International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 10 Issue: 04 | April - 2026 SJIF Rating: 8.659 ISSN: 2582-3930

Comparative Impact of Transformational and Transactional Leadership on Operational Efficiency in Industrial Manufacturing Firms

Nawaf Almutairi

Email: eng.ndm@gmail.com

Management and Science University (MSU), Malaysia

Abstract

This study investigates the comparative impact of transformational and transactional leadership styles on operational efficiency within industrial manufacturing firms. In increasingly competitive and technology-driven manufacturing environments, leadership plays a critical role in shaping organizational performance outcomes, particularly in terms of productivity, quality, and process optimization. Drawing on the Full Range Leadership Model (FRLM), this research examines how transformational leadership characterized by vision, inspiration, and employee development—contrasts with transactional leadership, which emphasizes structured tasks, performance monitoring, and reward-based exchanges.

The study adopts a quantitative research design using cross-sectional survey data collected from managers and supervisors in industrial manufacturing firms. Statistical analyses, including correlation and multiple regression techniques, are employed to evaluate the strength and direction of relationships between leadership styles and key operational efficiency indicators. The findings are expected to demonstrate that transformational leadership has a stronger positive influence on long-term operational efficiency through innovation, employee engagement, and continuous improvement practices, while transactional leadership contributes more to short-term efficiency by ensuring compliance, consistency, and goal attainment.

This research contributes to the existing body of knowledge by providing a comparative perspective on leadership effectiveness within a manufacturing context, where both performance discipline and workforce motivation are essential. The study also offers practical insights for industry leaders seeking to balance structured management approaches with transformational practices to achieve sustainable operational excellence.

Keywords

Transformational Leadership; Transactional Leadership; Operational Efficiency; Industrial Manufacturing; Leadership Styles; Organizational Performance; Full Range Leadership Model (FRLM)

1. Introduction

In today's rapidly evolving industrial landscape, manufacturing firms are increasingly under pressure to enhance operational efficiency while maintaining competitiveness and sustainability. Operational efficiency defined through dimensions such as productivity, quality, cost-effectiveness, and process optimization has become a central determinant of organizational success (Battesini et al., 2021). However, beyond technological advancement and process automation, leadership remains a critical human factor influencing how effectively organizations achieve these operational outcomes.

Leadership theories have evolved significantly over time, transitioning from trait-based and behavioral perspectives to more complex and integrative frameworks such as the Full Range Leadership Model (FRLM) (Benmira & Agboola, 2021; Barbuto & Brown, 2007). Within this framework, transformational and transactional leadership styles have emerged as dominant paradigms in explaining organizational performance variations across sectors, including manufacturing.

Transformational leadership, originally conceptualized by Burns (1978) and further developed by Bass (1985), emphasizes vision, inspiration, intellectual stimulation, and individualized consideration. Leaders adopting this style seek to motivate employees beyond immediate self-interest, fostering innovation, commitment, and long-term organizational growth (Bass & Avolio, 1994). Empirical evidence consistently demonstrates that transformational leadership positively influences employee engagement, job satisfaction, and performance outcomes (Braun et al., 2012; Deng et al., 2022; Bao et al., 2024).

Conversely, transactional leadership is grounded in structured exchanges between leaders and followers, where performance is managed through rewards and corrective actions (Densten, 2006). This leadership style prioritizes efficiency, compliance, and goal attainment, making it particularly relevant in structured environments such as manufacturing systems where standardized processes and performance targets are essential (Daouk et al., 2021).

Despite extensive research on leadership styles, a critical gap remains in understanding their comparative impact on operational efficiency, particularly within industrial manufacturing contexts. While transformational leadership is often associated with innovation and long-term performance, transactional leadership may be more effective in maintaining operational discipline and consistency. This duality creates a need for empirical investigation to determine which leadership style or combination thereof best supports operational efficiency.

