

# THE STRUCTURAL RELATIONSHIP BETWEEN IATF 16949, QUALITY CULTURE, AND COMPETITIVE ADVANTAGE IN ENHANCING OPERATIONAL PERFORMANCE (CASE STUDY: AN AUTOMOTIVE COMPANY IN JABABEKA INDUSTRIAL ESTATE)

<sup>1</sup>Delfi Novira; \*<sup>2</sup>Hamdan Amaruddin

<sup>1</sup>Automotive company, Jababeka Industrial Estate

<sup>2</sup>Management, Economics and Business Faculty, Pelita Bangsa University  
Bekasi, Indonesia

Author's email:

<sup>1</sup>Delfion90@gmail.com; <sup>2</sup>hamdanamar@pelitabangsa.ac.id

\*Corresponding author: hamdanamar@pelitabangsa.ac.id

**Abstract:** To remain competitive in the global automotive market, companies must prioritize high-quality production, operational efficiency, and cost-effectiveness through standardized quality management systems. This research investigates the impact of IATF 16949 implementation on operational performance at an automotive firm in the Jababeka Industrial Estate, Cikarang. By employing a quantitative approach and Structural Equation Modeling (SEM) via SmartPLS 4, the study analyzed data from 68 respondents to explore the mediating roles of quality culture and competitive advantage. The findings reveal that IATF 16949 significantly enhances operational performance both directly and indirectly. Specifically, quality culture and competitive advantage function as vital mediators that bridge system implementation with operational excellence. These results suggest that integrating international standards with a robust quality culture and strategic positioning is essential for long-term manufacturing success. This study contributes an empirical model for system-and-culture-based management in the automotive sector, suggesting that future studies adopt a longitudinal perspective across broader industries.

**Keywords:** Competitive Advantage; IATF 16949; Operational Performance, Quality Culture; SEM-PLS.

## 1. INTRODUCTION

The global automotive sector is currently navigating a landscape of intensifying competition, marked by heightened consumer expectations regarding product reliability, innovation, and overall quality. In the Indonesian context, the automotive industry serves as a cornerstone of the national economy, contributing substantially to export revenues and the expansion of industrial supply chains. Data from GAIKINDO (2025) reveals that domestic vehicle sales reached 1,005,802 units in 2023, underscores Indonesia's status as one of the world's most promising automotive markets. Furthermore, the consistent growth in four-wheeled vehicle exports signifies that the domestic industry is not only meeting local demand but also securing a strategic foothold in international trade. Nevertheless, to sustain this global competitiveness, automotive firms must ensure unwavering quality consistency, operational agility, and the capacity to align with evolving international benchmarks.

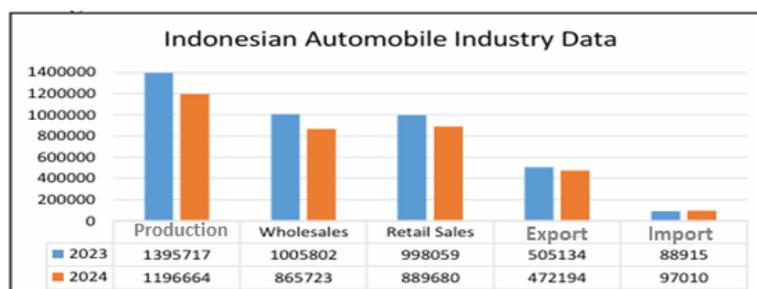


Figure 1. Indonesian Automobile Industry Data 2023 – 2024

To address these multifaceted challenges, the adoption of the International Automotive Task Force (IATF) 16949 quality management system has emerged as a vital strategic initiative. This standard is now a fundamental prerequisite within the global supply chain, particularly for Original Equipment Manufacturers (OEMs) and component suppliers. Existing literature suggests that the rigorous application of IATF 16949 enhances process efficiency, minimizes defect rates, and ensures regulatory compliance (Swarnakar & Khalfan, 2025). Moreover, Elrhanimi & EL Abbadi (2021) highlight quality culture as a critical catalyst that bolsters the efficacy of quality standards, while Zekhnini et al. (2025) identify competitive advantage as a strategic byproduct of system implementation that fortifies global standing. Additionally, Al-Kahtani & Al-Mekhlafi (2024) established that competitive advantage acts as a mediator between quality management and operational outcomes. Collectively, these findings imply that quality systems, organizational culture, and competitive positioning are deeply interconnected in driving superior performance.

