



Operational Excellence and Sustainable Business Performance: Operational Performance Mediation in Indonesian Manufacturing Firms

Basuki Fabina¹, Galih Raspati², Yoki Muchsam^{3*}

¹Manajemen logistik, Politeknik Kelapa Sawit Citra Widya Edukasi, Bekasi, Indonesia, ² Manajemen, Universitas Sains Indonesia, Bekasi, Indonesia, ³Administrasi Bisnis, Universitas Sains Indonesia, Bekasi, Indonesia,

¹basuki@cwe.ac.id, ²galih.raspati@lecturer.sains.ac.id, ^{3*}yoki.muchsam@lecturer.sains.ac.id



***Corresponding Author**
yoki.muchsam@lecturer.sains.ac.id

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ABSTRACT

Sustainable business performance has become a strategic priority for manufacturing firms as increasing environmental regulations and competitive pressures require organizations to integrate operational efficiency with sustainability objectives. However, previous studies have largely examined the direct relationship between operational excellence and sustainable business performance, while limited attention has been given to the mediating role of operational performance in this relationship, particularly within emerging economies. This study aims to examine the effect of operational excellence on sustainable business performance and to investigate the mediating role of operational performance among manufacturing firms in Indonesia. A quantitative explanatory research design was employed using survey data collected from 312 medium and large-scale manufacturing companies in West Java. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. The findings indicate that operational excellence has a significant positive effect on sustainable business performance and significantly enhances operational performance. Furthermore, operational performance positively influences sustainable business performance and mediates the relationship between operational excellence and sustainable business performance. These findings support the Resource Based View by demonstrating that operational capabilities create sustainable competitive advantages when translated into superior operational outcomes. The study contributes to the sustainability and operations management literature by clarifying the capability building mechanism linking operational excellence to sustainable business performance in an emerging economy context. Managerially, the findings suggest that manufacturing firms should strengthen operational execution capabilities through continuous improvement, process standardization, and operational efficiency initiatives to achieve long-term sustainability.

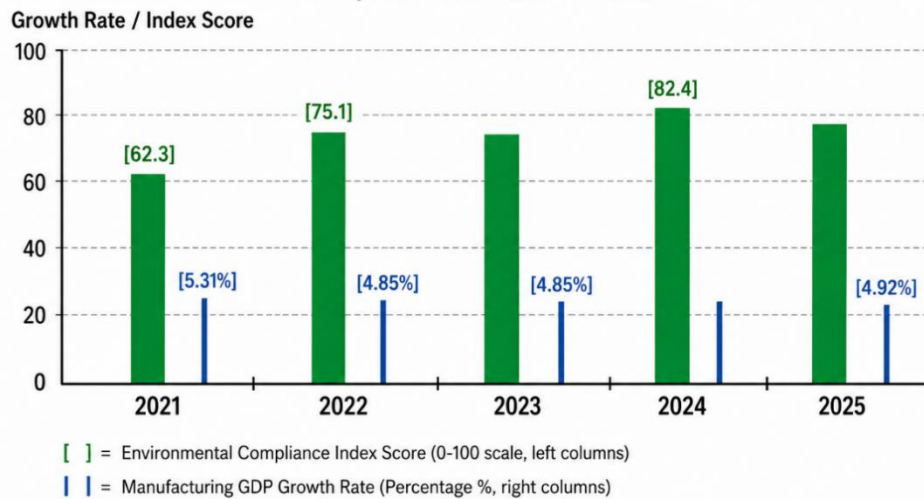
INTRODUCTION

The manufacturing sector remains one of the principal contributors to global economic growth while simultaneously generating substantial environmental pressures. As industrial production continues to expand, manufacturing firms are increasingly expected to balance productivity, competitiveness, and environmental responsibility. Growing international commitments to carbon reduction, circular economy practices, and environmental governance have transformed sustainability from a regulatory obligation into a strategic business imperative. Consequently, manufacturing companies are required to improve not only their economic performance but also their environmental and social performance through more efficient operational systems and resource utilization (Kazakova & Lee, 2022; OECD, 2024; Okorie et al., 2023; Pan et al., 2024).

Indonesia reflects this global challenge. As one of the country's primary economic sectors, manufacturing continues to contribute significantly to national economic growth while facing increasing pressure to comply with environmental regulations and sustainability initiatives such as Making Indonesia 4.0 (Muchsam et al., 2026). Although industrial production has continued to expand, many firms still experience operational inefficiencies related to resource utilization, production processes, waste management, and environmental compliance. These conditions indicate that improvements in production output alone are insufficient to achieve sustainable business performance without corresponding improvements in operational capability and organizational efficiency (BPS Indonesia, 2026).



Figure 1: Indonesian Manufacturing GDP Growth vs. Environmental Compliance Index (2021–2025)



Source: Synthesized from Badan Pusat Statistik (BPS) and Ministry of Environment and Forestry (KLHK) Annual Reports (2021–2025).

Figure 1. The Development of Manufacturing Growth

Figure 1 illustrates the development of manufacturing growth and environmental compliance in Indonesia during the 2021–2025 period. Although both indicators show positive trends, improvements in industrial output have not always been accompanied by proportional improvements in environmental performance. This pattern suggests that economic growth does not automatically translate into sustainable industrial performance, highlighting the need for stronger internal operational capabilities to support long-term sustainability (Adhikara et al., 2025; BPS Indonesia, 2026; Fatimah et al., 2020).

