

Leadership, Artificial Intelligence Capability, and Total Quality Management as Strategic Determinants of Sustainable Operational Excellence Across Industries

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ABSTRACT:

Sustainable operational excellence has become a strategic priority for organizations seeking to enhance competitiveness, resilience, innovation, and long-term sustainability in increasingly dynamic business environments. This study examined the influence of Leadership, Artificial Intelligence Capability, and Total Quality Management on Sustainable Operational Excellence across industries and developed an empirically validated structural model explaining their relationships. The study employed a quantitative, descriptive-correlational, and causal research design utilizing Structural Equation Modeling (SEM). Data were collected from 450 managerial, supervisory, and professional employees from selected service and manufacturing organizations in the Philippines using a structured survey questionnaire. Descriptive statistics and SEM were utilized to analyze the data. The findings revealed that Leadership ($M = 3.44$, $SD = 0.55$), Artificial Intelligence Capability ($M = 3.38$, $SD = 0.58$), Total Quality Management ($M = 3.53$, $SD = 0.51$), and Sustainable Operational Excellence ($M = 3.50$, $SD = 0.50$) were all manifested at very high levels. SEM results indicated that Leadership ($\beta = 0.29$, $p < .001$), Artificial Intelligence Capability ($\beta = 0.24$, $p < .001$), and Total Quality Management ($\beta = 0.43$, $p < .001$) significantly and positively influenced Sustainable Operational Excellence, with Total Quality Management emerging as the strongest determinant. The final structural model demonstrated acceptable to good model fit ($CMIN/DF = 2.41$, $GFI = 0.91$, $AGFI = 0.90$, $CFI = 0.94$, $TLI = 0.93$, $RMSEA = 0.058$, $SRMR = 0.052$) and explained 61% of the variance in Sustainable Operational Excellence ($R^2 = 0.61$). The study concludes that sustainable operational

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excellence is best achieved through the strategic integration of leadership effectiveness, artificial intelligence capability, and total quality management. The findings provide theoretical and managerial insights for organizations pursuing sustainable performance and long-term competitive advantage across industries.

Keywords: Leadership, Artificial Intelligence Capability, Total Quality Management, Sustainable Operational Excellence, Structural Equation Modeling, Organizational Performance, Quality Management, Digital Transformation.

INTRODUCTION

The contemporary business landscape is characterized by unprecedented technological disruption, global competition, rapidly evolving customer expectations, and increasing demands for sustainability and organizational resilience. These challenges have compelled organizations across industries to pursue sustainable operational excellence as a strategic objective that integrates efficiency, innovation, quality, adaptability, and long-term value creation. Sustainable operational excellence extends beyond the achievement of superior operational performance by emphasizing continuous improvement, stakeholder satisfaction, responsible resource utilization, and organizational sustainability. In this context, leadership has emerged as a critical organizational capability that influences strategic decision-making, employee engagement, innovation, and organizational transformation. Effective leaders establish a clear vision, foster a culture of collaboration and accountability, and guide organizations through complex environmental changes. Simultaneously, Total Quality Management (TQM) remains a fundamental management philosophy that promotes customer focus, process optimization, employee involvement, evidence-based decision-making, and continuous improvement. Recent studies have demonstrated that leadership and TQM significantly contribute to organizational effectiveness, operational efficiency, innovation, and sustainable performance across various organizational settings (Chiarini, 2020; Nunes et al., 2022). Moreover, Betito (2026) emphasized

that leadership styles significantly influence operational excellence through the successful integration of TQM practices, highlighting the importance of leadership-driven quality cultures in achieving superior organizational outcomes. As organizations strive to remain competitive in increasingly dynamic markets, the strategic alignment of leadership and quality management practices has become essential for sustaining operational excellence and long-term organizational success. The emergence of Artificial Intelligence (AI) has further transformed organizational operations by introducing advanced capabilities in automation, predictive analytics, real-time decision-making, process optimization, and intelligent resource management. AI capability refers to an organization's ability to acquire, develop, deploy, and leverage AI-related technologies, skills, and resources to enhance organizational performance and strategic competitiveness. Organizations with strong AI capabilities are better positioned to improve operational efficiency, increase innovation capacity, strengthen organizational agility, and respond effectively to environmental uncertainties. Empirical evidence indicates that AI capability positively influences organizational creativity, firm performance, digital transformation, and sustainability-oriented innovation (Mikalef & Gupta, 2021; Dwivedi et al., 2023). Furthermore, the integration of AI with quality management systems has been recognized as a critical enabler of organizational transformation and operational effectiveness in the era of Industry 4.0. Supporting this perspective, Betito, Sario, and Bacay (2025) found that the integration of artificial

intelligence into Total Quality Management frameworks significantly enhances institutional effectiveness, process efficiency, and organizational transformation. Despite the growing body of literature examining leadership, artificial intelligence capability, and total quality management independently, limited empirical research has explored their combined influence on sustainable operational excellence within a single structural framework across industries. The absence of such an integrated perspective limits the understanding of how these strategic determinants collectively contribute to long-term organizational performance and sustainability. Therefore, this study investigates leadership, artificial intelligence capability, and total quality management as determinants of sustainable operational excellence across industries and seeks to develop an empirically validated model that can provide theoretical and practical insights for organizations pursuing sustainable competitive advantage in the digital era.

Research Questions

This study aims to examine the influence of leadership, artificial intelligence capability, and total quality management on sustainable operational excellence across industries. Specifically, it seeks to answer the following questions:

1. What is the level of:
 - 1.1 Leadership;
 - 1.2 Artificial Intelligence Capability;
 - 1.3 Total Quality Management; and
 - 1.4 Sustainable Operational Excellence across industries?
2. Does Leadership significantly influence Sustainable Operational Excellence across industries?

3. Does Artificial Intelligence Capability significantly influence Sustainable Operational Excellence across industries?

4. Does Total Quality Management significantly influence Sustainable Operational Excellence across industries?

5. What structural model best explains Sustainable Operational Excellence across industries?

Hypotheses of the Study

The study tested the following null hypotheses:

H01: Leadership does not significantly influence Sustainable Operational Excellence across industries. **H02:** Artificial Intelligence Capability does not significantly influence Sustainable Operational Excellence across industries.

H03: Total Quality Management does not significantly influence Sustainable Operational Excellence across industries.

Framework of the Study

This study is anchored on the premise that sustainable operational excellence is achieved through the effective integration of strategic leadership, technological capability, and quality management practices. Drawing from the principles of Transformational Leadership Theory, Dynamic Capabilities Theory, Resource-Based View (RBV), and Total Quality Management (TQM), the study posits that organizations possessing strong leadership, advanced artificial intelligence capability, and robust quality management systems are more likely to achieve superior and sustainable operational outcomes. These theoretical perspectives collectively suggest that organizational resources and capabilities serve as strategic drivers of operational effectiveness, innovation, continuous improvement, and long-term competitiveness.

