# Analyzing the Effect of TQM Practices on the Project Performance Among Construction Firms in the National Capital Region, Philippines

Review of Integrative Business & Economics Research

Melvin V. Moraga*
De La Salle University & Far Eastern University

Sheila Marie Gacutan
De La Salle University

Denise Nicole Nazaire
De La Salle University

Alessandra Denise Sumeguin
De La Salle University

Isabel Rosalina Tantoy
De La Salle University

**ABSRACT**

The need for improvement and expansion of projects stems from a country's construction industry as a key contributor to the growth of the Philippine economy. Total Quality Management plays a critical role in developing products as well as other developments in the field of construction industry. This study investigated the practices and the adoption of quality through implementing TQM in the construction firms. It contributes to the knowledge on TQM and project performance by presenting the theoretical significance on TQM as a management system to bolster the performance of construction sector in the Philippines. Data include 62 samples comprising top to senior management employees from small, medium, and large construction firms. Data were analyzed with regression analysis. The findings show that all TQM practices in a joint manner are statistical significance. The findings also found that leadership, strategic planning, customer focus, workforce focus, measurement, analysis and knowledge management, operations focus, and result individually has a positive significance on project performance.

Keywords: Total Quality Management, project performance, leadership, strategic planning, customer focus, workforce focus, measurement, analysis, and knowledge management.

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## 1. BACKGROUND

Project performance in construction firms is influenced by a myriad of factors, including Total Quality Management (TQM) practices. While previous research has extensively examined the relationship between leadership, strategic planning, and project performance, the role of specific TQM practices remains underexplored in the context of construction projects. Understanding how these TQM practices interact and contribute to project outcomes, while controlling for organizational characteristics such as firm size as well as gender diversity is essential for developing effective project management strategies within construction firm.

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The Philippines is expected to be among the fastest construction markets over the next 15 years globally, according to UK-based think tank Oxford Economics and Global Construction and Infrastructure. Hence, it is imperative to explore the factors which can lead to greater enhancement of the construction industry's performance quality.

Numerous studies have highlighted the importance of leadership in driving project success within organizations (Avolio & Bass, 2004). Effective leadership behaviors, such as clear communication, strategic decision-making, and team motivation, have been linked to improved project outcomes, including higher levels of project completion rates and stakeholder satisfaction (Pinto & Slevin, 2018). Similarly, strategic planning has been identified as a critical factor in achieving project objectives and enhancing organizational performance (Kaplan & Norton, 2008). Organizations that engage in strategic planning activities, such as setting clear goals, conducting environmental scans, and developing action plans, are better equipped to navigate uncertainties and challenges in project execution (Bryson, 2018).

Furthermore, the implementation of TQM practices, such as continuous improvement, customer focus, employee involvement, results measurement, analysis, and knowledge management, and operations focus, has been associated with improved project performance and organizational effectiveness (Oakland, 2014). Each of these TQM practices contributes to enhancing project outcomes by fostering a culture of quality, encouraging collaboration, and promoting innovation within construction firms.

However, the specific interplay between these independent variables and their collective impact on project performance in construction projects remains relatively understudied. To address this gap in the literature, this study aims to investigate the relationship between leadership effectiveness, strategic planning, customer focus, workforce focus, results measurement, analysis, and knowledge management, operations focus, and project performance in construction firms. By comprehensively examining these factors, the study seeks to provide valuable insights into the drivers of project success within the construction industry.

## 2. LITERATURE REVIEW

### 2.1 Project Performance

Industries such as construction, information technology, consulting, and the like, are all highly performance based. Notably, the construction industry regarded as the largest and most complex of them all, putting much more emphasis on the effects of its performance on its clients. Among the emerging challenge of embracing wide and deep change at work is the adaption of strategic quality management and lean business method (Gamad, 2019).

