

## Exploring the Effects of Implementing TQM Strategy, With Organizational Learning Capability and Innovation Capability as Mediators, On Operational Performance at Indonesian Plastic Packaging Industry

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Article Information		Abstract
Submission date	10 December 2023	<p><b>Research aim:</b> The purpose of this study to unravel and understand the positive correlation between TQM and OP, mediated by Organizational Learning Capability (OLC) and Organizational Innovation (OI) on the plastic packaging industry.</p> <p><b>Design/Method/Approach:</b> This research utilizes quantitative survey conducted across 140 plastic companies with Structural Equation Modeling Partial Least Squares (SEM PLS) analysis</p> <p><b>Research Finding:</b> The findings reveal that as organizations implement TQM strategies, there is a discernible positive impact on Operational Performance. This relationship is intricately influenced and mediated by the organizational processes of learning and innovation. Organizational Learning Capability (OLC) and Organizational Innovation (OI) emerge as pivotal mediators, playing a vital role in shaping the dynamics between TQM and Operational Performance.</p> <p><b>Keywords:</b> TQM, OLC, OI, Plastic industry</p>
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### 1. Introduction

Manufacturing companies are typically those that do not purchase finished goods from suppliers. Instead, they acquire raw materials, which are then processed to produce finished goods ready for use [1]. These finished products are the ones manufactured by the company and subsequently sold to consumers. The profit of a manufacturing company is the difference between revenue and expenses, including the cost of goods sold, operating expenses, taxes, interest, and other charges. The manufacturing industry is also referred to as the secondary or non-extractive industry. It is termed the secondary industry because manufacturing relies on raw materials extracted from primary industries.

The manufacturing industry does not directly utilize raw materials from natural resources. Therefore, the manufacturing industry is also referred to as the non-extractive industry. Manufacturing produces goods on a large scale (mass production). Indonesia stands as one of the largest manufacturing bases in ASEAN, contributing significantly, accounting for 20.27% of the national economy. In the current highly dynamic global business environment, where customers demand high-quality standards, international competition intensifies. Over time, it becomes evident that only organizations committed to delivering excellent quality will succeed [2].

Productivity of products is a crucial factor in enhancing competitiveness, alongside

production processes and speed. In today's business world, many companies strive to maintain their presence by innovating their products. Competition is fiercer in the era of globalization, requiring companies to produce high-quality goods and services that meet customer needs to emerge victoriously. Companies provide innovative, efficient, and economical goods and services required by consumers, aiming for the lowest possible cost and the highest possible quality. A logical approach to enhancing quality amid competitive challenges involves continuous improvement in customer-related business operations that span the entire organization, emphasizing flexibility and quality. Therefore, quality is linked to the continuous improvements made by many companies to drive market growth and win the competition.

Plastic products are manufactured to meet the diverse needs of the Indonesian society across various sectors, including the food and beverage industry, automotive, pharmaceuticals, and household necessities. The plastic industry significantly contributes to Indonesia's economy by creating employment opportunities for approximately 500,000 individuals [3]. The production of plastic packaging in Indonesia continues to increase each year, exhibiting an average annual growth rate of 4.65%. The decline in plastic production in 2018 aligns with the overall decrease in domestic manufacturing production amid the trade tensions between the United States and China [4].



**Figure 1. Plastic Packaging Production (in M USD)**

Based on this data, from an economic perspective, the annual increase in plastic production for packaging with an average annual growth rate of 4.65% in Indonesia signifies several noteworthy aspects. Notably, there is a rising demand across economic sectors such as food and beverage, consumer products, pharmaceuticals, and others. This industrial growth can create new economic opportunities, generate employment, and have a positive impact on the national GDP.

Total Quality Management (TQM) exerts a significant impact on the operational performance of companies, including those in the plastic packaging industry [5]. TQM emphasizes continuous improvement, customer satisfaction, and employee engagement. By implementing TQM aspects, companies can enhance their production processes, reduce waste, leading to increased efficiency and profitability. Total Quality Management (TQM) can have

a notably positive effect on Operational Performance (OP) [6], [7]. In the plastic packaging industry in Indonesia, the implementation of TQM can enhance Operational Performance (OP) in various ways: TQM can assist plastic packaging companies in reducing production costs, improving productivity, enhancing product quality, reducing production time, improving product delivery times, and enhancing customer service [7]. TQM encourages companies to adopt management principles focused on continuous measurement, analysis, and improvement in every operational aspect. Through the application of TQM, plastic packaging companies in Indonesia can achieve improved Operational Performance, enhance customer satisfaction, and attain business sustainability.