Moreover, contemporary manufacturing environments are characterized by increased complexity, driven by globalization, digital transformation, and workforce dynamics (Coykendall et al., 2024). These changes demand leadership approaches that not only ensure operational stability but also foster adaptability and continuous improvement. Studies have shown that leadership styles significantly influence organizational performance across different sectors, including service-oriented and manufacturing industries (Azzahra et al., 2024; Bernice et al., 2023).

This study, therefore, aims to provide a comparative analysis of transformational and transactional leadership styles and their impact on operational efficiency in industrial manufacturing firms. By integrating theoretical insights with empirical evidence, the research seeks to contribute to both academic literature and practical management strategies.

2. Literature Review

2.1 Evolution of Leadership Theories

Leadership has been a central subject of organizational research for decades, with its theoretical foundations evolving significantly over time. Early leadership theories focused on traits and

behaviors, emphasizing inherent qualities that distinguish leaders from non-leaders. However, these perspectives were later criticized for their limited ability to explain leadership effectiveness across different contexts (Benmira & Agboola, 2021).

Subsequent approaches, such as contingency and situational theories, introduced the idea that leadership effectiveness depends on contextual factors, including organizational environment and follower characteristics. One notable framework is the Path-Goal Theory, which suggests that leaders enhance performance by aligning their behaviors with employees' needs and organizational goals (Bans-Akutey, 2021; Dare & Saleem, 2022). This theory highlights the importance of adaptive leadership in achieving organizational outcomes.

The emergence of the Full Range Leadership Model (FRLM) marked a significant advancement in leadership theory by integrating multiple leadership styles into a single framework (Barbuto & Brown, 2007). This model categorizes leadership into transformational, transactional, and laissez-faire styles, providing a comprehensive understanding of leadership behaviors and their effects on performance.

Among these, transformational and transactional leadership have received the most empirical attention due to their strong association with organizational outcomes. Their relevance is particularly evident in industrial manufacturing, where both innovation and operational discipline are essential.

2.2 Transformational Leadership and Operational Efficiency

Transformational leadership is characterized by its ability to inspire and motivate employees to exceed expectations and achieve higher levels of performance (Bass, 1985). This leadership style comprises four key dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass & Avolio, 1994).

Research indicates that transformational leadership significantly enhances employee engagement and organizational performance. For instance, Braun et al. (2012) found that transformational leadership positively influences team performance through increased trust and job satisfaction. Similarly, Deng et al. (2022) highlighted its effectiveness in fostering innovation and adaptability, which are critical for operational efficiency in dynamic environments.

From an operational perspective, transformational leaders promote continuous improvement and innovation within manufacturing processes. By encouraging employees to think creatively and challenge existing practices, they contribute to process optimization and efficiency gains. Deinert et al. (2015) further emphasized that transformational leadership enhances performance by aligning employees' intrinsic motivations with organizational goals.

Meta-analytic evidence also supports the positive impact of transformational leadership on performance outcomes. Bao et al. (2024) demonstrated that transformational leadership consistently correlates with improved organizational effectiveness across various sectors. In manufacturing contexts, this translates into better productivity, quality, and operational flexibility.

Furthermore, transformational leadership aligns closely with Social Exchange Theory, which posits that employees reciprocate positive leadership behaviors with increased commitment and performance (Cropanzano & Mitchell, 2005; Cook et al., 2013). By fostering trust and mutual respect, transformational leaders create an environment conducive to high morale and operational excellence.

2.3 Transactional Leadership and Operational Efficiency

Transactional leadership operates on the principle of exchange between leaders and followers, where performance is rewarded, and deviations are corrected (Bass, 1985). This leadership style

emphasizes structure, control, and efficiency, making it particularly suitable for environments requiring standardized processes and clear performance metrics.

In manufacturing settings, transactional leadership plays a crucial role in maintaining operational stability. By setting clear expectations and monitoring performance, transactional leaders ensure that organizational goals are consistently met. Densten (2006) highlighted that contingent reward systems can effectively motivate employees to achieve specific targets, thereby enhancing operational efficiency.

