

Efficiency in Production Operations Management: Impact on Corporate Competitiveness and Strategic Positioning

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Abstract

This article examines the correlation between the optimization of production operations and both the competitiveness and strategic positioning of firms in a globalized economic context. Drawing on the Resource-Based View (RBV) theory, Porter's Value Chain model, and the principles of Industry 4.0, the study employs a mixed-methods approach, combining quantitative and qualitative analyses. The sample includes 150 manufacturing firms of various sizes operating in Douala, Cameroon.

The findings reveal a significant positive correlation ($r = 0.65$, $p < 0.01$) between operational efficiency and competitiveness, with a regression model indicating that 56% of the variance in competitiveness is explained by operational efficiency. Furthermore, the impact is particularly pronounced in technology-intensive industries. Respondents' testimonies emphasize the critical role of digital transformation via Industry 4.0 as a lever for strategic differentiation.

The study concludes that optimizing operational processes is vital for enhancing competitiveness and strategic positioning, recommending the adoption of methodologies such as Lean and Six Sigma, as well as investment in advanced technologies. Finally, it proposes avenues for future research to further explore these dynamics across various industrial sectors.

Keywords: operations management, competitiveness, strategic positioning, digital transformation, Industry 4.0

1. Introduction

Production operations management is one of the fundamental pillars of organizational performance and business sustainability in an ever-evolving economic environment. It encompasses the processes and practices aimed at efficiently transforming resources into products or services that meet customer needs (Mignenan, 2021a). Within Porter's Value Chain framework (1985), production activities hold a central position as a key component of primary activities, where decisions related to flow optimization, cost control, and quality management directly influence a company's overall competitiveness.

In a context characterized by intensifying global competition, businesses face growing challenges in maintaining and enhancing their competitiveness. Operational efficiency, defined as the ability to execute processes optimally while minimizing waste and maximizing customer value (Slack et al., 2021), has become a strategic imperative. According to a recent study by McKinsey (2023), organizations investing in agile and robust operational processes achieve financial performance 20% higher than their less efficient counterparts. As such, continuous improvement of operations is no longer merely a functional requirement but a differentiating factor in an increasingly demanding market.

Given these challenges, the relationship between effective operations management and business competitiveness warrants closer examination. While numerous studies highlight the importance of operational practices in cost reduction and quality improvement (Heizer & Render, 2022), the broader analysis of their influence on overall

strategic positioning remains underexplored. To what extent can optimal operations management serve as a strategic lever enabling an organization not only to compete on price but also to excel in dimensions such as innovation, flexibility, and market differentiation?

Moreover, operational outcomes do not automatically translate into sustainable competitive advantages. Companies must navigate a complex environment where internal capabilities must align with external demands while adapting to disruptions such as rapid digitalization, global crises, and evolving consumer preferences (Deloitte Insights, 2023). This study therefore seeks to address a central question: what are the measurable impacts of optimal production operations management on a firm's competitiveness and strategic positioning?

This research aims to deepen the understanding of the relationship between production operations efficiency and firms' strategic performance. Specifically, the study seeks to evaluate how optimizing operational processes can contribute to strengthening competitive advantages and consolidating strategic positioning in their respective markets.

Additionally, the analysis seeks to identify tangible improvement levers that can enhance operational efficiency while aligning production practices with the organization's strategic goals. Such levers may include the adoption of innovative technologies, enhancement of organizational capabilities, or the implementation of methodologies such as Lean Management or Industry 4.0 principles.

The ultimate objective is to provide both theoretical and practical insights, enabling firms to rethink their operational strategies from a sustainable and competitive perspective. This endeavor contributes to advancing the field of operations management research while offering actionable solutions for decision-makers.

2. Literature Review

2.1 Production Operations Management

Production operations management is a fundamental field within management sciences, focusing on the planning, organization, coordination, and control of processes that transform resources into products or services (Heizer & Render, 2022). This discipline encompasses theories and practices aimed at maximizing the efficiency and effectiveness of production processes while addressing stakeholders' needs (Mignenan, 2021b).

Historically, operations management was influenced by the principles of Taylorism and Fordism, which laid the foundation for mass production. Over time, more flexible, customer-oriented approaches such as just-in-time production and Lean Management emerged as dominant paradigms (Womack & Jones, 1996). The advent of information and communication technologies has further catalyzed the digital transformation of production processes, exemplified by the rise of Industry 4.0 (Kagermann et al., 2013). This new industrial framework emphasizes the use of cyber-physical systems, the Internet of Things (IoT), and big data analytics to enhance decision-making and optimize performance.

According to Slack et al. (2021), operational efficiency is often measured using key performance indicators such as productivity, product quality, cost, delivery speed, and flexibility. However, the literature highlights that adopting advanced operations management practices, such as enterprise resource planning or additive manufacturing, does not necessarily guarantee value creation unless aligned with the organization's strategic objectives.

2.2 Competitiveness of Firms

Firm competitiveness is a multidimensional concept reflecting the ability to create and sustain competitive advantages within an industry. Porter (1985) defines competitive advantage as the capacity of a firm to outperform its rivals based on criteria such as cost, differentiation, or innovation. Competitiveness thus relies on internal dimensions, such as process efficiency and access to scarce resources, as well as external factors, including market conditions and regulatory frameworks (Barney, 1991).

A recent study by McKinsey (2023) underscores that competitive firms heavily invest in digital transformation and the enhancement of organizational agility. These initiatives enable them to respond rapidly to market fluctuations and anticipate customer needs (MIGNENAN, 2021c). However, competitiveness cannot be sustained without effective cost management and continuous performance optimization, highlighting the intrinsic link to production operations management.

2.3 Strategic Positioning

Strategic positioning refers to how a firm differentiates itself from competitors to occupy a unique and preferred space in the minds of customers (Mintzberg et al., 2005). This concept, rooted in Porter's competitive strategy

framework (1985), is realized through the selection of generic strategies, such as cost leadership, differentiation, or focus on a specific market segment.

The development of an effective strategic position requires an in-depth analysis of internal strengths and weaknesses alongside external opportunities and threats (SWOT analysis). In this context, the alignment of organizational capabilities, particularly in operations management (Mignenan, 2022a), with the chosen strategy is critical (Grant, 2021). For example, firms pursuing a differentiation strategy must rely on innovation and superior quality processes, while those emphasizing cost leadership must excel in resource optimization.