Project success is a vital factor of project performance as it helps identify factors that contribute to providing high-quality outcomes (Adeleke et al., 2018). The most notable framework to measure project performance is the Iron Triangle or Triple Constraint (Pollack et al., 2018), which measure time, cost, and quality of a project. A study by Jong et al. (2019) has modified this framework, adding an external factor: customer service requirements, to consider customer satisfaction.

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Talib et al. (2010) averred that TQM plays a vital role in developing practices within a firm that strives to improve effectiveness, competitiveness, flexibility to meet clients' requirements, the accomplishment of concrete business solutions, and most importantly enhance project performance. Past studies have shown that challenges such as achieving higher quality performance within a firm can be solved by implementing TQM since such a framework focuses on quality initiatives for attaining competitive advantage within their respective industry. Firms have to remain the quality of their product, especially the companies which provide service product then it is necessary to perform some activities to keep the service product (Sophira et al., 2018).

## 2.2 TQM Practices

TQM revolves around instilling practices that would promote quality products and services within an organization (Jong et al., 2019). Multiple frameworks for TQM as a management system have been developed, but the Malcolm Baldridge National Quality Award (MBNQA) was chosen as it was overwhelmingly adapted by multiple studies concerning construction (Jong et al., 2019; Lee et al., 2013; Talib et al., 2013) and has been applied to monitor construction projects (Jaeger et al., 2013). The Philippines has adopted a localized version, known as the Philippine Quality Award (PQA). In this framework, the categories are aligned with the MBNQA and are used to measure the performance excellence of firms with seven criteria of assessment and score point as follows:

Table 1. PQA Criteria and Sub-items (Department of Trade and Industry, 2019-2021)

| Category | Point |
|---|---|
| Leadership | 120 |
| Strategic Planning | 85 |
| Customer Focus | 85 |
| Workforce Focus | 85 |
| Operations Focus | 85 |
| Measurement, Analysis and Knowledge Management | 90 |
| Results | 450 |
| Total | 1000 |

*Leadership* (LS) refers to the leadership style of an organization's top management to successfully fulfill their responsibilities (Dandage et al., 2015).

*Strategic Planning* (SP) considers a firm's mission, vision, values, and ability to establish and meet objectives (Sadikoglu & Olcay, 2014).

*Customer Focus* (CF) revolves around an organization's efforts to build relationships and meet customer satisfaction, while *Workforce Focus* (WFF) is centered on how a firm creates a high-performing working environment (Bailey, 2020).

*Operations Focus* (OPR) entails designing, managing, and improving key processes within a firm (Lee & Dale, 1998).

*Measurement, Analysis, and Knowledge Management* (MAK) focus on data management and how a firm utilizes it for decision-making (Bashir & Farooq, 2019).

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*Results* (RS) are key processes that show improvement and performance for a firm (Philippine Quality Award, n.d.).

TQM has been practiced within the construction industry in the Philippines for quite some time, the localized TQM practices being formally called the Philippine Quality Award. Seeing how it is still being used as a strategy for competitive advantage for construction firms, it is important to see whether implementing such practices within a firm would positively impact the outcome of the project performance of construction firms.

## 2.3 Leadership

Leadership is a vital measure of project performance in the construction industry as projects are usually composed of groups of people, which rely on project leaders to manage the team. The outcome of a project is dependent on how managers lead their team to the success of a project (Liphadzi et al. 2021). Various leadership styles have been tested to determine their impact on the performance of construction projects. Nasiru and Kasimu (2018) asserted that leadership styles such as servant, pace setting, coaching, visionary, transformational, strategic, transactional, democratic, and charismatic had a very high impact on the performance of construction projects as compared to other styles. Contradictory to this, Jong et al. (2019) found that leadership has no significant impact on the project performance of construction firms in Malaysia. The findings revealed that leadership in the construction industry of Malaysia is not intensive enough, which resulted in leadership having an insignificant impact on project performance.

## 2.4 Strategic Planning

In the study by Haythem (2015), although there is a positive relationship between project performance and strategic planning, the relationship is said to be weak. In another study by Zwikael et al. (2014), it asserted that the impact of planning on project performance relies on the risk of a project and its success parameters. In other words, project planning may significantly affect project performance if the project's level of project risk is high and if it has very specific success measures.

