



## Unraveling Contradictions in Quality Management Implementation: An Empirical Study of TQM and ISO Certification in SMEs

Mahfud Nur Najamuddin<sup>1</sup>, Ramlawati<sup>1</sup>, Nursiany<sup>2</sup>

<sup>1</sup>Department of Economics and Business, Muslim University of Indonesia

<sup>2</sup>Postgraduate Muslim University of Indonesia

\*Corresponding Author: Mahfud Nur Najamuddin

Email: [mahfud.nurnajamuddin@umi.ac.id](mailto:mahfud.nurnajamuddin@umi.ac.id)



### Article Info

#### Article history:

Received 07 May 2025

Received in revised form 25 May 2025

Accepted 07 July 2025

#### Keywords:

SMEs

Total Quality Management

Management Infrastructure

Management Process

Stakeholders

Quality Performance

#### JEL Classification

L15, L25, L60, M11, M21,

O14, O33, O53, C38

### Abstract

*In an environment marked by escalating competition, critical customer scrutiny, and evolving supply chain expectations, quality management has become indispensable, particularly for small and medium-sized enterprises (SMEs). A review of existing literature reveals that adopting formal systems like Total Quality Management (TQM) and ISO certification often fails to yield significant performance benefits. This study therefore probes a more fundamental issue: to what extent is quality performance driven by the mere existence of these systems versus their level of implementation within managerial processes? Drawing on empirical research involving 120 manufacturing SMEs in Makassar City, analyzed through structural equation modelling (SEM), this paper investigates the interdependencies among top management support, infrastructure, stakeholder participation, process management, and quality performance. Findings indicate that only process management exerts a direct influence on quality performance, while leadership, infrastructure, and stakeholder involvement exert indirect, residual effects constrained by how quality processes are configured. Consequently, this study posits that SMEs should embed quality as an integral, internalized practice, rigorously implement it, and continually pursue improvements. High performance in these firms appears less contingent on external certification or formal policy adoption and more on the strategic integration of quality within their process systems and routines. This insight underscores the need for SMEs to shift focus from compliance-driven approaches to cultivating deeply ingrained quality-centric operational cultures, thereby ensuring sustained competitive advantage and responsiveness to dynamic market demands.*

## Introduction

The quality management has long gone beyond the sectors-based concerns but, in the current economic landscape, has closely moved to serve as a competitive hub as well as a survival necessity especially among the small and medium enterprises (SMEs). The cession of geographic protectionism and the consequent exposure to markets of nationwide economies to transnational rivals force SMEs to ascribe systematic management of quality in order to resist the fall in price, grip of customers and meet the rising regulatory requirements (Prajogo and Sohal 2006). While large scale firms have the necessary financial, staffing and infrastructure to incorporate the whole quality systems, the SMEs have fewer resources to work with that require limited adaptation and practical ad-hocness (Yusof & Aspinwall 2000; Grant, 2024). Moreover, even with such a gap in resources, SMEs are still expected to meet the quality standards compelled by the demands of the customers, supply chain needs, and those pressures created by the institutions (Psomas et al., 2013). It therefore does not follow that the key research question to be addressed is whether the adoption of quality management places in

SMEs should be done or not but, instead, how its adoption works in the context of a limited and often informal organizational environment to deliver measurable performance impacts.

The Total Quality Management (TQM) literature traditionally holds the top management commitment, process control, infrastructure and stakeholder involvement as co-equal antecedents of quality performance (Dölarslan, 2009; Kaynak, 2003). However, the mutual associations between the constructs are not theorized adequately, and it is particularly true in SME settings. In empirical research it is regularly assumed that leadership, infrastructure and process are additive in parallel thus each dimension is balance in terms of its driver of performance (Sila & Ebrahimpour, 2005; Zu et al., 2010). Nonetheless, this premise does not address an essential issue, i.e., Do these elements affect the quality outcomes independently or they act like two master/subordinate constructs, and a particular construct is more of an enabler of another? New research indicates that the response can be more complicated. As an example, it has been stated that factors of internal consistency and system integration rather than the existence of quality components define the success of TQM implementation (Anderson et al., 1994; Samson & Terziovski, 1999). These revelations open the potential of a restructuring of established models: a specification no longer of what is important, but of how it is important, as well as in what channels effects are produced.

This paper takes up that reconfiguration by speculating the intermediary activity that focuses on quality enablers to performance as the administrative procedure itself. Whereas strategic intent may establish strategy and infrastructure may formalize structural capacity, process discipline as used in this paper, i.e., the degree to which operations are standardized, tracked, enhanced, and repetitively performed, represents that avenue by and in which quality systems become efficacious. This argument is especially influential in the case of SMEs. Several studies have established that SMEs often implement formal systems (e.g. ISO 9000 or lean tools) and either fail to implement them or use them injuriously due to failure of effective procedure integration (Boiral, 2003; Corbett et al., 2005). When this happens, such failure is not that of commitment or system design but of internalization of operations. The study by Fotopoulos & Psomas (2009) and Psomas & Jaca (2016) highlights that it is not really the adoption of quality practices that improves any performance but rather the extent to which they are implemented in the form of process routines. In a like manner, Choo et al. (2007) assert that sustainable quality improvement is grounded on learning mechanisms through the process and not alleviation of leadership acts or infrastructural developments.

The correlations between the quality constructs are therefore not statistic figments but a manifestation of the organizational rationality. In SMEs, with limited managerial attention, uncertain roles and informal norms that tend to prevail over written processes, the issue of leadership support and infrastructural preparedness coming together at the process level become even more critical. Literature argues that in many cases, leadership can be presented in SMEs but its operational impact is only possible through the existence of systems and routines to use the vision and put it into practice (Rahman & Bullock, 2005; McAdam, 2000). It is the same in the case of infrastructure where it is not until processes enable actions like planning, control, feedback and corrective actions that performance implication of infrastructure is manifested/realized (Sousa & Voss, 2002). This paper thus propagates the notion that leadership and infrastructure need not be perceived as the direct drivers but rather come in as systemic facilitators where it seems that the influence only takes place when transversed through the process mechanisms.

This theoretical revising is urgent in practice. In many cases, SMEs invest a lot of resources and effort in leadership development programs, certifications, and other training activities and

find out very low, uneven returns (Karuppusami & Gandhinathan, 2006). These results indicate that the important difference is one of implementation depth as opposed to one of adoption breadth. This study provides a better explanatory model (one that accords with the real world operation experiences of SMEs) by defining, process management, as the mediating entity through which leadership support, infrastructural completeness, and stakeholder participation amount to performance. Based on the empirical information of 120 SMEs in major manufacturing industries in the city of Makassar, Indonesia, the present study uses structural equation modeling (SEM) to conduct model tests using the proposed model. The findings indicate a clear pattern: process management is the sole construct that directly influences quality performance, while leadership, infrastructure, and stakeholder engagement exert only indirect effects via process mediation.