Despite the documented benefits of IATF 16949, a significant portion of previous research has focused predominantly on product quality and customer satisfaction, often overlooking the comprehensive integration of quality culture and competitive advantage as mediating variables for operational performance. Empirical evidence also indicates a potential disconnect between obtaining certification and achieving actual performance gains, as evidenced by the data from PT Multi Usage Indonesia in Table 1.1. Although the company is IATF 16949:2016 certified, operational inconsistencies persist, notably an increase in the production reject rate from 4.97% in 2023 to 5.24% in 2024. This discrepancy highlights a critical research gap: quality certification alone does not guarantee improved performance; rather, its success depends on internal factors such as quality culture and differentiation-based competitive strategies.

**Table 1.1.** Operational Performance Data of an Automotive Company in Jababeka (2023–2024)

Year	IATF 16949 Status	Production Reject Rate (%)	Target Reject Rate (%)	Achievement Gap (%)
2023	Certified	4.97%	< 4.50%	+ 0.47%
2024	Certified	5.24%	< 4.50%	+ 0.74%

Addressing this gap, the present study contributes a novel perspective by examining a dual mediation model—incorporating quality culture and competitive advantage—within the relationship between IATF 16949 and operational performance. As this model remains under-explored within the Indonesian automotive landscape, this research offers a more holistic framework for understanding these dynamics. Theoretically, the study expands the discourse on how international quality systems influence performance through cultural and strategic mechanisms. Practically, the findings serve as a strategic roadmap for automotive management to design sustainable quality improvements while enhancing market competitiveness. Consequently, this research aims to: 1) analyze the impact of IATF 16949 on operational performance; 2) evaluate its effect on quality culture; 3) assess its influence on competitive advantage; 4) examine the link between quality culture and performance; 5) determine the impact of competitive advantage on performance; and 6-7) investigate the mediating roles of both quality culture and competitive advantage. This study utilizes a quantitative survey method among PT Multi Usage Indonesia employees, analyzed through Partial Least Squares Structural Equation Modeling (PLS-SEM).

## 2. LITERATURE REVIEW.

### 2.1 IATF 16949 Implementation

The IATF 16949:2016 standard is a global quality management system specifically designed

for the automotive industry, emphasizing the development of a process-oriented quality management system that provides for continual improvement, defect prevention, and the reduction of variation and waste in the supply chain. Implementation of this standard is no longer optional but a primary requirement for entering the global automotive supply chain. Previous studies indicate that IATF 16949 adds significant value to the general ISO 9001 requirements by strictly addressing manufacturing efficiency and operational compliance.

### *2.2 Quality Culture*

Quality culture is defined as the set of values, beliefs, and norms within an organization that foster a commitment to continuous improvement and customer satisfaction. It acts as a catalyst that reinforces the technical implementation of quality standards. In the automotive sector, a strong quality culture is characterized by leadership commitment, proactive employee behavior, and a deep-seated focus on operational excellence. Research suggests that without a supportive culture, the technical certification of quality systems often fails to yield actual performance improvements.

### *2.3 Competitive Advantage*

From the Resource-Based View (RBV) perspective, competitive advantage is achieved when a company implements a value-creating strategy not simultaneously being implemented by any current or potential competitors. In this study, competitive advantage is manifested through product innovation, differentiation, and the ability to respond flexibly to market demands. Implementing international quality standards like IATF 16949 can serve as a strategic resource that is difficult for competitors to imitate, thereby enhancing the firm's market position.

### *2.4 Operational Performance*

Operational performance refers to the measurement of a company's effectiveness and efficiency in its production and delivery processes. Key indicators in the automotive industry typically include work effectiveness, delivery timeliness, cost-efficiency, and defect rate reduction. Operational performance is the ultimate outcome of the synergy between technical quality systems, organizational values, and strategic positioning.