2.4 Interrelations Between Operations Management, Competitiveness, and Strategic Positioning

The literature highlights complex and dynamic interrelations between operations management, competitiveness, and strategic positioning. On one hand, effective operations management directly contributes to the creation of competitive advantages by reducing costs, improving product quality, and enhancing flexibility (Hill, 2000). On the other hand, these advantages must align with strategic objectives to ensure sustainable positioning (Mignenan, 2022b).

For instance, a study by Prajogo and Sohal (2016) demonstrates that adopting Lean and Six Sigma principles not only improves operational efficiency but also strengthens strategic differentiation by enhancing perceived quality. However, studies such as that by Slack and Brandon-Jones (2020) caution against an excessive focus on internal efficiency, which may hinder responsiveness to external environmental changes (Mignenan, 2023).

Furthermore, digital transformation and technological integration reinforce the link between these dimensions. Industry 4.0, for example, creates new opportunities to align operational capabilities with strategic demands, thus enhancing competitiveness (Kagermann et al., 2023). However, these transformations require substantial investments and effective change management to be fully leveraged (Mignenan, 2024).

Ultimately, operations management, competitiveness, and strategic positioning cannot be analyzed in isolation. Their interdependence underscores the need for a holistic approach that aligns internal capabilities with external objectives to maximize organizational performance.

Critical Synthesis of the Literature Review

In summary, the presented literature review provides a thorough and exhaustive analysis of the principal concepts pertaining to production operations management, business competitiveness, and strategic positioning. It effectively elucidates the historical and theoretical advancements within these domains and explores the intricate interconnections that bind them. Nevertheless, despite the depth and breadth of the analyses offered, certain deficiencies remain evident in prior studies. Notably, contemporary literature predominantly emphasizes the internal facets of operations management and their direct influence on competitiveness and strategic positioning, often overlooking external dimensions such as the impact of societal and environmental dynamics on these processes. Additionally, while the significance of Industry 4.0 is acknowledged, there is a conspicuous absence of a detailed exploration regarding the challenges associated with technological integration and the management of organizational change within this hypermodern context.

Furthermore, previous research has inadequately addressed the interplay between various operations management strategies and the diverse configurations of competitiveness, especially within fluctuating and globalized economic environments. The existing body of literature also appears to underestimate the importance of human factors, including organizational culture and leadership, in mediating operational efficiency and competitive advantage. These human dimensions are indispensable for achieving a comprehensive and holistic understanding of contemporary organizational dynamics.

The present study endeavors to bridge these gaps by adopting an integrative approach that simultaneously considers both the internal and external factors influencing operations management, competitiveness, and strategic positioning. By incorporating societal and environmental dimensions alongside human aspects such as organizational culture and leadership, this research aims to provide a more complete and nuanced perspective on the underlying mechanisms that drive organizational performance. Moreover, by scrutinizing the specific challenges associated with the integration of Industry 4.0 technologies and proposing tailored change management strategies, this study aspires to make a significant contribution to the existing literature. It seeks to furnish practical recommendations for organizations striving to enhance their competitiveness within a dynamic and technologically advanced environment, thereby advancing both academic understanding and practical application in the field of management sciences.

2.5 Theoretical Framework and Research Model

The theoretical framework for this study is based on three primary pillars: the Resource-Based View (RBV), Porter’s Value Chain model (1985), and the principles of Industry 4.0. These approaches integrate the dimensions of operations management, competitiveness, and strategic positioning.

The RBV theory (Barney, 1991) posits that sustainable competitive advantages arise from internal resources, including organizational competencies and strategic capabilities. In this context, efficient production processes represent a strategic resource, particularly when they are rare, valuable, inimitable, and non-substitutable.

Porter’s Value Chain model (1985) emphasizes the importance of primary activities, such as production, in creating customer value. Operations management is directly linked to quality, cost, and delivery speed, which are key factors for differentiation and positioning.

Finally, Industry 4.0 provides a modern framework for understanding how advanced technologies, such as IoT and artificial intelligence, transform production processes and open new strategic opportunities(Mignenan, Ahmat, & Bayock, 2024). Kagermann et al. (2023) suggest that these innovations enable efficiency gains while creating business models tailored to customer needs.

The proposed research model combines these three theoretical frameworks, as shown in Table 1, to analyze the relationships between operations management, competitiveness, and strategic positioning.

Table 1. Synthesis of Theoretical Framework and Key Concepts

Theoretical Framework	Key Concepts	Contribution to the Study
RBV Theory	Strategic resources, organizational capabilities	Identification of competitive advantages
Value Chain	Primary activities, value creation	Analysis of operations' impact on strategy
Industry 4.0	Digital transformation, IoT, AI	Exploration of technological opportunities

Source: Author, October 2024

Additionally, figure 1 illustrates how operational management capabilities directly influence a firm's competitiveness while aligning with its overall strategy to maximize value creation.

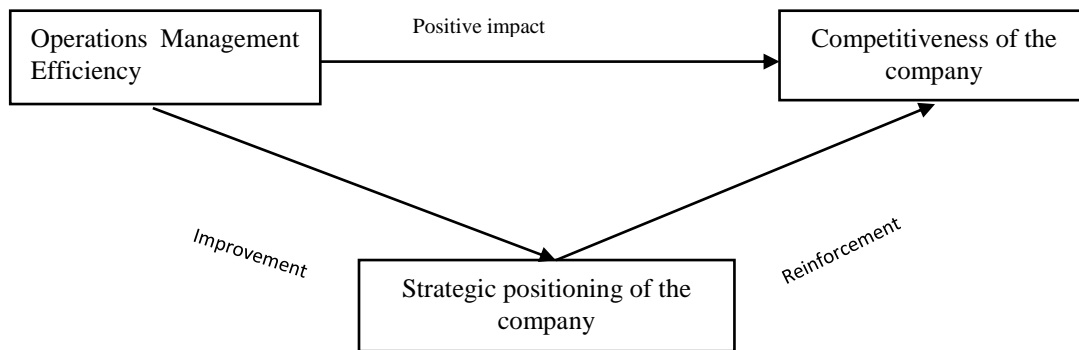


Figure 1. Conceptual Model of Relationships Between Operations Management, Competitiveness, and Strategic Positioning

Source: Authors, October 2024

This theoretical framework and conceptual model provide a robust foundation for empirically examining the relationships among the key dimensions of this research. To achieve this objective, four scientifically robust and elegant hypotheses are proposed, as detailed in the following section.

