Quality Performance of Manufacturing Companies in West Java: SCM, TQM, and JIT Impact

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Abstract

This study aims to analyze the impact of supply chain management (SCM), total quality management (TQM), and just-in-time (JIT) practices on the quality performance of manufacturing companies in Jawa Barat, Indonesia. The manufacturing sector in Jawa Barat plays a crucial role in the regional economy, making it imperative for companies to maintain high-quality standards to remain competitive. Data were collected through surveys and interviews from a sample of 40 manufacturing companies in Jawa Barat. The analysis included statistical techniques such as t-tests and F-tests to examine the relationships between SCM, TQM, JIT, and quality performance. The results indicated that SCM, TQM, and JIT practices have a significant positive influence on quality performance. The calculated t-values and F-value were found to be greater than the critical values, indicating statistical significance. Furthermore, the Adjusted R Square value of 0.669 suggests that 66.9% of the variance in quality performance can be attributed to the combined influence of SCM, TQM, and JIT. These findings underscore the importance of implementing effective SCM, TQM, and JIT practices to enhance quality performance in manufacturing companies. By optimizing supply chain processes, fostering a culture of continuous improvement, and implementing lean production methods, companies can achieve higher product quality, customer satisfaction, and operational efficiency.

Keywords: Quality Performance, Supply Chain Management (SCM), Total Quality Management (TQM), Just-In-Time (JIT), Manufacturing Companies in Jawa Barat.

1. Introduction

Manufacturing companies in Jawa Barat refer to the companies operating within the province of Jawa Barat, Indonesia, that are involved in the production of goods through various industrial processes. Jawa Barat, also known as West Java, is a province located on the island of Java and is one of the most industrialized regions in Indonesia. Manufacturing companies in Jawa Barat encompass a wide range of industries, including automotive, electronics, textiles, food processing, pharmaceuticals, and more. These companies play a crucial role in the economy of Jawa Barat, contributing to employment generation, economic growth, and exports. The manufacturing sector in Jawa Barat benefits from several factors that make the region attractive for businesses. These factors include a strategic geographical location with access to ports and transportation infrastructure, a skilled workforce, availability of raw materials, and supportive government policies. These manufacturing companies in Jawa Barat face various challenges such as maintaining product quality, optimizing production processes, meeting customer demands, and staying competitive in the global market. To address these challenges and improve their overall performance, companies often adopt different strategies and management techniques.

Phenomenon The Impact of Supply Chain Management, Total Quality Management, and Just-in-Time on the Quality Performance of Manufacturing Companies in Jawa Barat. The quality performance of manufacturing companies in Jawa Barat is influenced by the strategies and management techniques they adopt, particularly in the areas of supply chain management (SCM), total quality management (TQM), and just-in-time (JIT) practices. These companies recognize the importance of maintaining high-quality standards to meet customer expectations, ensure operational efficiency, and gain a competitive edge in the market. Supply chain management plays a vital role in ensuring the timely delivery of materials, optimizing inventory levels, and minimizing disruptions in the production process [1]. By effectively managing their supply chains, manufacturing companies in Jawa Barat can enhance the quality performance of their products by ensuring that the right materials are available at the right time, reducing lead times, minimizing stockouts,

Accepted: 19-07-2023 | Revision: 23-07-2023 | Publication: 30-09-2023 | https://doi.org/10.37034/infeb.v5i3.646
and improving overall supply chain efficiency. Total quality management focuses on integrating quality principles and practices throughout all aspects of an organization [2]. By implementing TQM principles, manufacturing companies in Jawa Barat can foster a culture of continuous improvement, customer focus, and employee involvement. This can result in improved product quality, reduced defects and waste, enhanced process efficiency, and ultimately, higher quality performance. Just-in-time practices emphasize producing and delivering products or components only when they are needed in the production process. JIT aims to minimize inventory levels, reduce waste, and improve production efficiency [3]. By implementing JIT principles, manufacturing companies in Jawa Barat can achieve higher quality performance by reducing the likelihood of product obsolescence, minimizing defects, improving production flexibility, and ensuring timely deliveries to customers. Understanding the impact of SCM, TQM, and JIT on the quality performance of manufacturing companies in Jawa Barat is crucial for optimizing operational processes, meeting customer demands, and maintaining a competitive advantage in the dynamic market. This study aims to analyze how the adoption and effective implementation of SCM, TQM, and JIT practices contribute to the quality performance of manufacturing companies in Jawa Barat. By examining the relationships between these management strategies and quality outcomes, valuable insights can be gained to help enhance the overall quality performance of manufacturing companies in the region.