### *2.5 Hypotheses Development*

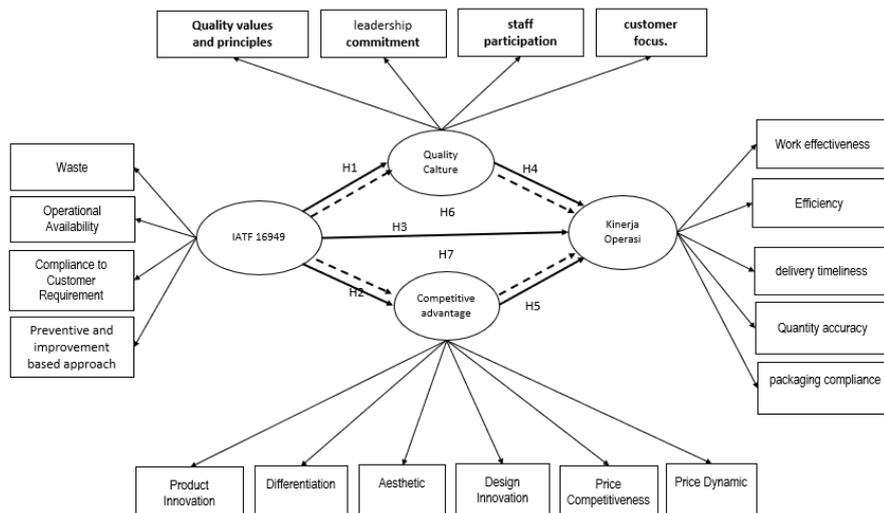
Based on the established conceptual framework and the integration of the aforementioned theories, this study proposes seven interconnected hypotheses. Primarily, it is hypothesized that the rigorous implementation of IATF 16949 directly exerts a significant positive influence on operational performance (H1). Furthermore, this international quality standard is expected to serve as a foundational driver that significantly enhances both quality culture (H2) and the firm's competitive advantage (H3). In addition to these direct relationships, the model evaluates how internal organizational factors contribute to performance outcomes. Specifically, it is proposed that a robust quality culture (H4) and a strong competitive advantage (H5) each have a significant positive impact on operational performance. Beyond these direct effects, this research investigates the complex interplay of these variables through mediation paths. It is hypothesized that quality culture (H6) and competitive advantage (H7) significantly mediate the relationship between IATF 16949 implementation and operational performance. Collectively, these hypotheses seek to validate the structural mechanisms through which quality management systems transform into superior manufacturing outcomes.

## **3. RESEARCH METHODS**

### *3.1 Research Design and Framework*

This study employs a quantitative research design with a causal-explanatory approach to investigate the structural relationships between IATF 16949 implementation and operational performance. This design was selected to objectively evaluate the cause-and-effect dynamics

through numerical data, facilitating the generalizability of findings within the automotive sector. Given that constructs such as quality culture and competitive advantage are latent variables, a quantitative structural model is particularly relevant as it allows these abstract concepts to be measured through empirical indicators. This methodological alignment is consistent with the work of Triwibowo & Yusuf (2024), who utilized structural modeling to examine quality management impacts.



**Figure 2.** Conceptual Framework

The conceptual framework (see Figure 2) positions IATF 16949 implementation as the independent variable, with quality culture ( $Z_1$ ) and competitive advantage ( $Z_2$ ) serving as dual mediating variables. Operational performance is defined as the dependent variable, representing the ultimate metric of organizational success. The model utilizes unidirectional paths to illustrate the hypothesized causal influences being tested via PLS-SEM.

### 3.2 Operational Definitions and Instrumentation

To bridge theoretical constructs with empirical measurement, operational definitions were developed for each variable. The implementation of IATF 16949 serves as the primary driver, while quality culture and competitive advantage act as the strategic "bridges" to operational excellence. All variables are operationalized into measurable indicators, as summarized in Table 2. Primary data were gathered using a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), to capture respondent perceptions accurately (Sugiyono, 2023).