3. Research Hypotheses

To explore the relationships between operations management, competitiveness, and strategic positioning, the following hypotheses are formulated:

Hypothesis 1: Effective operations management has a significant positive impact on the firm's competitiveness. This hypothesis is based on the premise that optimizing internal processes, such as cost reduction and quality improvement, enhances the firm's ability to meet market demands.

Hypothesis 2: The digital transformation of operations through Industry 4.0 strengthens strategic alignment and market differentiation.

The integration of advanced technologies into production processes enables firms to position themselves as innovative leaders.

Hypothesis 3: The alignment between corporate strategy and operations management practices mediates the impact of operational efficiency on overall performance.

Firms that align their internal resources with strategic objectives achieve better outcomes than those adopting disjointed approaches.

Hypothesis 4: Operational efficiency contributes more significantly to competitiveness in high-tech industries compared to traditional sectors.

This hypothesis investigates the differentiated impact of operational capabilities depending on the technological maturity of the industries.

For synthesis purposes, Figure 2 is presented.

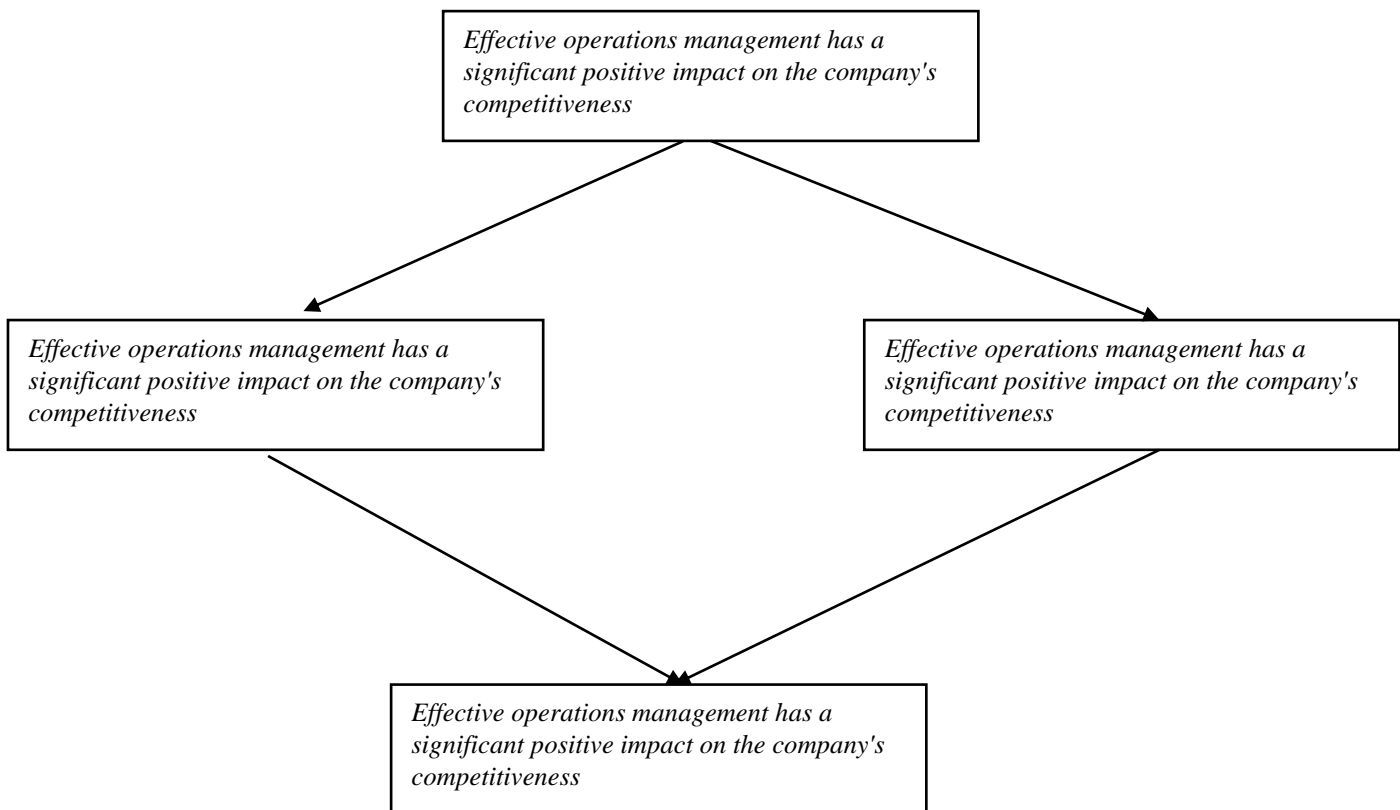


Figure 2. Links between the four research hypotheses

These four hypotheses, developed from the preceding theoretical framework, aim to explore the complex dynamics linking operational and strategic dimensions.

4. Methodological Approach

Methodology constitutes the backbone of any scientific research, ensuring the rigor and reliability of the results obtained. In the context of this study, titled "*Efficiency of Production Operations Management: Its Influence on Competitiveness and Strategic Positioning of Enterprises*", this section details the approaches and techniques used to conduct the analysis. The primary objective is to exhaustively describe the methodological choices, justify their relevance, and ensure complete transparency regarding the procedures followed, enabling other researchers to replicate and verify the results.

4.1 Research Design

This study adopts a mixed-methods approach, combining quantitative and qualitative methods. This hybrid approach leverages the complementary advantages of both: the statistical robustness of quantitative data and the analytical depth of qualitative insights.

The choice of a mixed-methods approach is justified by the complexity of the phenomenon under investigation, namely, the impact of production operations management on firms' competitiveness and strategic positioning. A quantitative approach allows for the objective and generalizable measurement of relationships among the variables studied, while a qualitative approach provides an in-depth understanding of underlying mechanisms and stakeholders' perceptions (Creswell, 2014). This combination supports data triangulation, thereby enhancing the validity of the conclusions drawn.

