. The first section obtains information concerning the respondents and the project. The second section gathers information about the subject project’s characteristics. The third section assesses how much the project manager follows transformational leadership. The fourth section of the survey measures the level of team communication, collaboration, and cohesiveness on the subject project. The final section evaluates project success in terms of schedule performance, cost performance, quality performance, and stakeholder satisfaction.

The hypothesis verification method involves three key variables: transformational leadership, teamwork quality, and project success. To evaluate these variables, the study used a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

## 2.4. Research Variables and Methods

The assessment of transformational leadership used a 20-item five-point Likert scale that was used by [22] and was initially created by [23]. Team members were instructed to document the transformational leader behaviors exhibited by their immediate supervisor. To measure teamwork quality, a questionnaire that uses a fully standardized questionnaire (five-point answer scale) was used by [11] and by [15] was applied to measure TWQ. That questionnaire has a total of 37 questions divided into 10,8,6,4, and 10 questions to measure the following items respectively communication, coordination,

the balance of member contribution (BMC), mutual support, effort, and cohesion [11]. For the project success construct, a questionnaire was developed using work from [24]. The success criteria of Project success were measured along three criteria that were applied and validated in previous research by [25] These criteria are: 1. Meeting planning goals (success at the project manager level) that was measured by 5 questions, 2. End-user benefits (success from the end-user point of view) that was measured by 7 questions and 3. Contractor benefits (success at the contractor's level that was measured by 9 questions.

## 2.5. Procedures and Analysis Techniques

The analysis began with descriptive statistics, summarizing dataset features through measures of central tendency and variability (standard deviation). This foundational insight aids understanding before moving on to validity and reliability checks of the measurement tool. Regression techniques were then applied to test hypotheses, examining the effects of "Transformational Leadership" (independent variable) on "Project Success" (dependent variable) and "Teamwork Quality" (mediating variable). Simple regression assessed these direct effects, while multiple regression analyzed the impact of transformational leadership dimensions on both project success and teamwork quality. Finally, path analysis was conducted to explore direct and indirect relationships among the variables.

## 2.6. Dealing with Validity and Reliability

This research used a questionnaire that was tested and used in previous work. To assess the validity and reliability of the tool used for measuring sample responses, two key metrics were employed: the internal consistency coefficient, which evaluates the correlation between questionnaire items, and Cronbach's Alpha coefficient, which measures the stability of the items and dimensions of the questionnaire. Cronbach's Alpha Coefficient was used to measure the stability of the content variables, including the independent variable (Transformational Leadership), the mediating variable (Teamwork Quality), and the dependent variable (Project Success).

## 2.7. Research Model and Hypotheses

Given the previous literature, it's of great importance to investigate the effect of transformational leadership on the success of construction projects and to study the mediating role of teamwork quality.

**H1:** Transformational leadership positively Influences Teamwork Quality.

**H2:** Teamwork quality positively Influences Project success.

**H3:** Transformational leadership positively Influences Project success.

**H4:** Transformational leadership positively Influences Project success through mediating teamwork quality.

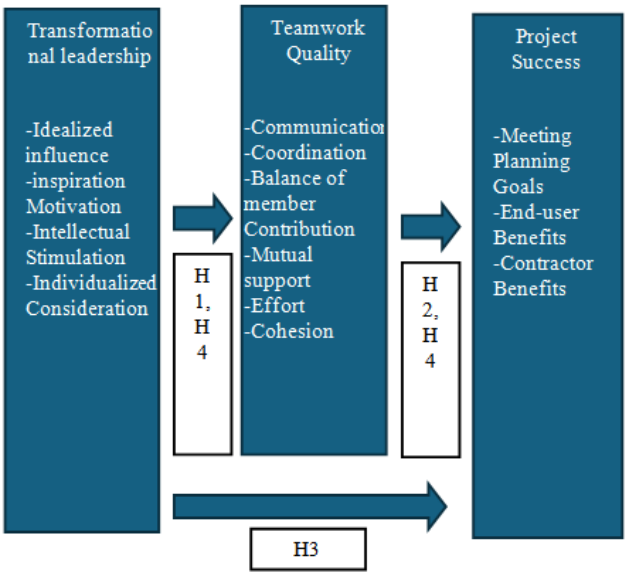


**Figure 1.** Research model

# 3. Results

This section illustrates the outcomes of the data collection phase, focusing on the analysis of descriptive statistics from the distributed questionnaire sample to figure out significant conclusions and facilitate comparisons in the study discussion section. The statistical analysis section uses correlation and regression analysis for direct relationships and SEM to study the indirect effect on the dependent variable, and to infer the transformational leadership effect on project success through the use of teamwork quality as a mediator.

## 3.1. Demographic Information

**Table 1. Demographic information (respondents)**

| N | Variable | Category | Frequency | Percentage |
|---|---|---|---|---|
| 1 | Gender | Male | 209 | 58.5 |
| | | Female | 148 | 41.5 |
| 2 | Age | Less than 30 year | 77 | 21.6 |
| | | 30 Less than 40 year | 133 | 37.3 |
| | | 40 Less than 50 year | 98 | 27.5 |
| | | More than 50 year | 49 | 13.7 |
| 3 | Position | Owner | 54 | 15.1 |
| | | Contractor | 149 | 41.7 |
| | | Supervision agency | 38 | 10.6 |
| | | consultant | 116 | 32.5 |

Demographic Information: A total of 357 professional team members participated in this survey. Their ages ranged from under 30 to over 50 years, with 21.6% under 30, 37.3% between 30 and 40, 27.5% between 40 and 50, and 13.7% over 50. In terms of gender, 58.5% were male

and 41.5% were female. The positions included 15.1% owners, 41.7% contractors, 10.6% from supervision agencies, and 32.5% consultants (Table 1).

Regarding project demographics, the majority of projects were in the building sector (30.5%), followed by industrial (28%), infrastructure (15.4%), and others (26.1%). The installed costs varied, with 54.9% of projects under 10 million. Additionally, 28.6% were new "Greenfield" projects, while 45.4% involved renovations, and 26.1% were expansions (Table 2).