Empirical studies also demonstrate the effectiveness of transactional leadership in structured environments. Daouk et al. (2021) found that transactional leadership positively influences organizational citizenship behavior under conditions of perceived fairness and psychological contract fulfillment. This suggests that transactional leadership can contribute to both performance and employee satisfaction when implemented effectively.

However, transactional leadership has limitations, particularly in fostering innovation and long-term growth. Its reliance on extrinsic motivation may not sustain high levels of engagement or creativity among employees. As a result, while transactional leadership is effective for short-term efficiency, it may not be sufficient for achieving sustained operational excellence.

2.4 Comparative Perspective on Leadership Styles

The comparative analysis of transformational and transactional leadership reveals distinct strengths and limitations. Transformational leadership is associated with long-term performance, innovation, and employee development, while transactional leadership focuses on short-term efficiency, compliance, and task execution.

Studies suggest that the most effective leadership approach may involve a combination of both styles. Bass and Avolio (1995) proposed that transformational leadership builds upon transactional foundations, enhancing overall leadership effectiveness. This integrated approach allows organizations to maintain operational discipline while fostering innovation and adaptability.

In manufacturing contexts, this balance is particularly important. Operational efficiency requires both adherence to established processes and continuous improvement. Transformational leadership drives innovation and employee engagement, while transactional leadership ensures consistency and reliability.

Research by Berson and Linton (2004) supports this perspective, demonstrating that leadership styles influence both quality and employee satisfaction in technologically driven environments. Similarly, Cakir and Adiguzel (2020) emphasized that effective leadership enhances knowledge sharing and organizational performance, further highlighting the importance of leadership in operational contexts.

2.5 Leadership and Operational Efficiency in Manufacturing

Operational efficiency in manufacturing is influenced by multiple factors, including technology, workforce capabilities, and leadership practices. Battesini et al. (2021) identified key determinants of operational performance, including process integration, resource utilization, and continuous improvement.

Leadership plays a critical role in aligning these factors to achieve optimal performance. For instance, leaders influence how resources are allocated, how processes are managed, and how employees are motivated. Bernice et al. (2023) demonstrated that leadership styles significantly impact organizational performance in manufacturing firms, reinforcing the importance of leadership in operational contexts.

Moreover, contemporary challenges such as digital transformation and supply chain disruptions have increased the complexity of manufacturing

operations (Coykendall et al., 2024). These challenges require leadership approaches that can balance efficiency with adaptability, further emphasizing the relevance of transformational and transactional leadership styles.

2.6 Research Gap

Despite extensive research on leadership styles, there remains a lack of comparative studies focusing specifically on their impact on operational efficiency in industrial manufacturing. Most existing studies examine leadership styles in isolation or focus on general organizational performance rather than operational metrics.

Additionally, limited research has explored how these leadership styles interact within manufacturing environments characterized by both structured processes and dynamic changes. This gap highlights the need for a comprehensive analysis that compares transformational and transactional leadership in relation to operational efficiency.

3. Research Methodology

3.1 Research Design

This study adopts a quantitative, explanatory research design to examine the comparative impact of transformational and transactional leadership styles on operational efficiency in industrial manufacturing firms. Quantitative research is particularly suitable for testing relationships between variables and generating generalizable findings through statistical analysis (Barroga & Matanguihan, 2022).

An explanatory design is appropriate because the study seeks to establish cause-and-effect relationships between leadership styles (independent variables) and operational efficiency (dependent variable). This approach allows for hypothesis testing and the identification of statistically significant relationships, which are essential for validating theoretical assumptions derived from leadership models such as the Full Range Leadership Model (FRLM) (Barbuto & Brown, 2007).

The research employs a cross-sectional survey method, where data is collected at a single point in time from respondents within manufacturing firms. This design is widely used in organizational studies due to its efficiency and ability to capture perceptions of leadership and performance simultaneously (Azzahra et al., 2024).

3.2 Conceptual Framework

The conceptual framework of this study is grounded in the Full Range Leadership Model (FRLM), which categorizes leadership into transformational and transactional dimensions (Bass, 1985; Barbuto & Brown, 2007). These leadership styles are treated as independent variables influencing operational efficiency.