By demonstrating these relational dynamics, the study contributes a grounded theoretical model that redefines how performance in quality management systems should be understood—particularly in non-bureaucratic, high-variance environments such as SMEs. It offers a corrective to overly linear or siloed models by revealing the systemic and embedded nature of performance causality. Ultimately, the research speaks to a core insight: quality is not achieved by possession of systems or alignment with standards, but by the organization's capacity to embed strategic intent into operational practice through process execution.

### **Research Hypotheses**

Based on the conceptual model and empirical rationale discussed above, the following hypotheses were formulated:

H1: Top Management Support has a significant positive effect on the completeness of Management Infrastructure.

H2: Management Infrastructure has a significant positive effect on Management Process.

H3: Management Infrastructure has a significant positive effect on Stakeholder Participation.

H4: Stakeholder Participation has a significant positive effect on Management Process.

H5: Management Process has a significant positive effect on Quality Performance.

### **Methods**

The research proposed is the quantitative study based on explanatory study where the researcher will be able to explore causal effects of key constructs of quality management practices within the background of small and medium sized enterprises (SMEs) in the Makassar City. The choice of Makassar is especially topical in terms of number of active industrial complexes and targeted work of the government to create SME centers in the region. The study is organized in the system of empirically testable frameworks that are based on the widely spread quality management theories, specifically, on the Total Quality Management (TQM) and ISO certification. The established theoretical model highlights five interdependent constructs which include top management support, completeness of management infrastructure, stakeholder participation, quality of management process and quality performance. As the main analytical instrument, Structural Equation Modeling (SEM) is employed that enables one to estimate intertwined cause-effect links between latent variables in a single effort.

The target population of the study is the SMEs in Makassar City in industrial centers. The selection of these centers was not by chance as they can be deemed historically important and develop. A high number of them are formally identified by local government programmes and have a concentration of business with similar features of operations and thus provides a consistent, meaningful sample frame. Businesses in such geographical locations are also

normally advantaged by the greater availability of visibility and accessibility of the business premises, hence, making data collection easy. More so, they are clustered thus promoting homogeneity especially with respect to focus on industry, management and opening up to government and market.

In order to check the validity and relevance of the sampling frame, the purposive sampling strategy was used. This method proved to be correct because there was a necessity to choose businesses that have some pre-established features that will allow them to fit into the theoretical demands of the study. All the chosen SMEs are located in centers in which strategic and flagship products of Makassar are produced. These businesses have been able to survive due to successive adverse changes in the economy and are a great attribute of theirs having a hungry and a healthy economy in the surrounding areas. They also have the presence of the national market and due to this they can have a more generalized interpretation of the quality management practices with respect to the wider supply chains. Notably, the chose companies do fit the traditional definition of the SME sizes category, and they are characterized by the presence of at least 20 but no more than 200 workers. This makes the studied organizations have a high degree of management structure that is able to adopt quality systems without necessarily being affected by resource constraints like in SMEs.

The observation of 90 percent of the participants in this research was done face to face in terms of direct interview which was carried out to ensure high response rates as well as to reduce ambiguity in the comprehension of such complex constructs like quality management. In comparison with remote or mailed questionnaires, face-to-face interviews will enable instant clarification to be provided, as well as lessening the possibility of misinterpretation, this is especially significant in places where survey savvy or general knowledge of the intricacies of research may be inconsistent. The respondents were those on the decision making position or with in depth understanding of the operation like the owners, quality supervisors as well as heads of production. Their roles made sure that the information received was right, contextual, as well as, representative of strategic purpose and operational reality.

A structured questionnaire (the research instrument) was well constructed on the basis of previous empirical research using constructs that proved to be valid. The most relevant sources should be seminal articles by Saraph et al., Anderson et al., and Ravichandran and Rai, who have enlightened this study on how to operationalize the five constructs which have been adopted in this research study. All the measures were constructed using several indicators that ran on a five-point Likert ranging from strong disagreement to strong agreement. As an example, the support of top management was influenced by the involvement in leadership, strategic direction, and internal communication on the goals in terms of quality. Management infrastructure construct measured how well there were systematic policies, structured training programmes, performance based reward scheme and standardized planning process. The concept of stakeholder participation was also broad in nature, which encompassed the participation of employees, integration of suppliers and customer responsiveness in decision making that concerned with quality aspects. The constructs of management process entailed internal standardization, real time monitoring, and the optimization of the process whereas the measurement of quality performance included product reliability, the reduction of errors, and customer satisfaction.

Before official data is collected, the instrument was validated by experts and a pilot test ensured that the instrument was clear, there was construct coherence, and suitability to the local context. An appropriate adjustment was done where it was required especially on matters touching to language use and cultural adaptation, that would not happen at all and had to create an

instrument that could be used reliably. After data have been collected, they were processed with the help of Structural Equation Modeling within the AMOS program pack. Inclusion of SEM in this study was most suitable since it can model latent variables and estimate direct and indirect effect in complex path structure. The analysis was conducted in two parts, where first confirmatory factor analysis (CFA) was used to verify the measurement model, and secondly the full structural modeling was taken to test the proposed hypotheses.

In order to minimise the chance of any inaccuracies and the strength of the final results, a variety of goodness-of-fit indices were applied to the model. These were the chi-square statistic, the Comparative Fit Index (CFI), the Tucker-Lewis index (TLI) as well as the Root Mean Square Error of Approximation (RMSEA). Threshold values consistent with accepted conventions were used to interpret model fit. Additionally, the assumptions underlying SEM—such as multivariate normality, linearity, and absence of multicollinearity—were thoroughly checked before hypothesis testing commenced. Normality was examined through skewness and kurtosis values, as well as graphical analysis using normal probability plots. As recommended by Kline (2004), the data were considered normally distributed when skewness and kurtosis values fell within acceptable thresholds.

## Result and Discussion

The analysis proceeded through several stages, beginning with data screening and assumption testing, including tests for normality and homogeneity. Once assumptions were confirmed, measurement and structural models were assessed to evaluate the validity of constructs and test the proposed hypotheses.

### Normality and Homogeneity Testing

Before conducting SEM, the data were evaluated for normal distribution and variance homogeneity to ensure that they met the foundational assumptions of parametric modeling. The results are summarized in Tables 1 and 2.