**Table 2. Demographic information (Projects)**

| N | Variable | Category | Frequency | Percentage |
|---|---|---|---|---|
| 1 | Industry sector | Building | 109 | 30.5 |
| | | Industrial | 100 | 28 |
| | | Infrastructure | 55 | 15.4 |
| | | Others | 93 | 26.1 |
| 2 | Installed cost | <10 million | 196 | 54.9 |
| | | 10 <30 Million | 67 | 18.8 |
| | | 30<60 million | 41 | 11.5 |
| | | 60<100 million | 21 | 5.9 |
| | | >100 million | 32 | 9 |
| 3 | Initial Site | New "Greenfield | 102 | 28.6 |
| | | Renovation | 162 | 45.4 |
| | | Expansion | 93 | 26.1 |

## 3.2. Descriptive Statistics of Key Variables

**Table 3. Descriptive Statistical of the dimensions of (Transformational leadership)**

| N | dimensions | Mean | Std. Deviation | Relative importance | Rank |
|---|---|---|---|---|---|
| 1 | Idealized influence | 3.52 | 0.77 | 70.45% | 2 |
| 2 | Inspirational motivation | 3.57 | 0.74 | 71.51% | 1 |
| 3 | Intellectual stimulation | 3.49 | 0.76 | 69.95% | 3 |
| 4 | Individual consideration | 3.45 | 0.79 | 69.19% | 4 |
| T | | 3.51 | 0.68 | 70.27% | |

From the above table, it is clear that the general trend of the study sample is on a dimension of Transformational leadership, indicating that it is towards the (Agreement), with a mean of (3.51), and the Std. Deviation (0.68), with Relative importance (70.27%). The most agreeable dimensions are Inspirational motivation, Idealized influence, Intellectual stimulation, and individual consideration, with Relative importance (71.51%), (70.45%), (69.95%), (69.19%), respectively.

**Table 4. Descriptive Statistical of the dimension (Teamwork Quality)**

| N | dimensions | Mean | Std. Deviation | Relative importance | Rank |
|---|---|---|---|---|---|
| 1 | Communication | 3.33 | 0.63 | 66.78% | 5 |
| 2 | Coordination | 3.47 | 0.65 | 69.50% | 3 |
| 3 | Balance of Member Contributions | 3.31 | 0.72 | 66.31% | 6 |
| 4 | Mutual Support | 3.55 | 0.67 | 71.06% | 1 |
| 5 | Effort | 3.38 | 0.70 | 67.63% | 4 |
| 6 | Cohesion | 3.49 | 0.55 | 69.81% | 2 |
| T | | 3.42 | 0.49 | 68.47% | |

From the above table, it is clear that the general trend of the study sample is on a dimension (Teamwork Quality), indicating that it is towards the (Agreement) and (neutral), with a mean of (3.42), and the Std. Deviation (0.49), with Relative importance (68.47%).

The most important dimensions are Mutual Support, Cohesion, Coordination, Effort, Communication, and Balance of Member Contributions, with Relative importance (71.06%), (69.81%), (69.50%), (67.63%), (66.78%),(and 66.31%), respectively.

**Table 5. Descriptive Statistical of the dimension (Project Success)**

| N | dimensions | Mean | Std. Deviation | Relative importance | Rank |
|---|---|---|---|---|---|
| 1 | Meeting planning goals | 3.56 | 0.73 | 71.35% | 2 |
| 2 | End-user benefits | 3.67 | 0.76 | 73.40% | 1 |
| 3 | Contractor benefits | 3.40 | 0.66 | 68.12% | 3 |
| T | | 3.54 | 0.62 | 70.96% | |

From the above table, it is clear that the general trend of the study sample is on a dimension (Project Success), indicating that it is towards the (Agreement), with a mean of (3.54), and the Std. Deviation (0.62), with Relative importance (70.96%).

The most important dimensions are End-user benefits, Meeting planning goals, and contractor benefits, with Relative importance (73.40%), (71.35%),(and 68.12%), respectively.

## 3.3. Validity and Reliability Analysis

**Table 6. Results of the Reliability test**

| Main Dimensions | Reliability | Validity |
|---|---|---|
| Independent variable (Transformational leadership). x | | |
| Idealized influence | .841 | .917 |
| Inspirational motivation | .797 | .892 |
| Intellectual stimulation | .812 | .901 |
| Individual consideration | .839 | .915 |
| Total: Transformational leadership x | .828 | .909 |
| Mediating (Teamwork Quality) m | | |
| Communication | .854 | .924 |
| Coordination | .738 | .859 |
| Balance of Member Contributions | .762 | .872 |
| Mutual Support | .841 | .917 |
| Effort | .790 | .889 |
| Cohesion | .826 | .908 |
| Total: Teamwork Quality m | .857 | .925 |
| Dependent (Project Success) y | | |
| Meeting planning goals | .872 | .933 |
| End-user benefits | .811 | .901 |
| Contractor benefits | .769 | .876 |
| Total: The Project Success y | .820 | .914 |
| Total Effect | .863 | 0.928 |

To assess the validity and reliability of the tool used for measuring sample responses, two key metrics were employed: the internal consistency coefficient, which evaluates the correlation between questionnaire items, and

Cronbach's Alpha coefficient, which measures the stability of the items and dimensions of the questionnaire. Cronbach's Alpha Coefficient was used to measure the stability of the content variables, including the independent variable (Transformational Leadership), the mediating variable (Teamwork Quality), and the dependent variable (Project Success).

The reliability and validity of the questionnaire used in the study "The Impact of Transformational Leadership on Project Success: The Mediating Role of Teamwork Quality in the Construction Industry in Egypt" were assessed using Cronbach's alpha coefficient. The overall Cronbach's alpha coefficient for the study was found to be 0.863, indicating a high degree of reliability. This high reliability positively impacts the validity (self-honesty) of the study, which was recorded at 0.928.

1. The value of Cronbach's alpha coefficient for the dimensions of Transformational Leadership (x) ranged between 0.797 and 0.841.
2. The value of Cronbach's alpha coefficient for the dimensions of Teamwork Quality ranged between 0.738 and 0.854.
3. The value of Cronbach's alpha coefficient for the dimensions of Project Success ranged between 0.769 and 0.872.

The Cronbach's alpha coefficient values for all dimensions are greater than 70%, indicating a high degree of internal consistency for all questionnaire items. This high internal consistency suggests that the measures used in the study are reliable, allowing us to confidently rely on the responses to achieve the study's objectives and analyze the results.