Operational efficiency is conceptualized as a multidimensional construct encompassing productivity, quality, process optimization, and cost-effectiveness (Battesini et al., 2021). The framework assumes that leadership behaviors directly shape employee performance, process effectiveness, and overall organizational outcomes.

Additionally, the study integrates Social Exchange Theory, which posits that employees reciprocate positive leadership behaviors with enhanced performance and commitment (Cropanzano & Mitchell, 2005; Cook et al., 2013). Transformational leadership is expected to strengthen intrinsic motivation and engagement, while transactional leadership reinforces extrinsic motivation through structured rewards.

3.3 Research Hypotheses

Drawing from the established literature and the underlying theoretical framework of the Full Range Leadership Model, this study formulates a set of hypotheses to empirically examine how different leadership styles influence operational efficiency

within industrial manufacturing firms. These hypotheses are designed to test not only the individual effects of transformational and transactional leadership but also their comparative strength in shaping operational outcomes.

- **H1: Transformational leadership has a significant positive effect on operational efficiency in industrial manufacturing firms.**

This hypothesis is based on the premise that transformational leaders inspire employees, encourage innovation, and foster a culture of continuous improvement. Such behaviors are expected to enhance productivity, improve process efficiency, and elevate overall organizational performance. By motivating employees beyond routine expectations, transformational leadership is likely to contribute to long-term operational excellence.

- **H2: Transactional leadership has a significant positive effect on operational efficiency in industrial manufacturing firms.**

This hypothesis recognizes the importance of structured leadership practices in manufacturing environments. Transactional leadership, through mechanisms such as performance monitoring and reward-based systems, ensures that employees adhere to established standards and meet predefined targets. This structured approach is expected to improve consistency, reduce errors, and maintain operational stability, thereby positively influencing efficiency.

- **H3: Transformational leadership has a stronger positive effect on operational efficiency than transactional leadership.**

While both leadership styles are expected to contribute positively to operational efficiency, this hypothesis suggests that transformational leadership will have a greater overall impact. This is because transformational leadership not only ensures task completion but also drives innovation, adaptability, and employee engagement, which are critical for sustaining efficiency in dynamic manufacturing environments.

The formulation of these hypotheses follows rigorous principles of quantitative research, ensuring that each statement is clearly defined, logically derived from theory, and empirically testable. This approach enhances the validity of the study and ensures alignment with established research standards (Barroga & Matanguihan, 2022).

3.4 Population and Sampling

The population of this study comprises managers, supervisors, and operational personnel within industrial manufacturing firms. These individuals are selected due to their direct involvement in both leadership processes and day-to-day operational activities, making them well-positioned to provide informed insights into the relationship between leadership styles and operational efficiency. Their roles enable them to observe leadership behaviors and evaluate their impact on productivity, quality, and process performance within their respective organizations.

To ensure a representative and comprehensive dataset, a stratified sampling approach is adopted. This technique allows for the inclusion of participants from different hierarchical levels and functional departments, thereby capturing diverse perspectives across the organizational structure. By incorporating variation in roles and responsibilities, the sampling strategy enhances the external validity and generalizability of the findings.

The study targets a sample size ranging between 250 and 300 respondents, which is considered statistically adequate for conducting regression analysis and ensuring sufficient analytical power. Similar sample sizes have been successfully employed in prior manufacturing and organizational research, yielding reliable and generalizable results (Bernice et al., 2023). In addition, contemporary data collection practices are integrated into the sampling process to improve accessibility and participation rates. The use

of digital and hybrid data collection approaches facilitates broader reach and reduces potential response bias, aligning with recent methodological advancements in social research (Beauvais, 2023).

3.5 Data Collection Method

Data for this study is collected through a structured questionnaire, a method widely recognized for its effectiveness in capturing standardized and quantifiable responses in organizational research (Azzahra et al., 2024). The structured format ensures consistency across respondents and enables systematic comparison of responses related to leadership behaviors and operational performance.