**Tabel 2.** Definition of Operational Variables

Variable	Definition	Indicators	Scale
IATF 16949 Implementation (X)	A system that provides added value to processes to ensure customer satisfaction and compliance with industry specifications (Baltazar-Jiménez et al., 2022).	Waste level; operational availability; compliance with customer requirements; prevention and improvement-based processes.	Ordinal 1–5

Variable	Definition	Indicators	Scale
Quality Culture (Z1)	A framework that guides organizational actions toward customer satisfaction, continuous improvement, and business sustainability (Navarro & Naranjo, 2025).	Quality values and principles; leadership and management commitment; staff participation; customer focus.	Ordinal 1–5
Competitive Advantage (Z2)	Efforts made to distinguish oneself from competitors through resources and capabilities (TUNÇ, 2022).	Product innovation; differentiation; aesthetics and ergonomics; design innovation; price competitiveness; price flexibility.	Ordinal 1–5
Operational Performance (Y)	Measurement of the effectiveness and efficiency of company operations against set standards (Wiyatno et al., 2024).	Work effectiveness; efficiency; delivery timeliness; price accuracy; quantity; packaging compliance.	Ordinal 1–5

### 3.3 Population and Sampling Procedure

The study was conducted at PT Multi Usage Indonesia, an automotive manufacturer specializing in decorative parts plating and assembly in the Jababeka Industrial Estate, Cikarang. The research period spanned from October 2024 to July 2025. The target population comprised 68 employees in strategic and operational roles, including managers, supervisors, and department heads, who possess direct expertise in IATF 16949 standards.

A purposive sampling technique was employed to ensure respondents met specific criteria related to quality management involvement. Regarding sample adequacy, the study adheres to the "10-times rule" (Hair et al., 2017). Given that the most complex construct (competitive advantage) contains six indicators, the minimum required sample was 60. Thus, the 68-respondent sample size is statistically sufficient for robust model testing using PLS-SEM.

### 3.4 Data Collection and Analytical Technique

Data were sourced through a combination of primary and secondary channels. Primary data were collected via Google Forms and supplemented by field observations, while secondary data were gathered from academic literature and internal company reports to strengthen the theoretical foundation.

Statistical analysis was performed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4 software. This method is particularly advantageous for models involving complex latent variables and relatively small sample sizes ( $N \leq 100$ ) (Hair et al., 2017). The analysis followed a two-stage evaluation:

1. Measurement Model (Outer Model): Assessed through convergent validity, discriminant validity, and reliability testing (Cronbach's Alpha and Composite Reliability).
2. Structural Model (Inner Model): Evaluated through model fit indices (SRMR, NFI), the coefficient of determination ( $R^2$ ), and effect size ( $f^2$ ).

Hypothesis testing was conducted through a bootstrapping procedure to determine the significance of both direct and indirect (mediating) effects. This comprehensive analytical

approach ensures a rigorous evaluation of the mechanisms linking quality systems to operational performance.

## 4. RESULTS AND DISCUSSION

### 4.1 Result

#### 4.1.1 Data Overview and Respondent Profiles

The findings of this study are presented in two integrated stages: a descriptive analysis of the research variables followed by a structural model evaluation via PLS-SEM. To maintain focus on the core research objectives, this section highlights primary results, while supplementary data are available in the appendices. Demographic analysis indicates that the respondent pool is primarily composed of individuals aged 20–40 years with 1–10 years of professional experience, mostly holding permanent employment status. The high concentration of respondents at the supervisor and leader levels ensures that the data reflect the insights of personnel directly responsible for the company’s operational and quality management execution.

#### 4.1.2 Descriptive Analysis of Variables

The descriptive results suggest a strong positive alignment across all research constructs:

- a) IATF 16949 Implementation: Respondents rated this variable positively (mean 3.65 – 4.18), with "compliance with customer requirements" achieving the highest score (mean 4.18). This underscores that the standard is a key driver in meeting client-specific demands.
- b) Quality Culture: This construct showed high engagement (mean 3.71 – 4.21). While "quality values and principles" are deeply embedded as a foundation (mean 4.21), the data also indicate slight variations in employee participation levels.
- c) Competitive Advantage: The company’s strength lies in "product innovation" (mean 4.3), whereas "price competitiveness" showed lower scores (mean 3.7 – 3.8). This implies a strategic lean toward differentiation rather than cost leadership.
- d) Operational Performance: While "work effectiveness and efficiency" were rated highly (mean 4.1 – 4.2), the "product quality/defect" aspect received the lowest mean (3.60), highlighting a critical area for ongoing improvement.