**Measuring internal consistency**

**Table 7. Internal Consistency Using Pearson Correlation for Transformational Leadership Dimensions**

| Main Dimensions | Pearson Correlation | SIG. |
|---|---|---|
| Independent variable (Transformational leadership). x | | |
| Idealized influence | 0.876** | Less than 0.01 |
| Inspirational motivation | 0.715** | Less than 0.01 |
| Intellectual stimulation | 0.659** | Less than 0.01 |
| Individual consideration | 0.730** | Less than 0.01 |
| Mediating (Teamwork Quality) m | | |
| Communication | 0.805** | Less than 0.01 |
| Coordination | 0.721* | Less than 0.05 |
| Balance of Member Contributions | 0.675** | Less than 0.01 |
| Mutual Support | 0.798** | Less than 0.01 |
| Effort | 0.742** | Less than 0.01 |
| Cohesion | 0.610** | Less than 0.01 |
| Dependent (Project Success) y | | |
| Meeting planning goals | 0.873** | Less than 0.01 |
| End-user benefits | 0.615** | Less than 0.01 |
| Contractor benefits | 0.724** | Less than 0.01 |

**Note:** **Correlation is significant at the 0.01 level.
**Note:** *Correlation is significant at the 0.05 level.

From the table, it is clear that the correlation coefficients for each dimension of transformational leadership, teamwork quality, and Project Success with their total scores are significant at a level of less than 0.01, ranging from 0.615 to 0.876. This indicates the validity and consistency of the study tools.

## 3.4. Hypothesis Testing

The statistical method used: The (correlation coefficient) of Pearson correlation is used to measure the direction and the strength of the relationship between independent and dependent, Mediator variables, if the level of significance is less than (0.05) it indicates the presence of a significant relationship and if the significance level is greater than (0.05) this indicates that there is no statistically significant relationship. This test was made on the hypothesis of the study.

$H_1$:(Transformational leadership) x significantly and positively influences (Teamwork Quality) m.

$H_2$: (Teamwork Quality) m significantly and positively influences (Project Success) y.

$H_3$:(Transformational leadership) x significantly and positively influences (Project Success) y.

$H_4$:(Transformational leadership) x significantly and positively influences Project Success y through (Teamwork Quality) m

**Table 8. Correlation between "The impact of Transformational leadership on Project Success the Mediating role of Teamwork Quality in the construction industry in Egypt" by using Pearson correlation**

| Dimensions | x TL | m- TQ | y- PS |
|---|---|---|---|
| x- Transformational leadership | - | | |
| m Teamwork Quality | .728** | | |
| y- Project Success | .698** | .713** | |

** Significant level 0.01

From the above table it is clear that There is a significant positive relationship between Dimensions " The Impact of Transformational Leadership on Project Success the Mediating Role of Teamwork Quality in the Construction Industry in Egypt ", The value of the Pearson correlation coefficient ranges between ( 0.698: 0.728) at p-value (level of significantly less than) (.01).

**$H_1$:(Transformational leadership) x significantly and positively influences (Teamwork Quality) m.**

Variables of the hypothesis are transformational leadership and teamwork quality. Simple line regression will be used to examine the relationship between the two variables.

**Table 9. Effect of Transformational leadership on Teamwork Quality "simple Linear Regression"**

| Independent variables | β | t. test | | F. test | | r | $R^2$ |
|---|---|---|---|---|---|---|---|
| | | Value | Sig. | Value | Sig. | | |
| constant | 1.577 | 16.780 | 0.01** | 400.396 | *.001* | .728 | 53 % |
| Transformational leadership | .525 | 20.010 | 0.01** | | | | |

** Significant level 0.01

From the above table, it is clear that There is a significant positive relationship between (Transformational leadership) and (Teamwork Quality), which reached the correlation coefficient (0.728) at a level significantly less than (0.01). coefficient of determination

was 53 % which means the independent variable (Transformational leadership) explains (53%) of the total change in the Mediating variable (Teamwork Quality), which is significant.

The results of the previous table confirmed the existence of a significant impact of all dimensions of (Transformational leadership) on (Teamwork Quality) according to the Test (t) equal (20.010), where the level of indication is less than 0.01.

To test the quality of the conciliation model as a whole, (F-test) was used, where the value of the test is (400.396), which is significant at a level less than (0.01), which indicates the quality of the impact significance of the regression model on (Teamwork Quality).

Given the previous findings Teamwork Quality = 1.577 + .728 Transformational leadership

We accept the statistical alternative hypothesis that "There is an Effect of Transformational Leadership on Teamwork Quality ".

The effect of the dimensions of TL on teamwork quality showed the following equation: Teamwork Quality m = 1.574 + 0.269 Inspirational motivation x2 + 0.193 Individual consideration x4 + 0.187 Intellectual stimulation x3 + 0.172 Idealized influence x1.

**$H_2$: (Teamwork Quality) m significantly and positively influences (Project Success) y.**

Variables of the hypothesis are teamwork quality and project success. Simple line regression will be used to examine the relationship between the two variables.

**Table 10. Effect of the "Teamwork Quality on Project Success" Using Simple Linear**

| Independent variables | β | t. test | | F. test | | r | $R^2$ |
|---|---|---|---|---|---|---|---|
| | | Value | Sig. | Value | Sig. | | |
| constant | 0.502 | 3.124 | 0.01 ** | 366.337 | 001 **. | .713 | 50.8 % |
| Teamwork Quality m | 0.890 | 19.14 | 0.01 ** | | | | |

** Significant level 0.01

From the above table, There is a significant positive relationship between Teamwork Quality and Project Success, with a correlation coefficient of 0.713 at a significance level of less than 0.01.

Coefficient of determination was 50.8 % which means the mediating variable, Teamwork Quality, explains 50.8% of the total variation in the dependent variable, Project Success, which is significant.

The results confirm a statistically significant impact of all dimensions of Teamwork Quality on Project Success, as evidenced by the t-test value of 19.140, with a significance level of less than 0.01.

The quality of the regression model was assessed using the F-test, which yielded a value of 366.337, significant at a level of less than 0.01. This indicates the significant impact of the regression model on Project Success.