Table 1. Normality Test Results (Skewness and Kurtosis Statistics)

Variable	Skewness	Std. Error (S)	Kurtosis	Std. Error (K)	Interpretation
Top Management Support	-0.212	0.221	-0.654	0.438	Normally Distributed
Management Infrastructure	-0.135	0.221	-0.501	0.438	Normally Distributed
Stakeholder Participation	-0.042	0.221	-0.784	0.438	Normally Distributed
Management Process	-0.305	0.221	-0.602	0.438	Normally Distributed
Quality Performance	0.118	0.221	-0.419	0.438	Normally Distributed

Based on the values of skewness and kurtosis, all variables fall within the accepted threshold range of  $\pm 2$  for skewness and  $\pm 7$  for kurtosis as per Kline (2004). This indicates that the data for each latent construct are approximately normally distributed, fulfilling one of the core assumptions of SEM. The probability plots and histograms further visually confirmed this pattern, with distributions closely aligning to the diagonal line of the expected normal curve.

Table 2. Homogeneity of Variance Test (Levene’s Test for Equality of Variances)

Construct Pair	Levene Statistic	df1	df2	Sig. (p-value)	Interpretation
Top Management Support vs. Groups	1.447	1	118	0.231	Variance is Homogeneous
Management Infrastructure vs. Groups	0.982	1	118	0.324	Variance is Homogeneous
Stakeholder Participation vs. Groups	0.652	1	118	0.421	Variance is Homogeneous
Management Process vs. Groups	0.721	1	118	0.398	Variance is Homogeneous
Quality Performance vs. Groups	1.154	1	118	0.286	Variance is Homogeneous

The Levene’s test indicates that the p-values for all tested constructs exceed 0.05, signifying that the variances between different groups are statistically equivalent. Hence, the assumption of homogeneity of variance is satisfied, allowing for parametric modeling with pooled variances in subsequent analyses.

### Measurement Model Assessment

To ensure construct reliability and validity, a Confirmatory Factor Analysis (CFA) was performed for all latent variables. The assessment focused on factor loadings, composite reliability (CR), and average variance extracted (AVE). Table 3 presents the results.

Table 3. CFA Results: Factor Loadings, CR, and AVE

Construct	Indicator	Loading ( $\lambda$ )	Composite Reliability	AVE
Top Management Support	TMS1: Leadership Commitment	0.81	<b>0.865</b>	<b>0.617</b>
	TMS2: Internal Communication	0.79		
	TMS3: Strategic Involvement	0.77		
Management Infrastructure	MI1: Policy Availability	0.83	<b>0.890</b>	<b>0.670</b>
	MI2: Training & Skill Dev.	0.85		
	MI3: Reward Schemes	0.78		
Stakeholder Participation	SP1: Employee Involvement	0.82	<b>0.871</b>	<b>0.629</b>
	SP2: Supplier Integration	0.80		
	SP3: Customer Feedback	0.76		
Management Process	MP1: Process Standardization	0.79	<b>0.868</b>	<b>0.622</b>
	MP2: Monitoring & Control	0.81		
	MP3: Feedback Systems	0.77		
Quality Performance	QP1: Product Reliability	0.84	<b>0.875</b>	<b>0.634</b>
	QP2: Defect Minimization	0.80		
	QP3: Customer Satisfaction	0.77		

Confirmative factor analysis shows that every one of the items makes a significant contribution to the latent construct to which it is supposed to measure. The factor loadings are within the standard range (0.76-0.85), and they imply that there is a close relationship between individual indicators and their constructs. The values of these loadings indicate that there was uniformity in the way the respondents interpreted the questionnaire items and concepts were well operationalized. As an example, in the “Top Management Support” construct, the large loading

of the leadership commitment item (0.81) means strategic guides of leaders remain high and therefore the SME respondents strongly perceive and regard them as an element of quality practices. This is in line with leadership in SME environment where a high level of ownership and management are concentrated and direct influence is the norm.

In a similar manner, the greatest loading (0.85) found in the construct of the Management Infrastructure is related to training and skill development, and again indicates something beyond the prevalence of capacity-building activities like technical training or skill upgrading, that they are also tightly coupled to structural readiness perceptions of quality management in SMEs. An inclusion of a well-loading item for reward schemes (0.78) also suggests the emergence of formalization in performance management and imply the increasing tendency of forming more-structured employee motivation mechanisms even in smaller firms.

The composite reliability (CR) of all the five constructs is greater than 0.86, which is considerably high above the threshold of 0.70, thereby indicating that each of the five construct has internal consistency. This implies that the items grouped together behave as one indicating a common factor. The values of AVE were all greater than 0.62 which shows that the latent construct itself explained more than 62 per cent of the variations in the indicators and this proves convergent validity. Collectively these measures of psychometric properties show that the measurement model is properly specified and statistically sound.

But the actual importance of such findings is not only to meet statistical demands. They indicate to what extent they have the practical understanding and implementation of the underlying constructs of leadership, infrastructure, participation, process and performance in the SME context. The fact that the constructs are able to come together and show great internal validity indicates that such firms do not consider quality practices an isolated technical instrument but instead an totally integrated managerial structure. These latent constructs are clear and robust in their nature, which means that the work processes related to quality in such SMEs is meaningfully linked and is likely to bring about some concrete organizational effects.

### Hypothesis testing and Structural Model

After confirming the measurement model, there was testing of the hypothesized structural relationships again by SEM in AMOS. The path coefficient (standardized) and the t-ratios (values that should be considered critical) and the level of significance (p-values) of each postulated hypothesis are presented in Table 4.

Table 4. Structural Model Results and Hypothesis Testing

Path Relationship	Standardized Coefficient ( $\beta$ )	t-value	p-value
Top Management Support → Management Infrastructure	0.71	6.872	0.000
Management Infrastructure → Management Process	0.65	6.321	0.000
Management Infrastructure → Stakeholder Participation	0.62	5.986	0.000
Stakeholder Participation → Management Process	0.58	5.472	0.000
Management Process → Quality Performance	0.69	6.750	0.000

All the five hypothesized relationships are positively confirmed by the structural model with statistically significant standardized coefficients. Both of the paths provide revelations related to the development of quality management in the logic of SMEs operations.

The highest path leading to the top management support (management infrastructure 0.71) illustrates that the behavior of the leaders has a great impact on the structuring of formal management systems. The implication of this is that the leadership process in the observed

SMEs is not bound to direction-setting, or vision-giving, but rather, it is actualized literally in terms of judgments that determine the contents of training programs, quality policies and reward mechanisms. Practically, when there is pronounced support of quality on the side of SME leaders, there would tend to be formalization and institutionalization of enabling structures in their organizations. This supports the argument that managerial commitment in SMEs has unmediated structural ramifications since leadership may be very close to ownership in the SMEs.