#### 4.1.3 PLS-SEM Structural Model Analysis

The structural model demonstrates an adequate fit with the empirical data (GoF = 0.663; SRMR = 0.071). Furthermore, the Coefficient of Determination ( $R^2$ ) for operational performance is 0.819, indicating that 81.9% of the variance in performance is explained by IATF 16949 implementation, quality culture, and competitive advantage.

**Table 2.** Presents a Summary of the Hypothesis Testing Results Based on the Bootstrapping Analysis

Path Analysis	Coef.	T-Stat.	P-Value	Desc.
IATF 16949 → Operational Performance	0.293	3.168	0.001	Supported
IATF 16949 → Quality Culture	0.733	8.212	0.000	Supported
IATF 16949 → Competitive Advantage	0.716	7.911	0.000	Supported
Quality Culture → Operational Performance	0.239	2.127	0.017	Supported

Path Analysis	Coef.	T-Stat.	P-Value	Desc.
Competitive Advantage → Operational Performance	0.448	4.188	0.000	Supported
IATF 16949 → Quality Culture → Operational Performance	0.175	2.119	0.017	Supported
IATF 16949 → Competitive Advantage → Operational Performance	0.321	3.810	0.000	Supported

Table 2 summarizes the hypothesis testing results derived from the bootstrapping procedure. These findings confirm that IATF 16949 implementation exerts both a direct impact on operational performance and an indirect influence through quality culture and competitive advantage. The analysis identifies these mediating roles as partial mediation, suggesting that while IATF 16949 directly improves performance, its impact is significantly bolstered when channeled through a robust quality culture and strategic competitive positioning.

Ultimately, this study confirms that IATF 16949 serves as the fundamental catalyst that fosters a quality-centric culture and enhances market competitiveness, which collectively drive superior operational outcomes in the automotive manufacturing sector.

#### 4.2 Discussion

The empirical results of this study demonstrate that IATF 16949 implementation significantly enhances operational performance, both through direct mechanisms and indirect pathways via quality culture and competitive advantage. These findings underscore that international automotive standards are not merely tools for regulatory compliance; rather, they serve as strategic foundations that catalyze efficiency, quality, and organizational resilience. However, the efficacy of such systems is contingent upon the organization's ability to internalize quality principles into its cultural fabric and translate them into tangible market advantages.

##### 4.2.1 The Direct Impact of IATF 16949 on Performance

The direct influence of IATF 16949 on operational performance is evidenced by a significant path coefficient of 0.293. This suggests that the standardized protocols improve process control and alignment with customer specifications. Empirically, this is supported by the company's on-time delivery rate, which surged from 91.67% in 2023 to 99.85% in 2024. Nevertheless, the simultaneous rise in the production rejection rate (from 4.97% to 5.24%) indicates that system implementation alone yields only partial results. Without the integration of cultural and strategic drivers, technical compliance may struggle to address deep-seated operational inconsistencies. This aligns with Laskurain-Iturbe et al. (2021), who argue that while IATF 16949 adds value beyond ISO 9001 by reducing waste, its success depends on manufacturing maturity.

##### The Role of Quality Culture and Competitive Advantage

The study reveals a robust relationship between IATF 16949 and quality culture (coefficient: 0.733). This confirms that the standard acts as a vehicle for instilling core quality values, fostering proactive behavior, and increasing employee engagement. This is consistent with Amaruddin et al. (2022), highlighting that leadership commitment within quality systems drives productive organizational behavior. At PT Multi Usage Indonesia, this cultural shift is reflected in the reduction of the IQC (Incoming Quality Control) outflow to process to 0.041%, signaling heightened quality awareness at the operational level.

Furthermore, IATF 16949 significantly contributes to competitive advantage (coefficient:

0.716). From a Resource-Based View (RBV) perspective, these quality standards transform into strategic resources that are difficult for competitors to replicate. This finding mirrors the work of Deyaa et al. (2023) regarding the Egyptian automotive sector. Despite production fluctuations, the company maintained a "Grade B" customer satisfaction rating, suggesting that its value differentiation—rooted in innovation and reliability—remains highly relevant to consumers.