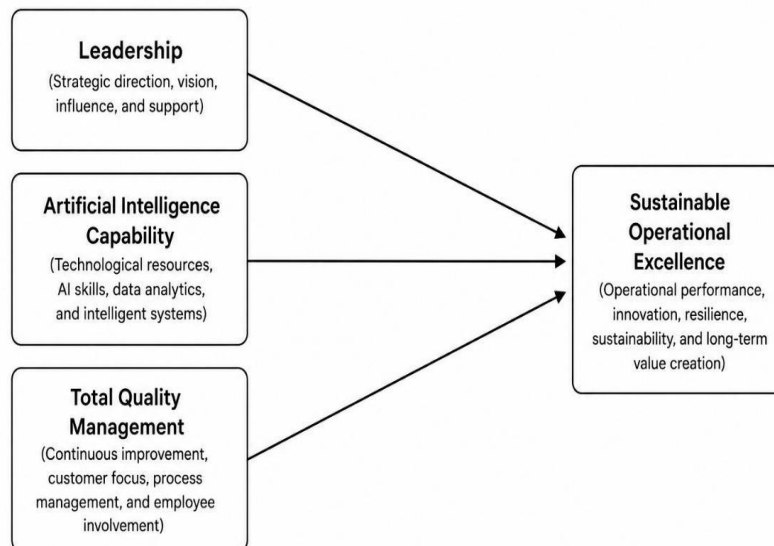


Figure 1: Conceptual Framework of the Study

Figure 1 presents the conceptual framework of the study, illustrating the hypothesized relationships among Leadership, Artificial Intelligence Capability, Total Quality Management, and Sustainable Operational Excellence across industries. The framework posits that Leadership, characterized by strategic direction, vision, influence, and organizational support, serves as a critical driver of operational effectiveness by fostering a culture of innovation, adaptability, and continuous improvement. Artificial Intelligence Capability, represented by technological resources, AI competencies, data analytics, and intelligent systems, is proposed to enhance organizational performance through data-driven decision-making, process optimization, and operational agility. Likewise, Total Quality Management, encompassing continuous improvement, customer focus, process management, and employee involvement, is expected to strengthen organizational efficiency and quality-oriented performance. These three exogenous variables are hypothesized to exert direct and significant influences on Sustainable Operational Excellence, the endogenous variable, which is reflected in operational performance, innovation, resilience, sustainability, and long-term value creation. The framework underscores the synergistic role of leadership, technological capability, and quality management in achieving sustainable organizational success and provides

the theoretical basis for testing the proposed structural model using Structural Equation Modeling (SEM).

METHODOLOGY

Research Design

This study employed a quantitative, descriptive-correlational, and causal research design to examine the relationships among leadership, artificial intelligence capability, total quality management, and sustainable operational excellence across industries. The descriptive component was utilized to assess the levels of the study variables as perceived by the respondents, while the correlational and causal components were used to determine the magnitude and direction of the relationships among the constructs and evaluate their influence on sustainable operational excellence. To achieve the objectives of the study, Structural Equation Modeling (SEM) was employed as the primary analytical technique. SEM is a multivariate statistical approach that enables the simultaneous examination of multiple relationships among latent variables while accounting for measurement errors. This technique is particularly appropriate for testing complex theoretical models involving direct effects among constructs and identifying the structural model that best explains the phenomenon under investigation. Through SEM, the study examined

the direct effects of leadership, artificial intelligence capability, and total quality management on sustainable operational excellence and validated the proposed theoretical framework across industries.

Population, Sample Size, and Sampling Technique

The population of the study consisted of managerial, supervisory, and professional employees from selected organizations operating in the service and manufacturing sectors in the Philippines. These respondents were considered appropriate participants because they possess direct knowledge and experience regarding leadership practices, artificial intelligence adoption, quality management initiatives, and operational performance within their respective organizations. The inclusion of both service and manufacturing organizations provided a broader perspective on the determinants of sustainable operational excellence across different organizational settings. The sample size was determined using the recommended requirements for Structural Equation Modeling (SEM), which generally require a minimum of 200 respondents and preferably between 300 and 500 respondents to ensure stable parameter estimation and adequate statistical power. Accordingly, a total of 450 respondents was targeted for participation in the study. The study employed a stratified random sampling technique, wherein respondents were proportionally selected from participating service and manufacturing organizations based on their organizational classification. This sampling approach ensured adequate representation from both sectors, minimized sampling bias, and enhanced the reliability and generalizability of the findings. After data screening and validation, only completely accomplished questionnaires were included in the final analysis to ensure the quality and integrity of the data used in testing the proposed structural model.

Research Instrument

Data were collected through a structured survey questionnaire designed to measure the study

variables, namely Leadership, Artificial Intelligence Capability, Total Quality Management, and Sustainable Operational Excellence. The instrument was developed based on an extensive review of relevant literature and established measurement scales from previous studies and was subsequently adapted to align with the objectives and context of the present investigation. The questionnaire consisted of two major parts. The first part elicited the demographic profile of the respondents, while the second part contained statements measuring the latent constructs included in the proposed structural model. The Leadership construct assessed organizational leadership practices in terms of strategic vision, communication, employee empowerment, decision-making, and organizational support. Artificial Intelligence Capability measured the organization's ability to acquire, implement, integrate, and utilize AI-related technologies and resources to improve operational effectiveness and innovation. Total Quality Management evaluated organizational practices associated with continuous improvement, customer focus, process management, employee involvement, and quality culture. Sustainable Operational Excellence measured the extent to which organizations achieve operational efficiency, innovation, resilience, sustainability, and long-term performance. All items were measured using a four-point Likert scale, where 4 indicated Strongly Agree, 3 indicated Agree, 2 indicated Disagree, and 1 indicated Strongly Disagree. The use of a four-point scale was intended to encourage respondents to provide definitive responses while minimizing central tendency bias. Higher scores indicated higher levels of leadership effectiveness, artificial intelligence capability, total quality management implementation, and sustainable operational excellence. The instrument was designed to generate reliable and valid data suitable for Structural Equation Modeling (SEM), thereby facilitating the examination of the hypothesized relationships among the study variables.

Data Gathering Procedure

Prior to data collection, the researcher secured

the necessary approvals from the concerned organizations and ensured compliance with ethical research standards. A formal request letter was submitted to the management of participating organizations seeking permission to conduct the study and administer the survey questionnaire to qualified respondents. Upon approval, the purpose of the study, confidentiality provisions, voluntary nature of participation, and respondents' rights were clearly communicated to all participants through an informed consent statement. The survey questionnaire was administered through both online and face-to-face distribution methods to maximize participation and improve response rates. Respondents were given sufficient time to complete the questionnaire and were encouraged to provide honest and objective responses based on their organizational experiences. Upon retrieval of the completed questionnaires, the responses were carefully reviewed to ensure completeness and consistency. Incomplete and invalid responses were excluded from the analysis. The collected data were subsequently encoded, organized, and subjected to data screening procedures, including checks for missing values, outliers, normality, and multicollinearity, prior to statistical analysis. The finalized dataset served as the basis for conducting the descriptive analyses, measurement model validation, and Structural Equation Modeling (SEM) procedures used to test the proposed hypotheses and determine the structural model that best explains sustainable

operational excellence across industries.