Beyond broad macro-trends, identifying the specific internal operational barriers that prevent manufacturing enterprises from achieving sustainable business performance is essential. Figure 2 breaks down the primary operational bottlenecks reported by Indonesian manufacturing firms.

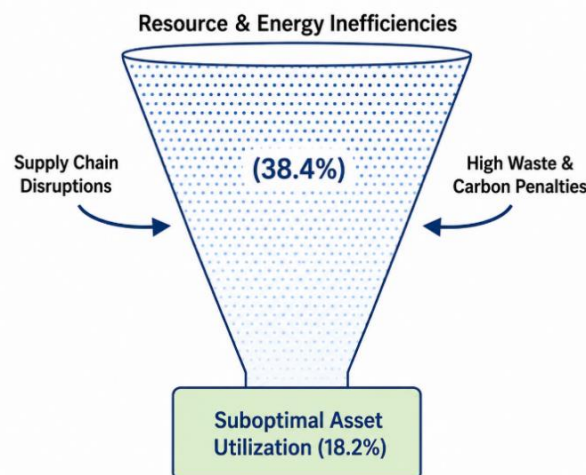


Figure 2. Operational Bottlenecks Restricting Sustainable Transition in Indonesian Manufacturing

Figure 2 summarizes the major operational challenges faced by Indonesian manufacturing firms. Resource and energy inefficiencies, waste generation, supply chain disruptions, and suboptimal asset utilization remain dominant barriers to sustainable business performance. These findings indicate that sustainability challenges are closely associated with internal operational processes rather than external environmental pressures alone, emphasizing the importance of operational improvement as a strategic capability.



Research Gap

Previous studies have consistently demonstrated that operational excellence enhances organizational performance and supports sustainability initiatives through improvements in process efficiency, quality management, and resource utilization (Gomez-Conde et al., 2023b; Khan et al., 2023). However, much of the existing literature conceptualizes this relationship as a direct effect, offering limited explanation of the organizational mechanisms through which operational excellence is translated into sustainable business performance. Likewise, recent studies on sustainable manufacturing have primarily emphasized green supply chain management, environmental certification, and technological innovation, while paying relatively little attention to the mediating role of internal operational capabilities in transforming strategic initiatives into economic, environmental, and social performance outcomes (Zhang & Li, 2024; Prabowo & dkk., 2023; Wijaya & Pratama, 2023).

Moreover, empirical evidence from Indonesian manufacturing firms remains limited, despite the sector's increasing exposure to sustainability regulations, global supply chain disruptions, and industrial transformation under the Making Indonesia 4.0 agenda (Kementerian Perindustrian, 2025; Badan Pusat Statistik (BPS), 2026). Existing studies have largely examined sustainability from the perspectives of environmental practices or organizational policies rather than explaining how operational capabilities function as a capability-building mechanism that links operational excellence with sustainable business performance. Consequently, an important theoretical and empirical gap remains regarding the process through which operational excellence generates sustainable business performance in emerging manufacturing economies.

To address these gaps, this study proposes an integrated capability-based model in which operational performance functions as a mediating mechanism linking operational excellence to sustainable business performance. Drawing upon the Resource-Based View (RBV), the study argues that operational excellence creates strategic value only when it is translated into superior operational performance, including improvements in operational efficiency, process reliability, quality, and resource utilization. These enhanced operational capabilities subsequently strengthen firms' economic, environmental, and social performance. By empirically examining this mediating mechanism within the Indonesian manufacturing context, this study extends the application of the RBV in sustainability research and provides empirical evidence from an emerging economy undergoing rapid industrial transformation and increasing sustainability demands.

Accordingly, this study aims to examine the effect of operational excellence on sustainable business performance and to investigate the mediating role of operational performance in Indonesian manufacturing firms. Specifically, the study seeks to explain how operational performance translates operational excellence into improvements in economic, environmental, and social performance. The findings are expected to enrich the operations management and sustainability literature by clarifying the capability-building process underlying sustainable business performance, while also providing practical guidance for manufacturing managers and policymakers in developing operational strategies that support long-term organizational competitiveness.

LITERATURE REVIEW

Resource-Based View

The Resource-Based View (RBV) explains that sustainable competitive advantage is achieved when organizations possess and effectively utilize resources that are valuable, rare, inimitable, and non-substitutable (VRIN) (J. B. Barney, 2021)(Armstrong, 2021). While the original RBV emphasizes strategic resources as the foundation of superior organizational performance, recent studies argue that competitive advantage depends not only on resource ownership but also on the organization's capability to transform these resources into operational capabilities that improve long-term performance (Anand et al., 2023).

Within manufacturing organizations, operational capabilities including standardized processes, continuous improvement, quality management, and efficient resource utilization represent strategic organizational assets that are difficult for competitors to replicate. These capabilities enable firms to improve productivity, operational flexibility, and organizational resilience while simultaneously supporting environmental and social objectives(Gómez-leal et al., 2021) (Gomez-Conde & dkk., 2023; Kaufmann & Gaeckler, 2024).Consequently, RBV provides an appropriate theoretical foundation for explaining how operational excellence creates organizational value through enhanced operational performance.