Given the previous findings Project Success = 0.502 + 0.713 Teamwork Quality

Based on these findings, we accept the statistical alternative hypothesis that "There is an effect of Teamwork Quality on Project Success."

The effect of the dimensions of TWQ on PS showed the following equation: Project Success (y) = 0.489 + 0.304 (Communication) (m1) + 0.260 (Mutual Support) (m4) + 0.228 (Cohesion) (m6) + 0.192 (Coordination) (m2).

**$H_3$:(Transformational leadership) x significantly and positively influences (Project Success) y**

**Table 11. Effect of "Transformational Leadership on Project Success" simple Linear Regression**

| Independent variables | β | t. test | | F. test | | r | $R^2$ |
|---|---|---|---|---|---|---|---|
| | | Value | Sig. | Value | Sig. | | |
| constant | 1.337 | 10.91 | 0.01 ** | 338.038 | .001 ** | .698 | 48.8 % |
| TL x | .629 | 18.38 | 0.01 ** | | | | |

** Significant level 0.01

From the above table, There is a significant positive relationship between Transformational Leadership and Project Success, with a correlation coefficient of 0.698 at a significance level of less than 0.01.

The independent variable, Transformational Leadership, explains 48.8% of the total variation in the dependent variable, Project Success, which is significant.

The results confirm a statistically significant impact of all dimensions of Transformational Leadership on Project Success, as evidenced by the t-test value of 18.386, with a significance level of less than 0.01.

To test the overall quality of the regression model, the F-test was used. The test yielded a value of 338.038, which is significant at a level of less than 0.01, indicating the strong impact significance of the regression model on Project Success.

The regression equation is as follows: Project Success = 1.337 + 0.698 Transformational Leadership

Based on these findings, We accept the statistical alternative hypothesis there is an Effect of "Transformational leadership on Project Success ".

The effect of the dimensions of TL on PS showed the following equation: Project Success = 1.317 + 0.337 Idealized Influence (x1) + 0.216 Inspirational Motivation (x2) + 0.138 Intellectual Stimulation (x3).

**$H_4$:(Transformational leadership) x significantly and positively influences Project Success y through (Teamwork Quality) m**

The Research Hypotheses variables are divided into:

a- Observed Endogenous Variables: include dependent variable Project Success (Meeting planning goals y1, End-user benefits y2, Contractor benefits y3", and mediating variable Teamwork Quality (Communication m1, Coordination m2, Balance of Member Contributions m3, Mutual Support m4, Effort m5, Cohesion m6 ).

b- Observed Exogenous Variables: Include independent variable Transformational leadership "Idealized influence x1, Inspirational motivation x2, and Intellectual stimulation x3, Individual consideration x4 ".

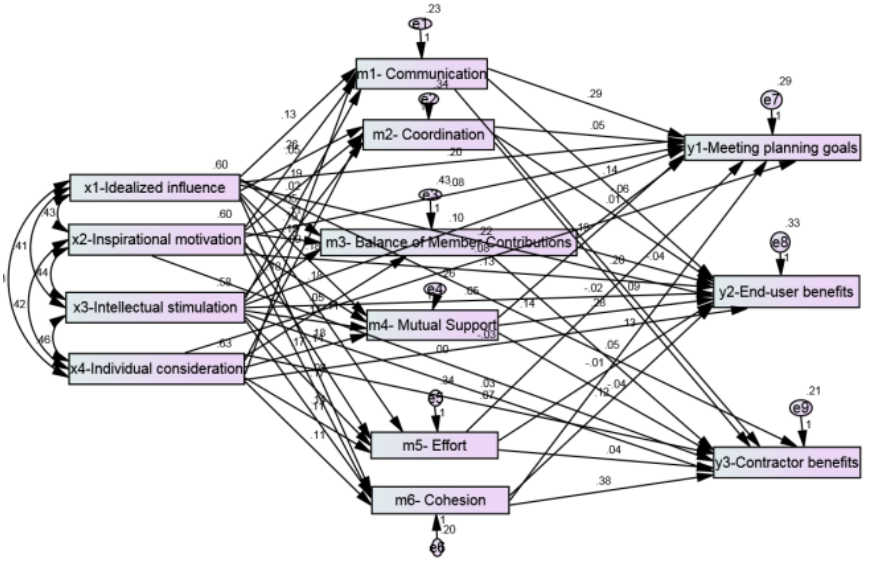


**Figure 2.** Model 1

Evaluating the coefficients of the structural model for interpreting relationships:

**Regression weights for model 1**

**Table 12. Estimates of the coefficients of the structural model "The indirect effect of Transformational leadership on Project Success through the mediation of Teamwork Quality"**