RESULTS AND DISCUSSION

1. Level of Leadership, Artificial Intelligence Capability, Total Quality Management, and Sustainable Operational Excellence Across Industries

The initial phase of the analysis examined the extent to which leadership, artificial intelligence capability, total quality management, and sustainable operational excellence were manifested across participating organizations. Establishing the levels of these constructs provides a foundational understanding of the organizational conditions under which sustainable operational excellence is achieved and offers preliminary insights into the strategic capabilities possessed by organizations across industries. The descriptive results are presented in Table 1.

1.1. Leadership

The first indicator examined in this study was leadership. Leadership is considered a critical organizational capability that influences strategic direction, employee engagement, innovation, and organizational effectiveness. The extent to which leadership is practiced within organizations provides insight into management's ability to guide employees toward achieving operational and strategic objectives. The descriptive results for leadership are presented in Table 1.

Table 1 Level of Leadership Across Industries

Indicators	Mean	SD	Interpretation
Leaders communicate a clear organizational vision and direction.	3.48	0.52	Very High
Leaders encourage employee participation in decision-making.	3.39	0.58	Very High
Leaders demonstrate commitment to organizational goals and objectives.	3.56	0.49	Very High
Leaders effectively manage organizational change and challenges.	3.41	0.54	Very High
Leaders provide support for employee development and growth.	3.36	0.61	Very High
Leaders promote innovation and continuous improvement.	3.44	0.57	Very High
Leaders foster a culture of collaboration and teamwork.	3.38	0.59	Very High
Leaders make timely and informed decisions.	3.47	0.51	Very High
Leaders uphold ethical standards and organizational values.	3.53	0.48	Very High
Leaders inspire employees to achieve high levels of performance.	3.42	0.56	Very High
Overall Mean	3.44	0.55	Very High

Note. Mean scores were interpreted using the following scale: 3.26–4.00 = Very High; 2.51–3.25 = High; 1.76–2.50 = Low; and 1.00–1.75 = Very Low. SD = Standard Deviation.

Table 1 presents the level of leadership across industries as perceived by managerial, supervisory, and professional employees. The findings revealed an overall mean score of 3.44 ($SD = 0.55$), interpreted as Very High, indicating that leadership practices are extensively manifested within the participating organizations. Among the indicators, leaders demonstrate commitment to organizational goals and objectives obtained the highest mean score ($M = 3.56$, $SD = 0.49$), followed by leaders uphold ethical standards and organizational values ($M = 3.53$, $SD = 0.48$). These findings suggest that organizational leaders are highly committed to achieving strategic objectives while maintaining ethical and value-driven management practices. The result supports the assertion that effective leadership serves as a critical organizational capability that enhances strategic alignment, employee commitment, and organizational effectiveness (Betito, 2026). The high level of leadership observed in the study further indicates that leaders are actively involved in fostering employee engagement, facilitating organizational change, and promoting innovation and continuous improvement. Such practices are essential in contemporary organizations where leaders are expected to navigate complex business environments and drive sustainable organizational performance. This finding is consistent with previous studies emphasizing that effective leadership contributes significantly to organizational adaptability, innovation capability, and long-term sustainability by creating a supportive environment for organizational learning and performance improvement (Contreras et al., 2020). Moreover, leadership has been recognized as a strategic resource that enables organizations to effectively utilize organizational assets and capabilities to achieve superior operational outcomes.

Although all leadership indicators received favorable evaluations, the relatively lower mean score for employee development and growth ($M = 3.36$, $SD = 0.61$) suggests potential opportunities for strengthening leadership initiatives related to talent development, mentoring, and succession planning. Investing in employee capability development may further enhance organizational performance and sustainability by ensuring the availability of competent and engaged human resources. Overall, the findings imply that leadership is strongly embedded within the participating organizations and serves as a foundational element in achieving sustainable operational excellence. The results lend support to the proposition that leadership contributes significantly to organizational resilience, operational effectiveness, and continuous improvement, thereby positioning organizations to achieve long-term competitive advantage and sustainable success across industries (Sony et al., 2021; Nunes et al., 2022).

1.2. Artificial Intelligence Capability

The second variable examined in this study was Artificial Intelligence Capability. As organizations increasingly adopt digital technologies to enhance operational performance and strategic decision-making, artificial intelligence capability has become a critical organizational resource that facilitates innovation, operational efficiency, process optimization, and competitive advantage. Assessing the level of artificial intelligence capability provides insight into the extent to which organizations possess the technological infrastructure, competencies, and resources necessary to leverage AI-driven solutions in achieving sustainable operational excellence. The descriptive results are presented in Table 2.

Table 2 Level of Artificial Intelligence Capability Across Industries

Indicators	Mean	SD	Interpretation
The organization utilizes AI technologies to improve operational efficiency.	3.41	0.57	Very High
AI systems support data-driven decision-making processes.	3.45	0.54	Very High
The organization possesses adequate technological infrastructure for AI implementation.	3.31	0.61	Very High
Employees are provided with opportunities to develop AI-related competencies.	3.24	0.65	High
AI applications contribute to process automation and productivity improvement.	3.47	0.52	Very High
AI technologies enhance organizational innovation and problem-solving capabilities.	3.43	0.55	Very High
The organization invests in AI initiatives to support strategic objectives.	3.35	0.60	Very High
AI technologies facilitate real-time monitoring and performance evaluation.	3.38	0.58	Very High
The organization effectively integrates AI into operational processes.	3.29	0.63	Very High
AI capability contributes to organizational adaptability and competitiveness.	3.46	0.53	Very High
Overall Mean	3.38	0.58	Very High

Note. Mean scores were interpreted using the following scale: 3.26–4.00 = Very High; 2.51–3.25 = High; 1.76–2.50 = Low; and 1.00–1.75 = Very Low. SD = Standard Deviation.

Table 2 presents the level of Artificial Intelligence Capability across industries. The findings revealed an overall mean score of 3.38 (SD = 0.58), interpreted as Very High, indicating that the participating organizations possess substantial capabilities in adopting, integrating, and utilizing artificial intelligence technologies to support operational and strategic activities. Among the indicators, AI applications contribute to process automation and productivity improvement obtained the highest mean score ($M = 3.47$, $SD = 0.52$), followed closely by AI capability contributes to organizational adaptability and competitiveness ($M = 3.46$, $SD = 0.53$) and AI systems support data-driven decision-making processes ($M = 3.45$, $SD = 0.54$). These findings suggest that organizations increasingly recognize artificial intelligence as a strategic resource for improving efficiency, enhancing decision quality, and strengthening organizational competitiveness. The results further indicate that artificial intelligence capability is becoming an integral component of organizational transformation and operational excellence. Organizations with strong AI capabilities are better positioned to leverage data analytics, automation technologies, and intelligent systems to optimize processes, reduce operational inefficiencies, and improve responsiveness to changing market conditions.