Building upon this perspective, the present study argues that operational excellence alone does not automatically generate sustainable business performance. Instead, its strategic value is realized through improved operational performance, which subsequently strengthens firms' economic, environmental, and social performance. Therefore, the RBV offers a suitable theoretical lens for explaining the capability-building process underlying sustainable business performance in manufacturing firms.

Operational Excellence

Operational excellence refers to an organization's ability to continuously improve processes, eliminate operational waste, standardize workflows, and deliver consistent value to customers through efficient resource utilization. Rather than representing a single management technique, operational excellence reflects an integrated





organizational capability encompassing continuous improvement, Lean practices, process standardization, quality management, and operational efficiency (Al-Khatib, 2024; Khan at al., 2023).

Recent manufacturing studies increasingly recognize operational excellence as a strategic capability that supports both organizational competitiveness and sustainability. Continuous process improvement reduces production defects, minimizes material and energy consumption, and enhances operational flexibility, thereby improving economic performance while simultaneously reducing environmental impacts (Richter & Müller, 2025; Zhou & Chen, 2025). In addition, standardized operational processes contribute to safer working environments and higher employee engagement, reinforcing the social dimension of sustainable business performance (Khan & at al., 2023).

From the RBV perspective, operational excellence represents an internally developed capability that enables organizations to optimize the utilization of strategic resources. Consequently, firms with higher levels of operational excellence are expected to achieve superior operational performance and greater sustainable business performance over time.

Operational Performance

Operational performance reflects the effectiveness and efficiency with which organizations transform resources into products and services while meeting customer and organizational requirements. Common indicators include cost efficiency, product quality, delivery reliability, production flexibility, and capacity utilization (Li at al., 2024); Wang & Zhao, 2026). Previous studies indicate that operational performance represents the operational manifestation of organizational capabilities developed through continuous improvement and process management initiatives. Firms demonstrating superior operational performance typically experience lower operational costs, improved production efficiency, and greater responsiveness to market changes, creating conditions that facilitate long-term organizational sustainability (Ahmed & dkk., 2024; Gómez-Leal & dkk., 2021).

Within the RBV framework, operational performance functions as an intermediate capability through which strategic resources generate organizational value. Therefore, operational performance is expected to mediate the relationship between operational excellence and sustainable business performance by translating strategic operational capabilities into measurable organizational outcomes.

Sustainable Business Performance

Sustainable business performance refers to an organization's ability to simultaneously achieve economic prosperity, environmental stewardship, and social responsibility over the long term. This multidimensional concept is commonly grounded in the Triple Bottom Line framework, which emphasizes balanced organizational performance across financial, environmental, and social dimensions (Sarkis at al., 2024).

In manufacturing industries, sustainable business performance extends beyond profitability by incorporating efficient resource utilization, emissions reduction, waste minimization, employee well-being, and responsible stakeholder engagement (Geng et al., 2022; Zhou & Chen, 2025). Recent studies suggest that organizations are more likely to achieve sustainable business performance when sustainability initiatives are embedded within operational processes rather than implemented as isolated environmental programs (Khan & at al., 2023).

Accordingly, sustainable business performance is viewed in this study as the ultimate organizational outcome resulting from the effective deployment of operational excellence and superior operational performance.

H1: Based on the Resource-Based View, operational excellence represents an organizational capability that enhances competitive advantage by improving process efficiency and resource utilization. Previous studies consistently demonstrate that organizations implementing continuous improvement, Lean practices, and quality management achieve superior economic, environmental, and social performance (Al-Khatib, 2024 ;Khan & at al., 2023; Zhou & Chen, 2025). Therefore, firms with higher levels of operational excellence are expected to achieve greater sustainable business performance. H1. Operational Excellence has a positive effect on Sustainable Business Performance.

H2: Operational excellence establishes standardized operational routines that improve production efficiency, quality consistency, delivery reliability, and operational flexibility. According to the RBV, these organizational routines represent strategic capabilities that strengthen operational performance (Anand & dkk., 2023; Kaufmann & Gaeckler, 2024; (Li et al, 2024). Consequently, higher operational excellence is expected to enhance operational performance. H2. Operational Excellence positively affects Operational Performance.

H3: Superior operational performance enables organizations to utilize resources more efficiently, reduce operational waste, and improve overall productivity. These improvements provide organizations with greater capacity to pursue environmental and social objectives while maintaining economic performance (Li at al., 2024; Gomez-Conde et al., 2023); Patel & Desai, 2025). Therefore, operational performance is expected to positively influence sustainable business performance. H3. Operational Performance positively affects Sustainable Business Performance.

H4: Drawing upon the Resource-Based View, operational excellence is expected to create organizational value indirectly through improved operational performance. Continuous improvement initiatives first strengthen operational capabilities before generating broader sustainability outcomes. Consequently, operational performance serves as the capability-building mechanism linking operational excellence with sustainable business performance (Kim & Lee, 2024; Gupta & Singh, 2025). H4. Operational Performance mediates the relationship between Operational Excellence and



Sustainable Business Performance.

Conceptual Framework

Figure 3 presents the conceptual framework of this study based on the Resource-Based View (RBV). The framework proposes that Operational Excellence directly influences Sustainable Business Performance and indirectly affects it through Operational Performance as a mediating variable. Operational excellence is conceptualized as a strategic organizational capability that enhances operational efficiency, quality, and resource utilization, while operational performance translates these capabilities into improvements in economic, environmental, and social performance. Accordingly, the framework assumes that operational performance functions as the capability-building mechanism linking operational excellence to sustainable business performance.