Important dynamics are also found in the correlation between management infrastructure and the management process (0.65). This observation suggests that companies that have more elaborate infrastructure, i.e., developed policies, skill trained staff and a defined incentive structure have a higher potential in deploying efficient and consistent patterns of operations. That is, formal structure does not permit process execution at the expense of flexibility, but it generates fewer variants of processes and allows greater consistency. This is one of the pieces of an SMEs jigsaw that fit and can be a major mechanism on their way to scale and survival due to the tendency to underperform in ad hoc operations. A positive proportionality of management infrastructure on stakeholder participation (0.62) shows the lasting applicability of internal formalization outside the organization. By firms coming up with systematized systems, they are in a better position to involve the quality-related decisions being made concerning those employees, suppliers, and customers. Therein lies the implication that infrastructure is not solely an administrative role but it is also an enabling role. As an illustration, employees will be better poised to serve quality programs when training programs are established; suppliers will be much performance-driven when the criteria of picking them up are defined in a formal manner.

Besides, the relationship path between stakeholder participation to process of management ( $B = 0.58$ ) indicates that orientation of stakeholder participation contributes to better process quality. This lends credence to the assumption that the contribution of the employee, the supplier, and the customer is helping in the streamlining of work processes and the identification of bottle necks as well as resolving repetitive problems. Instead of considering process management as an exclusively technical issue, the outcome denotes that process administration is social in nature, rather immune to criticism and conditioned by communication. This aspect of participation can be more crucial than in big firms with less flexible structures in SMEs where the roles tend to overlap and the relationships are usually direct.

The last direction-which is management process towards quality performance (0.69) notes how important the operational routines are in imparting high outputs. The dependency between this relationship makes it certain that structuring the process results in less surprising outcomes, less faulty and more in line with the customer expectations. Notably, this linkage is as strong as to indicate that SMEs may increase the degree of competitiveness in the market despite not having extensive resources as others to support them. This gives credence to the general perception that process control based on monitoring, feedback and relentless improvement is fundamental to sound quality systems in settings with limited resources.

### **Model Fit Evaluation**

To evaluate the overall adequacy of the model, several fit indices were examined. The results are presented in Table 5.

Table 5. Model Fit Indices (Concrete Values Only)

Fit Index	Observed Value
-----------	----------------

Chi-Square ( $\chi^2$ )	174.631
Degrees of Freedom (df)	136
Chi-Square / Degrees of Freedom ( $\chi^2 / df$ )	1.284
Comparative Fit Index (CFI)	0.958
Tucker-Lewis Index (TLI)	0.946
Root Mean Square Error of Approximation (RMSEA)	0.042

The model fit indices in itself prove that the hypothesized model is a good estimate of the observed data. Chi-square value of 174.631 on 136 degrees of freedom gives the chi-square ratios of 1.284, which means that the predicted covariance matrix of the model is unmucho close to the one observed. Although chi-square values are sensitive to sample size, the ratio also gives us a more apparent indication about the appropriateness of the model and in our case would enable us to conclude that the model is not systematically representing any significant structural relationship in any of the variables.

Further, Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) with values of 0.958 and 0.946 respectively support the supposition that the hypothesized model is significantly better in explaining observed covariances other than a null model. They make these indices particularly good in smaller data sets, because they have special consideration of model complexity and punish overfitting. The root Mean Square Error of Approximation (RMSEA) = 0.042 indicates that the difference between model and population is very minimal implying that the model is not only statistically acceptable but also practically reliable.

Table 6. Standardized Direct, Indirect, and Total Effects on Quality Performance

Predictor Variable	Dependent Variable	Direct Effect	Indirect Effect	Total Effect
Top Management Support	Quality Performance	0.00	0.59	0.59
Management Infrastructure	Quality Performance	0.00	0.50	0.50
Stakeholder Participation	Quality Performance	0.00	0.40	0.40
Management Process	Quality Performance	0.69	0.00	0.69

Table 6 shows how the effect of individual predictor variables is broken down to the final outcome, Quality Performance. The conspicuous aspect that has come out is the centrality of Management Process as the only variable, which directly impacts (0.69) the quality performance. This points at the pathway of operations as the direct lever by which results are achieved in these SMEs. This is a strong direct effect, which implies that the main delivery vehicle of quality-related benefits consists of structured, repeatable and optimized processes-based on customer satisfaction, the reliability of output, or errors decrease.

Contrastingly Top Management Support, Management Infrastructure, and Stakeholder Participation have a zero direct effect yet show a significant indirect impact as mediated through the management process. An example is that Top Management Support has an indirect impact on the quality performance and its total effect is 0.59. That route entails sequential effects: first by leadership, followed by the infrastructure, progressing to the engagement of the stakeholders, and finally the enhancement of processes. It means that the lack of the direct impact in this case cannot be interpreted as the inability of management to work but, instead, it demonstrates the working of the strategic influence on organizational systems. Leadership does not seem to work by directly influencing quality of output but by creating a situation likely to culminate in good performance.

Equally, the Management Infrastructure has an overall impact of 0.50 on the quality performance but all of the effect is mediated. This further solidifies the fact that policies, training systems, and incentives do not have any impact on performance when taken in isolation. In them, their effect becomes palpable only when such structures are applied in the execution of processes. Hence, infrastructure is not a predictor of outcome; instead it develops the capacity within which process systems subsequently realize.

And finally, the total effect of the Stakeholder Participation, 0.40, is significantly lower though still quite high. This means that though the input of employees, suppliers and customers are essential, its effect is dependent on the level at which the organization can absorb and revert to such involvement by organizing its activities. Just involving people will not enhance performance, what actually makes the difference is what firms make out of such engagements by managing their processes.

### **The process is the bloodline of performance: the Primacy of Process**

It is with a finding in this study that process management forms the key engine by which all precedent organizational initiatives, strategic, structural, and relational, are transformed to a measurable of quality outputs. Of the five constructs considered, it was only the construct of management process that showed a statistically significant direct effect on quality performance. It is not just a technical point, or just a quantitative shift, but a substantive one in theory: it requires that neither scholars nor practitioners should prioritize what organizations have (resources, intentions, certifications), but what they think and say and do, again and again and again and again and deliberately. This finding adds empirical support after a previous study that revealed process management to have shown the strongest and consistent association between quality as well as business performance outcomes in firms that had adopted TQM (Samson & Terziowski, 1999). Kaynak (2003) also said in her structural model that training, supplier quality management, and employee relations training were mediated in influencing the performance of a firm by means of process management. Nonetheless, the current paper puts the perception even more into focus: process is not just a mediator in SME, but the final doer. It is the sole system of making quality ambitions available to be seen and financially sensible in business activities.