Laird (2016) pointed out that the relationship between project performance and planning was tied to a project's complexity and size. Specifically, when a project becomes more complex and reaches a bigger size, managers tend to perform effective planning to ensure maximum project performance. With this, it can be implied that strategic planning may impact project performance, depending on the project's risk, size, complexity, or employee performance.

## 2.5 Customer Focus

Jong et al. (2019) pointed out that customer focus has no direct impact on project performance and was not seen as a vital factor to it. This implies that construction firms do not see customer needs as a priority. Additionally, the relationship between the two is proven significant with process management as a moderator. In a study by Owino & Makokha (2021), customer focus was seen to have a positive correlation with the construction project performances in Uasin Gishu County. Through a firm's continuous customer focus efforts, outputs are produced in accordance with the customer's needs and with respect to their expectations, and quality will be successfully aimed.

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## 2.6 Workforce Focus

Workforce focus has been observed to significantly impact project performance, given its role in the overall operations process of the projects. In fact, in the study on Malaysian construction firms (Jong et al., 2019), it was highlighted how essential the workforce is, given how their involvement is key in every stage of the projects. The workforce is considered the company's asset, hence, their performance in the industry should be given full attention. In Indonesia, although workforce focus was also seen to have an influence on the project performance of their construction industry, the ability of a firm to creates a high-performing working environment registered the lowest value as compared to leadership, strategic planning, and operations focus (Utami & Sutrisno, 2019).

## 2.7 Operations Focus

In the MBNQA framework, operations emphasize the ability of an organization to plan, control, and enhance their key processes. The Project Management of Knowledge Guide (2008) states that there are 44 processes, which can be collated into five groups, that must be integrated throughout the cycle of a construction project. Lee and Dale (1998) found that the management of business processes could be a customer-focused approach that measures and improves company processes. Zair (1997) explained that the management of business processes is concerned with principal components of business operations and depends on measurement activity to evaluate each process performance, set goals and fulfill outputs that meet the company's objectives. Abuezhayeh et al. (2021) found that the increase in the usage of business process management, along with knowledge management, can optimize process and business performance.

## 2.8 Measurement, analysis, knowledge management

The availability of quality information and its usage, as a TQM practice, significantly influences performance (Mehralian, Nazaret, & Rasekh, 2017). This result reflected as well in the study by Valmohammadi and Roshanzamir (2015) which investigated pharmaceutical manufacturers in Tehran and found that measurement, analysis, and knowledge management was affiliated with the performance of an organization. Both studies suggested that increasing a firm's performance could be realized through the application of data collection and implementation or an analysis system. Quality performance was also directly linked with quality information within the manufacturing industry as found by Zeng et al. (2015).

## 2.9 Results

All relations mentioned for results are adapted from the PQA (n.d.). Five performance levels make up the results of the MBNQA framework namely the product and process results, customer-focused results, workforce-focused results, leadership and governance results, and financial and market results. These levels help boost a firm's performance outcome, either negatively or positively depending on the results of said levels.

Product and process results primarily focus on the trends, key processes, and indicators which makes customer-focused performance much more appropriate according to the type of service asked from the customer. Such results also affect work process effectiveness, more specifically a firm's productivity, efficiency, cycle time, and innovation. When product and process results

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are mixed with project performance, there can be an increase in optimized performance if the measures of the workforce and customer requirements are satisfied. Customer-focus results' effect on project performance is based on the effectiveness of satisfying customer needs.