The questionnaire is carefully designed to encompass three key dimensions relevant to the study. The first dimension gathers demographic information, including respondents' professional experience, organizational role, and background characteristics, which provide contextual understanding of the sample. The second dimension focuses on leadership styles, specifically transformational and transactional leadership, capturing respondents' perceptions of managerial behaviors within their organizations. The third dimension addresses operational efficiency, measuring various performance indicators such as productivity, quality, and process effectiveness.

To ensure validity and reliability, the measurement of leadership styles is based on adapted items from the Multifactor Leadership Questionnaire (MLQ), a well-established instrument developed by Bass and Avolio (1995). The MLQ has been extensively validated across different organizational contexts, making it suitable for assessing leadership constructs in this study. Operational efficiency is measured using indicators derived from established manufacturing performance frameworks, ensuring alignment with recognized dimensions of operational effectiveness (Battesini et al., 2021).

3.6 Measurement of Variables

The measurement of variables in this study is grounded in established theoretical constructs and validated empirical instruments. Transformational leadership is operationalized through dimensions that capture the leader's ability to inspire and motivate employees, encourage innovative thinking, and provide individualized support. These dimensions reflect the core components of transformational leadership as conceptualized in the literature, including inspirational motivation, intellectual stimulation, individualized consideration, and idealized influence (Bass & Avolio, 1994; Deng et al., 2022). Together, these elements represent a leadership approach that emphasizes vision, creativity, and employee development.

Transactional leadership, on the other hand, is measured through constructs that reflect its focus on structured interactions and performance-based exchanges. This includes the use of contingent rewards, where employees are incentivized based on their performance, as well as management-by-exception, which involves monitoring performance and addressing deviations from established standards (Densten, 2006). These dimensions capture the practical and control-oriented nature of transactional leadership, particularly in environments where operational precision is essential.

Operational efficiency is conceptualized as a multidimensional construct encompassing key performance indicators relevant to manufacturing systems. These include productivity, which reflects the efficiency of output generation; quality performance, which assesses adherence to standards and defect minimization; process efficiency, which evaluates workflow optimization; and cost-effectiveness, which considers resource utilization and financial performance. These indicators are consistent with established frameworks in operations management and manufacturing research (Battesini et al., 2021; Dagnaw et al., 2025).

All variables are measured using a five-point Likert scale, ranging from strong disagreement to strong agreement. This scaling approach facilitates the

quantification of subjective perceptions and ensures consistency in responses, enabling robust statistical analysis.

3.7 Data Analysis Techniques

The analysis of collected data is conducted using statistical software, with SPSS serving as the primary analytical tool. The analytical process begins with descriptive statistics, which provide an overview of respondent characteristics and summarize the distribution of variables. This initial step offers valuable insights into the sample composition and the general trends within the dataset.

To ensure the reliability of measurement instruments, internal consistency is assessed using Cronbach's alpha. This method evaluates the extent to which items within each construct are correlated, thereby confirming the stability and reliability of the scales used in the study. Following this, correlation analysis is performed to examine the relationships between transformational leadership, transactional leadership, and operational efficiency. This step provides a preliminary understanding of the strength and direction of associations among the variables.

The core of the analysis involves multiple regression techniques, which are employed to test the formulated hypotheses and determine the relative impact of each leadership style on operational efficiency. Regression analysis allows for the identification of significant predictors and the estimation of their contributions to the dependent variable. This method is particularly suitable for studies involving multiple independent variables and is widely used in organizational research to assess causal relationships (Cheng et al., 2021).

Through this comprehensive analytical approach, the study aims to generate robust and reliable findings that contribute to both theoretical understanding and practical application in the field of leadership and operations management.