**Pengertian** The term Organizational Innovation (OI) refers to a company's ability to create and implement new practices within the organizational system, enabling the establishment of a competitive advantage. This encompasses the application of knowledge management, intra and interdepartmental collaboration, promotion of employee participation, and effective implementation of innovative processes [8]. On the other hand, Organizational Learning Capability (OLC) is defined as a company's ability to create, integrate, and transfer knowledge within the organization with the aim of enhancing innovative capabilities and adapting to environmental changes. This includes the ability to learn from experience, learn through reflection, and learn from others within the organization [9].

Previous research has explored the impact of Total Quality Management (TQM) on Operational Performance (OP) using mediators such as Organizational Innovation (OI) and Organizational Learning Capability (OLC). Additionally, Green manufacturing practices have been identified as playing a mediating role in the relationship between TQM and OP. In other words, Green manufacturing practices serve as a pathway through which TQM influences OP. Based on studies evaluating the influence of TQM on Operational Performance in small and medium-sized enterprises (SMEs) in the pharmaceutical industry in Thailand, it was found that entrepreneurial orientation and TQM positively influence the Operational Performance of pharmaceutical SMEs in Thailand [10]. Furthermore, organizational learning was identified as playing a crucial role as a moderating variable in the relationship between entrepreneurial orientation and Operational Performance. Specifically, OLC can enhance the relationship between entrepreneurial orientation and Operational Performance. Another study indicated that Organizational Innovation (OI) plays a significant role in the relationship between TQM and Operational Performance (OP). OI can enhance TQM implementation within an organization by increasing creativity, motivation, and adaptability to changes. Moreover, innovation can improve organizational performance through increased efficiency, effectiveness, and product or service differentiation [11]. This research provides insights for organizations to integrate OI within TQM as a strategy to enhance organizational performance. Additionally, the findings can serve as a reference for researchers interested in exploring the role of OI in the broader context of TQM and Operational Performance.

Based on the various aforementioned studies that indicate differences in the outcomes of the relationship between Total Quality Management (TQM) and Operational Performance (OP), and considering the absence of research conducted within the plastic packaging industry in Indonesia, this study aims to delve further into examining the impact of TQM on Operational Performance with the mediation of Organizational Innovation (OI) and Organizational Learning Capability (OLC) in the implementation within the plastic packaging industry in Indonesia.

### 1.1. Statement of Problem

In the dynamic landscape of the Indonesian plastic packaging industry, a pressing issue arises regarding the need to understand and optimize the relationships among key organizational factors. The statement of the problem revolves around the intricate dynamics between Total Quality Management (TQM), Organizational Innovation (OI), Organizational Learning Capability (OLC), and Operational Performance (OP). Despite the acknowledged significance of TQM in enhancing OP, the specific mediating roles of OI and OLC in this relationship remain unclear. Additionally, the industry lacks comprehensive insights into the nuanced impact of OI and OLC on OP, posing a challenge in developing tailored strategies for sustainable operational success.

Furthermore, the statement of the problem delves into the gap in current research, specifically the absence of detailed investigations into these relationships within the context of the plastic packaging sector in Indonesia. As the industry continues to evolve amidst global dynamics and increasing demands for innovation and efficiency, understanding the interplay between TQM, OI, OLC, and OP becomes imperative. Thus, the research aims to address this gap and provide valuable insights for industry practitioners, decision-makers, and scholars alike, contributing to the knowledge base for informed strategic initiatives and enhanced operational efficiency within the Indonesian plastic packaging industry.