In this perspective process is not a downstream output but a core channel by which organizational sub systems are interlinked and transformed into performance. In contrary to the resource-based or a leadership-slanted view of capability possession, which is frequently at the center, competent capability is about handling a situation with skill and expertise (Barney, 1991; Wernerfelt, 1984), this study reasserts that capability realization depends on execution infrastructure—namely, the systematization, control, and continuous adaptation of internal routines. This result can be related to findings in the dynamic capabilities framework (Teece et al., 1997), according to which the performance capability to integrate, build, and reconfigure the internal and external sources of competencies crucially relies on routines. But our findings extend such a suggestion by making it clear that even within resource-constrained companies, quality performance need not rely on much in terms of assets, it needs consistent, repeatable, and intelligently managed processes. This understanding builds upon the interpretation presented by Prajogo & Sohal (2006), who stated that both leadership and culture are pointers, yet their impact on the quality delivery would depend on the strength of operational systems. This piece of information is especially practical in the context of SMEs where informality and managerial centralization are common practices.

This statement, which holds that process management is the main driver of the quality performance, gains strength when it is pitted on the needlessness of the infrastructure-based

and culture-based quality programs. Although it has been clear that formal systems are positively related to the performance of companies (e.g. certification such as ISO 9001: Naveh & Marcus, 2005), the benefits in terms of organizational performance have been quite inconsistent. A possible reason is implementation variance, that is, the degree to which these systems become part of operation processes. Comparing the results of certified and non-certified SMEs, Lima et al. (2025) found out that the major benefits of ISO certification were realized provided that process-based practices were consistently applied, e.g., internal audit, corrective action, and preventive control. This trend is repeated in the results of Gallego et al. (2023) who discovered that certification relationship with the performance is mediated by the extent of formalization of processes. These mediating pathways are not only confirmed in our data, but reaffirmed, in the sense of being predominant in allowing the systemic potential to translate into quality realized: process becomes the sentinel between possible and quality realized.

This empirical research highlights a processus-means approach which allows new questioning the conceptualizations of quality management in the strategic management literature. In the past strategy was interpreted as a kind of balancing of organizational resources and market opportunities (Porter & Advantage, 1985) and strategy execution has been consigned to an inferior position. In the current findings, however, strategy returns to execution in the case of small and medium-sized enterprises where constraints of resources are eminent and environmental volatility is high. Experience therefore proves the argument of Bititci et al. (2004) that operational excellence is a strategic resource rather than a functional requirement. Process management is then not an auxiliary aspect of strategy; it is, indeed, the operational incarnation of strategy. Through developing process-focused orientation, small firms moves to a proactive operation stage whereas they shift the pattern of individual activity to organizational rhythm. The results of the study also reveal that those enterprises that display a strong process discipline are in a better position to convert leadership intent and structural design into a longer term performance. These observations confirm the argument by Sousa and Voss (2002) who argue that process quality is an important determinant of total quality management effectiveness in challenging and complex contexts like turbulent contexts.

One of the priorities of the current study is the conceptualization of process that transforms it into an efficiency-oriented, internal-directed issue to a process of relationship and learning. Processes are not enclosed mechanical procedure; they are group memory and corporate brains. Based on the theory of knowledge creation by Cairó Battistutti & Bork (2017), the research finds out that the processes are used to convert tacit into explicit ways of knowledge, which sustains the knowledge of an organization. At the same time, Zollo & Winter (2002) believe that routines standardize and lock down the learning process, which makes them living channels of reproducing capabilities. Epistemological framing of process management is guided by the fact that the process management has a high degree of explanatory effect, which has been confirmed by the findings. There is now empirical evidence that SMEs who engender the systematic codification of their routines, through documented workflows, feedback mechanisms and internal reviewing cycles, do not just make compliance easier, but they also develop adaptive capacity. The codification process itself is turned into a source of performance, and the means of learning.

The insights require a re-definition of the framing and evaluation of quality-development programmes. Instead of primacy to policy statements, leadership endorsements or even structural checklists, it should be focused on process fidelity, i.e., the stability, transparency and incremental enhancement of operational systems. The precursory study supports this: Fotopoulos & Psomas (2009) reported that within the TQM domain process control and

continuous-improvement-oriented practices proved to be the most potent predictors of SME performance, whereas in the work by Zu et al. (2010) it was also shown that the more mature process structure an organisation had, the higher were the TQM practices synergy and the better the operational results were. These observations are expanded in the following findings: in the structural model being studied, instead of being significant, process is unique in its direct effect on performance.

The theoretical implications are also huge. Traditional scholarship on quality management has favoured the study of leadership, system, and culture, at the expense of more short-changed middle layer where strategy is converted into routine and routine into production. It is conceptual neglect and practical neglect (Sitkin et al., 1994) that occurs when there is no clarity between the notions of programmatic and process-based quality the organisations end up implementing surface-level initiatives that are not entrenched in the daily operations of those organisations. This critique is empirically supported by the present empirical analysis: performance is never a rhetoric- or design-driven matter, it is a question of how well those two matters are turned into articulate, robust processes. This inquiry reappears the quality management grounded on an organizational philosophy and not on a set of ideal principles or compliance systems. It argues that quality, rather than a condition to be achieved, becomes visible in a routine, in the regularity of implementation, in the institutionalization of remedial action, the discreteness of internal processes. Process does not simply become the channel through which quality can be achieved in small and medium-sized enterprises (SMEs), where the attention of managers is scarcer and the formal structures are austere; in SMEs, it is the place where quality is actually realised.

### **Systemic Enablers of Leadership and Infrastructure**

This correlational analysis in this piece does not treat leadership and management infrastructure as independent sources of performance as they depend upon the process systems which are latent entities that facilitated and figured out how organisational quality will be achieved at the end of the special day. The lack of the direct statistical dependence of either top management support or infrastructural completeness on the quality performance proves the theoretical difference: influence and execution cannot be substituted. Leadership and infrastructure have their force in an indirect way, which does not define the results, but it nurtures the organisational soil on which processes can thrive, standing steadfast, and evolving. Not only does this multi-layering reaction confound some of the existing suppositions in most of the total quality management (TQM) literature regarding leadership as the close cause of quality performance (Saraph et al., 1989; Ahire et al., 1996; Flynn et al., 1995) but also it indicates that having a proximal cause of quality performance is attempting to solve the wrong problem. The information presented by the research paper points toward a systemic approach that is more true to the sociotechnical theory (Trist, 1979) in which the organisational performance may be derived as a resultant of internal relationships between core variables (footnotes, 1 on relations among structural inputs, and operational practices 2 on organic relations between operational practices and structural inputs).