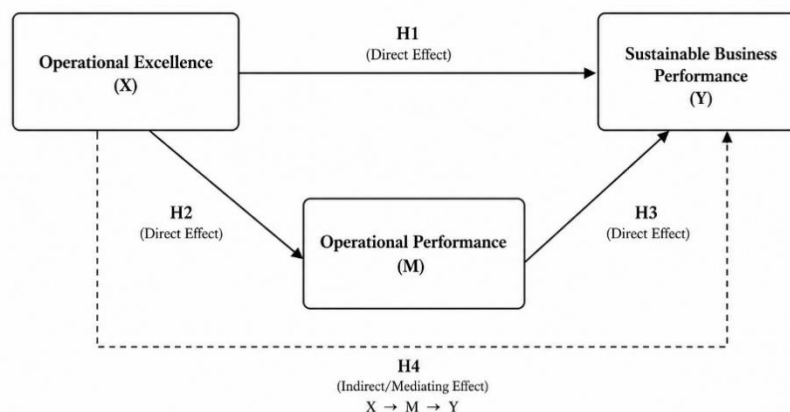


Figure 3. Conceptual Framework

METHOD

Research Design and Context

This study employed a quantitative explanatory research design using a cross-sectional survey to examine the relationships among Operational Excellence, Operational Performance, and Sustainable Business Performance in Indonesian manufacturing firms. The study is grounded in the Resource-Based View (RBV), which posits that firms achieve sustainable competitive advantage by developing and effectively utilizing valuable organizational capabilities that are difficult for competitors to imitate (J. B. Barney, 2021). Within this perspective, operational excellence is viewed as a strategic organizational capability that enhances operational performance and ultimately contributes to sustainable business performance.

To test the proposed research model, this study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4. PLS-SEM was selected because it is well suited for analyzing complex structural relationships involving both direct and indirect effects among latent constructs. In addition, this approach is appropriate for prediction-oriented research and mediation analysis while accommodating non-normal data distributions and relatively complex research models (Hair et al., 2024).

The empirical investigation was conducted among manufacturing firms located in West Java, Indonesia, during the 2025–2026 research period. West Java was selected because it is Indonesia's largest manufacturing hub, accommodating a high concentration of medium- and large-scale manufacturing companies across diverse industrial sectors, including automotive, electronics, textiles, chemicals, and food processing (Badan Pusat Statistik [BPS], 2025). These industries are currently experiencing increasing demands to improve operational efficiency while simultaneously addressing sustainability requirements and global competitive pressures. Therefore, West Java provides an appropriate empirical setting for examining how operational capabilities contribute to sustainable business performance within an emerging manufacturing economy.

Population, Sampling, and Data Collection

The target population consisted of medium- and large-scale manufacturing firms operating in West Java, Indonesia, particularly within the automotive, electronics, textile, chemical, and food processing industries. These industries were selected because they represent major manufacturing sectors in West Java and face increasing demands to improve operational efficiency while achieving sustainability objectives under a rapidly changing business (Badan Pusat Statistik (BPS, 2026; Kementerian Perindustrian, 2025).





A purposive sampling technique was employed to ensure that respondents possessed sufficient knowledge of organizational operations and strategic decision-making. Following recent recommendations for management research, key informants were selected from managerial positions directly responsible for production, operations, quality management, or general management, as these individuals were considered the most appropriate sources of information regarding organizational operational capabilities (Saunders et al., 2023). To improve sample consistency, several inclusion criteria were established. Participating firms were required to (1) operate as medium- or large-scale manufacturing enterprises employing at least 100 full-time employees, (2) have operated continuously in West Java for a minimum of five years, and (3) appoint respondents with at least three years of managerial experience in operational or production-related functions. Micro- and small-scale enterprises, as well as firms without formal operational and quality management systems, were excluded to ensure comparability across participating organizations.

The minimum sample size was determined using an a priori power analysis with G*Power 3.1.9.7 (Kang, 2021). Assuming a significance level of 0.05, statistical power of 0.95, a medium effect size ($f^2 = 0.15$), and three structural paths, the minimum required sample size was 119 observations. To increase statistical power and reduce the risk of non-response, 500 questionnaires were distributed through a combination of online surveys and direct visits to manufacturing firms between July 2025 and February 2026.

A total of 312 valid questionnaires were returned, representing a response rate of 62.4%, which exceeded the minimum sample requirement for PLS-SEM analysis. To examine the potential influence of non-response bias, a wave analysis was performed by comparing early and late respondents using independent sample t-tests, following the procedure recommended by Armstrong and Overton (Duszynski et al., 2022). No statistically significant differences were identified ($p > 0.05$), indicating that non-response bias was unlikely to affect the findings. Missing values accounted for less than 1.5% of the dataset and were randomly distributed; therefore, they were imputed using the Expectation Maximization (EM) algorithm prior to statistical analysis (Hair et al., 2024).

Measurement of Variables

This study examined three latent constructs: Operational Excellence, Operational Performance, and Sustainable Business Performance. Consistent with the proposed conceptual framework, Operational Excellence was specified as the exogenous construct, Operational Performance as the mediating construct, and Sustainable Business Performance as the endogenous construct.