### 1.2. Research Objectives

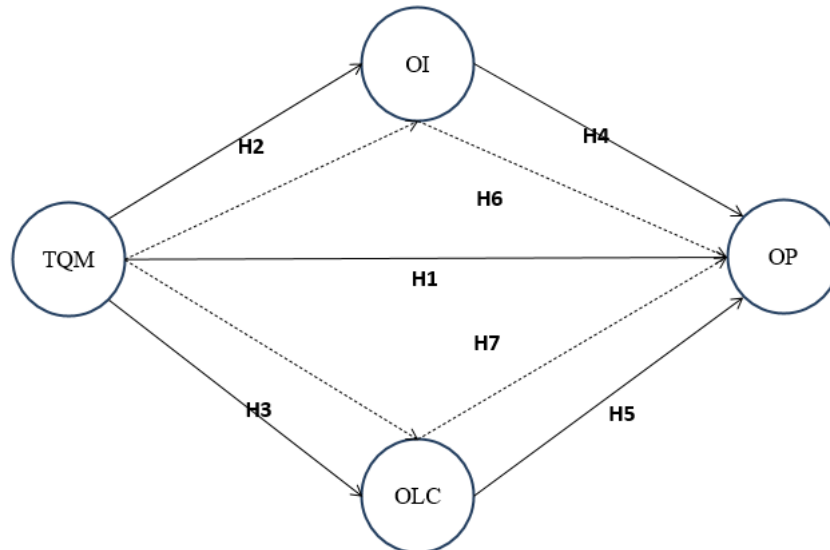
The research aims to achieve several objectives within the Indonesian plastic packaging industry context. Firstly, it seeks to assess the existing correlation between Total Quality Management (TQM) and Operational Performance (OP). Secondly, the study aims to investigate the mediating role of Organizational Learning Capability (OLC) in the relationship between TQM and OP. Additionally, the research aims to explore how Organizational Innovation (OI) mediates the association between TQM and OP in the specific context of the plastic packaging sector in Indonesia. Furthermore, the study intends to identify and analyze the interconnected relationships among TQM, OLC, OI, and OP within the industry. Ultimately, the research endeavors to provide actionable insights for industry practitioners and decision-makers, offering strategic recommendations to enhance operational efficiency by leveraging TQM strategies, OLC, and OI within the dynamic landscape of the Indonesian plastic packaging sector.

## 2. Method

This research employs a quantitative method through a structured survey conducted among 140 plastic companies within the Indonesian plastic packaging industry. The survey instrument is designed to gather data on key variables including Total Quality Management (TQM) implementation, Organizational Learning Capability (OLC), Organizational Innovation (OI), and Operational Performance (OP). This method allows for a systematic and comprehensive examination of the relationships between these variables, providing statistical insights into the nature and extent of their correlation. The collected data is then analyzed using appropriate statistical techniques to draw meaningful conclusions and contribute to a nuanced understanding of the dynamics within the studied industry.

Based on previous research as well as the problems to be studied, a conceptual framework was created that refers to the relationship between Total Quality Management (TQM) and Operational Performance (OP), which is mediated by Organizational Learning Capability

(OLC) and Organizational Innovation (OI), as follows:



**Picture 2 . Conceptual Framework**

Referring to the above conceptual framework, several hypotheses are formulated to encompass the relationships between Total Quality Management (TQM) and Operational Performance (OP), Organizational Innovation (OI), and Organizational Learning Capability (OLC). Additionally, hypotheses are crafted to explore the interconnections between OI, OLC, and their impact on OP. These hypotheses serve as the foundation for the empirical investigation, aiming to validate and contribute empirical evidence to the intricate relationships delineated within the research framework :

- Hypotesis 1 : Total Quality Management (TQM) has a positive and significant relationship with Operational Performance (OP) in the plastic packaging industry in Indonesia.
- Hypotesis 2 : Total Quality Management (TQM) has a positive and significant relationship with Organizational Innovation (OI)
- Hypotesis 3 : Total Quality Management (TQM) has a positive and significant relationship with Organizational Learning Capability (OLC)
- Hypotesis 4 : Organizational Innovation (OI) has a positive and significant relationship with Operational Performance (OP)
- Hypotesis 5 : Organizational Learning Capability (OLC) has a positive and significant relationship with Operational Performance (OP)
- Hypotesis 6 : Organizational Innovation (OI) have significantly mediate the relationship between Total Quality Management (TQM) and Operational Performance (OP).
- Hypotesis 7 : Organizational Learning Capability (OLC) have significantly mediate the relationship between Total Quality Management (TQM) and Operational Performance (OP).

The temporal approach employed in this research utilizes a cross-sectional design. The cross-sectional research design is an observational research design used to collect data at a specific point in time. The advantages of the cross-sectional design lie in its time and cost

efficiency, depicting the state of affairs at a particular moment [12]. Executing research with a cross-sectional design necessitates the careful selection of a representative sample, meticulous data collection, and thorough data analysis to ensure valid conclusions and prevent biased data outcomes.