| Path | | | Estimate | S.E | C.R. | P-Value | Sig. |
|---|---|---|---|---|---|---|---|
| Communication m1 | ← | Idealized influence x1 | 0.131 | 0.052 | 2.493 | 0.013** | Sig. |
| | ← | Inspirational motivation x2 | .258 | .054 | 4.747 | .001** | Sig. |
| | ← | Intellectual stimulation x3 | .024 | .058 | 0.420 | .674 | Not Sig. |
| | ← | Individual consideration x4 | .190 | .053 | 3.566 | .001** | Sig. |
| Coordination m2 | ← | Idealized influence x1 | .052 | .063 | 1.819 | .013** | Sig. |
| | ← | Inspirational motivation x2 | .191 | .066 | 2.908 | .004** | Sig. |
| | ← | Intellectual stimulation x3 | .109 | .070 | 1.560 | .019* | Sig. |
| | ← | Individual consideration x4 | .086 | .064 | 1.341 | .180 | Not Sig. |
| Balance of Member Contributions m3 | ← | Idealized influence x1 | .049 | .072 | .684 | .494 | Not Sig. |
| | ← | Inspirational motivation x2 | .145 | .075 | 1.946 | .022** | Sig. |
| | ← | Intellectual stimulation x3 | .183 | .080 | 2.297 | .012** | Sig. |
| | ← | Individual consideration x4 | .052 | .073 | 1.704 | .041** | Sig. |
| Mutual Support m4 | ← | Idealized influence x1 | .182 | .056 | 3.240 | .001** | Sig. |
| | ← | Inspirational motivation x2 | .181 | .058 | 3.107 | .002** | Sig. |
| | ← | Intellectual stimulation x3 | .107 | .062 | 1.725 | .085 | Not Sig. |
| | ← | Individual consideration x4 | .173 | .057 | 3.024 | .002** | Sig. |
| Effort m5 | ← | Idealized influence x1 | .110 | .064 | 1.724 | .045** | Sig. |
| | ← | Inspirational motivation x2 | .181 | .066 | 2.732 | .006** | Sig. |
| | ← | Intellectual stimulation x3 | .167 | .071 | 2.356 | .018** | Sig. |
| | ← | Individual considerationx4 | .112 | .065 | 1.722 | .085 | Not Sig. |
| Cohesion m6 | ← | Idealized influence x1 | .139 | .049 | 2.846 | .004** | Sig. |
| | ← | Inspirational motivation x2 | .080 | .050 | 1.580 | .014** | Sig. |
| | ← | Intellectual stimulation x3 | .139 | .054 | 2.572 | .010** | Sig. |
| | ← | Individual consideration x4 | .112 | .050 | 2.252 | .024** | Sig. |
| Meeting planning goals y1 | ← | Communication m1 | .291 | .060 | 4.891 | .001** | Sig. |
| | ← | Coordination m2 | .049 | .049 | 1.993 | .021** | Sig. |
| | ← | Balance of Member Contributions m3 | .061 | .043 | 1.415 | .057** | Sig. |
| | ← | Mutual Support m4 | .078 | .063 | 1.245 | .013** | Sig. |
| | ← | Effort m5 | .015 | .049 | .313 | .754 | Not Sig. |
| | ← | Cohesion m6 | .131 | .064 | 2.039 | .041** | Sig. |
| | ← | Idealized influence x1 | .196 | .061 | 3.196 | .001** | Sig. |
| | ← | Inspirational motivation x2 | .079 | .066 | 1.205 | .028** | Sig |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ← | Intellectual stimulation x3 | .100 | .067 | 1.484 | .038** | Sig |
| | ← | Individual consideration x4 | .193 | .056 | 3.475 | .001** | Sig. |
| End-user benefits y2 | ← | Communication m1 | .136 | .063 | 2.146 | .032** | Sig. |
| | ← | Coordination m2 | .008 | .052 | .143 | .886 | Not Sig. |
| | ← | Balance of Member Contributions m3 | .043 | .046 | .935 | .050** | Sig. |
| | ← | Mutual Support m4 | .281 | .059 | 4.749 | .001** | Sig. |
| | ← | Effort m5 | .007 | .052 | .138 | .891 | Not Sig. |
| | ← | Cohesion m6 | .125 | .068 | 1.832 | .047** | Sig. |
| | ← | Idealized influence x1 | .222 | .065 | 3.412 | .001** | Sig. |
| | ← | Inspirational motivation x2 | .128 | .070 | 1.837 | .046** | Sig |
| | ← | Intellectual stimulation x3 | .051 | .071 | .708 | .479 | Not Sig. |
| | ← | Individual consideration x4 | .031 | .067 | .468 | .640 | Not Sig. |
| Contractor benefits y3 | ← | Communication m1 | .138 | .052 | 2.647 | .008** | Sig. |
| | ← | Coordination m2 | .091 | .042 | 2.151 | .031** | Sig. |
| | ← | Balance of Member Contributions m3 | .045 | .037 | 1.215 | .024** | Sig. |
| | ← | Mutual Support m4 | .039 | .048 | 1.812 | .017** | Sig. |
| | ← | Effort m5 | .035 | .042 | .847 | .397 | Not Sig. |
| | ← | Cohesion m6 | .376 | .055 | 6.869 | .001** | Sig. |
| | ← | Idealized influence x1 | .196 | .051 | 3.862 | .001** | Sig. |
| | ← | Inspirational motivation x2 | .000 | .056 | .001 | .999 | Not Sig. |
| | ← | Intellectual stimulation x3 | .029 | .057 | .505 | .614 | Not Sig. |
| | ← | Individual consideration x4 | .066 | .053 | 1.239 | .015** | Sig. |

**Significant at the (0.05) level

**Effect of Transformational Leadership on Teamwork Quality:**

Idealized influence (x1) and Inspirational motivation (x2) have a strong positive effect on Communication (m1), Coordination (m2), Mutual Support (m4), Effort (m5), and Cohesion (m6) at a significance level of less than 0.05.

Intellectual stimulation (x3) has no significant effect on Communication (m1) but positively affects Coordination (m2), Balance of Member Contributions (m3), Effort (m5), and Cohesion (m6) at a significance level of less than 0.05.

Individual consideration (x4) positively impacts Communication (m1), Balance of Member Contributions (m3), Mutual Support (m4), and Cohesion (m6) but does not significantly affect Coordination (m2) or Effort (m5).

**Effect of Teamwork Quality on Project Success:**

Communication (m1) and Cohesion (m6) strongly positively impact Meeting planning goals (y1) and End-user benefits (y2) at a significance level of less than 0.05.

Coordination (m2), Balance of Member Contributions (m3), and Mutual Support (m4) positively affect Meeting planning goals (y1), End-user benefits (y2), and Contractor benefits (y3) at a significance level of less than 0.05.

Effort (m5) does not significantly impact Meeting planning goals (y1), End-user benefits (y2), or Contractor benefits (y3).

**Effect of Transformational Leadership on Project Success:**

Idealized influence (x1) and Inspirational motivation (x2) have a positive effect on Meeting planning goals (y1), End-user benefits (y2), and Contractor benefits (y3) at a significance level of less than 0.05.

Intellectual stimulation (x3) and Individual consideration (x4) positively impact Meeting planning goals (y1) and Contractor benefits (y3) but show varying effects on End-user benefits (y2).

**Goodness of fit for model 1**

**Table 13. Quality Assessment Criteria of the Structural Model 1**

| Ser. | Indicators | value |
|---|---|---|
| 1 | Chi square | 398.839 |
| 2 | The goodness of fit index GFI | 0.813 |
| 3 | The root mean square error of approximation RMSEA | 0.071 |

Chi-Square is (398.839) which is normal in the condition of a large sample size.

The goodness of fit index (GFI) was (0.813), (For the saturated model a perfect 1)

The root mean square error of approximation (RMSEA) is (0.071), the test is significant which indicates that the data had an acceptable fit with the hypothesized model so that we can rely on the hypothesized model to investigate our hypothesis.