### 2.10 Firm Size and Gender Diversity as Control Variables

Firm size is a fundamental organizational characteristic that can influence various aspects of construction firm performance, including project management practices, resource allocation, and strategic decision-making. Past studies have highlighted both positive and negative relationships between firm size and project performance in the construction industry. Larger construction firms may benefit from economies of scale, greater financial resources, and enhanced organizational capabilities, leading to improved project performance outcomes (e.g., Ahadzie et al., 2017). Conversely, smaller construction firms may demonstrate higher levels of flexibility, agility, and innovation, enabling them to adapt more effectively to project-specific challenges and achieve competitive advantages (e.g., Dubois & Gadde, 2002). Understanding the nuanced relationship between firm size and project performance is essential for contextualizing the influence of TQM practices within different organizational settings and industry contexts.

Gender diversity, representing both men and women within organizational leadership and workforce, has emerged as an important organizational characteristic in the construction industry. Research on gender diversity in construction firms has highlighted its potential influence on leadership dynamics, decision-making processes, and organizational culture. Studies have shown that gender-diverse leadership teams may exhibit more balanced decision-making processes, creativity, and innovation, contributing to improved organizational performance (Terjesen et al., 2009). Gender diversity can also foster a more inclusive and equitable organizational culture, enhancing employee morale, engagement, and productivity, which are crucial factors in achieving project success (O'Neill et al., 2008)

### 2.11 Research Model

The research model (Fig. 1) asserts that TQM practices - leadership, strategic planning, customer focus, workforce focus, operations focus, measurement, analysis and knowledge management and results – as the independent variables individually and in joint manner have a positive and significant effect on project performance as the dependent variable. Based on the localized version of MBNQA all the seven factors are necessary to effectively assess quality management systems and practices within the Philippine construction industry.

### Hypotheses of the Study

**H1**: **Leadership has a positive and significant effect on the project performance among the selected construction firms.**

Nasiru & Kasimu (2018) asserted that leadership styles such as servant, pace setting, coaching, visionary, transformational, strategic, transactional, democratic, and charismatic had a significant impact on the project performance of construction firms. It is an essential practice given that it can help firms become successful despite the complicated, unpredictable, and rapid dynamics of the construction sector (Ofori & Toor, 2012).

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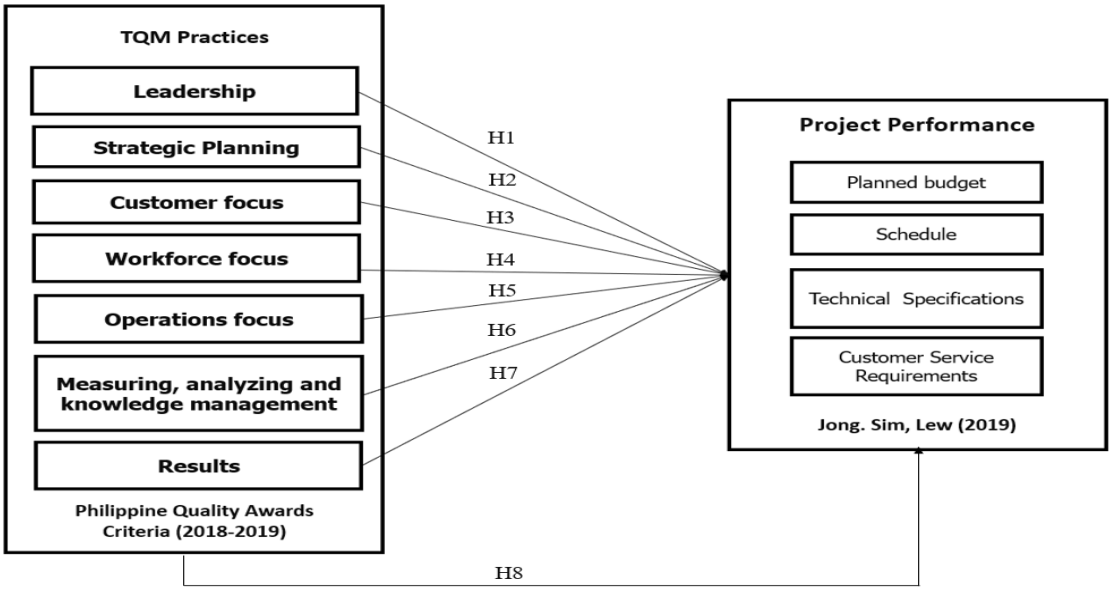
**H2₀: Strategic planning has a positive and significant effect on the project performance among the selected construction firms.**