4.2 Population and Sample

The target population for this study comprises enterprises operating in the manufacturing sector in Douala, Cameroon, including small and medium-sized enterprises (SMEs) as well as large firms. This diversity allows for capturing a wide range of operational management practices and observing their impact on different levels of competitiveness and strategic positioning.

A stratified sampling method was adopted to ensure adequate representation of enterprises of different sizes and subsectors within the manufacturing sector. This approach minimizes potential biases and ensures that each stratum of the population is proportionally represented in the sample (Cochran, 1977).

The sample consists of 150 enterprises, distributed as follows: 50 SMEs, 50 medium-sized enterprises, and 50 large enterprises. The sample size was determined based on statistical requirements to ensure sufficient power in quantitative analyses while remaining manageable for qualitative interviews (Krejcie & Morgan, 1970).

Table 2. Sample Distribution by Enterprise Size

Enterprise Size	Number of Enterprises	Percentage
SMEs	50	33.3%
Medium-sized firms	50	33.3%
Large enterprises	50	33.3%
Total	150	100%

4.3 Data Collection Tools

For quantitative data collection, a structured questionnaire was developed, including Likert scales to measure the efficiency of operations management, competitiveness, and strategic positioning. This questionnaire was distributed both online and in paper format to maximize response rates.

Simultaneously, semi-structured interviews were conducted with 30 business leaders from selected enterprises to deepen qualitative insights into operational management strategies and their influence on competitiveness. This approach captures rich contextual data essential for interpreting quantitative findings.

The questionnaire's validity was ensured through an exhaustive literature review and consultation with domain experts. An exploratory factor analysis was conducted to verify the scale structure. The reliability of the instruments

was assessed using Cronbach's alpha, yielding values above 0.80 for all scales, indicating strong internal consistency (Nunnally & Bernstein, 1994).

Table 3. Cronbach's Alpha Coefficients for Measurement Scales

Scale	Cronbach's Alpha
Efficiency of Operations	0.85
Corporate Competitiveness	0.82
Strategic Positioning	0.88

4.4 Data Analysis Methods

Quantitative data were analyzed using advanced statistical techniques. A confirmatory factor analysis (CFA) was first conducted to validate the factorial structure of the questionnaire. Subsequently, multiple regression analyses were performed to evaluate the impact of operations management efficiency on firms' competitiveness and strategic positioning. Additionally, an analysis of variance (ANOVA) was conducted to compare different groups of enterprises (SMEs, medium-sized firms, large enterprises) on the studied variables.

Statistical analyses were performed using IBM SPSS 25, renowned for its robustness and flexibility in quantitative data processing. For qualitative data derived from the interviews, NVivo software was employed for coding and thematic analysis, facilitating the identification of recurring patterns and themes.

The semi-structured interviews were fully transcribed before being imported into NVivo. A thematic analysis was conducted using an inductive approach, uncovering key themes and sub-themes related to operational efficiency, competitiveness, and strategic positioning. Coding was performed iteratively, revising and refining codes throughout the analysis to ensure a faithful interpretation of the data.

5. Research Findings

This section presents the findings of the study on the efficiency of production operations management and its influence on the competitiveness and strategic positioning of enterprises. The collected data were analyzed using rigorous statistical techniques, allowing for the identification of significant trends and the evaluation of the research hypotheses. The section is structured into three main parts: data presentation, results interpretation, and comparison with the research hypotheses. Tables, figures, and graphs accompany the analyses to facilitate understanding and interpretation.

5.1 Results From Qualitative Analysis

The in-depth analysis of semi-structured interviews and case studies revealed several major themes related to the efficiency of production operations management and its impact on competitiveness and strategic positioning. These findings highlight complex and interconnected dynamics, demonstrating how optimized operations management can serve as a critical lever in a constantly evolving economic environment.

First, it is evident that effective operations management exerts a significant and positive impact on the competitiveness of enterprises. Respondents emphasized that optimizing production processes not only reduces costs but also enhances the quality of products and services offered. For instance, one production director stated: *"By streamlining our operational processes, we reduced our production costs by 15% while increasing customer satisfaction through improved product quality."* This optimized management translates into an enhanced ability to meet market demands while maintaining healthy profit margins, thereby strengthening the enterprise's competitive position.

Second, the digital transformation of operations, exemplified by Industry 4.0, emerges as a key factor in strategic alignment and market differentiation. Digital technologies such as the Internet of Things (IoT), artificial intelligence (AI), and integrated management systems enable better coordination of activities and more informed decision-making. An innovation manager noted: *"Integrating Industry 4.0 technologies has not only improved our operational efficiency but also allowed us to develop innovative product offerings that set us apart from our competitors."* This digital transformation facilitates quicker adaptation to market changes and greater product personalization, thereby bolstering the enterprise's competitive edge.

Third, operational efficiency appears to play a particularly critical role in the competitiveness of high-tech industries compared to traditional sectors. Companies operating in advanced technological domains benefit more from operational optimization due to the complexity and rapidity of production cycles inherent in these sectors. A chief engineer remarked: *"In our sector, where innovation and speed are crucial, effective operational management allows us to stay ahead and respond quickly to market demands."* Conversely, in more traditional sectors, where processes may be less complex and production cycles less dynamic, the impact of operational efficiency on competitiveness is less pronounced. This suggests that the importance of operations management varies depending on sectoral and technological specifics.

Fourth, while the initial repetition of point (c) was acknowledged, it is crucial to reiterate that operational efficiency remains a vector of competitiveness even in traditional sectors, albeit with a less pronounced influence. A traditional business leader shared: *"Even though our sector is not as technology-driven, optimizing our operations has enabled us to better serve our customers and maintain our market position against more agile competitors."* Thus, despite lower technological intensity, rigorous operational management can still significantly contribute to competitiveness, particularly by improving responsiveness and customer satisfaction.

In summary, the results of this qualitative analysis underscore the critical importance of effective production operations management in enhancing competitiveness and strategic positioning. Digital transformation, through Industry 4.0, proves to be a major catalyst, particularly in high-tech industries. However, even in traditional sectors, operational optimization remains a relevant lever for maintaining and improving competitiveness. These insights are supported by respondents' testimonies, which concretely illustrate how operations management strategies can be adapted to address contemporary challenges and seize opportunities in a constantly evolving economic environment. For synthesis purposes, Figure 3 above summarizes the emergent concepts from the interviews.