This finding is consistent with Mikalef and Gupta (2021), who emphasized that artificial intelligence capability enhances organizational creativity and firm performance by enabling organizations to transform

technological resources into strategic value. Similarly, Gandolfo & Lupi, 2021 reported that AI capability significantly contributes to sustainability-oriented innovation and organizational adaptability through digital transformation initiatives.

Notwithstanding the favorable results, the indicators related to employee development of AI competencies ($M = 3.24$, $SD = 0.65$) and the effective integration of AI into operational processes ($M = 3.29$, $SD = 0.63$) obtained comparatively lower mean scores. These findings suggest that while organizations have invested substantially in AI technologies, opportunities remain to strengthen workforce readiness and deepen the integration of AI solutions into core business processes. The relatively higher

variability observed among these indicators may reflect differences in technological maturity, organizational readiness, and resource availability across industries. Nevertheless, the overall findings indicate that artificial intelligence capability is widely established among the

participating organizations and serves as a critical enabler of innovation, operational efficiency, and sustainable organizational performance. The results further support the growing body of literature asserting that AI capability represents a strategic organizational asset that facilitates digital transformation and contributes to long-term operational excellence (Dwivedi et al., 2023; Betito et al., 2025).

1.3. Total Quality Management

The third variable examined in this study was Total Quality Management (TQM). As a comprehensive management philosophy, TQM

emphasizes continuous improvement, customer satisfaction, employee involvement, process optimization, and quality-driven organizational culture. In today's highly competitive business environment, organizations increasingly adopt TQM principles to enhance operational performance, improve service and product quality, and achieve long-term sustainability. Assessing the level of TQM provides valuable insights into the extent to which quality management practices are institutionalized and integrated into organizational operations. The descriptive results are presented in Table 3.

Table 3 Level of Total Quality Management Across Industries

Indicators	Mean	SD	Interpretation
The organization continuously improves its processes and services.	3.58	0.48	Very High
Customer satisfaction is a primary organizational priority.	3.61	0.46	Very High
Employees actively participate in quality improvement initiatives.	3.46	0.54	Very High
Quality standards are consistently implemented throughout the organization.	3.55	0.50	Very High
Management demonstrates commitment to quality excellence.	3.62	0.45	Very High
Decisions are based on objective data and performance indicators.	3.49	0.53	Very High
Cross-functional collaboration supports quality improvement efforts.	3.44	0.57	Very High
Employees receive adequate training on quality management practices.	3.38	0.61	Very High
Continuous monitoring and evaluation are practiced to ensure quality performance.	3.57	0.49	Very High
Quality improvement initiatives contribute to organizational effectiveness.	3.60	0.47	Very High
Overall Mean	3.53	0.51	Very High

Note. Mean scores were interpreted using the following scale: 3.26–4.00 = Very High; 2.51–3.25 = High; 1.76–2.50 = Low; and 1.00–1.75 = Very Low. SD = Standard Deviation.

Table 3 presents the level of Total Quality Management across industries. The findings revealed an overall mean score of 3.53 (SD = 0.51), interpreted as Very High, indicating that quality management principles are strongly embedded within the participating organizations. Among the indicators, management demonstrates commitment to quality excellence obtained the highest mean score ($M = 3.62$, $SD = 0.45$), followed by customer satisfaction is a primary organizational priority ($M = 3.61$, $SD = 0.46$) and quality improvement initiatives contribute to organizational effectiveness ($M = 3.60$, $SD = 0.47$). These results suggest that organizations recognize quality as a strategic imperative and actively pursue excellence through customer-centered and continuous improvement initiatives.

The findings further indicate that organizations have established a strong quality culture characterized by management commitment, systematic process improvement, and performance monitoring. The high ratings across the TQM indicators suggest that quality management practices are not merely operational activities but are integrated into strategic and organizational decision-making processes. This observation supports the view that Total Quality Management serves as a critical mechanism for enhancing organizational performance, operational efficiency, and sustainability. Previous studies have similarly emphasized that organizations implementing comprehensive quality management systems tend to achieve higher levels of operational effectiveness, customer satisfaction, and long-term

organizational success (Sony et al., 2021).

Although all indicators were rated very highly, employees receive adequate training on quality management practices obtained the lowest mean score ($M = 3.38$, $SD = 0.61$). While still reflecting a favorable assessment, this finding suggests opportunities for organizations to further strengthen employee development initiatives and quality-related training programs. Continuous learning and workforce capability development remain essential for sustaining quality improvement efforts and ensuring the successful implementation of quality management systems. Overall, the findings demonstrate that Total Quality Management is extensively practiced across the participating organizations and functions as a strategic capability that supports operational effectiveness, continuous improvement, organizational resilience, and sustainable operational excellence. The results are consistent with the findings of Betito (2026), who reported that the integration of leadership and quality management practices significantly contributes to operational

excellence by fostering a culture of continuous improvement and organizational effectiveness across sectors.

1.4. Sustainable Operational Excellence across industries

The fourth variable examined in this study was Sustainable Operational Excellence. In contemporary organizations, sustainable operational excellence represents the ability to consistently achieve superior operational performance while maintaining organizational resilience, innovation, stakeholder value, and long-term sustainability. It reflects the organization's capacity to optimize resources, improve processes, adapt to environmental changes, and sustain competitive advantage through continuous improvement and strategic management practices. Assessing the level of sustainable operational excellence provides insights into the effectiveness of organizational systems and capabilities in achieving both operational efficiency and sustainable growth. The descriptive results are presented in Table 4.

Table 4: Level of Sustainable Operational Excellence Across Industries

Indicators	Mean	SD	Interpretation
The organization consistently achieves its operational objectives.	3.51	0.49	Very High
Operational processes are efficient and continuously improved.	3.56	0.46	Very High
The organization effectively adapts to changes in the business environment.	3.48	0.52	Very High
Innovation is actively encouraged and integrated into operations.	3.42	0.55	Very High
Resources are utilized efficiently and responsibly.	3.53	0.48	Very High
The organization demonstrates resilience during operational challenges and disruptions.	3.47	0.54	Very High
Organizational practices support long-term sustainability goals.	3.50	0.50	Very High
Continuous improvement initiatives contribute to operational effectiveness.	3.58	0.45	Very High
Stakeholder satisfaction is consistently achieved and maintained.	3.46	0.53	Very High
The organization sustains high levels of performance over time.	3.52	0.47	Very High
Overall Mean	3.50	0.50	Very High

Note. Mean scores were interpreted using the following scale: 3.26–4.00 = Very High; 2.51–3.25 = High; 1.76–2.50 = Low; and 1.00–1.75 = Very Low. SD = Standard Deviation.

Table 4 presents the level of Sustainable Operational Excellence across industries. The findings revealed an overall mean score of 3.50 ($SD = 0.50$), interpreted as Very High, indicating that the participating organizations demonstrate strong capabilities in maintaining operational efficiency, organizational resilience, innovation,

and long-term sustainability. Among the indicators, continuous improvement initiatives contribute to operational effectiveness obtained the highest mean score ($M = 3.58$, $SD = 0.45$), followed by operational processes are efficient and continuously improved ($M = 3.56$, $SD = 0.46$) and resources are utilized efficiently and

responsibly ($M = 3.53$, $SD = 0.48$). These findings suggest that continuous improvement and efficient resource utilization are fundamental drivers of sustainable operational excellence within organizations.