Panuwatwanitch et al. (2016) claim that the absence of strategic planning in the construction industry is one of the reasons for its low performance. Strategic planning provides firms with a clear direction towards the goals of the project, to set expectations among the parties involved (Al-Ghrairee & Matriano, 2020). In the context of higher education institution's performance, Owolabi and Makinde (2012) pointed out that that effective implementation of strategic planning requires the involvement of all internal stakeholders, especially the staff working at various levels of a university. Apart from establishing strategic vision, its proper communication by the leadership across all hierarchical levels is extremely important to have a positive effect on institutional performance (Haque et al, 2020).

Figure 1. Research model.




**H3₀: Customer focus has a positive and significant effect on the project performance among the selected construction firms.**

According to multiple studies (Owino & Makokha, 2021; Murunga & Kisimbii, 2019), customer focus positively impacts the project performance of construction firms. Specifically, through a firm's customer-focused efforts, they are more likely to have outputs that are in accordance with the expectations and needs of the customers.

**H4: Workforce focus has a positive significant effect on the project performance among the selected construction firms.**

Based on a study by Jong et al. (2019), focusing on the workforce is vital in the construction industry given that the presence of the workforce is needed at every phase of a construction project. It is considered as an invaluable asset in a firm, which is the reason they must be given enough attention to effectively hone their skills and talents.

**H5: Operations focus has a positive and significant effect on the project performance**

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**among the selected construction firms.**

In the study by Abuezhayeh et al. (2021), project performance can be improved by adopting business process management and knowledge management. Other studies suggest that utilizing business process management and knowledge management can improve project performance and enhance core competencies (Zhang & Lu, 2007; Han, et al., 2008).

**H6: Measurement, analysis, and knowledge management have a positive and significant effect on the project performance among the selected construction firms.**

Al-Zayyat et al. (2010) asserted that there is a positive relationship between knowledge management and project performance. Specifically, the information gathered through knowledge management can be utilized to the advantage of a firm, which can then increase project performance. Furthermore, the availability and usage of quality information, as a TQM practice, significantly affects project performance (Mehralian et al., 2017).

**H7: Results have a positive and significant effect on the project performance among the selected construction firms.**

Results are concerned with assessing an organization's key areas, such as its processes and products, financial performance, leadership, workforce, and customer satisfaction. The impact of the results may be positive or negative, depending on the performance of the firm in these key areas. Specifically, low performance may negatively affect project performance, while high performance may positively influence project performance.

**H8: Leadership, strategic planning, customer focus, workforce focus, operations focus, management, analysis, and knowledge management, and results altogether have a positive and significant effect on the project performance among the selected construction firms.**

## 3. METHODOLOGY

### 3.1 Research Method

The study applied a quantitative research method with a sample size of 62 respondents which was selected through purposive sampling method. The study conducted a regression analysis using data collected from a sample of construction companies. The dependent variable, project performance, was measured using objective criteria such as project completion time, adherence to budget, and stakeholder satisfaction. The independent variables included leadership, strategic planning, customer focus, workforce focus, operations focus, management, analysis, and knowledge management, and results, which were assessed through validated instruments. Additionally, firm size and gender diversity were included as control variables to account for its potential influence on project outcomes. Firm size was operationalized as the number of employees of the organization.

### 3.2 Research Locale

This study geographically focuses on small to large scale construction firms with operations in the NCR. NCR is composed of 16 cities, namely Caloocan, Las Piñas, Makati, Malabon, Mandaluyong, Manila, Marikina, Muntinlupa, Navotas, Parañaque, Pasay, Pasig, San Juan, Taguig, Quezon City, and Valenzuela, and one lone municipality which is Pateros. With the

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construction industry being a substantial contributor to the country's economic improvement, the study conducted within the scope of the country's capital, which is also the economic, political, and educational center of the country. A total of 13 construction firms participated in the study, with three being from Paranaque City, four from Quezon City, three from Manila, two from Pasig City, and one from Taguig City.