#### 4.2.2 Mediating Mechanisms and Operational Synergy

Quality culture and competitive advantage were found to influence operational performance with coefficients of 0.239 and 0.448, respectively. Interestingly, while the contribution of quality culture is lower, it explains why customer complaints decreased (from 20 cases in 2023 to 13 in 2024) despite higher internal rejection rates. This suggests that a quality-centric culture prioritizes "customer-visible" quality even when internal processes face challenges.

The mediation analysis provides the most compelling insight. Quality culture acts as a significant mediator (0.175), but competitive advantage serves as a stronger mediator (0.321). Remarkably, the indirect path via competitive advantage is larger than the direct path of IATF 16949 implementation. This implies that the technical benefits of the standard are most potent when converted into strategic market advantages.

## CONCLUSION

This research concludes that the implementation of IATF 16949 is a significant determinant of operational performance, exerting both direct and indirect influences through quality culture and competitive advantage. The adoption of this international standard is empirically proven to enhance process effectiveness and operational efficiency. Specifically, IATF 16949 implementation serves as a robust precursor to the development of a quality culture (0.733) and the attainment of competitive advantage (0.716). While quality culture fosters organizational awareness and customer orientation, its direct contribution to performance is relatively modest. In contrast, competitive advantage emerges as a more dominant driver of operational outcomes (0.448), highlighting the critical role of innovation, product differentiation, and strategic flexibility.

The mediation analysis confirms that both quality culture and competitive advantage significantly bridge the gap between system implementation and operational excellence. Notably, competitive advantage acts as the more potent mediator, suggesting that the technical rigor of IATF 16949 yields the greatest impact when converted into strategic market value. With an  $R^2$  value of 0.819 and strong goodness-of-fit indices (SRMR, GoF, and  $Q^2$ ), this structural model provides a robust theoretical and practical framework for the automotive industry. However, the scope of this study is limited to a single manufacturing firm in West Java, and it does not account for external variables such as digital transformation or global supply chain volatility. These limitations suggest a need for future research to adopt longitudinal designs and broader industrial scopes to enhance generalizability.

### Recommendations

#### 1. For Industrial Practitioners

To optimize the benefits of IATF 16949, companies should focus on the deep internalization of quality standards through continuous training, risk-based internal audits, and the formation of cross-functional teams. Management must actively cultivate a quality-centric culture by implementing transparent feedback mechanisms and quality-based incentive programs. Furthermore, to sustain a competitive edge, it is recommended that firms invest in internal Research and Development (R&D) and adopt emerging technologies that support consistent product differentiation and market responsiveness.

#### 2. For Academic Research

This study enriches quality management theory by clarifying the mediating roles of organizational culture and strategic advantage. Future scholars are encouraged to expand this research to include multi-firm or cross-sectoral analyses to achieve broader representativeness. Additionally, incorporating variables such as leadership styles, organizational learning, or Industry 4.0 integration would further refine the model. Finally, employing a mixed-methods approach—combining quantitative rigor with qualitative depth—could provide a more nuanced understanding of the socio-technical dynamics influencing the success of quality management systems.