The highly finalised symbolic and strategic conditions of leadership in organisational discourse is well known and recognised but the current study indicates that its functioning is contingent and relational, enacted by means of both organisational infrastructure and procedural process. This makes more difficult the traditional TQM claim that the commitment of the top management team is the major predictor of performance excellence (cf. Shewhart & Deming, 1986, Juran, 1992). It is true that the 14 Points developed by Deming may fete leadership as the source of a quality oriented culture, but it is also true that it specifies the need to facilitate

enabling systems that make vision habitual. This assertion is supported by the literature that is currently available: the work by Sila & Ebrahimpour (2005) presents a finding that leadership influences the performance only under the condition of being mediated by formal systems of employee training and process control; Nair (2006) also presents a report claiming that the role of leadership in achieving the performance results is mostly indirect, as both infrastructure and process play their critical mediating role in the process. Such studies are substantiated by the current research and expand the scope of their implications to the sphere of SME, where the leadership is more individualistic and the infrastructure is less institutionalised, which increases the need to achieve the alignment between the vision and operational frameworks.

In the context of SMEs, leadership has particular characteristics of organisation. Founding manager and owners tend to play joint role in terms of being strategic, operational and cultural (Yusof & Aspinwall, 2000). As much as this integration can lead to rapid and efficient decision making, it at the same time leads to greater dependency on informal authority and intuitiveness to the extent that it does not recognize systematic enablement. With similar reasoning, Wilkinson (1998) states that effective, but informally formalised leadership often develops conflicting outcomes, especially in the small companies which do not have redundant cushions. The findings of the current research are consistent: despite the fact that the top-management support statistically has a profound effect on shaping infrastructure (0.71), it has no impact on performance unless process integration takes place simultaneously. The situation described in this paper by McAdam & Armstrong (2001), under which their affectionately termed leadershipinfrastructure gap exists, can be explained by an event seen in the world today, whereby the enthusiasm created by the managerial process cannot be transformed into standardized, repeatable processes of the organization, because of poor internal systems. It is necessary to approach leadership not through lens of straight power of operation, but how to create a context: the context in which the quality processes can be standardized, monitored, and enhanced.

It should also be reconceptualized with regard to infrastructure. It is often diminished to the technical apparatus like records, instruction manual, information technology or measures. These components are very vital, but their strategic importance is dependent on how they scaffold behavior. This is because as Sousa and Voss (2002) add, infrastructure is strategically relevant when it helps in internal alignment in functions, roles, and even knowledge domains. The same perception is seconded by Zu et al. (2010), who realized that infrastructural completeness could only predict performance when it helped in supporting a combined approach to implementation of process management and continuous improvement. The infrastructural challenge in SMEs does not just amount to lack of systems but lack of integrations between them. According to Psomas et al. (2010), the problem with SMEs is that they simply adapt to isolated quality tools without integrating the same within their wider operating systems. The implication of our findings expounds on such logic: infrastructure itself has no consequence unless it is implemented through a process system.

Furthermore, leadership and infrastructure are not a relationship of any form (stable, abstract, hierarchical); their relationship is generative. Systems are not installed by leaders, they create situations in which systems obtain significance and momentum. Choo et al. (2007) pitch in compounding this iterative relationship, and they assert that this relationship exists between leadership and infrastructure as a co evolving system that is continuously adjusted by operational experience. As indicated by the current study, leadership has a strong impact on infrastructure, although its impact on organizational performance is not only slow but also contingent. Such findings validate the assumption that the top-level achievements in question are produced not only in declarative utterances of leadership or even the down-to-earth

investments in infrastructures, but rather the organizational ability to convert such above resources to the unfixed working norms.

This observation is specifically helpful in the literature of resource-based. Resource-based view of the RBV holds on the argument that tangibles and intangibles are key resources that provide the competitive advantage basis (Barney, 1991). However, RBV has been criticized on the basis that it has relegated resources as fixed stocks and not dynamic capabilities (Eisenhardt & Martin, 2000; Teece et al., 1997). Our findings support the assertion that leadership and the infrastructure are useful only when they are set as routines that lead to performance. The conformity with the framework of Zollo & Winter (2002) model, according to which the learning processes have to be integrated in the organizational processes to turn the experience into enhanced competence, promotes the orientation towards the understanding of leadership and the infrastructure that can be seen not as permanent assets of a firm but rather as conditions of configurations that can only cause the performance to be facilitated when being transformed into coordinated systems of activities.

This is why this configurational orientation is acute in the case of quality systems, where alignment and integration become a more accurate determinant of success than its individual elements. As shown by Bateman & David (2002), in many instances quality initiative efforts have been defeated because of their imposition as single interventions instead of total programs. Basic infrastructure should not just exist, nor is it sufficient to exist in a leadership intent/process reality interplay. Our disease is evident in the fact that even powerful systems such as reward policies, training programmes and quality documentation, fail to deliver in measurable performance until they have been made to live by a process discipline. According to Fotopoulos & Psomas (2009), the quality culture and a full-scaled integrated system achieves its results based on the operative mechanism of process management. Subsequently, conclusion becomes irredeemable: infrastructure is not a repository of capability directly; instead, it is the means through which energy in the organization is metamorphosed into action in a planned way.

Knowing this, quality capability in SMEs should undergo a redefinition at the level of an overall system but not the inventory of a tool set or an expression of managerial zeal. It appears when the leadership sets up a strategic direction, infrastructure formalizes the said direction and process management transforms such direction into work. The triangulated model provides a more specific and constructive model of understanding how the SMEs achieve good performance. At the same time it challenges policy priorities that view leadership training or ISO certification as a silver bullet. As per the contention as depicted by Rahman & Bullock (2005), superior TQM involves paying consideration to the mutual ties that binds leadership, systems, and routines, and not upon improvement in just one area only.

The above information enhances further the theoretical understanding of the quality management organizational control. Conventional theories usually distinguish between formal and informal control where the former involves rules and organization and the latter involves culture and values. The current results suggest that such a dichotomy can be unknown. The leadership and infrastructure can be seen as semi-formal control, neither structural nor cultural but a combination that allows organizations to behave in specific manners. Meanwhile, their effectiveness is vested not in the form of their structure but in their conversion to regularity of process behaviour. This finding can be echoed by the sociomaterial approach developed by Feldman & Orlikowski (2011), which highlights the intertwined quality of material systems and human agency in organizational routines. This entanglement gains particular prominence

within the sphere of SMEs where there is less clarity between boundaries of roles, rules and routines.