### 3.3 Data Sources

The data collected consists of pure quantitative techniques. An online questionnaire, sourced from PQA, was used for the primary data. A Likert scale was used for the questions. Divided into eight sections, the questionnaire contained TQM practices and project performance indicators with each variable having measurement items. Respondents included are those with sufficient experience or knowledge of the TQM practices utilized within their firms. These include those in a position of authority such CEOs, Senior Managers, Head of departments etc.

The measures employed (Table 2) to operationalize the variables in the research model are adapted from the Philippine Quality Award (PQA).

Table 2: Sources of Measures

| Construct | No. of items |
|---|---|
| Project Performance | 6 |
| Leadership | 5 |
| Strategic Planning | 5 |
| Customer focus | 5 |
| Measurement, analysis and knowledge management | 5 |
| Workforce focus | 6 |
| Operations focus | 4 |
| Results | 9 |

### 3.4 Reliability Tests

A pre-test was conducted using a sample size of 30 to assess the reliability of the measurement items under project performance. The result registered Cronbach's alpha internal consistency of 0.751, which suggests that the questionnaire is reliable, consistent, and valid as it is higher than the acceptable level. The measurement items measuring TQM practices were directly adapted from the PQA framework and these were already deemed as highly reliable given how the items were already localized for the Philippine setting's standard.

## 4. RESULTS

### 4.1 Descriptive Statistics

Overall. 44% who participated are from small construction firms, 35% from large firms, and 21% from medium-sized firms. Data analysis showed that companies utilized operations focus the most and results the least.

Based on the result, workforce focus scored the highest which suggests that the employees have been working well as a team and are cooperative, employees are given recognition for

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their work, and they have the commitment to achieve success in their organization. Leadership together with measurement, analysis, and knowledge management share a somewhat similar result which implies that workforce is knowledgeable about the firm's mission and how well the leadership team manages the company. Strategic planning, results, and project performance have a relatively close grand mean average scores which posits that employees are following their respective strategic plans, and the outcome of all projects provide sufficient satisfaction to the customer.

### 4.2 Inferential Statistics

The results show that leadership, strategic planning, customer focus, workforce focus, measuring, analyzing and knowledge management, operations focus, and results altogether predicted the project performance among constructions firms in NCR ($F=293.85$, $p<.05$). The result also shows that 97.4% of the variance in project performance can be explained by the seven predictors. The adjusted R square is 0.971 shows that model is a good fit model as the value is greater than 0.60.

Table 3: Model summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.987 | 0.974 | 0.971 | 0.169 |

Predictors: (Constant), leadership, strategic planning, customer focus, workforce focus, measuring, analyzing and knowledge management, operations focus and results
Dependent Variable: project performance

Table 4: ANOVA

| Model | Sum of squares | Df | Mean square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 59.44 | 7 | 8.491 | 293.85 | 0.000a |
| Residual | 1.56 | 54 | 0.028 | | |
| Total | 61 | 61 | | | |

Predictors: (Constant), leadership, strategic planning, customer focus, workforce focus, measuring, analyzing and knowledge management, operations focus and results.
Dependent variable: project performance.