All constructs were operationalized as reflective measurement models and measured using multi-item indicators adapted from previously validated instruments in the operations management and sustainability literature. Responses were recorded using a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The questionnaire was designed to capture respondents' perceptions of organizational practices and performance at the firm level.

Operational Excellence was measured using six indicators representing continuous improvement, process standardization, lean practices, quality management, operational efficiency, and waste reduction. Operational Performance was assessed through five indicators covering cost efficiency, delivery reliability, production flexibility, capacity utilization, and product quality. Sustainable Business Performance was measured using nine indicators representing the economic, environmental, and social dimensions of the Triple Bottom Line framework. The operational definitions and measurement indicators are summarized in Table 1.

Table 1. Operationalization of Variables

Construct	Dimension	Indicators	Code	Sources
Operational Excellence (X)	Continuous Improvement	Employees continuously seek improvement opportunities	OE1	(Hair et al., 2024; Khan & at al., 2023).
	Process Standardization	SOPs are consistently implemented	OE2	
	Lean Practices	Non-value-added activities are eliminated	OE3	
	Quality Management	Defect rates are minimized through quality control	OE4	
	Operational Efficiency	Resources are utilized optimally	OE5	
	Waste Reduction	Material and energy waste is minimized	OE6	
Operational Performance (M)	Cost Efficiency	Operational costs are effectively controlled	OP1	(Li et al, 2024); Wang & Zhao, 2026)
	Delivery Reliability	Timely delivery of products to customers	OP2	
	Production Flexibility	Ability to adjust to demand changes	OP3	
	Capacity Utilization	Optimal use of production capacity	OP4	
	Product Quality	Consistent production of high-quality output	OP5	
Sustainable Business	Economic Performance	Revenue growth improvement	SBP1	(Gomez-Conde et al.,





**Performance
(Y)**

2023 ;Zhou &
Chen, 2025).

Economic Performance	Profitability increase	SBP2
Economic Performance	Market competitiveness improvement	SBP3
Environmental Performance	Reduction in energy consumption	SBP4
Environmental Performance	Reduction in waste generation	SBP5
Environmental Performance	Control of emissions	SBP6
Social Performance	Improvement in occupational safety	SBP7
Social Performance	Employee well-being enhancement	SBP8
Social Performance	Community contribution	SBP9

Instrument Validation

Prior to the main survey, the questionnaire was pilot-tested with 30 managers from manufacturing firms that were not included in the final sample. The pilot study confirmed that all measurement items were clearly understood by respondents and demonstrated satisfactory internal consistency, with Cronbach's Alpha values exceeding the recommended threshold of 0.70.

The measurement model was subsequently evaluated using Partial Least Squares Structural Equation Modeling (PLS-SEM). Indicator reliability was assessed using outer loadings (≥ 0.70), while internal consistency was evaluated using Cronbach's Alpha and Composite Reliability ($CR \geq 0.70$). Convergent validity was examined through the Average Variance Extracted ($AVE \geq 0.50$), and discriminant validity was assessed using the Heterotrait–Monotrait ratio (HTMT < 0.85), following the recommendations of (Hair et al., 2022) and (Henseler et al., 2015). These procedures ensured that all constructs satisfied the required standards of reliability and validity prior to structural model evaluation.

Table 2. Descriptive Statistics of the Study Variables

Variable	Mean	SD	Skewness	Kurtosis
Operational Excellence (OE)	3.077	0.972	-0.189	-0.624
Operational Performance (OP)	2.996	0.984	0.060	-0.769
Sustainable Business Performance (SBP)	3.042	1.045	-0.053	-0.890

RESULT

A total of 312 valid responses from medium- and large-scale manufacturing firms were included in the final analysis. The respondents predominantly held managerial positions related to production, operations, plant management, and quality management, indicating that they possessed sufficient knowledge of organizational operations and strategic decision-making. The participating firms represented major manufacturing subsectors in West Java, including automotive, electronics, textiles, chemicals, and food processing, providing a diverse representation of Indonesia's manufacturing industry.

Prior to hypothesis testing, preliminary data screening was conducted to evaluate data quality and determine the suitability of the dataset for PLS-SEM analysis. Descriptive statistics indicated that all variables fell within acceptable ranges of skewness and kurtosis, suggesting that no substantial distributional problems were present.

Potential common method bias (CMB) was assessed using Harman's single-factor test. The first unrotated factor explained less than 40% of the total variance, indicating that common method bias was unlikely to influence the observed relationships (Kock, 2015). In addition, full collinearity VIF values for all latent constructs were below the recommended threshold of 3.3, further supporting the absence of common method variance.

Multicollinearity among predictor constructs was also examined using inner VIF values. All values remained below the recommended threshold of 5.0, indicating that multicollinearity was not a concern and confirming the suitability of the dataset for subsequent structural model evaluation.

Measurement Model Assessment

Before evaluating the structural relationships, the measurement model was assessed to ensure that all latent constructs satisfied the recommended standards of reliability and validity. Following the guidelines of Hair et al. (Hair et al., 2022), the assessment included indicator reliability, internal consistency reliability, convergent validity, and discriminant validity.