Quality performance refers to the measure of how well a product or service meets or exceeds customer expectations and requirements. It encompasses various aspects such as reliability, durability, functionality, aesthetics, and overall customer satisfaction. In the context of manufacturing companies, quality performance is a critical factor in determining their success and competitiveness in the market [4]. Manufacturing companies strive to achieve high-quality performance as it directly impacts customer loyalty, brand reputation, and long-term profitability. By maintaining high-quality standards, companies can gain a competitive edge by differentiating themselves from their competitors and building a loyal customer base[5]. Effective quality performance requires the implementation of robust quality management systems and practices throughout the entire production process. This involves setting quality objectives, establishing quality control measures, conducting regular inspections and testing, and continuously monitoring and improving quality performance. Quality performance is not limited to the manufacturing stage but extends to the entire supply chain, including the sourcing of raw materials, production processes, packaging, and distribution [6]. Quality performance can also be influenced by factors such as supply chain management, total quality management, and just-in-time practices. Implementing effective supply chain management ensures that the right materials are available at the right time, minimizing disruptions and delays that could impact product quality. Total quality management focuses on instilling a quality-driven culture within the organization, encouraging employee involvement and continuous improvement efforts to enhance quality performance. Just-in-time practices help reduce waste, improve production efficiency, and ensure timely deliveries, all of which contribute to overall quality performance [7]. Manufacturing companies that excel in quality performance gain a competitive advantage by earning customer trust and loyalty. They experience lower costs associated with rework, recalls, and customer complaints, while enjoying higher customer satisfaction and repeat business. Additionally, strong quality performance can open doors to new market opportunities and partnerships, as it signifies a commitment to excellence and a willingness to meet customer demands [8].

Supply Chain Management (SCM) is a strategic approach that focuses on the effective coordination and optimization of all activities involved in the flow of goods, services, information, and resources from the point of origin to the point of consumption. It encompasses the planning, sourcing, production, inventory management, logistics, and distribution processes across the entire supply chain [1]. Effective supply chain management is crucial for manufacturing companies as it enables them to streamline operations, reduce costs, improve efficiency, and enhance customer satisfaction [9]. By integrating and aligning all supply chain activities, companies can ensure a smooth and uninterrupted flow of materials and information, leading to timely delivery of products to customers. One of the key goals of supply chain management is to achieve a balance between customer service levels and operational costs. By understanding customer demands and market trends, companies can optimize their supply chain processes to meet customer expectations while minimizing waste, excess inventory, and inefficiencies [10]. Supply chain management involves various activities, such as demand forecasting, procurement, production planning, inventory management, transportation, and distribution [11]. These activities are interconnected, and any disruption or inefficiency at one stage can have a ripple effect throughout the supply chain. For example, delays in procuring raw materials can result in production delays and missed delivery deadlines. Furthermore, effective supply chain management also involves collaboration and coordination with suppliers, distributors, and other stakeholders. Building strong relationships and partnerships within the supply chain can lead to improved communication, shared information, and better coordination of activities, resulting in enhanced efficiency and responsiveness [12].

Technological
advancements have played a significant role in transforming supply chain management. The use of advanced software systems, data analytics, and automation has enabled real-time visibility, accurate demand forecasting, efficient inventory management, and seamless coordination between different supply chain partners.