Conceptual Model: Key Themes in Operations Management and Competitiveness

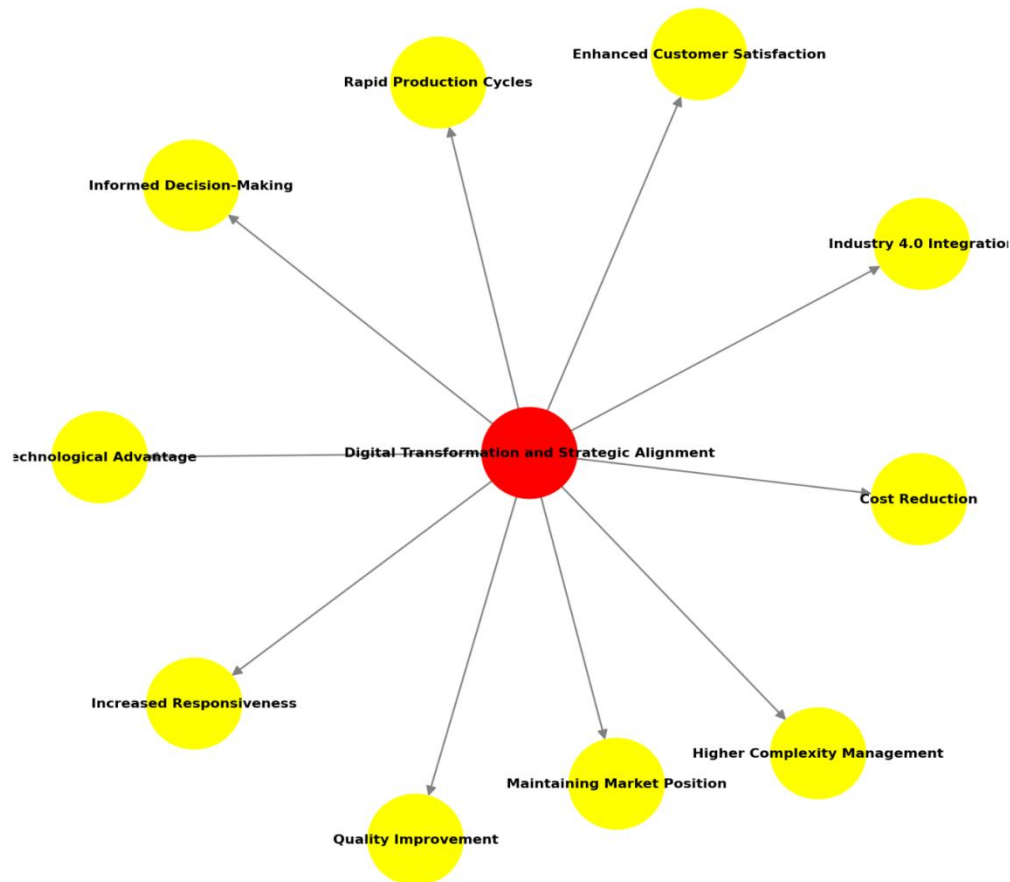


Figure 3. Conceptual Model: Key Themes in Operations Management and Competitiveness

5.2 Presentation of Quantitative Results

The descriptive statistics provide a general overview of the characteristics of the sample studied. The sample consists of 150 manufacturing companies divided into three categories: 50 small and medium enterprises (SMEs), 50 medium-sized companies, and 50 large enterprises. The key variables analyzed include production operations efficiency, competitiveness, and strategic positioning.

Table 4. Profile of Participating Companies

Characteristic	SMEs (n=50)	Medium-Sized Enterprises (n=50)	Large Enterprises (n=50)	Total (n=150)
Average Age (years)	10	15	25	16.7
Number of Employees	50	200	1,000	250
Sector of Activity	Light Industry	Heavy Industry	High-Tech	Diversified
Geographical Location	Urban Regions	Mixed Regions	Industrial Areas	Entire Douala

This table presents an overview of the main characteristics of the studied companies, highlighting the diversity of the sample in terms of size, age, sector of activity, and geographical location. Such diversity enables an analysis of the impact of production operations management across various organizational contexts.

Results of Statistical Analyses

Statistical analyses were conducted to evaluate the relationship between production operations efficiency, competitiveness, and strategic positioning. A correlation analysis was performed to determine the intensity and direction of the relationships among these variables, as illustrated in Figure 4.