The environmental setting for this research is a real-world setting. The real-world environment involves data collection from actual organizations or companies, where the research variables are observed and measured in a genuine context. In this study, data is collected regarding the implementation of TQM, operational performance, environmental performance, and other variables from organizations that have implemented TQM and have relevant environmental practices. This real-world environment provides insights into how these constructs operate in the plastic packaging industry in Indonesia.

Data are also collected from sources such as documentation, archives, and information that supports data from primary sources. Data collection techniques in this study used observation, interviews, and documentation studies. Questionnaire were conducted to 146 respondent with data is described in table below:

**Table 1. Respondent Data**

<b>Respondent profile</b>	<b>Characteristics</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Company	PMDN	72	49,3
	Mix (PMA & PMDN)	74	50,6
	Total	146	100,0
Number of Employee	Less than 50 person	16	11,0
	Between 50 - 100 person	15	10,3
	More than 100 person	115	78,8
	Total	146	100,0
Location	Jabodetabek	91	62,3
	Jawa tengah	2	1,4
	Jawa timur	40	27,4
	Others	13	8,9
	Total	146	100,0
Department	<i>Low management</i>	27	18,5
	<i>Middle management</i>	41	28,1
	<i>Senior management</i>	78	53,4
	Total	146	100,0

The interviews were conducted with structure and non structure method. And the interview sessions were segregated into the following 4 topics such as job security, business process and system, organization structure and position, and working environment and facilities.



### 3. Results and Discussion

The exploration of the intricate relationships within the plastic packaging industry in Indonesia has yielded compelling insights, as revealed in the Results and Discussion section. This pivotal segment of the research unravels the findings derived from investigating the interplay between Total Quality Management (TQM), Organizational Innovation (OI), Organizational Learning Capability (OLC), and Operational Performance (OP). The subsequent discourse delves into the nuanced connections and implications of these variables, shedding light on their collective impact on the industry's dynamics.

#### 3.1 Direct Effect Hypothesis

In delving into the intricacies of the research framework, this section unfolds the Direct Effect Hypothesis, a focal point that elucidates the anticipated direct relationships between key variables. This section explores the proposed direct effects, particularly examining the influence of Total Quality Management (TQM) on Operational Performance (OP) within the context of the plastic packaging industry in Indonesia. The Direct Effect Hypothesis serves as a critical lens through which the study endeavors to unveil and understand the immediate impacts of TQM on the operational aspects of organizations in this specific industrial landscape.

**Table 2. Results of Direct Influence Hypothesis Testing**

Hipotesis	Path	T Statistics	P Values	Result
H1	TQM → OP	5,305	0,000	Positive, Significant
H2	TQM → OI	4,591	0,000	Positive, Significant
H3	TQM → OLC	8,809	0,000	Positive, Significant
H4	OI → OP	1,676	0,048	Positive, Significant
H5	OLC → OP	0,241	0,405	Positive, Not Significant

Based on the hypothesis testing results among the variables presented in the table above, the findings can be outlined as follows:

The hypothesis that Total Quality Management (TQM) has a positive and significant relationship with Operational Performance (OP) in the plastic packaging industry in Indonesia is supported. The path coefficient (original sample) for TQM → OP is 0.421, with a t-statistic of 5.305 (> 1.645) and a p-value of 0.000 (< 0.05). Thus, it can be concluded that TQM has a positive and significant impact on Operational Performance (OP) in the plastic packaging industry in Indonesia.

The hypothesis stating that TQM has a positive and significant relationship with Organizational Innovation (OI) in the plastic packaging industry in Indonesia is supported. The path coefficient (original sample) for TQM → OI is 0.543, with a t-statistic of 4.591 (> 1.645) and a p-value of 0.000 (< 0.05). Thus, it can be concluded that TQM has a positive and significant impact on Organizational Innovation (OI) in the plastic packaging industry in Indonesia.

The hypothesis positing that TQM has a positive and significant relationship with Organizational Learning Capability (OLC) in the plastic packaging industry in Indonesia is supported. The path coefficient (original sample) for TQM → OLC is 0.601, with a t-statistic

of 8.809 ( $> 1.645$ ) and a p-value of 0.000 ( $< 0.05$ ). Thus, it can be concluded that TQM has a positive and significant impact on Organizational Learning Capability (OLC) in the plastic packaging industry in Indonesia.