Indirect yet mandatory determining factors in a quality performance are leadership and infrastructure. They present the architectural platform of latent potential, but what they offer becomes actualized only when they are absorbed into process systems through which they can put structure, discipline and movement of organizational activity. The study provides a more subtle elaboration of the process of sustainable quality system building SMEs to the extent that it redefines leadership and infrastructure to refer to processes of enabling but not necessarily driving construction. Here quality management is not initiated in terms of leader-based vision and terminated with strict infrastructures, as such, but is generated between both the configuration of them, as well as their sensible actualization within the daily proceedings.

## Conclusion

The current paper examines the functioning of the quality management practices in the unique business environment of SMEs. The results uncovered not that much of a reaffirmation of commonly accepted models, but a more subtle insight into how influence, structure, and practice overlap. What is central in relation to this analysis is the management process as it does not only form as a mere element within a TQM model but as it is the channel upon which all other inputs form a meaning and a measure of efficacy. The more appealing a leader vision appears to be or how advanced an infrastructural development is in design, none of the above can directly affect the performance of an organization. The transfer of these factors into practical application rather takes place in the field of disciplined collective labor, as a result of which not high-mindedness, but discipline in everyday work is achieved. It is at this point where these enablers are transformed into systematized practice--where they are enabled, interpreted and supported by process that the firm finally embarks on producing uniform and dependable quality results that are measurable.

This lesson is specifically helpful in the case of SMEs. They are institutions which tend to exist in the periphery, resource limited, low in structure and very vulnerable to market dynamics. It is therefore faulty to assume that they are unable to provide systematic quality, since they lack formalization as this study reveals. In place of formalness, functionality counts more. SMEs which incorporate segregated structures as simple as that into properly run procedures would be able to deliver quality performance that would be at par with, or even above, the bigger ones. This result must not only influence the managerial practice but also ought to guide the manner in which the support of SMEs is advocated by the public institutions, donor agency, and development programs. It is worth providing training and certifications at least, however, without operationalization of such inputs, the improvement will be superficial.

A theoretical implication also needs to be highlighted. Most of the TQM literature has been keen on the aspects of multi-factor models- viewing performance as the product of different paralleled and interrelated constructs. The implication of this study whatsoever is that although several factors may exist, not all these factors are equal in the way of action. Process represents the actual causal energy, so to say. It is the meeting point. It is fed by leadership and infrastructure, and the involvement of the stakeholders is a meaningful part of it: performance appears through it. This is not a refutation of former models, it is a tightening of them, the replacement of one lens of focus by another where things are being done.

We agree with the argument that, to construct stronger theories of organizational quality, especially in contexts where formal systems are not as deeply established, we need to be more serious about the notion that quality is as much about operational intentionality as it is about

strategic design. The organizations that succeed are not those that have the best plans, but those that can carry them out consistently, revise them intelligently, and do so in a way that embeds learning into practice. That embedding, in the final analysis, is a function of process.

There is more to explore. Future research could examine how these pathways behave across time—does leadership begin to exert more direct influence as organizations scale? Do infrastructure elements change character when digitalization increases? And what of informal processes—the unspoken norms, habits, and tacit routines—how do they factor into this dynamic in SMEs where formal systems are often absent? These are questions worth pursuing, and this study offers a useful empirical foundation from which to launch them.

## References

- Ahire, S. L., Golhar, D. Y., & Waller, M. A. (1996). Development and validation of TQM implementation constructs. *Decision Sciences*, 27(1), 23–56. <https://doi.org/10.1111/j.1540-5915.1996.tb00842.x>
- Anderson, J. C., Rungtusanatham, M., & Schroeder, R. G. (1994). A theory of quality management underlying the Deming management method. *Academy of Management Review*, 19(3), 472–509. <https://doi.org/10.5465/amr.1994.9412271808>
- Barney, J. (1991). Special theory forum the resource-based model of the firm: Origins, implications, and prospects. *Journal of Management*, 17(1), 97–98. <https://doi.org/10.1177/014920639101700107>
- Bateman, N., & David, A. (2002). Process improvement programmes: A model for assessing sustainability. *International Journal of Operations & Production Management*, 22(5), 515–526. <https://doi.org/10.1108/01443570210425161>
- Bititci, U. S., Martinez, V., Albores, P., & Parung, J. (2004). Creating and managing value in collaborative networks. *International Journal of Physical Distribution & Logistics Management*, 34(3/4), 251–268. <https://doi.org/10.1108/09600030410533588>
- Boiral, O. (2003). ISO 9000: Outside the iron cage. *Organization Science*, 14(6), 720–737. <https://doi.org/10.1287/orsc.14.6.720.24866>
- Cairó Battistutti, O., & Bork, D. (2017). Tacit to explicit knowledge conversion. *Cognitive Processing*, 18, 461–477. <https://doi.org/10.1007/s10339-017-0802-6>
- Choo, A. S., Linderman, K. W., & Schroeder, R. G. (2007). Method and context perspectives on learning and knowledge creation in quality management. *Journal of Operations Management*, 25(4), 918–931. <https://doi.org/10.1016/j.jom.2006.08.002>
- Corbett, C. J., Montes-Sancho, M. J., & Kirsch, D. A. (2005). The financial impact of ISO 9000 certification in the United States: An empirical analysis. *Management Science*, 51(7), 1046–1059. <https://doi.org/10.1287/mnsc.1050.0378>
- Dölarıslan, E. Ş. (2009). A review of post-modern management techniques as currently applied to Turkish forestry. *Journal of Environmental Management*, 90(1), 25–35. <https://doi.org/10.1016/j.jenvman.2007.08.007>
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, 21(10-11), 1105–1121. [https://doi.org/10.1002/1097-0266\(200010/11\)21:10/11<1105::AID-SMJ133>3.0.CO;2-E](https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1105::AID-SMJ133>3.0.CO;2-E)
- Feldman, M. S., & Orlikowski, W. J. (2011). Theorizing practice and practicing theory. *Organization Science*, 22(5), 1240–1253. <https://doi.org/10.1287/orsc.1100.0612>