Table 5: Coefficients

| | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|
| | B | SE | Beta | t | Sig. |
| Constant | 0.019 | 0.025 | | 0.789 | 0.000 |
| LS | 0.762 | 0.023 | 0.983 | 41.94 | 0.000 |
| SP | 0.407 | 0.120 | 0.354 | 2.939 | 0.004 |
| CF | 0.364 | 0.121 | 0.342 | 2.822 | 0.006 |
| WFF | 0.519 | 0.204 | 0.795 | 3.890 | 0.002 |
| OF | 0.524 | 0.102 | 0.430 | 4.430 | 0.000 |
| MAK | 0.413 | 0.121 | 0.366 | 2.770 | 0.007 |
| RS | 0.832 | 0.100 | 0.627 | 6.248 | 0.000 |

Dependent Variable: Project Performance

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Leadership beta coefficient value amounts to 0.983 with a significant value of 0.000 which is lower than 0.05, hence leadership was found to have a positive significant effect on project performance. Several leadership styles had been seen to have a significant impact on construction projects, such as but not limited to servant, visionary, transformational strategic, transactional, etc. (Nasiru & Kasimu, 2018).

Strategic planning amounts to beta coefficient of 0.354 with a significant value of 0.000, hence strategic planning was found to have a positive significant effect on project performance. Various literatures (Zwikael et al., 2014) showed that strategic planning directly impacts project performance, but to a weak extent, or depends on other aspects of a project such as its risk and success parameters. This is somehow true given that strategic planning only accounted for 12.6% of the project performance of construction firms, which is relatively low as compared to the R-square of other variables in this statistical test. In the study by Laird (2015) it found that the impact of strategic planning increased when a project becomes more complex and of a bigger scale.

Customer focus accounts for 0.342 beta coefficient with a significant value of 0.006, suggesting that customer focus positively predicts project outcomes. This finding echoes the claim of several authors (Owino & Makokha, 2019 and Murunga & Kisimbii, 2019) which asserted that customer focus directly impacted project performance. Being customer-focused helped a firm successfully achieve quality outputs though meeting the customer needs and expectations.

Workforce TQM practice amounts to beta coefficient of 0.795 with a significant value of 0.002, hence workforce focus was found to have a positive significant effect on project performance. The findings of numerous authors (Jong et al., 2019) showed that workforce focus directly impacts project performance, and this is aligned with the results above. Workforce involvement is highly important in every phase of the project, and their output is also one of the benchmarks for a project's quality.

Focus on operations obtains coefficient value of 0.627 with a significant value of 0.000, implying that operations focus. This finding supports the claim by Abuezhayeh (2021) in which operations were found to be a significant predictor of project performance when combined with other variables, specifically knowledge management.

Measurement, analysis and knowledge management processes show a positive significant effect on project outcomes with a significant value of 0.007. The availability of quality information and its usage, as a TQM practice, significantly influences performance (Mehralian et. al, 2017). The result of the study corroborated with the findings by Valmohammadi and Roshanzamir (2015) which found that measurement, analysis, and knowledge management were affiliated with the performance of an organization.

Results which primarily focus on success outcome amount to beta coefficient of 0.354 with a significant value of 0.000, hence results were found to have a positive significant effect on project performance.

In the previous analysis, the study examined various TQM practices affecting project performance in the construction industry. While the initial regression analysis shed light on the contributions of leadership, strategic planning, and workforce focus, it expanded the

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investigation by incorporating control variables, firm size, and gender diversity, into the model.

Table 6: Linear Regression Analysis

| | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. |
| Constant | .655 | .820 | | .798 | .428 |
| LS | .672 | .218 | .463 | 3.083 | .003 |
| SP | .011 | .182 | .010 | .061 | .952 |
| CF | .119 | .151 | .111 | .783 | .437 |
| S | .051 | .081 | .073 | .636 | .528 |
| G | .007 | .189 | .004 | .037 | .971 |

Dependent Variable: Project Performance, S = firm size, G = gender
Note: F = 4.557, p = .05, R2 =.289.

The low p-value of 0.003 indicates that the leadership is statistically significant with a significant level at 0.05. This suggests that leadership practices within construction firms have a significant impact on project performance. Specifically, effective leadership behaviors such as vision-setting, team motivation, and decision-making are likely to positively influence project outcomes.

The high p-value of 0.952 suggests that strategic planning is not statistically significant in predicting project performance. This indicates that strategic planning activities within construction firms may not have a significant direct effect on project outcomes, at least within the context of this analysis.