Table 3 presents the results of the measurement model assessment. All indicator loadings exceeded the recommended threshold of 0.70, ranging from 0.84 to 0.91, indicating satisfactory indicator reliability. The Composite Reliability (CR) values ranged from 0.90 to 0.94, while Cronbach's Alpha values ranged from 0.88 to 0.93, confirming strong internal consistency reliability. Furthermore, the Average Variance Extracted (AVE) values ranged from 0.65 to 0.71, exceeding the recommended threshold of 0.50 and demonstrating adequate convergent validity. Finally, all HTMT



values were below the recommended threshold of 0.85, indicating that discriminant validity was successfully established. Overall, these results confirm that the measurement model satisfies the recommended reliability and validity criteria and is appropriate for subsequent structural model assessment.

Table 3. Measurement Model Assessment

Construct	Item	Outer Loading
Operational Excellence	OE1	0.818
	OE2	0.825
	OE3	0.794
	OE4	0.844
	OE5	0.841
	OE6	0.827
Operational Performance	OP1	0.825
	OP2	0.811
	OP3	0.815
	OP4	0.839
	OP5	0.819
	SBP1	0.826
Sustainable Business Performance	SBP2	0.848
	SBP3	0.822
	SBP4	0.851
	SBP5	0.823
	SBP6	0.824
	SBP7	0.832
	SBP8	0.848
	SBP9	0.852

Discriminant validity was evaluated using the Heterotrait Monotrait ratio (HTMT). As presented in Table 4, all HTMT values were below the recommended threshold of 0.85, confirming that each construct was empirically distinct from the others. Overall, these results indicate that the measurement model satisfied the recommended criteria for reliability and validity and was therefore suitable for structural model evaluation.

Table 4. Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability	AVE	Result
Operational Excellence	0.901	0.924	0.671	Accepted
Operational Performance	0.889	0.918	0.691	Accepted
Sustainable Business Performance	0.927	0.940	0.653	Accepted

Discriminant validity was assessed using the Heterotrait Monotrait ratio (HTMT). As shown in Table 5, all HTMT values ranged from 0.642 to 0.754, remaining below the recommended threshold of 0.85 (Hair et al., 2022). These results indicate that the three latent constructs are empirically distinct and adequately capture different conceptual domains. Therefore, discriminant validity was established, supporting the suitability of the measurement model for structural model evaluation.

Table 5. Discriminant Validity (HTMT)

Constructs	OE	OP	SBP
Operational Excellence	----		
Operational Performance	0.708	----	
Sustainable Business Performance	0.642	0.754	----

Structural Model Assessment

The structural model was evaluated using the bootstrapping procedure with 10,000 resamples to examine the proposed direct and indirect relationships among the latent constructs. The assessment included the estimation of standardized path coefficients (β), t-statistics, p-values, coefficients of determination (R^2), effect sizes (f^2), predictive relevance (Q^2 Predict), and mediation effects.

The results indicate that the structural model demonstrates satisfactory explanatory power. Operational Excellence explains 31.9% of the variance in Operational Performance ($R^2 = 0.319$), while Operational Excellence and Operational Performance jointly explain 45.7% of the variance in Sustainable Business Performance ($R^2 = 0.457$). These findings suggest that the proposed model provides moderate explanatory capability. Figure x presents the final PLS-SEM structural model estimated using SmartPLS 4. The figure illustrates the relationships among Operational Excellence, Operational Performance, and Sustainable Business Performance, including the standardized path coefficients and the reflective measurement indicators associated with each latent construct. The model also depicts the



indirect relationship through Operational Performance as the mediating variable.

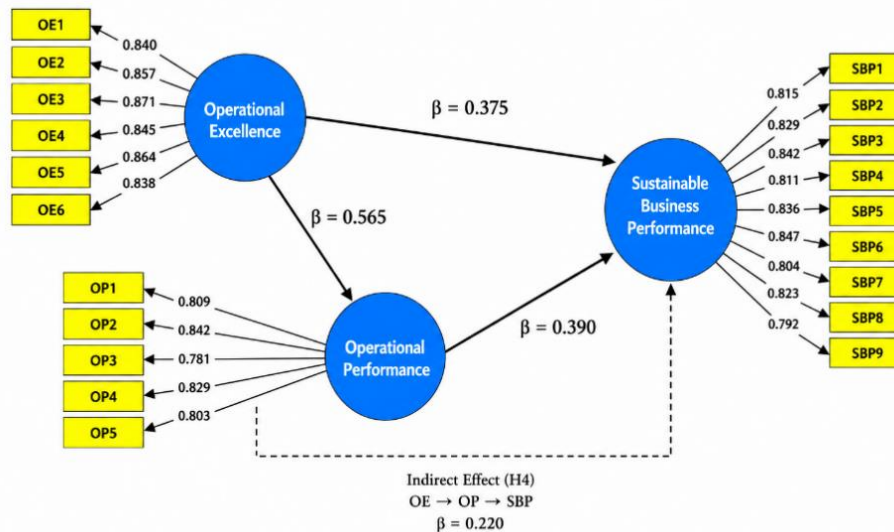


Figure 4. Structural Model Results of the PLS-SEM Analysis

As shown in Figure 4, Operational Excellence has a positive direct effect on Sustainable Business Performance ($\beta = 0.375$) and a stronger positive effect on Operational Performance ($\beta = 0.565$). Furthermore, Operational Performance positively influences Sustainable Business Performance ($\beta = 0.390$). The indirect effect of Operational Excellence on Sustainable Business Performance through Operational Performance is 0.220, indicating partial mediation. These results are consistent with the subsequent bootstrapping analysis presented in Table 6 and Table 10.