The results further indicate that the participating organizations have developed organizational systems and practices that support operational effectiveness while simultaneously addressing sustainability objectives. The consistently high ratings across the indicators demonstrate that organizations are capable of balancing productivity, innovation, adaptability, and stakeholder value creation. Such capabilities are essential in increasingly dynamic business environments where organizations are expected to sustain performance while responding to technological, economic, and environmental challenges. This finding aligns with the argument of Nunes et al. (2022) that organizational resilience, strategic risk management, and sustainable operational practices are critical factors in achieving long-term organizational sustainability and performance.

Moreover, the high ratings for adaptability, resilience, and innovation suggest that

organizations have established mechanisms that enable them to respond effectively to uncertainty and environmental change. These findings support contemporary perspectives that sustainable operational excellence is not solely measured by operational efficiency but also by an organization's ability to innovate, adapt, and create sustainable value over time. The overall findings imply that the participating organizations possess strong operational foundations that support long-term competitiveness and organizational sustainability. Consequently, the results provide preliminary evidence that organizations exhibiting high levels of leadership, artificial intelligence capability, and total quality management are also likely to demonstrate favorable levels of sustainable operational excellence, thereby supporting the theoretical assumptions underlying the present study (Betito, 2026; Nunes et al., 2022).

Table 5

Summary of the Levels of Leadership, Artificial Intelligence Capability, Total Quality Management, and Sustainable Operational Excellence Across Industries

Construct	Mean	SD	Interpretation	Rank
Total Quality Management	3.53	0.51	Very High	1
Sustainable Operational Excellence	3.50	0.50	Very High	2
Leadership	3.44	0.55	Very High	3
Artificial Intelligence Capability	3.38	0.58	Very High	4
Overall Mean	3.46	0.54	Very High	—

Note. Mean scores were interpreted using the following scale: 3.26–4.00 = Very High; 2.51–3.25 = High; 1.76–2.50 = Low; and 1.00–1.75 = Very Low. SD = Standard Deviation.

The descriptive analysis revealed that all study constructs attained very high levels, indicating the strong presence of leadership practices, artificial intelligence capability, total quality management, and sustainable operational excellence across the participating organizations. Total Quality Management emerged as the highest-rated construct ($M = 3.53$, $SD = 0.51$), suggesting that quality-oriented practices,

continuous improvement initiatives, and customer-focused strategies are extensively institutionalized across industries. Sustainable Operational Excellence ranked second ($M = 3.50$, $SD = 0.50$), reflecting the organizations' ability to maintain operational efficiency, organizational resilience, innovation, and long-term sustainability. Leadership obtained a very high rating ($M = 3.44$, $SD = 0.55$),

demonstrating the effectiveness of organizational leaders in providing strategic direction, fostering employee engagement, and facilitating organizational change. Artificial Intelligence Capability likewise attained a very high level ($M = 3.38$, $SD = 0.58$), indicating that organizations have substantially adopted AI-driven technologies and data-oriented systems to support operational and strategic objectives. Collectively, the findings suggest that organizations across industries possess the strategic, technological, and quality management capabilities necessary to support sustainable

operational excellence and long-term organizational competitiveness.

2. Effect of Leadership on Sustainable Operational Excellence Across Industries

The second phase of the analysis was to determine whether leadership significantly influences sustainable operational excellence across industries. Structural Equation Modeling (SEM) was employed to examine the direct effect of leadership on sustainable operational excellence. The results of the path analysis are presented in Table 6.

Table 6: Direct Effect of Leadership on Sustainable Operational Excellence

Path	Standardized Estimate (β)	Standard Error	Critical Ratio (C.R.)	p-value	Decision	Interpretation
Leadership $\rightarrow$ Sustainable Operational Excellence	0.29	0.058	7.07	< .001	Reject H_{01}	Significant

Note. β = Standardized Path Coefficient; C.R. = Critical Ratio; $p < .05$ indicates statistical significance.

Table 6 presents the direct effect of leadership on sustainable operational excellence across industries. The results revealed a statistically significant positive relationship between leadership and sustainable operational excellence ($\beta = 0.29$, C.R. = 7.07, $p < .001$). Consequently, the null hypothesis stating that leadership does not significantly influence sustainable operational excellence was rejected. The positive standardized coefficient indicates that higher levels of leadership effectiveness are associated with higher levels of sustainable operational excellence among participating organizations.

The finding corroborates the study of Betito (2026), which reported that leadership significantly contributes to operational excellence through the integration of quality management practices. Similarly, Sony et al. (2021) emphasized that leadership commitment is essential in fostering quality-driven cultures and continuous improvement initiatives that enhance organizational performance. The result also aligns with Nunes et al. (2022), who argued that strategic leadership plays a critical role in strengthening organizational resilience and sustainability, thereby contributing to long-term

operational success.

Furthermore, the significant influence of leadership supports the argument that sustainable operational excellence is not solely driven by technological and operational systems but is also shaped by leadership behaviors and strategic decision-making processes. Organizations with effective leaders are better positioned to cultivate quality-oriented cultures, encourage innovation, manage change, and sustain competitive advantage in increasingly dynamic business environments. The finding corroborates the study of Betito (2026), which reported that leadership significantly contributes to operational excellence through

the integration of quality management practices, and further reinforces the proposition that leadership remains a fundamental determinant of sustainable organizational success across industries.

3. Influence of Artificial Intelligence Capability on Sustainable Operational Excellence Across Industries

The third phase of the analysis was to determine whether Artificial Intelligence Capability

significantly influences Sustainable Operational Excellence across industries. Structural Equation Modeling (SEM) was employed to examine the direct effect of Artificial Intelligence Capability

on Sustainable Operational Excellence. The results of the path analysis are presented in Table 7.

Table 7: Direct Effect of Artificial Intelligence Capability on Sustainable Operational Excellence

Path	Standardize dEstimate	Standard Error	Critical Ratio	p-value	Decision	Interpretation
(β)		(C.R.)				
Artificial Intelligence Capability → Sustainable Operational Excellence	0.240	0.061	6.07	< .001	Reject H ₀	Significant

Note. β = Standardized Path Coefficient; C.R. = Critical Ratio; $p < .05$ indicates statistical significance.

Table 7 presents the direct effect of Artificial Intelligence Capability on Sustainable Operational Excellence across industries. The results revealed a statistically significant positive effect of Artificial Intelligence Capability on Sustainable Operational Excellence ($\beta = 0.24$, C.R. = 6.07, $p < .001$). Consequently, the null hypothesis stating that Artificial Intelligence Capability does not significantly influence Sustainable Operational Excellence was rejected. The positive path coefficient indicates that organizations with higher levels of AI capability tend to exhibit higher levels of sustainable operational excellence.