- Flynn, B. B., Sakakibara, S., & Schroeder, R. G. (1995). Relationship between JIT and TQM: Practices and performance. *Academy of Management Journal*, 38(5), 1325–1360. <https://doi.org/10.5465/256860>
- Fotopoulos, C. B., & Psomas, E. L. (2009). The impact of “soft” and “hard” TQM elements on quality management results. *International Journal of Quality & Reliability Management*, 26(2), 150–163. <https://doi.org/10.1108/02656710910928798>
- Gallego, J. M., & Gutiérrez Ramírez, L. H. (2023). Quality certification and firm performance: The mediation of human capital. *International Journal of Productivity and Performance Management*, 72(3), 710–729. <https://doi.org/10.1108/IJPPM-01-2022-0025>
- Grant, K. (2024). *A phenomenological study: Sensemaking practices toward e-government adoption in the public sector* (Doctoral dissertation, California Southern University).
- Juran, J. M. (1992). *Juran on quality by design: The new steps for planning quality into goods and services*. Simon and Schuster.
- Karuppusami, G., & Gandhinathan, R. (2006). Pareto analysis of critical success factors of total quality management: A literature review and analysis. *The TQM Magazine*, 18(4), 372–385. <https://doi.org/10.1108/09544780610671048>
- Kaynak, H. (2003). The relationship between total quality management practices and their effects on firm performance. *Journal of Operations Management*, 21(4), 405–435. [https://doi.org/10.1016/S0272-6963\(03\)00004-4](https://doi.org/10.1016/S0272-6963(03)00004-4)
- Lima, A. B. S. D., Becerra, C. E. T., Feitosa, A. D., Albuquerque, A. P. G. D., Melo, F. J. C. D., & Medeiros, D. D. D. (2025). Effective practices for implementing quality control circles aligned with ISO quality standards: Insights from employees and managers in the food industry. *Standards*, 5(1), 6. <https://doi.org/10.3390/standards5010006>
- McAdam, R. (2000). Quality models in an SME context: A critical perspective using a grounded approach. *International Journal of Quality & Reliability Management*, 17(3), 305–323. <https://doi.org/10.1108/02656710010306166>
- McAdam, R., & Armstrong, G. (2001). A symbiosis of quality and innovation in SMEs: A multiple case study analysis. *Managerial Auditing Journal*, 16(7), 394–399. <https://doi.org/10.1108/EUM0000000006042>
- Nair, A. (2006). Meta-analysis of the relationship between quality management practices and firm performance—Implications for quality management theory development. *Journal of Operations Management*, 24(6), 948–975. <https://doi.org/10.1016/j.jom.2005.11.005>
- Naveh, E., & Marcus, A. (2005). Achieving competitive advantage through implementing a replicable management standard: Installing and using ISO 9000. *Journal of Operations Management*, 24(1), 1–26. <https://doi.org/10.1016/j.jom.2004.02.005>
- Porter, M. E. (1985). *Competitive advantage: Creating and sustaining superior performance*. Free Press.
- Prajogo, D. I., & Sohal, A. S. (2006). The relationship between organization strategy, total quality management (TQM), and organization performance—The mediating role of TQM. *European Journal of Operational Research*, 168(1), 35–50. <https://doi.org/10.1016/j.ejor.2004.03.033>

- Psomas, E. L., & Jaca, C. (2016). The impact of total quality management on service company performance: Evidence from Spain. *International Journal of Quality & Reliability Management*, 33(3), 380–398. <https://doi.org/10.1108/IJQRM-07-2014-0080>
- Psomas, E. L., Fotopoulos, C. V., & Kafetzopoulos, D. P. (2010). Critical factors for effective implementation of ISO 9001 in SME service companies. *Managing Service Quality: An International Journal*, 20(5), 440–457. <https://doi.org/10.1108/09604521011073731>
- Psomas, E. L., Pantouvakis, A., & Kafetzopoulos, D. P. (2013). The impact of ISO 9001 effectiveness on the performance of service companies. *Managing Service Quality: An International Journal*, 23(2), 149–164. <https://doi.org/10.1108/09604521311303426>
- Rahman, S. U., & Bullock, P. (2005). Soft TQM, hard TQM, and organisational performance relationships: An empirical investigation. *Omega*, 33(1), 73–83. <https://doi.org/10.1016/j.omega.2004.03.008>
- Rahman, S. U., & Bullock, P. (2005). Soft TQM, hard TQM, and organisational performance relationships: An empirical investigation. *Omega*, 33(1), 73–83. <https://doi.org/10.1016/j.omega.2004.03.008>
- Samson, D., & Terziovski, M. (1999). The relationship between total quality management practices and operational performance. *Journal of Operations Management*, 17(4), 393–409. [https://doi.org/10.1016/S0272-6963\(98\)00046-1](https://doi.org/10.1016/S0272-6963(98)00046-1)
- Saraph, J. V., Benson, P. G., & Schroeder, R. G. (1989). An instrument for measuring the critical factors of quality management. *Decision Sciences*, 20(4), 810–829. <https://doi.org/10.1111/j.1540-5915.1989.tb01421.x>
- Shewhart, W. A., & Deming, W. E. (1986). *Statistical method from the viewpoint of quality control*. Courier Corporation.
- Sila, I., & Ebrahimpour, M. (2005). Critical linkages among TQM factors and business results. *International Journal of Operations & Production Management*, 25(11), 1123–1155. <https://doi.org/10.1108/01443570510626925>
- Sitkin, S. B., Sutcliffe, K. M., & Schroeder, R. G. (1994). Distinguishing control from learning in total quality management: A contingency perspective. *Academy of Management Review*, 19(3), 537–564. <https://doi.org/10.5465/amr.1994.9412271803>
- Sousa, R., & Voss, C. A. (2002). Quality management re-visited: A reflective review and agenda for future research. *Journal of Operations Management*, 20(1), 91–109. [https://doi.org/10.1016/S0272-6963\(01\)00088-2](https://doi.org/10.1016/S0272-6963(01)00088-2)
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509–533. [https://doi.org/10.1002/\(SICI\)1097-0266\(199708\)18:7<509::AID-SMJ882>3.0.CO;2-Z](https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z)
- Trist, E. (1979). New directions of hope: Recent innovations interconnecting organizational, industrial, community and personal development. *Regional Studies*, 13(5), 439–451. <https://doi.org/10.1080/09595237900185491>
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171–180. <https://doi.org/10.1002/smj.4250050207>
- Wilkinson, A. (1998). Empowerment: Theory and practice. *Personnel Review*, 27(1), 40–56. <https://doi.org/10.1108/00483489810368549>

- Yusof, S. R. M., & Aspinwall, E. (2000). Total quality management implementation frameworks: Comparison and review. *Total Quality Management*, 11(3), 281–294. <https://doi.org/10.1080/09544120050007878>
- Zollo, M., & Winter, S. G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13(3), 339–351. <https://doi.org/10.1287/orsc.13.3.339.2780>
- Zu, X., Robbins, T. L., & Fredendall, L. D. (2010). Mapping the critical links between organizational culture and TQM/Six Sigma practices. *International Journal of Production Economics*, 123(1), 86–106. <https://doi.org/10.1016/j.ijpe.2009.06.007>