The hypothesis asserting that Organizational Innovation (OI) has a positive and significant relationship with Operational Performance (OP) in the plastic packaging industry in Indonesia is supported. The path coefficient (original sample) for  $OI \rightarrow OP$  is 0.206, with a t-statistic of 1.676 ( $> 1.645$ ) and a p-value of 0.048 ( $< 0.05$ ). Thus, it can be concluded that Organizational Innovation (OI) has a positive and significant impact on Operational Performance (OP) in the plastic packaging industry in Indonesia.

The hypothesis suggesting that Organizational Learning Capability (OLC) has a positive and significant relationship with Operational Performance (OP) in the plastic packaging industry in Indonesia is not supported. The path coefficient (original sample) for  $OLC \rightarrow OP$  is 0.034, with a t-statistic of 0.241 ( $\leq 1.645$ ) and a p-value of 0.405 ( $\geq 0.05$ ). Thus, it can be concluded that Organizational Learning Capability (OLC) has a positive but not significant impact on Operational Performance (OP) in the plastic packaging industry in Indonesia.

The research findings highlight the substantial positive impact of Total Quality Management (TQM) on Operational Performance (OP) in the Indonesian plastic packaging industry, affirming its strategic significance. The study also underscores the crucial role of TQM in fostering Organizational Innovation (OI) and Organizational Learning Capability (OLC). While OI exhibits a significant positive influence on OP, the relationship between OLC and OP is positive yet not statistically significant. These insights provide valuable guidance for industry practitioners, emphasizing the importance of TQM practices and innovation in enhancing operational outcomes. The nuanced findings also open avenues for further exploration of the intricate relationships among TQM, OI, OLC, and OP within the dynamic landscape of the plastic packaging sector in Indonesia.

### 3.2 Mediation Effect Hypothesis

This segment serves as a pivotal juncture where the study unfolds the envisioned mediating roles of Organizational Innovation (OI) and Organizational Learning Capability (OLC) in the relationship between Total Quality Management (TQM) and Operational Performance (OP) within the plastic packaging industry in Indonesia. By scrutinizing the Mediation Effect Hypothesis, the research seeks to unravel the nuanced pathways through which TQM influences OP, shedding light on the mediating mechanisms orchestrated by OI and OLC. This section intricately navigates the dynamic interplay between these variables, contributing to a comprehensive understanding of the intricate relationships shaping organizational dynamics within the studied industry.

**Table 3. Mediation Hypothesis Testing Results**

Hipo	Path	T Statistics	P Values	Result
H6	$TQM \rightarrow OI \rightarrow OP$	1,394	0,083	positive, not significant
H7	$TQM \rightarrow OLC \rightarrow OP$	0,227	0,410	positive, not significant

Insights from the mediation hypothesis testing results presented in the table above, the study reveals intricate dynamics within the researched variables. The positive and significant



impact of Total Quality Management (TQM) on Operational Performance (OP) in the Indonesian plastic packaging industry is affirmed. Furthermore, the mediating roles of Organizational Innovation (OI) and Organizational Learning Capability (OLC) in these relationships offer nuanced insights into the mechanisms influencing operational outcomes.:

Relationship between Total Quality Management (TQM) → Organizational Innovation (OI) → Operational Performance (OP) is characterized by a coefficient path (original sample) of a positive 0.112. The associated t-statistic has a value of 1.394 ( $\leq 1.645$ ), and the p-value is 0.083 ( $\geq 0.05$ ). Consequently, it can be concluded that Organizational Innovation (OI) mediates the relationship between Total Quality Management (TQM) and Operational Performance (OP) in the plastic packaging industry in Indonesia, providing a positive yet nonsignificant impact.

Relationship between Total Quality Management (TQM) → Organizational Learning Capability (OLC) → Operational Performance (OP) exhibits a coefficient path (original sample) of a positive 0.020. The corresponding t-statistic has a value of 0.227 ( $\leq 1.645$ ), and the p-value is 0.410 ( $\geq 0.05$ ). In accordance with these findings, that Organizational Learning Capability (OLC) mediates the relationship between Total Quality Management (TQM) and Operational Performance (OP) in the plastic packaging industry in Indonesia, imparting a positive yet nonsignificant impact.