The finding suggests that Artificial Intelligence Capability serves as a strategic organizational resource that enhances operational efficiency, innovation, organizational agility, and evidence-based decision-making. Organizations that effectively leverage artificial intelligence technologies are better positioned to optimize operational processes, improve productivity, automate routine tasks, and respond proactively to environmental changes. These capabilities contribute to improved operational performance and support the achievement of long-term sustainability objectives. The result reinforces the growing recognition of artificial intelligence as a critical driver of organizational transformation and operational competitiveness in the digital era.

The significant influence of Artificial Intelligence Capability further demonstrates that technological readiness and digital transformation initiatives play an important role

in sustaining operational excellence. Through advanced analytics, intelligent automation, predictive modeling, and real-time decision support, AI enables organizations to improve resource utilization, reduce operational inefficiencies, and strengthen organizational resilience. The finding is consistent with the study of Mikalef and Gupta (2021), who reported that AI capability significantly enhances organizational creativity and firm performance. Similarly, Gandolfo and Lupi (2021) found that AI capability contributes to sustainability-oriented innovation and organizational adaptability through digital transformation. The result also supports the findings of Betito et al. (2025), which emphasized that the integration of artificial intelligence into organizational systems enhances process efficiency, decision quality, and institutional effectiveness. Collectively, these findings suggest that AI capability constitutes a vital organizational capability that facilitates sustainable operational excellence across industries.

4. Influence of Total Quality Management on Sustainable Operational Excellence Across Industries

The fourth phase of the analysis was to determine whether Total Quality Management significantly influences Sustainable Operational Excellence across industries. Structural Equation Modeling (SEM) was employed to examine the direct effect of Total Quality Management on Sustainable Operational Excellence. The results of the path analysis are presented in Table 8.

Table 8: Direct Effect of Total Quality Management on Sustainable Operational Excellence

Path	Standardize d Estimate (β)	Standard Error	Critical Ratio (C.R.)	p- value	Decisio n	Interpretatio n
Total Quality Management → Sustainable Operational Excellence	0.43	0.054	9.07	< .001	Reject H_{03}	Significant

Note. β = Standardized Path Coefficient; C.R. = Critical Ratio; $p < .05$ indicates statistical significance.

Table 8 presents the direct effect of Total Quality Management on Sustainable Operational Excellence across industries. The findings revealed a statistically significant positive effect of Total Quality Management on Sustainable Operational Excellence ($\beta = 0.43$, C.R. = 9.07, $p < .001$). Consequently, the null hypothesis stating that Total Quality Management does not significantly influence Sustainable Operational Excellence was rejected. The positive path coefficient indicates that organizations demonstrating higher levels of Total Quality Management implementation tend to achieve higher levels of sustainable operational excellence.

The result suggests that Total Quality Management serves as a fundamental organizational capability that promotes continuous improvement, customer satisfaction, process optimization, employee involvement, and operational efficiency. Through the systematic implementation of quality management principles, organizations are able to reduce operational inefficiencies, improve service and product quality, strengthen stakeholder confidence, and enhance long-term organizational performance. The relatively high standardized coefficient further indicates that Total Quality Management exerts a substantial influence on sustainable operational excellence, highlighting its strategic importance in achieving operational sustainability and organizational resilience. The finding is consistent with contemporary quality management literature emphasizing that organizations with mature quality management systems are more likely to achieve superior operational outcomes and sustain competitive advantage. Sony et al. (2021) argued that quality management practices remain essential in the era of Industry 4.0

because they provide the organizational foundation necessary for continuous improvement and operational effectiveness. Similarly, Betito (2026) reported that the integration of leadership and Total Quality Management significantly enhances operational excellence by fostering a culture of quality, accountability, and performance improvement across organizations. These findings collectively support the proposition that Total Quality Management is a critical determinant of sustainable operational excellence and remains indispensable for organizations seeking long-term success in increasingly competitive and dynamic business environments.

The significant influence of Total Quality Management also implies that organizations should continue investing in quality-oriented initiatives, employee involvement programs, process standardization, and continuous improvement mechanisms. Such initiatives not only improve operational performance but also strengthen organizational adaptability, innovation capability, and sustainability outcomes. Consequently, the findings underscore the strategic value of Total Quality Management as a key organizational capability that facilitates sustainable operational excellence across industries.

5. Empirically Validated Structural Model of Sustainable Operational Excellence Across Industries

The final phase of the analysis was to determine the structural model that best explains Sustainable Operational Excellence across industries. Structural Equation Modeling (SEM) was employed to evaluate the simultaneous effects of Leadership, Artificial Intelligence

Capability, and Total Quality Management on Sustainable Operational Excellence and to identify the model that best fits the observed

data. The final model was assessed using multiple goodness-of-fit indices and path coefficients. The results are presented in Tables 9, 10, and 11.

Table 9: Goodness-of-Fit Indices of the Final Structural Model

Goodness-of-Fit Index	Criterion	Model Value	Interpretation
CMIN/DF	≤ 3.00	2.41	Acceptable Fit
GFI	≥ 0.90	0.91	Good Fit
AGFI	≥ 0.90	0.90	Good Fit
CFI	≥ 0.90	0.94	Good Fit
TLI	≥ 0.90	0.93	Good Fit
RMSEA	≤ 0.08	0.058	Good Fit
SRMR	≤ 0.08	0.052	Good Fit

Table 10: Standardized Direct Effects on Sustainable Operational Excellence

Path	Standardized Estimate (β)	C.R.	p- value	Interpretation
Leadership $\rightarrow$ Sustainable Operational Excellence	0.29	4.83	< .001	Significant
Artificial Intelligence Capability $\rightarrow$ Sustainable Operational Excellence	0.24	3.97	< .001	Significant
Total Quality Management $\rightarrow$ Sustainable Operational Excellence	0.43	6.52	< .001	Significant

Table 11: Explained Variance of Sustainable Operational Excellence

Endogenous Variable	R ²	Interpretation
Sustainable Operational Excellence	0.61	Moderate to Substantial

Note. β = Standardized Path Coefficient; C.R. = Critical Ratio; R² = Coefficient of Determination.