Total Quality Management (TQM) is a management philosophy and approach that aims to create a culture of continuous improvement, customer focus, and employee involvement within an organization. TQM emphasizes the importance of quality in all aspects of operations, products, and services. It involves the integration of quality principles, practices, and methodologies across all levels and functions of an organization [13]. The core principles of TQM revolve around meeting or exceeding customer expectations, preventing defects rather than detecting them, continuous improvement, and empowering employees. TQM encourages organizations to shift their focus from a traditional quality control approach to a proactive approach that involves every employee in the pursuit of excellence [14]. One of the key elements of TQM is customer focus. Organizations adopting TQM strive to understand customer needs, expectations, and preferences. By gathering feedback, conducting surveys, and engaging in customer interactions, companies can align their products, services, and processes to meet customer requirements. This customer-centric approach helps build trust, satisfaction, and loyalty among customers, leading to long-term business success. Another critical aspect of TQM is employee involvement and empowerment. TQM encourages organizations to promote a culture where employees are actively engaged in quality improvement efforts [4]. Employees are empowered to identify and solve problems, contribute ideas for improvement, and participate in cross-functional teams focused on quality initiatives. This engagement fosters a sense of ownership, accountability, and pride among employees, resulting in improved quality performance and organizational effectiveness. TQM also emphasizes the importance of continuous improvement. Organizations implementing TQM are committed to identifying and eliminating waste, defects, and inefficiencies in processes [15]. They adopt various quality improvement tools and methodologies such as Six Sigma, Lean Management, and Kaizen to drive continuous improvement efforts. By constantly analyzing data, measuring performance, and implementing corrective actions, organizations can enhance process efficiency, reduce defects, and deliver superior quality products and services. Furthermore, TQM promotes the concept of process orientation [16]. It encourages organizations to view their operations as a series of interconnected processes rather than isolated activities. By mapping and analyzing these processes, organizations can identify bottlenecks, streamline workflows, and optimize resource allocation to enhance overall efficiency and quality performance. Implementing TQM requires strong leadership commitment, effective communication, employee training, and the establishment of quality metrics and benchmarks. TQM is not a one-time initiative but a long-term commitment to continuously improve and innovate [17].

Just-in-Time (JIT) is a production and inventory management strategy that aims to optimize operational efficiency by minimizing inventory levels and ensuring that products are produced and delivered just in time to meet customer demand. JIT operates on the principle of eliminating waste, reducing costs, and improving overall productivity [13]. By adopting JIT, companies can achieve several benefits. First, JIT helps reduce inventory carrying costs by minimizing the need for storing excess stock. This leads to improved cash flow and better utilization of resources. Second, JIT enables companies to respond quickly to changes in customer demand, as production is driven by actual orders. This flexibility allows for efficient resource allocation and reduces the risk of overproduction or stockouts [18]. JIT also promotes a culture of continuous improvement. By focusing on waste reduction and streamlining processes, companies can identify and eliminate non-value-added activities, such as excess inventory, overproduction, and unnecessary waiting times. This results in improved operational efficiency, reduced lead times, and increased productivity [18]. Moreover, JIT emphasizes strong relationships with suppliers. Close collaboration and effective communication with suppliers enable companies to receive materials and components in a timely manner, aligning with production schedules. This reduces inventory levels, lowers costs, and ensures a smooth flow of materials throughout the supply chain [19]. Implementing JIT requires careful planning and coordination. Accurate demand forecasting, efficient production scheduling, reliable transportation, and effective quality control systems are essential elements of successful JIT implementation [20]. Additionally, JIT relies on cross-functional collaboration and employee empowerment to drive continuous improvement initiatives and ensure the smooth flow of materials and information across the organization [21].

The purpose of this study is to analyze and assess the impact of supply chain management (SCM), total quality management (TQM), and just-in-time (JIT) practices on the quality performance of manufacturing companies in Jawa Barat. By investigating the relationships between these management strategies and quality outcomes, the study aims to provide valuable insights and recommendations for enhancing the overall quality performance of manufacturing companies in the region. The findings of this study will contribute to the existing body of knowledge on SCM, TQM, and JIT, specifically in the context of
manufacturing companies in Jawa Barat. The research outcomes will help industry practitioners, policymakers, and stakeholders make informed decisions and implement effective strategies to improve quality performance, meet customer expectations, and sustain competitiveness in the manufacturing sector of Jawa Barat.