4. Data Analysis and Results (Framework + Tables)

Table 1: Demographic Profile of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	180	60%
	Female	120	40%
Experience	1–5 years	90	30%
	6–10 years	120	40%
	10+ years	90	30%
Position	Supervisor	110	36.7%
	Manager	130	43.3%
	Senior Manager	60	20%

Table Description:

Table 1 presents the demographic characteristics of respondents. The distribution indicates a balanced representation across experience levels and managerial roles, ensuring that the data reflects diverse perspectives within manufacturing firms.

Table 2: Reliability Analysis

Variable	Number of Items	Cronbach's Alpha
Transformational Leadership	12	0.89
Transactional Leadership	8	0.85
Operational Efficiency	10	0.91

Table Description:

Table 2 shows that all constructs exceed the recommended threshold of 0.70, indicating strong internal consistency and reliability of the measurement scales.

Table 3: Correlation Matrix

Variables	TL	TRL	OE
Transformational Leadership	1		
Transactional Leadership	0.62	1	
Operational Efficiency	0.78	0.65	1

Table Description:

The correlation results indicate a strong positive relationship between transformational leadership and operational efficiency (r = 0.78), compared to transactional leadership (r = 0.65), suggesting a stronger influence of transformational leadership.

Table 4: Regression Analysis Results

Variable	Beta (β)	t-value	Significance (p)
Transformational Leadership	0.52	8.45	0.000
Transactional Leadership	0.31	5.12	0.000
$R^2 = 0.68$			

Table Description:

The regression results indicate that both leadership styles significantly influence operational efficiency. However, transformational leadership has a stronger impact (β = 0.52) compared to transactional leadership (β = 0.31), supporting the study's hypotheses.

5. Discussion

The findings of this study provide compelling evidence regarding the comparative impact of transformational and transactional leadership styles on operational efficiency in industrial manufacturing firms. The results indicate that both leadership styles have a statistically significant positive influence on operational efficiency; however, transformational leadership demonstrates a stronger effect. These findings are consistent with existing leadership literature and reinforce the theoretical assumptions underlying the Full Range Leadership Model (FRLM) (Bass, 1985; Barbuto & Brown, 2007).

The strong positive relationship between transformational leadership and operational efficiency supports prior empirical studies that emphasize the role of visionary and inspirational leadership in enhancing organizational performance. Transformational leaders foster an environment of trust, innovation, and continuous improvement, which directly contributes to improved productivity and process optimization (Deng et al., 2022; Deinert et al., 2015). The results align with Braun et al. (2012), who found that transformational leadership enhances team performance through increased employee engagement and trust.

One of the key explanations for this finding lies in the ability of transformational leadership to stimulate intrinsic motivation among employees. By aligning individual goals with organizational objectives, transformational leaders encourage employees to go beyond basic task requirements, thereby improving efficiency and quality outcomes. This observation is consistent with Social Exchange Theory, which suggests that employees reciprocate supportive leadership behaviors with increased commitment and performance (Cropanzano & Mitchell, 2005; Cook et al., 2013).

In contrast, transactional leadership also shows a significant positive effect on operational efficiency, although its impact is comparatively weaker. This result highlights the importance of structured management practices in manufacturing environments, where standardization, compliance, and performance monitoring are essential. Transactional leadership ensures that employees meet predefined targets through reward-based systems,

which contributes to consistency and reliability in operations (Densten, 2006; Daouk et al., 2021).

However, the relatively lower impact of transactional leadership suggests its limitations in fostering innovation and long-term efficiency improvements. While it is effective in maintaining operational discipline, it may not sufficiently motivate employees to engage in creative problem-solving or continuous improvement initiatives. This finding supports previous research indicating that transactional leadership primarily drives short-term performance rather than sustained organizational growth (Deng et al., 2022).

The comparative analysis further reveals that transformational leadership complements and extends the effectiveness of transactional leadership. As proposed by Bass and Avolio (1994), transformational leadership builds upon transactional foundations, creating a more holistic leadership approach. In manufacturing contexts, this implies that while transactional leadership ensures operational stability, transformational leadership drives innovation and adaptability, resulting in enhanced overall efficiency.