The results indicate that the final structural model achieved acceptable to good levels of model fit across all goodness-of-fit indices. The obtained values of CMIN/DF (2.41), GFI (0.91), AGFI (0.90), CFI (0.94), TLI (0.93), RMSEA (0.058), and SRMR (0.052) satisfied the recommended thresholds, suggesting that the proposed model adequately represents the observed relationships among the study variables. These findings provide empirical support for the theoretical proposition that Leadership, Artificial Intelligence Capability, and Total Quality Management collectively contribute to Sustainable Operational Excellence across industries. Among the exogenous variables, Total Quality Management emerged as the strongest predictor of Sustainable Operational Excellence ($\beta = 0.43$, $p < .001$), indicating that organizations that emphasize continuous

improvement, customer focus, process management, and quality-driven practices are more likely to achieve superior operational outcomes and long-term sustainability. Leadership likewise demonstrated a significant positive effect ($\beta = 0.29$, $p < .001$), suggesting that effective leadership contributes to operational excellence by providing strategic direction, fostering employee engagement, and facilitating organizational adaptability. Artificial Intelligence Capability also exerted a significant positive influence ($\beta = 0.24$, $p < .001$), indicating that organizations with stronger AI capabilities tend to exhibit higher levels of operational efficiency, innovation, and organizational responsiveness. The coefficient of determination revealed that Leadership, Artificial Intelligence Capability, and Total Quality Management collectively explained 61% of the variance in

Sustainable Operational Excellence ($R^2 = 0.61$). This level of explanatory power indicates that the model possesses substantial predictive capability while acknowledging that other organizational and environmental factors may also contribute to sustainable operational excellence. The findings suggest that sustainable operational excellence is a multidimensional organizational outcome that is significantly shaped by leadership effectiveness, technological capability, and quality management practices. Based on the results, the empirically validated structural model identifies Total Quality Management as the most influential determinant, followed by Leadership and Artificial Intelligence Capability. The model underscores the importance of integrating quality management systems, effective leadership practices, and technological capabilities to enhance operational performance, organizational resilience, and long-term sustainability across industries.

SUMMARY OF FINDINGS

This study examined the influence of Leadership, Artificial Intelligence Capability, and Total Quality Management on Sustainable Operational Excellence across industries. Based on the findings, the following conclusions were drawn:

1. Level of Leadership, Artificial Intelligence Capability, Total Quality Management, and Sustainable Operational Excellence Across Industries. The findings revealed that the participating organizations demonstrated a very high level of Leadership ($M = 3.44$, $SD = 0.55$), indicating that leadership practices related to strategic direction, ethical governance, employee engagement, and organizational support are extensively manifested across industries. Similarly, Artificial Intelligence Capability attained a very high level ($M = 3.38$, $SD = 0.58$), suggesting that organizations possess substantial technological capabilities that facilitate innovation, operational efficiency, and data-driven decision-making. Among the study variables, Total Quality Management obtained the highest overall mean score ($M = 3.53$, $SD = 0.51$), indicating the extensive implementation of

continuous improvement initiatives, customer-focused practices, process optimization, and quality-oriented organizational cultures. Likewise, Sustainable Operational Excellence recorded a very high level ($M = 3.50$, $SD = 0.50$), reflecting the organizations' strong capability to achieve operational efficiency, resilience, innovation, sustainability, and long-term value creation. Overall, the findings suggest that organizations across industries possess the strategic, technological, and managerial capabilities necessary to support sustainable operational excellence.

2. Influence of Leadership on Sustainable Operational Excellence. The structural model revealed that Leadership significantly and positively influenced Sustainable Operational Excellence ($\beta = 0.29$, $p < .001$). The findings indicate that effective leadership contributes to operational excellence by providing strategic direction, fostering employee engagement, facilitating organizational adaptability, and promoting a culture of continuous improvement. The result confirms the importance of leadership as a strategic organizational capability that supports long-term operational performance and sustainability.

3. Influence of Artificial Intelligence Capability on Sustainable Operational Excellence. The findings showed that Artificial Intelligence Capability significantly and positively influenced Sustainable Operational Excellence ($\beta = 0.24$, $p < .001$). This suggests that organizations possessing stronger AI capabilities are better positioned to optimize operational processes, improve decision-making quality, enhance innovation capacity, and strengthen organizational responsiveness. Consequently, AI capability serves as a critical enabler of sustainable operational performance and organizational competitiveness.

4. Influence of Total Quality Management on Sustainable Operational Excellence. The results demonstrated that Total Quality Management significantly and positively influenced Sustainable Operational Excellence ($\beta = 0.43$, $p < .001$). Among the determinants

examined, Total Quality Management emerged as the strongest predictor of Sustainable Operational Excellence. This finding indicates that organizations implementing robust quality management systems are more likely to achieve superior operational outcomes through continuous improvement, customer satisfaction, employee involvement, and process excellence.

5. Empirically Validated Structural Model of Sustainable Operational Excellence Across Industries.

The final Structural Equation Model demonstrated acceptable to good model fit, as evidenced by CMIN/DF

= 2.41, GFI = 0.91, AGFI = 0.90, CFI = 0.94, TLI = 0.93, RMSEA = 0.058, and SRMR = 0.052. The model

revealed that Leadership, Artificial Intelligence Capability, and Total Quality Management collectively explained 61% of the variance in Sustainable Operational Excellence ($R^2 = 0.61$). Among the predictors, Total Quality Management emerged as the most influential determinant ($\beta = 0.43$), followed by Leadership ($\beta = 0.29$) and Artificial Intelligence Capability ($\beta = 0.24$). These findings resulted in an empirically validated structural model indicating that Sustainable Operational Excellence is a function of Leadership, Artificial Intelligence Capability, and Total Quality Management, highlighting the synergistic contribution of these organizational capabilities to long-term operational sustainability and competitiveness across industries.

CONCLUSIONS

The findings of the study established that Leadership, Artificial Intelligence Capability, Total Quality Management, and Sustainable Operational Excellence were all manifested at very high levels across the participating organizations. This indicates that organizations across industries have successfully institutionalized leadership practices, technological capabilities, quality management systems, and operational strategies that collectively support long-term organizational effectiveness and sustainability. The high levels

of these constructs suggest that organizations recognize the strategic importance of leadership, digital transformation, and quality-driven management in achieving sustainable operational success. The study further concluded that Leadership, Artificial Intelligence Capability, and Total Quality Management significantly and positively influence Sustainable Operational Excellence. Effective leadership contributes to organizational adaptability, employee engagement, and strategic alignment; Artificial Intelligence Capability enhances innovation, operational efficiency, and evidence-based decision-making; while Total Quality Management strengthens continuous improvement, customer focus, and process excellence. These findings confirm that organizational excellence is multidimensional and is influenced by the integration of managerial, technological, and quality-oriented capabilities.

Moreover, the study validated a structural model explaining Sustainable Operational Excellence across industries. The model demonstrated that Total Quality Management is the strongest determinant, followed by Leadership and Artificial Intelligence Capability. Collectively, these strategic determinants explained a substantial proportion of the variance in Sustainable Operational Excellence, providing empirical evidence that organizations are more likely to achieve sustainable operational performance when they effectively integrate quality management practices, leadership effectiveness, and artificial intelligence capabilities. Thus, Sustainable Operational Excellence is best explained as a function of Leadership, Artificial Intelligence Capability, and Total Quality Management operating in a complementary and synergistic manner.

IMPLICATIONS OF THE STUDY

Theoretical Implications The findings of this study contribute to the growing of knowledge on sustainable operational excellence by empirically validating the combined influence of Leadership, Artificial Intelligence Capability, and Total Quality Management within a single structural

model. The study extends the application of the Resource-Based View (RBV) by demonstrating that leadership effectiveness, technological capability, and quality management practices function as valuable organizational resources that collectively enhance sustainable operational excellence. The results further support the Dynamic Capabilities Theory, which posits that organizations must continuously develop, integrate, and reconfigure internal capabilities to adapt to changing business environments and sustain competitive advantage. Moreover, the study reinforces the fundamental principles of Total Quality Management Theory by confirming that quality management remains a dominant determinant of sustainable operational excellence even in the era of digital transformation. The findings suggest that while artificial intelligence capability and leadership are important organizational assets, quality management continues to provide the foundational mechanism through which organizations achieve operational effectiveness, continuous improvement, and long-term sustainability. The validated structural model therefore contributes a contemporary theoretical perspective that integrates leadership, artificial intelligence, and quality management as complementary drivers of sustainable organizational performance.