2. Research Method

This study will utilize a quantitative research approach to investigate the impact of supply chain management (SCM), total quality management (TQM), and just-in-time (JIT) practices on the quality performance of manufacturing companies in Jawa Barat. A total of 40 manufacturing companies located in Jawa Barat were selected as the research sample. Data will be collected through surveys and interviews from the selected sample. A stratified random sampling technique will be employed to ensure a diverse representation of industries within the manufacturing sector. Surveys will be administered to key personnel responsible for supply chain management, quality management, and production processes in the selected companies. The surveys will utilize validated scales or constructs adapted from existing literature to measure the independent variables of SCM, TQM, and JIT practices. In addition to surveys, semi-structured interviews will be conducted with managers and practitioners to gain qualitative insights and in-depth information about the implementation of SCM, TQM, and JIT practices in the manufacturing companies. These interviews will provide a deeper understanding of the challenges, successes, and impact of these practices on quality performance. The collected data will undergo rigorous analysis using appropriate statistical techniques such as regression analysis, correlation analysis, and descriptive statistics. Quantitative data analysis will be performed using statistical software packages like SPSS or R. The qualitative data from interviews will be subjected to thematic analysis to identify key themes and patterns. Throughout the study, ethical considerations will be adhered to, ensuring participant confidentiality, informed consent, and data anonymization. The findings of this research will contribute to the existing body of knowledge on the impact of SCM, TQM, and JIT practices on quality performance in the context of manufacturing companies in Jawa Barat.

3. Result and Discussion

Multiple regression analysis is used to predict the value of the dependent variable on the independent variable, as shown in Table 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>T Value</th>
<th>Significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>8.102</td>
<td>3.072</td>
<td>.003</td>
</tr>
<tr>
<td>SCM</td>
<td>.151</td>
<td>3.734</td>
<td>.000</td>
</tr>
<tr>
<td>TQM</td>
<td>.191</td>
<td>3.819</td>
<td>.000</td>
</tr>
<tr>
<td>JIT</td>
<td>.550</td>
<td>11.893</td>
<td>.000</td>
</tr>
<tr>
<td>F Square</td>
<td>68.744</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>R Square</td>
<td>.659</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on the calculated t-value (t-hitung) and the critical t-value (t tabel) in the given statement reveals an interesting finding. The calculated t-value of 3.734 is significantly greater than the critical t-value of 1.659. This indicates that the relationship between supply chain management (SCM) and quality performance is not only statistically significant but also positive in nature. The significance of this result suggests that there is a strong association between SCM practices and the quality performance of the manufacturing companies in Jawa Barat. It implies that the effective implementation of SCM strategies, such as efficient coordination of the supply chain, optimized inventory management, and timely delivery of materials, has a positive impact on the quality outcomes of these companies [9]. The rejection of the null hypothesis (Ho) and acceptance of the alternative hypothesis (Ha) further support the idea that SCM plays a crucial role in enhancing quality performance. This implies that companies in Jawa Barat can improve their quality outcomes by focusing on SCM practices and making efforts to streamline their supply chain processes. It is worth noting that while this study establishes a statistically significant relationship between SCM and quality performance, it is essential to consider other factors that may also influence quality outcomes. Variables such as total quality management (TQM), just-in-time (JIT) practices, organizational culture, and technological advancements may interact with SCM and collectively impact quality performance. Additionally, it is important to acknowledge the limitations of this study. The findings are based on the specific sample of manufacturing companies in Jawa Barat and may not be directly applicable to other regions or industries.

The provided information states that the calculated t-value (t-hitung) is 3.819, while the critical t-value (t tabel) is 1.659. By comparing these values, we observe that the calculated t-value is significantly greater than the critical t-value (3.819 > 1.659). Alternatively, the level of significance (0.000) is smaller than the alpha level (0.05). Based on this comparison, we can conclude that there is a positive and significant relationship between total quality management (TQM) and quality performance when considering them individually (parisially). The rejection of the null hypothesis (Ho) and acceptance of the alternative hypothesis (Ha) support this finding. This conclusion suggests that TQM practices have a statistically significant impact on the quality performance of the manufacturing companies in question. The positive influence indicates that when companies implement...
effective TQM principles such as continuous improvement, customer focus, and employee involvement, it leads to improved quality performance [15]. However, it's important to note that this conclusion is specific to the variables examined and the sample studied in Jawa Barat. The influence of TQM on quality performance may vary in different contexts and industries. Additionally, while this study establishes a statistically significant relationship, it is crucial to consider other factors that may also affect quality outcomes, such as supply chain management, just-in-time practices, and organizational culture. Furthermore, it's worth highlighting the limitations of this study. The findings are based on a specific sample of manufacturing companies in Jawa Barat.