#### 4. Conclusion

In this research relationships within the Indonesian plastic packaging industry are explored, focusing on the interplay between Total Quality Management (TQM) and mediating factors such as Organizational Innovation and Organizational Learning Capability. The study aims to unravel the impact of TQM strategies on Operational Performance (OP), providing valuable insights into the dynamics shaping the industry. By delving into these relationships, the research seeks to contribute to a nuanced understanding of the factors influencing operational outcomes in the specific context of the plastic packaging sector in Indonesia.. The study's findings reveal that TQM has a positive and significant influence on Operational Performance, Organizational Innovation, and Organizational Learning Capability. The conclusions drawn from the research are as follows:

- 1) Total Quality Management (TQM) has a positive and significant relationship with Operational Performance (OP) in the plastic packaging industry in Indonesia.
- 2) Total Quality Management (TQM) has a positive and significant relationship with Organizational Innovation (OI) in the plastic packaging industry in Indonesia.
- 3) Total Quality Management (TQM) has a positive and significant relationship with Organizational Learning Capability (OLC) in the plastic packaging industry in Indonesia.
- 4) Organizational Innovation (OI) has a positive and significant relationship with Operational Performance (OP) in the plastic packaging industry in Indonesia.
- 5) Organizational Learning Capability (OLC) has a positive and significant relationship with Operational Performance (OP) in the plastic packaging industry in Indonesia.
- 6) Organizational Innovation (OI) does not significantly mediate the relationship between Total Quality Management (TQM) and Operational Performance (OP).
- 7) Organizational Learning Capability (OLC) does not significantly mediate the relationship between Total Quality Management (TQM) and Operational Performance (OP).

These findings offer new insights into the relationships among various factors within the plastic packaging industry in Indonesia. The results demonstrate that the implementation of

Total Quality Management practices can positively impact Organizational Innovation and Organizational Learning Capability, ultimately leading to a positive impact on organizational performance. Overall, these findings provide valuable insights for practitioners and policymakers in the plastic packaging industry in Indonesia, offering guidance on enhancing company performance through the implementation of Total Quality Management practices.

In conclusion, the comprehensive analysis of the hypothesis testing results sheds light on the intricate relationships within the context of the plastic packaging industry in Indonesia. The study affirms that Total Quality Management (TQM) plays a pivotal role, positively and significantly influencing both Operational Performance (OP) and key organizational dynamics such as Organizational Innovation (OI) and Organizational Learning Capability (OLC). The findings underscore the strategic importance of TQM practices in enhancing overall performance and fostering innovation and learning within the industry.

Additionally, the study highlights the significant positive impact of Organizational Innovation (OI) on Operational Performance (OP), emphasizing the need for organizations to invest in innovative practices to achieve superior operational outcomes. However, the relationship between Organizational Learning Capability (OLC) and Operational Performance (OP) was found to be positive but not statistically significant, suggesting a nuanced interplay between learning capabilities and operational outcomes.

These insights contribute valuable implications for practitioners and decision-makers in the plastic packaging industry, guiding them in optimizing TQM strategies, fostering innovation, and refining learning processes for sustained success. The study lays a foundation for future research endeavors, encouraging a deeper exploration of the nuanced relationships among TQM, OI, OLC, and OP in the dynamic landscape of the Indonesian plastic packaging sector.

The implications and benefits derived from this research are manifold, offering valuable insights across various dimensions. From a theoretical standpoint, the study contributes fresh perspectives on the relationships among Total Quality Management (TQM), Organizational Learning Capability (OLC), and Operational Performance (OP) within the plastic packaging industry in Indonesia. This contribution enriches the existing knowledge base on sustainable practices and performance dynamics in the packaging sector.

On a managerial level, the findings provide a roadmap for industry managers in Indonesia's plastic packaging sector to enhance performance through the effective implementation of Total Quality Management practices. Managers can leverage these insights to formulate strategies and initiatives that promote sustainable practices, thereby enhancing operational performance.

In the regulatory arena, the research underscores the significance of incorporating sustainable practices, such as Total Quality Management, into the regulatory framework and policies governing the plastic packaging industry in Indonesia. Policymakers can utilize these findings to craft regulations that incentivize companies to adopt sustainable practices, fostering a balance between economic growth and operational sustainability.

Practically, the research holds implications for industry practitioners, offering actionable insights to improve Corporate Social Responsibility efforts, drive innovation, implement

effective Total Quality Management strategies, and elevate overall performance within the competitive landscape of the plastic packaging industry in Indonesia. In summary, this research bears implications for theoretical development, managerial decision-making, regulatory frameworks, and practical applications within the plastic packaging industry in Indonesia.

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