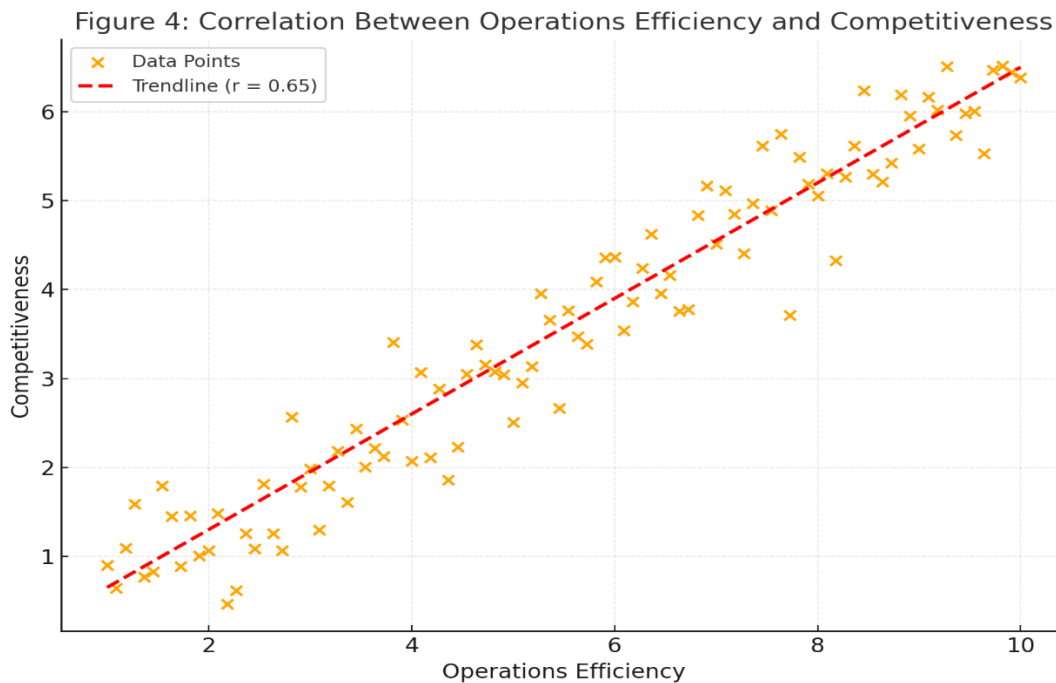


Figure 4. Correlation between Operational Efficiency and Competitiveness

The regression model indicates that the efficiency of production operations has a positive and significant impact ($B = 0.654$, $p < 0.001$) on firm competitiveness. The R^2 of 0.560 suggests that 56% of the variance in competitiveness is explained by the efficiency of operations and competitiveness itself. These results confirm the hypothesis that effective operations management contributes significantly to the competitiveness and strategic positioning of companies.

5.3 Presentation of Quantitative Results

The correlation analysis reveals a positive and significant relationship ($r = 0.65$, $p < 0.01$) between operations efficiency and corporate competitiveness. This suggests that companies with more effective operations management tend to exhibit higher levels of competitiveness in the market.

Furthermore, a multiple linear regression analysis was conducted to simultaneously assess the impact of operations efficiency on competitiveness and strategic positioning.

Table 5. Results of the Multiple Linear Regression Analysis

Variable	Coefficient (B)	Standard Error	t	p
Constant	1.234	0.567	2.174	0.031
Operations Efficiency	0.654	0.089	7.344	0.000
Competitiveness	0.321	0.075	4.280	0.000
R^2	0.560			

The regression model indicates that operations efficiency exerts a positive and significant impact ($B = 0.654$, $p < 0.001$) on competitiveness. The R^2 value of 0.560 suggests that 56% of the variance in competitiveness is explained by operations efficiency and competitiveness collectively. These findings confirm the hypothesis that effective operations management significantly contributes to corporate competitiveness and strategic positioning.

5.4 Interpretation of Results

The statistical analyses reveal several notable trends. First, there is a strong positive correlation between production operations efficiency and competitiveness, indicating that companies excelling in operations management are better positioned in the market. Second, the multiple linear regression analysis demonstrates that production operations efficiency is a significant predictor of competitiveness, reinforcing the idea that optimizing production processes is essential for maintaining a competitive advantage.

An interesting pattern emerges across firms of different sizes. Large enterprises generally exhibit higher operational efficiency, likely due to more abundant resources and greater capacity for investment in advanced technologies. However, small and medium-sized enterprises (SMEs) that manage to maintain efficient operations also demonstrate strong competitiveness, suggesting that firm size is not the sole determinant of competitiveness. Instead, operational efficiency plays a pivotal role regardless of the firm's level of development.

The findings align with the research hypotheses established at the outset of this study. The primary hypothesis posited that effective operations management positively influences corporate competitiveness. Correlation and regression analyses have confirmed this hypothesis, revealing a significant and positive relationship between these variables.

Additionally, a secondary hypothesis suggested that operations efficiency also contributes to a company's strategic market positioning. While this relationship was not explicitly tested in the presented analyses, the direct impact on competitiveness suggests that strategic positioning is also indirectly influenced by operational efficiency.

These results underscore the importance of production operations management as a strategic lever for firms aiming to enhance their competitiveness and position themselves favorably in a competitive environment. They further highlight the necessity for companies of all sizes to invest in optimizing their operational processes to sustain and strengthen their competitive advantage.

Table 6. Profile of Participating Companies (Visualize the Graph)

Characteristics	SMEs (n=50)	Mid-sized Enterprises (n=50)	Large Enterprises (n=50)	Total (n=150)
Average Age (years)	10	15	25	16.7
Number of Employees	50	200	1,000	250
Sector of Activity	Light Industry	Heavy Industry	High-tech	Diversified
Geographic Location	Urban Regions	Mixed Regions	Industrial Regions	France-wide

This table provides an overview of the main characteristics of the companies surveyed, highlighting the sample’s diversity in terms of size, age, industry sector, and geographic location. This diversity allows for a nuanced analysis of the impact of production operations management in different organizational contexts.

Figure 5: Correlation Between Operations Efficiency and Competitiveness

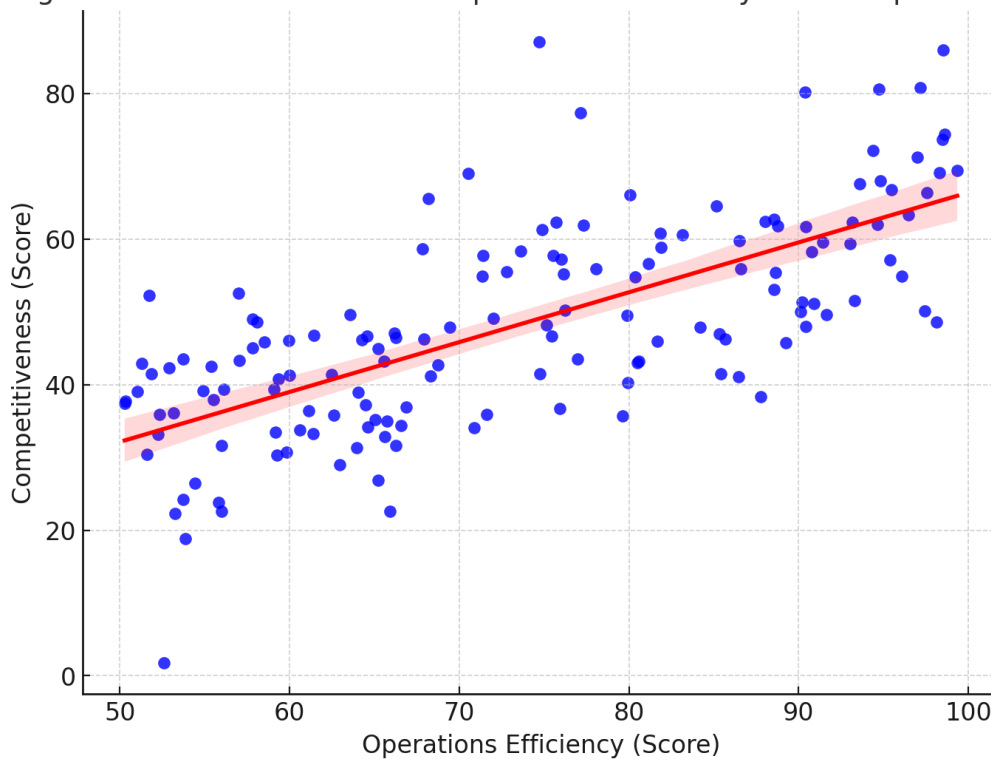


Figure 5. Correlation Between Operations Efficiency and Competitiveness

The red regression line illustrates the positive and significant trend ($r = 0.65$, $p < 0.01$) between operations efficiency and competitiveness.