The provided information states that the calculated t-value ($t$-hitung) is 11.893, while the critical t-value ($t$-tabel) is 1.659. By comparing these values, we can observe that the calculated t-value is significantly greater than the critical t-value (11.893 > 1.659). Additionally, the level of significance (0.000) is smaller than the alpha level (0.05). Based on this comparison, we can conclude that there is a positive and significant relationship between just-in-time (JIT) practices and quality performance when considering them individually (partial). The rejection of the null hypothesis (Ho) and acceptance of the alternative hypothesis (Ha) support this conclusion. This finding suggests that the implementation of JIT practices has a statistically significant impact on the quality performance of the manufacturing companies under investigation. The positive influence indicates that when companies adopt JIT principles such as minimizing inventory levels, reducing waste, and ensuring timely deliveries, it leads to improved quality performance [21]. However, it's important to note that this conclusion is specific to the variables examined and the sample studied in Jawa Barat. The impact of JIT on quality performance may vary in different contexts and industries. Additionally, while this study establishes a statistically significant relationship, it is crucial to consider other factors that may also affect quality outcomes, such as supply chain management, total quality management, and organizational culture.

The information provided states that the testing was conducted by comparing the calculated F-value with the critical F-value. The calculated F-value is 68.744, while the critical F-value is 2.69. The comparison reveals that the calculated F-value is significantly greater than the critical F-value (68.744 > 2.69). Additionally, the level of significance (0.000) is smaller than the alpha level (0.05). Based on this comparison, we can conclude that there is a significant and joint influence of supply chain management (SCM), total quality management (TQM), and just-in-time (JIT) practices on quality performance. The rejection of the null hypothesis (Ho) and acceptance of the alternative hypothesis (Ha) support this conclusion. This finding suggests that when SCM, TQM, and JIT practices are implemented together, they have a significant impact on the quality performance of the manufacturing companies under investigation. It indicates that a comprehensive approach that integrates these practices leads to improved quality outcomes. However, it's important to note that this conclusion is specific to the variables examined and the sample studied in Jawa Barat. The joint influence of SCM, TQM, and JIT on quality performance may vary in different contexts and industries. Additionally, while this study establishes a statistically significant relationship, it is crucial to consider other factors that may also affect quality outcomes, such as organizational culture, technological advancements, and market conditions.

Based on the information provided, the Adjusted R Square value in Table 1 is 0.669. This indicates that the combined contribution of the SCM, TQM, and JIT variables to the quality performance is 0.669 or 66.9%. The remaining 33.1% is influenced by other variables not examined in the study. The Adjusted R Square is a measure of the proportion of the variance in the dependent variable (quality performance) that can be explained by the independent variables (SCM, TQM, and JIT). In this case, the Adjusted R Square suggests that the combination of SCM, TQM, and JIT practices accounts for a significant portion of the variation in quality performance. The high Adjusted R Square value indicates a strong relationship between the independent variables and quality performance. It suggests that the implementation of SCM, TQM, and JIT practices has a substantial impact on enhancing quality outcomes in the manufacturing companies under investigation. However, it's important to acknowledge that the remaining 33.1% of the variance in quality performance is influenced by other factors not included in the study. These unexamined variables may include external market conditions, organizational culture, technological advancements, or specific industry dynamics. Understanding and considering these additional factors can provide a more comprehensive understanding of the overall determinants of quality performance. Therefore, while the combined contribution of SCM, TQM, and JIT is significant, it is essential to acknowledge the presence of other influential variables that may affect quality performance.

4. Conclusion

The findings of the study indicate that supply chain management (SCM), total quality management (TQM), and just-in-time (JIT) practices have a significant and positive impact on the quality performance of manufacturing companies in Jawa Barat. The statistical analysis, comparing the t-values, F-value, and Adjusted R Square, consistently supports the conclusion that these management practices contribute to improved quality outcomes. Specifically, SCM practices enhance...
the efficiency and effectiveness of the supply chain, resulting in timely delivery of materials and improved quality performance. TQM principles foster a culture of continuous improvement, customer focus, and employee involvement, leading to enhanced product quality and customer satisfaction. JIT practices minimize waste, reduce inventory levels, and optimize production processes, thereby positively influencing quality performance. The significant findings suggest that manufacturing companies in Java Barat should prioritize the adoption and effective implementation of SCM, TQM, and JIT practices to enhance their quality performance. By integrating these practices into their operations, companies can achieve improved product quality, reduced defects, enhanced customer satisfaction, and increased operational efficiency. It is important to note that while the study establishes a strong association between SCM, TQM, JIT, and quality performance, the specific results may vary in different contexts and industries.

References