According to the preceding results, we can conclude that Transformational leadership positively Influences Project Success through the mediation of Teamwork Quality.

**Model 2**

Path analysis to test the indirect effect of Transformational leadership on Project Success through the mediation of Teamwork Quality:

a- Observed Endogenous Variables: include dependent variable Project Success, and Teamwork Quality.

b- Observed Exogenous Variables: Include independent variable Transformational leadership.

Evaluating the coefficients of the structural model for interpreting relationships:

**Regression weights**

Effect of Transformational Leadership on Teamwork Quality:

- Transformational leadership X has a positive significant effect on Teamwork Quality M, with a

significance level less than (0.05), and the value of the critical path (C.R.), (20.038).

**Effect of Teamwork Quality on Project Success:**

- Teamwork Quality M, has a positive significant effect on Project Success Y, with a significance level less than (0.05), and the value of the critical path (C.R.), (8.635).

**Effect of Transformational Leadership on Project Success:**

- Transformational leadership X, has a positive significant effect on Project Success Y, with a significance level less than (0.05), and the value of the critical path (C.R.), (7.594).

**Goodness of fit**

From table clear:

- Chi-Square is (0.001)
- The goodness of fit index (GFI) was (0.999), (For the saturated model a perfect 1)
- The root mean square error of approximation (RMSEA) is (0.803). The test is significant which indicated that the data had an acceptable fit with the hypothesized model so that we can rely on the hypothesized model to investigate our hypothesis.

According to the preceding results, we can conclude that Transformational leadership positively Influences Project Success through the mediation of Teamwork Quality.

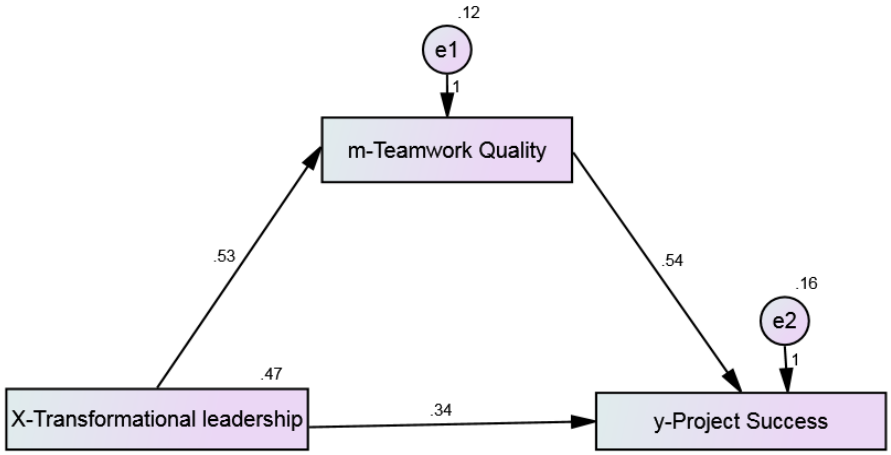


**Figure 3.** Model 2

**Table 14. Estimates of the coefficients of the structural model "The indirect effect of Transformational leadership on Project Success through the mediation of Teamwork Quality"**

| Path | | | Estimate | S.E | C.R. | P-Value | Sig. |
|---|---|---|---|---|---|---|---|
| Teamwork Quality M | ← | Transformational leadership X | 0.525 | 0.026 | 20.04 | 0.001** | Sig. |
| Project Success Y | ← | Teamwork Quality M | 0.542 | 0.063 | 8.635 | 0.001** | Sig. |
| | ← | Transformational leadership X | 0.344 | 0.045 | 7.594 | 0.001** | Sig. |

**Significant at the (0.05) level

**Table 15. Quality Assessment Criteria of the Structural Model**

| Ser. | Indicators | value |
|---|---|---|
| 1 | Chi square | 0.001 |
| 2 | The goodness of fit index GFI | 0.999 |
| 3 | The root mean square error of approximation RMSEA | 0.073 |

**Table 16. Path analysis results for research variables**

| Standard effects | Variables | Transformational leadership | P-Value | Sig. | Teamwork Quality | P-Value | Sig. |
|---|---|---|---|---|---|---|---|
| Direct effects | Teamwork Quality | 0.525 | 0.001* | Sig. | - | - | - |
| | Project Success | 0.344 | 0.001* | Sig. | 0.542 | 0.001* | Sig. |
| Indirect effects | Teamwork Quality | - | - | - | - | - | - |
| | Project Success | 0.285 | 0.001* | Sig. | - | - | - |
| Total effects | Teamwork Quality | 0.525 | 0.001* | Sig. | - | - | - |
| | Project Success | 0.629 | 0.001* | Sig. | 0.542 | 0.001* | Sig. |

*Significant at the (0.05) level

The total direct and indirect standard effects between the study variables can be explained as:

From the Table we can conclude that regarding the Direct effects The results were satisfactory and all of them were positive effects, as there is a direct effect between (Transformational leadership) and (Teamwork Quality) with a value of 0.525, there is a direct effect between (Transformational leadership) and (Project Success) with a value of 0.344, there is a direct effect between (Teamwork Quality) and (Project Success) with a value of 0.542

Regarding the Indirect effects, There is an indirect effect between (Transformational leadership) and (Project Success) with a value of 0.285

Regarding the total effect.

Total effect between (Teamwork Quality) and (Transformational leadership) 0.525

The total effect between (Project Success) and (Teamwork Quality) 0.542

Thus, the total effect between (Transformational leadership) and (Project Success) is 0.629

From this, the effect of the independent variable on the dependent variable becomes clear through the mediator. With the presence of the mediator variable, the effect between Transformational leadership and Project Success increased from (0.344) to (0.629).

### 3.5. Statistical Conclusion

This research aims to study how construction project effectiveness can be improved by enhancing the project manager's leadership style and teamwork quality. 357 construction professionals were included in the study from different positions such as contractors, consultants, and owners who were part of construction teams working at green field, renovation, and expansion projects ranging from less than 10 million to more than 100 million EGP. The study collected data related to completed projects through an online survey and used correlation, regression, and SEM to analyze the data. The result of the study showed a strong direct effect of the transformational leadership style on project success through mediating variable teamwork quality. The study suggests that companies working in the construction field in Egypt should emphasize the leadership skills of their project managers to get better results in the projects.