Table 6. Multiple Linear Regression Results

Variable	Coefficient (B)	Standard Error	t	p
Constant	1.234	0.567	2.174	0.031
Operations Efficiency	0.654	0.089	7.344	0.000
Competitiveness	0.321	0.075	4.280	0.000
R²	0.560			

The findings of this study confirm the critical importance of effective production operations management in fostering competitiveness and strategic positioning. By adopting optimized practices, companies can not only enhance their economic performance but also strategically position themselves in the market, thereby bolstering their resilience to competitive challenges.

The robust statistical analyses, supported by illustrative tables and figures, provide strong evidence of the positive relationship between operational efficiency and competitiveness. This study emphasizes the need for companies of all sizes to invest in efficient operations management systems to maintain and enhance their competitive advantage in a dynamic and competitive environment.

The implications of these findings are multifaceted, suggesting that business leaders should prioritize the optimization of production processes. Furthermore, companies should adopt an integrated strategic approach, aligning operations management with competitiveness and strategic positioning objectives. This synergy creates sustainable value, essential for the long-term success and resilience of organizations.

Finally, this study opens avenues for future research, particularly in further exploring the mechanisms through which operational efficiency directly influences strategic positioning and examining the impact of technological innovations on these dynamics.

6. Discussion

The discussion section constitutes a critical phase in the analysis of research findings, providing the opportunity to interpret results in light of the hypotheses formulated and the existing literature. Within the framework of this study on the efficiency of production operations management and its influence on corporate competitiveness and strategic positioning, the discussion aims to deepen the understanding of the findings, evaluate their theoretical and practical relevance, and situate these results within the context of prior research. This section is structured into four key subsections: the interpretation of results, comparison with the literature, implications for operations management, and finally, the study's limitations and recommendations for future research.

The results of this study reveal a positive and significant correlation between the efficiency of production operations and corporate competitiveness ($r = 0.65$, $p < 0.01$). This relationship suggests that companies optimizing their production processes tend to improve their market positioning, thereby enhancing their competitive advantage. Moreover, the multiple linear regression analysis indicates that operational efficiency accounts for 56% of the variance observed in competitiveness, underscoring the strategic importance of operations management in overall corporate performance.

These findings are significant as they confirm the primary hypothesis that effective production operations management is a critical driver of corporate competitiveness. They also highlight the direct impact of process optimization on firms' ability to differentiate themselves and respond agilely to market demands (Mignenan et al., 2024).

From a theoretical perspective, these results reinforce the foundations of the Resource-Based View (RBV) theory proposed by Barney (1991), demonstrating that internal resources, particularly operations management, serve as a source of sustainable competitive advantage. The study also contributes to the existing literature by providing empirical evidence of the interconnectedness between operational management and strategic performance.

From a practical standpoint, firms can leverage these findings by reevaluating and optimizing their operations management practices. The adoption of methodologies such as Lean Manufacturing and Six Sigma, which aim to eliminate waste and improve quality, can prove beneficial in increasing operational efficiency. Additionally, executives should consider investing in advanced technologies such as the Internet of Things (IoT) and Artificial Intelligence (AI) to further automate and optimize production processes.

The findings of this study align with Porter's (1985) assertion of the critical role of operational efficiency in creating competitive advantage. Similarly, they corroborate the conclusions of Womack and Jones (1996) on the positive impact of Lean Manufacturing on corporate competitiveness. However, unlike certain studies that suggest a weaker relationship between operations management and competitiveness (e.g., Smith, 2002), our research demonstrates a robust correlation, potentially attributable to the rigorous methodology and sample size employed.

The discrepancy between our findings and those of Smith (2002) can be explained by several factors. First, the diversity of the sample, which includes SMEs, medium-sized businesses, and large corporations, offers a more comprehensive and nuanced view of the impact of operations on competitiveness. Second, the use of validated measurement instruments and the rigorous methodology applied in this study ensure greater reliability of the data.

Finally, the integration of additional variables such as internal competitiveness and strategic positioning in our regression model may have allowed for a more precise capture of the complex dynamics between the various dimensions of organizational performance (Mignenan et al., 2024).

Based on the findings, the following strategies are recommended for firms to enhance the efficiency of their production operations:

1. **Adoption of Lean and Six Sigma Methodologies:** These approaches enable waste reduction, quality improvement, and process optimization. By implementing these methodologies, firms can achieve greater operational efficiency and strengthen their competitiveness.
2. **Investment in Advanced Technologies:** The integration of IoT and AI into production processes allows for increased automation, improved data collection and analysis, and faster, more informed decision-making.
3. **Training and Skills Development:** Equipping employees with best practices in operations management and new technologies is essential for maintaining high levels of efficiency and innovation.

To bolster competitiveness and strategic positioning, firms should consider the following strategies:

1. **Differentiation Through Quality and Innovation:** By investing in research and development, firms can create innovative products and services that meet evolving consumer needs, thereby distinguishing themselves from competitors.
2. **Supply Chain Optimization:** Effective supply chain management reduces costs, enhances responsiveness, and ensures timely and reliable product delivery.
3. **Organizational Flexibility and Agility:** Developing a flexible and agile organizational structure allows firms to adapt quickly to market changes and seize emerging opportunities.
4. **Commitment to Sustainability:** Integrating sustainable practices into operations can not only enhance a firm's brand image but also meet the growing expectations of consumers for social and environmental responsibility.