Table 6. Structural Model Assessment

Hypothesis	Structural Relationship	β	t-value	p-value	Decision
H1	Operational Excellence - Sustainable Business Performance	0.375	7.41	<0.001	Supported
H2	Operational Excellence - Operational Performance	0.565	13.84	<0.001	Supported
H3	Operational Performance - Sustainable Business Performance	0.390	7.53	<0.001	Supported
H4	Operational Excellence - Operational Performance - Sustainable Business Performance (Indirect Effect)	0.220	6.84	<0.001	Supported (Partial Mediation)

The structural model results provide empirical support for all proposed hypotheses. As shown in Table 6, Operational Excellence has a significant positive effect on Sustainable Business Performance ($\beta = 0.375$, $t = 7.41$, $p < 0.001$), supporting H1. The findings indicate that organizations implementing continuous improvement, standardized processes, lean practices, and quality management are more likely to achieve superior sustainability performance.

Operational Excellence also demonstrates a significant positive influence on Operational Performance ($\beta = 0.565$, $t = 13.84$, $p < 0.001$), confirming H2. This result suggests that operational excellence contributes directly to improvements in operational efficiency, delivery reliability, production flexibility, capacity utilization, and product quality.

Furthermore, Operational Performance exerts a significant positive effect on Sustainable Business Performance ($\beta = 0.390$, $t = 7.53$, $p < 0.001$), supporting H3. Firms with stronger operational performance therefore exhibit better economic, environmental, and social performance outcomes.

Finally, H4 is also supported. The bootstrapping analysis confirms a significant indirect effect of Operational Excellence on Sustainable Business Performance through Operational Performance ($\beta = 0.220$, $t = 6.84$, $p < 0.001$). Because both the direct effect (H1) and the indirect effect (H4) remain statistically significant, Operational Performance functions as a partial mediator. This finding suggests that Operational Excellence enhances Sustainable Business Performance not only directly but also indirectly by strengthening firms' operational capabilities.

Table 7. Coefficient of Determination (R^2)

Endogenous Construct	R^2	Interpretation
Operational Performance	0.319	Moderate
Sustainable Business Performance	0.457	Moderate



The mediation analysis further reveals that Operational Performance significantly mediates the relationship between Operational Excellence and Sustainable Business Performance (Indirect Effect = 0.220, $t = 6.84$, $p < 0.001$). Because both the direct and indirect effects remain statistically significant, the mediation is classified as partial mediation, indicating that Operational Excellence contributes to Sustainable Business Performance both directly and indirectly through improved Operational Performance.

The explanatory power of the model is considered satisfactory, with R^2 values of 0.319 for Operational Performance and 0.457 for Sustainable Business Performance. In addition, the Q^2 Predict values indicate that the model possesses acceptable predictive relevance, while the estimated effect sizes (f^2) suggest that Operational Excellence has a large effect on Operational Performance and moderate effects on Sustainable Business Performance, both directly and indirectly

Table 8. Effect Size (f^2) Menggunakan pedoman Cohen (0.02 = kecil, 0.15 = sedang, 0.35 = besar).

Relationship	f^2	Interpretation
OE $\rightarrow$ OP	0.47	Large
OE $\rightarrow$ SBP	0.18	Medium
OP $\rightarrow$ SBP	0.19	Medium

Table 9. Predictive Relevance (Q^2 Predict)

Endogenous Construct	Q^2 Predict	Interpretation
Operational Performance	0.24	Medium predictive relevance
Sustainable Business Performance	0.31	Good predictive relevance

Table 10. Mediation Analysis

Indirect Relationship	Indirect Effect	t-value	p-value	Mediation
OE $\rightarrow$ OP $\rightarrow$ SBP	0.220	6.84	<0.001	Partial Mediation

Indirect Effect = $0.565 \times 0.390 = 0.220$

DISCUSSION

The findings demonstrate that operational excellence contributes significantly to sustainable business performance among Indonesian manufacturing firms. This result suggests that organizations implementing continuous improvement, process standardization, lean manufacturing, and quality management are better positioned to achieve economic, environmental, and social performance simultaneously. Rather than functioning merely as operational improvement initiatives, these practices create organizational routines that enhance resource utilization, reduce operational waste, and improve production consistency. The findings are consistent with previous studies reporting that operational excellence supports long-term organizational sustainability by integrating efficiency improvement with environmental and social objectives (Al-Khatib, 2024; Khan et al., 2023; Zhou & Chen, 2025). Compared with earlier studies that primarily emphasized direct performance outcomes, this study provides additional evidence from Indonesian manufacturing firms, demonstrating that operational excellence remains an important strategic capability within an emerging economy experiencing increasing sustainability pressures.

The results further indicate that operational excellence significantly improves operational performance. This finding confirms that operational excellence is translated into measurable operational outcomes, including cost efficiency, delivery reliability, production flexibility, capacity utilization, and product quality. Continuous improvement programs and standardized operational processes enable firms to optimize internal resources while increasing responsiveness to changing market demands. This finding is consistent with the Resource-Based View (RBV)(Armstrong, 2021), which argues that sustainable competitive advantage depends not only on the possession of valuable resources but also on an organization's capability to transform those resources into superior operational capabilities. Similar conclusions have been reported by(Anand et al., 2023; Gomez-Conde et al., 2023b; Kaufmann & Gaeckler, 2024), who found that operational routines strengthen organizational capability and improve operational effectiveness. Therefore, the present findings reinforce the argument that operational excellence represents a strategic organizational capability rather than simply an operational management technique.