## 4. Discussion

The objective of this study is to clarify the correlation between leadership, teamwork, and project performance from the standpoint of project management through the utilization of empirical data analysis. Certain project managers develop specific leadership behaviors in an effort to enhance the project's performance. Our results clearly demonstrate the importance of transformational leadership captured through its four facets inspirational motivation, individual consideration, intellectual stimulation, and idealized influence in improving the quality of effectiveness of the team and finally enhancing the performance of project success. The result provided by this research supports the work done by many researchers in many domains for example Project teamwork partially mediates the Transformational leadership and project success relationship in higher education projects [9]. In the construction sector, team performance was proven to mediate the effect of Transformational leadership and project success [3]. Team-building practices and teamwork quality (TWQ) serially mediate the relationship between TL and PS in information system development projects [5]. Given the result of these studies, we can conclude the importance of Transformational leadership in enhancing project success through improved teamwork quality through its six dimensions communication, coordination, cohesion, effort, balance of member contribution, and mutual support, highlighting the need for project managers to the best of their ability, adapt the four dimensions of transformational leadership, IdeaFlized influence, inspirational motivation, intellectual stimulation, and individualized consideration.

To be able to prove that conclusion, first, the relationship between transformational leadership and teamwork quality was examined. Through data analysis, the result showed a positive strong effect of all four transformational leadership dimensions on teamwork quality. This result is consistent with the work done by many researchers [26,27]. Teams with transformational leaders exhibit higher internal teamwork quality and receive better collaboration ratings from other teams [27]. Shared transformational leadership is associated with proactive team followership and high-quality teamwork, characterized by conflict resolution and team synergy [26].

The second relationship that was studied in this research is the correlation between transformational leadership and Project success. The result presented a strong direct relationship effect on project success, this conclusion is consistent with the findings of new studies [28,3]. Recent studies have consistently demonstrated a positive relationship between transformational leadership and project success in various sectors. Transformational leadership has been found to directly impact project success [28,3] . and indirectly through mediating factors such as team performance [3] , self-efficacy [28], and project teamwork [9]. These findings highlight the importance of transformational leadership in fostering project success through various mechanisms, emphasizing its role in enhancing team performance, operational efficiency, and overall project outcomes.

The study also investigated the relationship between teamwork quality and project success and found a strong direct effect on teamwork quality on project success. Prior work done on the same point demonstrates the same result, for example [11] developed a comprehensive TWQ construct comprising six facets: communication, coordination, balance of member contributions, mutual support, effort, and cohesion. Their study of German software teams revealed significant associations between TWQ and team performance, as well as team members' personal success. [29] identified three key factors of teamwork strongly associated with project success in Saudi construction projects: team roles and responsibilities, goals and objectives, and leadership. [30] observed that TWQ and team performance correlation strengthened in later phases of project-based learning courses. Similarly, [31] found a direct positive relationship between project teamwork and project success

in Pakistani higher education projects. These findings underscore the critical importance of fostering high-quality teamwork to enhance project outcomes across various industries and contexts.

Given the previous findings, there is a consensus between researchers that a strong positive correlation between teamwork quality (TWQ) and project success exists.

Finally, This study found that there is a mediating role of Teamwork quality in the relationship between transformational leadership and project success, which is also consistent with prior work. Studies suggest that transformational leadership (TL) has a positive impact on project success (PS) through mediating variable teamwork quality. Teamwork quality has been found to be a significant influencer on this relationship [5,9] According to [5]. TL improves communication, collaboration, and cohesion among team members, resulting in excellent project outputs.

## 5. Conclusion

The answers to the research questions from the analysis of the data collected were as follows

- What is the effect of transformational leadership on Teamwork quality?

The alternative hypothesis that transformational leadership has a positive strong effect on teamwork quality was accepted. There is a strong positive effect of all of Inspirational motivation x2, Individual consideration x4, Intellectual stimulation x3, and Idealized influence x1 on Teamwork Quality at a significance level of less than 5%.

- What is the effect of transformational leadership on Project success?

The alternative hypothesis that transformational leadership has a positive strong effect on project success was accepted. it was found that the independent variables Idealized Influence (x1), Inspirational Motivation (x2), and Intellectual Stimulation (x3) have a significant effect on Project Success at a significance level of less than 0.05. However, Individual Consideration (x4) does not have a significant effect on Project Success

- What is the effect of Teamwork quality on project success?

The alternative hypothesis that teamwork quality has a positive strong effect on project success was accepted. it was found that the mediating variables Communication (m1), Mutual Support (m4), Cohesion (m6), and Coordination (m2) had a significant effect on Project Success at a significance level of less than 0.05.
However, Balance of Member Contributions (m3) and Effort (m5) showed no significant effect on Project Success.

- What is the mediating role of Teamwork quality on the relationship between transformational leadership and project success?

The alternative hypothesis that there is a mediating role of Teamwork quality in the relationship between transformational leadership and project success was accepted.

However, it was noted that Intellectual stimulation (x3) has no significant effect on Communication (m1). Individual consideration (x4) does not significantly affect Coordination (m2) or Effort (m5). Also, Effort (m5) does not significantly impact Meeting planning goals (y1), End-user benefits (y2), or Contractor benefits (y3). Intellectual stimulation (x3) and Individual consideration (x4) showed no significant effect on End-user benefits (y2).

Building on the findings and acknowledging the limitations of this study, several avenues for future research are suggested to further explore the relationships between Transformational Leadership, Teamwork Quality, and Project Success in construction projects. Future research should explore the applicability of this study's findings in various industries and geographical regions. The construction industry in Egypt, where this study was conducted, has its own unique characteristics, which might not be present in other sectors or regions. By examining different contexts, researchers can determine whether the positive relationship between Transformational Leadership and Project Success through Teamwork Quality is consistent across various settings, or if industry-specific or cultural factors significantly impact these relationships. Alternatively, while this study focused on Transformational Leadership, future research could expand the scope by exploring the effects of other leadership styles, such as transactional, servant, or authentic leadership, on Teamwork Quality and Project Success. Transactional leadership, with its focus on rewards and penalties, or servant leadership, which emphasizes serving the team, could have different impacts on teamwork dynamics and project outcomes. Another possible future research is the refinement of the data collection method. Given the reliance on self-reported data in this study, which can introduce biases such as social desirability or recall bias, future research should incorporate objective performance metrics and mixed-methods approaches to enhance the robustness of the findings. By combining quantitative data with qualitative insights from interviews, focus groups, or case studies, researchers can obtain a richer understanding of how leadership and teamwork interact to drive project success. Furthermore, Future studies should consider exploring other potential mediating or moderating variables in the relationship between leadership and project success. While this study highlighted the role of Teamwork Quality as a mediator, other factors such as organizational culture, team diversity, project complexity, or technological adoption could also influence the strength or direction of the observed relationships.