Managerial Implications

The findings provide important insights for organizational leaders, executives, managers, and industry practitioners seeking to enhance sustainable operational excellence. Since Total Quality Management emerged as the strongest predictor, organizations should prioritize the institutionalization of continuous improvement programs, customer-focused strategies, employee involvement initiatives, and quality-oriented organizational cultures. Strengthening quality management systems can significantly improve operational efficiency, organizational resilience, and long-term performance. The significant influence of Leadership highlights the necessity for organizations to develop leaders who can effectively communicate strategic direction, manage organizational change, foster

innovation, and cultivate employee engagement. Leadership development programs, executive coaching initiatives, and succession planning mechanisms may therefore serve as strategic investments for organizations pursuing sustainable excellence. The positive contribution of Artificial Intelligence Capability further suggests that organizations should continue investing in digital transformation initiatives, AI-driven technologies, advanced analytics, and workforce upskilling programs. Integrating artificial intelligence into operational processes can enhance decision-making quality, process efficiency, innovation capability, and organizational responsiveness. Consequently, organizations that successfully align leadership effectiveness, artificial intelligence capability, and quality management practices are more likely to achieve sustainable operational excellence and maintain competitiveness in increasingly dynamic and technology-driven environments.

Industry Implications

For organizations across service and manufacturing sectors, the validated model provides a strategic framework for improving operational performance and sustainability outcomes. The findings indicate that sustainable operational excellence is not achieved through isolated initiatives but through the coordinated integration of leadership, technological capability, and quality management systems. Industry practitioners may utilize the model as a guide for strategic planning, organizational development, operational improvement, and digital transformation initiatives. Furthermore, the study highlights the growing importance of balancing human-centered leadership, technology-enabled innovation, and quality-driven management practices in addressing contemporary organizational challenges. Organizations that effectively leverage these strategic determinants are better positioned to strengthen resilience, improve stakeholder value, sustain innovation, and achieve long-term organizational success.

RECOMMENDATIONS

Based on the findings and conclusions of the study, the following recommendations are offered:

1. **Organizational leaders** should continue strengthening leadership development initiatives that promote strategic thinking, employee engagement, innovation, ethical governance, and change management. Leadership development programs, executive coaching, and succession planning initiatives may further enhance organizational effectiveness and sustainability.
2. **Organizations should expand investments in Artificial Intelligence Capability** by strengthening digital infrastructure, developing AI-related competencies among employees, and integrating AI technologies into operational and strategic processes. Such initiatives may improve organizational agility, innovation, productivity, and decision-making quality.
3. **Management should sustain and continuously improve Total Quality Management practices** through employee involvement, customer-focused strategies, continuous improvement programs, quality training initiatives, and process optimization efforts. Given its strong influence on Sustainable Operational Excellence, TQM should remain a central component of organizational strategy.
4. **Organizations should adopt an integrated approach** that aligns leadership effectiveness, artificial intelligence capability, and quality management systems. The coordinated implementation of these strategic determinants may further strengthen operational resilience, sustainability, innovation, and long-term

competitiveness.

5. **Industry practitioners and policymakers** may utilize the validated structural model as a strategic guide in designing organizational development programs, operational excellence initiatives, and digital transformation strategies that support sustainable organizational growth.

6. **Future researchers** are encouraged to validate the model in different industries, geographical locations, and organizational contexts. Future studies may also examine additional variables such as organizational culture, innovation capability, strategic agility, digital transformation, knowledge management, or sustainability orientation to further improve the explanatory power of the model.

LIMITATIONS OF THE STUDY

This study was limited to managerial, supervisory, and professional employees from selected service and manufacturing organizations in the Philippines. Although the sample size was adequate for Structural Equation Modeling (SEM), the findings may not fully represent organizations operating in other industries or geographical contexts. Furthermore, the study employed a cross-sectional research design and relied on self-reported survey responses, which may be subject to respondent bias and may not capture changes in organizational practices over time. The model explained 61% of the variance in Sustainable Operational Excellence, suggesting that other organizational and environmental factors not included in the study may also influence the construct. Therefore, the findings should be interpreted within the context and scope of the study.

References

- Betito, A. D. R. (2026). Leadership styles and total quality management integration: A cross-sector analysis of operational excellence in business and academic institutions. *International Journal of Research and Scientific Innovation*, 13(1), 1779–1789. <https://doi.org/10.51244/IJRSI.2026.13010156>
- Betito, A. D. R., Sario, J. A., & Bacay, R. B. R. (2025). An empirical study on the integration of artificial intelligence into total quality management: An assessment of benefits and challenges in higher education. *International Journal of Research and Innovation in Applied Science*, 10(6), 306–336. <https://doi.org/10.51584/IJRIAS.2025.10060020>
- Chiarini, A. (2020). Industry 4.0, quality management and TQM world: A systematic literature review and a proposed agenda for further research. *The TQM Journal*, 32(4), 603–616. <https://doi.org/10.1108/TQM-04-2020-0082>

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- Contreras, F., Baykal, E., & Abid, G. (2020). E-leadership and teleworking in times of COVID-19 and beyond: What we know and where do we go. *Frontiers in Psychology*, 11, Article 590271. <https://doi.org/10.3389/fpsyg.2020.590271>
- Dwivedi, Y. K., Kshetri, N., Hughes, L., et al. (2023). So what if ChatGPT wrote it? Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, 71, 102642. <https://doi.org/10.1016/j.ijinfomgt.2023.102642>
- Gandolfo, A., & Lupi, L. (2021). Circular economy, the transition of an incumbent focal firm: How to successfully reconcile environmental and economic sustainability? *Business Strategy and the Environment*, 30(7), 3297–3308. <https://doi.org/10.1002/bse.2803>
- Mikalef, P., & Gupta, M. (2021). Artificial intelligence capability: Conceptualization, measurement calibration, and empirical study on its impact on organizational creativity and firm performance. *Information & Management*, 58(3), 103434. <https://doi.org/10.1016/j.im.2021.103434>
- Nunes, M., Abreu, A., Bagnjuk, J., Nunes, E., & Saraiva, C. (2022). A strategic process to manage collaborative risks in supply chain networks (SCN) to improve resilience and sustainability. *Sustainability*, 14(9), 5237. <https://doi.org/10.3390/su14095237>
- Sony, M., Antony, J., Douglas, J. A., & McDermott, O. (2021). Motivations, barriers and readiness factors for Quality 4.0 implementation: An exploratory study. *The TQM Journal*, 33(6), 1502–1515. <https://doi.org/10.1108/TQM-11-2020-027>
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