Another important finding is that operational performance significantly enhances sustainable business performance. Manufacturing firms demonstrating higher operational efficiency, consistent product quality, reliable delivery performance, and effective resource utilization are more capable of achieving balanced economic, environmental, and social outcomes. This result indicates that sustainability is not generated solely through environmental initiatives but also through improvements in everyday operational execution. The findings support recent manufacturing studies suggesting that operational performance enables organizations to reduce production waste, improve productivity, and strengthen organizational resilience while maintaining long-term competitiveness (Ahmed & dkk., 2024; K. Patel et al., 2025)(Li et al, 2024). Compared with previous sustainability studies that emphasized environmental management practices, this research highlights that operational capability itself constitutes an important driver of sustainable business performance(Ali et al., 2021)(Probokusumo et al., 2025) (Faisal et al., 2026).



The most significant contribution of this study is the identification of operational performance as a partial mediating mechanism between operational excellence and sustainable business performance. The mediation finding indicates that operational excellence creates organizational value both directly and indirectly through improvements in operational capability. This capability-building process extends the Resource-Based View by demonstrating that strategic resources generate sustainable organizational outcomes only after being transformed into superior operational performance (Anand et al., 2023; J. Barney et al., 2021). Consequently, this study addresses the research gap identified in previous literature, which has largely examined only the direct relationship between operational excellence and sustainability without explaining the organizational mechanism linking the two constructs (Gomez-Conde et al., 2023b; Khan et al., 2023). From a managerial perspective, the findings suggest that manufacturing firms should complement continuous improvement initiatives with investments in operational execution capabilities, including production process optimization, quality management systems, workforce capability development, and digital operational monitoring. These integrated efforts will enable firms to achieve stronger operational performance and, ultimately, more sustainable business performance.

CONCLUSION

Summary of Key Findings

This study examined the relationships among Operational Excellence, Operational Performance, and Sustainable Business Performance in Indonesian manufacturing firms using the Resource-Based View (RBV) as the underlying theoretical framework. The empirical findings demonstrate that Operational Excellence has a significant positive effect on Sustainable Business Performance, both directly and indirectly through Operational Performance. These results indicate that organizations implementing continuous improvement, process standardization, lean practices, and quality management are more likely to achieve superior economic, environmental, and social performance.

More importantly, the study confirms that Operational Performance functions as a mediating mechanism through which Operational Excellence enhances Sustainable Business Performance. This finding suggests that the benefits of operational excellence are realized not only through strategic initiatives but also through improvements in day-to-day operational execution, including cost efficiency, delivery reliability, production flexibility, capacity utilization, and product quality. Overall, the proposed model provides empirical evidence that strengthening operational capabilities is an effective pathway for improving sustainable business performance in Indonesian manufacturing firms.

Theoretical Contributions

This study contributes to the operations management and sustainability literature by extending the Resource-Based View (RBV) through the incorporation of Operational Performance as a mediating mechanism linking Operational Excellence to Sustainable Business Performance. While previous studies have generally emphasized the direct relationship between operational capabilities and organizational performance, this research demonstrates that operational capabilities create sustainable value through an intermediate capability-building process.

The findings provide empirical support for the argument that valuable organizational resources alone are insufficient to generate sustainable competitive advantage. Instead, firms must effectively transform these resources into superior operational performance before long-term economic, environmental, and social benefits can be achieved. By providing evidence from Indonesian manufacturing firms, this study also enriches the growing body of sustainability research within emerging economy contexts.

Practical and Policy Implications

The findings offer several practical implications for manufacturing managers and policymakers. First, Operational Excellence should be viewed as a long-term strategic capability rather than merely an operational efficiency initiative. Manufacturing firms are encouraged to strengthen continuous improvement programs, lean manufacturing practices, quality management systems, and process standardization to enhance organizational competitiveness and sustainability.

Second, the significant mediating role of Operational Performance highlights the importance of effective operational execution. Investments in production technology, digital process monitoring, operational analytics, and workforce capability development should therefore complement operational excellence initiatives to maximize sustainability outcomes.

From a policy perspective, government programs supporting industrial competitiveness should extend beyond technology adoption incentives by promoting capability development in operational management, process optimization, and managerial competencies. Such initiatives are particularly important for medium-sized manufacturing firms seeking to improve productivity while meeting increasing sustainability expectations.

Limitations and Future Research

This study has several limitations that provide opportunities for future research. First, the cross sectional research design limits the ability to establish causal relationships over time. Future studies are encouraged to employ longitudinal research designs to examine how operational capabilities evolve and influence sustainable business performance.





Second, the study focuses on medium and large scale manufacturing firms in West Java, Indonesia. Consequently, the findings should be generalized with caution to other industries or geographical contexts. Future research may validate the proposed model across different manufacturing sectors or emerging economies.

Finally, although the study implemented several procedural and statistical techniques to reduce common method bias, the findings were based primarily on managers' perceptions. Future research could strengthen the robustness of the results by combining survey data with objective operational indicators, sustainability reports, or audited financial and environmental performance data. In addition, future studies may incorporate constructs such as digital transformation capability, organizational learning, or innovation capability as additional antecedents or mediating variables to further explain sustainable business performance.

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