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## References

[1] Amirul, S. and Daud, H., A study on the relationship between leadership styles and leadership effectiveness in Malaysian GLCs, European Journal of Business Management, 2012, 193-201.

[2] Khan, S., Choi, S.L., and Iqbal, S.M.J., Importance of transformational leadership in project success: A theoretical framework, Actual Problems of Economics, 2015, 67-76.

[3] Saleem, H., Sajid, A., Aftab, R., and Malik, Z., A journey to cherish: How transformational leadership affects project success through team performance, Psychology and Education Journal, 2021, 1156-1166.

[4] Hansen, E., and Moutray, M., Teamwork in construction: An overview of theories and models, Journal of Construction Engineering and Management, 2018, 04018003.

[5] Ali, H., Chuanmin, S., Ahmed, M., Mahmood, A., Khayyam, M., and Tikhomirova, A., Transformational Leadership and Project Success: Serial Mediation of Team-Building and Teamwork, Frontiers in Psychology, 2021, 7-12.

[6] Olasupo, J.A., Construction project success evaluation using multi-criteria decision-making technique, Journal of Engineering, Project, and Production Management, 2012, 82-91.

[7] Alzahrani, M.M., Factors influencing construction project success in Saudi Arabia, International Journal of Project Management, 2013, 820-828.

[8] Ibrahim, I.A., Materials Management in Construction Projects: A Case Study of a Building Project in Nigeria, Journal of Construction Engineering, Management & Innovation, 2019, 1-13.

[9] Iqbal, S., The mediating role of project teamwork between transformational leadership and project success, Journal of Leadership Studies, 2019, 66-78.

[10] Aga, D.A., Noorderhaven, N., and Vallejo, B., Transformational leadership and project success: The mediating role of team-building, International Journal of Project Management, 2016, 806–818.

[11] Hoegl, M., and Gemuenden, H.G., Teamwork quality and the success of innovative projects: A theoretical concept and empirical evidence, Organization Science, 2001, 435-449.

[12] Weimar, N., De Pablos, P.O., and Rodríguez-Ardura, I., Teamwork quality and software development performance: A systematic literature review, Information and Software Technology, 2017, 115-129.

[13] Abdullah, A., Critical success factors for construction projects: A literature review, International Journal of Project Management, 2010, 922-935.

[14] Munyasya, B.M., and Chileshe, N., Towards Sustainable Infrastructure Development: Drivers, Barriers, Strategies, and Coping Mechanisms, Sustainability, 2018, 4341.

[15] Oh, H., The effect of leadership and teamwork on information systems development project success, Information Systems and e-Business Management, 2019, 517-541.

[16] Maimun, A., Critical success factors for construction projects: A literature review, International Journal of Project Management, 2010, 922-933.

[17] Albert, A., Carmeli, A., and Zaidman, N., Leadership and culture in project-based organizations: An empirical study, International Journal of Project Management, 2017, 542-552.

[18] Müller, R., Pemsel, S., and Shao, J., Organizational enablers for governance and governmentality in projects, International Journal of Project Management, 2016, 657-668.

[19] Turner, J.R., and Müller, R., The project manager's leadership style as a success factor on projects: A literature review, Project Management Journal, 2005, 49-61.

[20] Crawford, L., Hobbs, B., and Turner, J.R., Project categorization systems: Aligning capability with strategy for better results, Project Management Journal, 2008, S22-S36.

[21] Barattucci, M., Teresi, M., Pietroni, D., Iacobucci, S., Lo Presti, A., and Pagliaro, S., Ethical climate(s), distributed leadership, and work outcomes: The mediating role of organizational identification, Frontiers in Psychology, 2021.

[22] Bilal, M., Adeel, M., Rasheed, T., Zhao, Y., and Iqbal, H.M.N., Emerging contaminants of high concern and their enzyme-assisted biodegradation – A review, Environment International, 2019, 336-353.

[23] Podsakoff, P.M., MacKenzie, S.B., Moorman, R.H., and Fetter, R., Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors, The Leadership Quarterly, 1990, 107-142.

[24] Dvir, D., Raz, T., and Shenhar, A.J., An empirical analysis of the relationship between project planning and project success, International Journal of Project Management, 2003, 89-95.

[25] Shenhar, A.J., Holzmann, V., Melamed, B., and Zhao, Y., The project-oriented society: Perspectives on culture, governance, and innovation, Project Management Journal, 2018, 3-19.

[26] Alegbeleye, I.D., and Kaufman, E.K., How Team Members' Transformational Leadership and Effective Followership Work During Team Interactions, Journal of Leadership Studies, 2022, 4-22.

[27] Cha, J., Kim, Y., Lee, J.Y., and Bachrach, D.G., Transformational Leadership and Inter-Team Collaboration, Group & Organization Management, 2015, 715-743.

[28] Raza, T., Ali, S.A., and Majeed, M.U., Transformational Leadership and Project Success: The Roles of Social Capital and Self-Efficacy, International Journal of Management Studies, 2024, 335-371.

[29] Mughal, M.Y., and Ahmed, J., Remittances and business cycles: Comparison of south Asian countries, International Economic Journal, 2014, 513-541.

[30] Singh, H., Horvat, N., Škec, S., and Becattini, N., A longitudinal study of teamwork quality in design teams, Proceedings of the Design Society, 2022, 2383-2392.

[31] Iqbal, S.M.J., Nawaz, M.S., Bahoo, S., and Abdul, M.L., Impact of project teamwork on project success in Pakistan, South Asian Journal of Management, 2017, 1-13.