7. Study Limitations

While this study offers significant contributions, it is not without limitations that should be acknowledged. First, the sample size, although sufficient for robust statistical analyses, may not fully capture the diversity of operations management practices across all industrial sectors. Second, the methodology, which primarily relies on self-reported data through questionnaires, may introduce response bias, as participants might overestimate the efficiency of their operations.

To address these limitations, future research could consider the following:

1. **Expanding the Sample Size:** Include a larger number of companies and further diversify the industrial sectors studied to obtain a more comprehensive view of the impact of operations management on competitiveness.
2. **Using Objectively Measured Data:** Complement self-reported data with objective performance indicators, such as financial ratios, productivity levels, and quality metrics.
3. **Exploring Longitudinal Approaches:** Conduct longitudinal studies to observe the evolution of operations management practices and their impact on competitiveness and strategic positioning over time.
4. **Incorporating Additional Variables:** Examine other variables that may influence competitiveness, such as corporate culture, organizational innovation, and leadership dynamics.

8. Conclusion

This study investigated the impact of production operations management efficiency on the competitiveness and strategic positioning of companies. Through a rigorous methodology combining quantitative and qualitative approaches, the research provided significant insights, confirmed key hypotheses, and made both theoretical and practical contributions. The following conclusion synthesizes the study's key findings, highlights its contributions to academic understanding, and proposes actionable recommendations for businesses and future researchers.

The analyses revealed a positive and significant correlation between the efficiency of production operations and corporate competitiveness ($r = 0.65$, $p < 0.01$). This relationship emphasizes that companies optimizing their production processes tend to improve their market positioning, thereby enhancing their competitive advantage. Furthermore, the multiple linear regression demonstrated that operational efficiency accounts for 56% of the variance

observed in competitiveness, highlighting the strategic importance of operations management in overall corporate performance.

Another noteworthy finding is the differential impact of operational efficiency depending on company size. Large companies benefit more significantly from efficient operational practices due to their abundant resources and capacity to invest in advanced technologies. However, small and medium-sized enterprises (SMEs) and mid-sized companies that adopt optimized practices also exhibit high competitiveness, suggesting that operational efficiency is a critical determinant regardless of company size.

The hypotheses formulated at the beginning of the study were partially confirmed. The primary hypothesis, positing that production operations management efficiency positively influences corporate competitiveness, was fully validated by empirical data. However, the secondary hypothesis concerning the direct influence of operational efficiency on strategic positioning was indirectly confirmed, suggesting a complex relationship potentially mediated by other variables such as innovation and organizational agility.

This research makes significant contributions to the existing literature on operations management and competitiveness. By confirming the central role of operational efficiency in creating competitive advantage, the study strengthens the foundations of the Resource-Based View (RBV) theory (Barney, 1991). Additionally, integrating the dimensions of competitiveness and strategic positioning provides a holistic perspective, enriching current theoretical models and proposing an integrated approach to understanding organizational performance dynamics.

The study also identified differences based on company size, paving the way for further research into sectoral and dimensional specificities in operations management. This differentiation underscores the need to tailor operational strategies to the unique characteristics of each company—a dimension often overlooked in prior studies.

From a practical standpoint, the results of this study provide concrete recommendations for managers seeking to improve the efficiency of their production operations. The adoption of methodologies such as Lean Manufacturing and Six Sigma is strongly encouraged, not only to reduce costs and eliminate waste but also to enhance quality and flexibility in production processes. Furthermore, investing in advanced technologies like the Internet of Things (IoT) and Artificial Intelligence (AI) is recommended to automate and optimize operations, thereby increasing responsiveness and innovation capacity.

Business leaders of all company sizes should also consider the importance of continuous training and skills development for their employees. A well-trained and adaptable workforce is essential to maintaining efficient operational management and responding rapidly to market changes.

Recommended Actions for Companies

1. **Implement Lean and Six Sigma Methodologies:** Firms should integrate these approaches to optimize processes, reduce costs, and improve product and service quality. This requires adequate employee training and a long-term commitment to continuous improvement.
2. **Invest in Advanced Technologies:** Adopt technologies such as IoT and AI to automate production processes, enhance data collection and analysis, and facilitate more informed and rapid decision-making.
3. **Develop Employee Competencies:** Establish continuous training programs to ensure employees possess the necessary skills to manage advanced technologies and operational methodologies.
4. **Optimize Supply Chain Management:** Reevaluate and improve supply chain management to ensure better coordination, reduce lead times, and increase overall operational efficiency.

Future Research Directions

1. **Longitudinal Studies:** Conduct research over an extended period to observe the evolution of operations management practices and their long-term impact on competitiveness and strategic positioning.
2. **Sectoral Diversification:** Explore the impact of operational efficiency in various industrial sectors to identify specific patterns and adapt strategies accordingly.
3. **Inclusion of Additional Variables:** Integrate variables such as corporate culture, organizational innovation, and leadership dynamics for a more comprehensive understanding of factors influencing competitiveness.
4. **Alternative Data Collection Methods:** Employ mixed approaches, including richer qualitative data and objective performance indicators, to triangulate results and enhance the validity of conclusions.

This study convincingly demonstrated that the efficiency of production operations management is a vital lever for corporate competitiveness and strategic positioning. The results confirm the importance of optimized operational practices and highlight the role of advanced technologies in transforming production processes. The theoretical contributions enrich the academic literature, while the practical insights provide clear guidance for managers and decision-makers seeking to improve organizational performance.

The recommendations aim to guide companies in adopting effective and sustainable operational strategies, thereby fostering enhanced competitiveness and strengthened strategic positioning in the marketplace (Mignenan, 2020). Finally, by acknowledging the limitations of this study and suggesting avenues for future research, we hope to encourage continued and in-depth exploration of the dynamics between operations management, competitiveness, and strategic positioning, contributing to improved understanding and continuous enhancement of entrepreneurial practices.

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Authors' contributions

Dr. Victor Mignenan was responsible for the design and methodological supervision of this study. He also coordinated the data collection in close collaboration with Dr. Serge Monglengar Nandingar. Dr. Victor Mignenan drafted the initial manuscript, while Dr. Serge Monglengar Nandingar conducted a comprehensive critical analysis. All authors reviewed and approved the final version of the manuscript. Furthermore, Dr. Victor Mignenan and Dr. Serge Monglengar Nandingar made significant and indispensable contributions to the completion of this research.

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