## REFERENCES

- Aljazirah, N. H. (2024). Pengaruh TQM, Competitive Advantage dan Leadership Dalam Meningkatkan Kinerja Operasional (Study Empiris PT. Roda Mas Baja Inti) [The influence of TQM, Competitive Advantage and Leadership in increasing operational performance (Empirical study of PT. Roda Mas Baja Inti)]. *Study of Scientific and Behavioral Management (SSBM)*, 5(3), 110–121. [suspicious link removed] (In Indonesian).
- Al-Kahtani, S. M., & Al-Mekhlafi, A. W. A. G. S. (2024). The mediating role of competitive advantage in the relationship between total quality management, entrepreneurial orientation, organizational innovation, and organizational performance. *Uncertain Supply Chain Management*, 12(4), 2183–2196. <https://doi.org/10.5267/j.uscm.2024.6.012>
- Amaruddin, H., Faturrohman, F., & Wardhani, M. K. (2022). Sistem Manajemen Mutu ISO 9001:2015 Terhadap Kinerja Operasional melalui Budaya Kualitas dan Perilaku Produktif Karyawan [ISO 9001:2015 Quality Management System on operational performance through quality culture and employee productive behavior]. *MASTER: Jurnal Manajemen Strategik Kewirausahaan*, 2(1), 29–38. <https://doi.org/10.37366/master.v2i1.292> (In Indonesian).
- Baltazar-Jiménez, L., Parrales, M. C., & Gutiérrez González, M. A. (2022). *Impact on Productivity Quality Management, a perspective from the IATF 16949 Standard*. <https://orcid.org/0000-0002-0799-5421>
- Deyaa, T., Sultane, A., & Fahd, Y. M. (2023). The Impact of International Standard ISO 9001 in Achieving Competitive Advantage (An Analytical Study in the General Company for the Automotive Industry - Alexandria). *The Middle East International Journal for Social Sciences*, 5(1), 37–47.
- Elrhanimi, S., & EL Abbadi, L. (2021). Assessment model of lean effect (AMLE). *The TQM Journal*, 33(5), 1020–1048. <https://doi.org/10.1108/TQM-02-2019-0039>
- GAIKINDO. (2025, April). *Aliran Ekspor Mobil dari Indonesia ke sejumlah Negara masih Deras, Toyota Veloz dan Fortuner Terbanyak* [Car export flows from Indonesia to several countries remain heavy, Toyota Veloz and Fortuner are the highest]. <https://www.gaikindo.or.id/aliran-ekspor-mobil-dari-indonesia-ke-sejumlah-negara-masih-deras-toyota-veloz-dan-fortuner-terbanyak/> (In Indonesian).
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). SAGE Publications, Inc.
- Laskurain-Iturbe, I., Arana-Landín, G., Heras-Saizarbitoria, I., & Boiral, O. (2021). How does IATF 16949 add value to ISO 9001? An empirical study. *Total Quality Management and Business Excellence*, 32(11–12), 1341–1358. <https://doi.org/10.1080/14783363.2020.1717332>
- Navarro, G., & Naranjo, G. (2025). Quality Culture, Quality Management, and Organizational Performance: A Structural Model for the Manufacturing Sector. *Sustainability*, 17(9), 3934. <https://doi.org/10.3390/su17093934>
- Sugiyono. (2023). *Metode penelitian kuantitatif, kualitatif, dan R&D* [Quantitative, qualitative, and R&D research methods] (I. Sutopo, Ed.; 1st ed.). ALFABETA Bandung. (In Indonesian).
- Swarnakar, V., & Khalfan, M. (2025). Unveiling the impact of operational excellence practices on corporate performance: an exploratory research. *The TQM Journal*, ahead-of-print. <https://doi.org/10.1108/TQM-06-2024-0224>
- Triwibowo, R. N., & Yusuf, D. (2024). Influence of Total Quality Management on Competitive Advantage Through MSME Performance: A Case Study of Food and Beverage MSME in Cilacap District. *International Journal of Business and Entrepreneurship*, 1(1).
- TUNÇ, T. (2022). Project and Process Realms: Analysis of Two Strategic Management Means in the Context of Competitive Advantage. *19 Mays Sosyal Bilimler Dergisi*, 3(1), 58–74. <https://doi.org/10.52835/19maysbd.1023154>
- Wiyatno, T. N., Kurnia, H., Zulkarnaen, I., & Nuryono, A. (2024). How Influenced Management Behavior is on the Implementation of Total Quality Management (TQM) and Company Operational Performance.

*International Journal of Industrial Engineering and Management*, 15(3), 225–237.  
<https://doi.org/10.24867/IJIE-2024-3-359>

Zekhnini, K., Chaouni Benabdellah, A., Cherrafi, A., Bouhaddou, I., & Bag, S. (2025). Viable industrial supplier performance evaluation using fuzzy inference system: a case of the automotive industry. *Journal of Business & Industrial Marketing*, 40(4), 941–962. <https://doi.org/10.1108/JBIM-12-2022-0555>