Similarly, the relatively high p-value of 0.437 indicates that customer focus is not statistically significant in predicting project performance. This suggests that while customer-centric practices may be important for overall organizational success, they may not directly impact project performance outcomes in the construction industry.

The relatively high p-value of 0.528 for firm size indicates that firm size is not statistically significant in predicting project performance. This suggests that, within the context of this analysis, the size of construction firms may not have a significant direct effect on project outcomes after controlling for other variables. Similarly, the high p-value of 0.971 for gender suggests that the age of leaders is not statistically significant in predicting project performance. This indicates that, within the scope of this analysis, the gender demographics of leaders may not directly influence project outcomes in construction firms.

Table 7: Linear Regression Analysis

| | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. |
| Constant | 1.171 | .775 | | 1.511 | .136 |
| MAK | .003 | .178 | .003 | .019 | .985 |
| WF | .336 | .178 | .291 | 1.886 | .065 |
| OF | .338 | .170 | .320 | 1.992 | .051 |
| S | .070 | .100 | .100 | .813 | .420 |
| G | .022 | .013 | .013 | .113 | .910 |

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Dependent Variable: Project Performance, S = firm size, G = gender
Note: F = 4.719, p = .05, R2 =.296.

The findings showed that measurement, analysis, and knowledge management are not statistically significant in predicting project performance with a very high p-value of 0.985. This indicates that, within the context of this analysis, the implementation of measurement, analysis, and knowledge management practices may not have a significant direct effect on project outcomes. Meantime, workforce focus accounts for p-value of 0.065 which is close to the significance level of 0.05. While not statistically significant at 0.05 level, the result suggests a potential trend towards significance. Further investigation may be warranted to explore the influence of workforce-focused TQM practices on project performance. Similarly, the p-value of 0.051 is slightly above the conventional significance level. While not statistically significant at the 0.05 threshold, this p-value indicates a potential trend towards significance. Operations-focused TQM practices may have a borderline effect on project performance.

The relatively high p-value of 0.420 for firm size suggests that firm size is not statistically significant in predicting project performance. This indicates that the size of construction firms may not have a significant direct effect on project outcomes after controlling for other variables. Meanwhile, the p-value of 0.910 for gender suggests that gender has no effect on project performance. Gender diversity within construction firms may have some influence on project outcomes, but further investigation is needed to determine the extent of this effect.

## 5. CONCLUSION

The study has shed light on the significant role of adopting TQM practices in driving project performance within the construction industry. The findings highlight the significant impact of leadership on project performance, with effective leadership behaviors positively influencing project outcomes. The findings also revealed that focusing on customer's perspective, meeting expectations, as well as building customer relationship, workforce practices, the ability of an organization to plan, control and enhance key processes, the ability of an organization to use its data and results, which primarily focuses on achieving success outcome, play an individual role in enhancing project performance among construction firms in the political capital of the Philippines.

The incorporation of the control variables, firm size and gender diversity enhances understanding of the factors influencing project performance with leadership remains as a predictor. Firm size and gender do not demonstrate statistically significant direct effects on project outcomes in construction firms, after accounting for other variables in the regression model.

## 6. RECOMMENDATIONS

Investing in leadership development programs can enhance project performance by fostering the necessary skills and behaviors among project managers and team leaders. The workforce's leaders should prioritize ensuring that the whole workforce is knowledgeable of their mission and vision to keep them aligned in achieving their objectives. Engaging in strategic planning activities, organizations can better align their resources and activities with project goals, leading to improved project outcomes. Being transparent and making their workforce aware of specific changes that may affect their work. More involvement of employees in making

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decisions if management deem it to bring satisfaction to customers, especially if they are well-informed, instead of micromanaging.

Further research may be needed to explore the nuanced effects of TQM practices and organizational characteristics on project outcomes in construction firms. Future research could explore additional factors that may influence project performance and employ larger sample sizes to enhance the generalizability of the findings.

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