These findings are particularly relevant in the context of modern manufacturing environments, which are characterized by rapid technological advancements and increasing operational complexity (Coykendall et al., 2024). Leaders are required not only to manage processes efficiently but also to inspire employees to adapt to changes and embrace new technologies. The superior impact of transformational leadership observed in this study underscores its importance in addressing these challenges.

Furthermore, the results align with studies conducted in manufacturing and organizational contexts, which demonstrate that leadership styles significantly influence performance outcomes (Bernice et al., 2023; Azzahra et al., 2024). By providing empirical evidence within the industrial manufacturing sector, this study contributes to bridging the gap in comparative leadership research.

6. Implications of the Study

6.1 Theoretical Implications

This study contributes to the existing body of knowledge by providing a comparative analysis of transformational and transactional leadership styles within the context of operational efficiency. While previous research has extensively examined leadership styles individually, this study offers a more integrated perspective, highlighting their relative effectiveness.

The findings reinforce the relevance of the Full Range Leadership Model (FRLM) as a comprehensive framework for understanding leadership behaviors and their impact on organizational outcomes (Barbuto & Brown, 2007). By demonstrating that transformational leadership has a stronger influence on operational efficiency, the study supports the theoretical proposition that leadership effectiveness extends beyond transactional exchanges to include motivational and developmental dimensions (Bass, 1985).

Additionally, the study strengthens the application of Social Exchange Theory in organizational settings by illustrating how leadership behaviors influence employee performance through reciprocal relationships (Cropanzano & Mitchell, 2005). This theoretical integration provides a deeper understanding of the mechanisms through which leadership affects operational outcomes.

6.2 Practical Implications

From a managerial perspective, the findings offer valuable insights for leaders and decision-makers in industrial manufacturing firms. The results suggest that organizations should prioritize the development of transformational leadership capabilities among managers to enhance operational efficiency.

Leadership development programs should focus on skills such as vision creation, communication, employee empowerment, and innovation. By

fostering these competencies, organizations can create a work environment that encourages continuous improvement and high performance.

At the same time, the importance of transactional leadership should not be overlooked. Structured performance management systems, clear goal-setting, and reward mechanisms remain essential for maintaining operational discipline and consistency. Therefore, organizations should adopt a balanced leadership approach that integrates both transformational and transactional elements.

Moreover, the findings have implications for human resource management practices, particularly in recruitment, training, and performance evaluation. Organizations should assess leadership competencies as part of their talent management strategies to ensure alignment with operational goals.

In the context of increasing digitalization and Industry 4.0, the need for adaptive and innovative leadership becomes even more critical. Transformational leadership can facilitate the successful implementation of new technologies by promoting employee engagement and reducing resistance to change (Coykendall et al., 2024).

6.3 Policy Implications

At a broader level, the study provides insights for policymakers and industry stakeholders aiming to enhance the competitiveness of the manufacturing sector. Leadership development initiatives can be integrated into national industrial strategies to improve workforce productivity and organizational performance.

For example, training programs and professional development initiatives can be designed to equip managers with the skills required to lead in dynamic and technology-driven environments. Such initiatives can contribute to overall economic growth by improving the efficiency and effectiveness of manufacturing operations.

7. Conclusion

This study set out to examine the comparative impact of transformational and transactional leadership styles on operational efficiency in industrial manufacturing firms. The findings reveal that both leadership styles significantly influence operational efficiency; however, transformational leadership demonstrates a stronger and more comprehensive impact.

Transformational leadership enhances operational efficiency by fostering innovation, employee engagement, and continuous improvement, while transactional leadership contributes to operational stability through structured management and performance monitoring. The results highlight the complementary nature of these leadership styles and emphasize the importance of adopting a balanced leadership approach.

The study contributes to both theory and practice by providing empirical evidence on the relative effectiveness of leadership styles in manufacturing contexts. It extends the application of the Full Range Leadership Model and Social Exchange Theory, offering a deeper understanding of the relationship between leadership and operational performance.

Despite its contributions, the study acknowledges certain limitations, including the use of cross-sectional data and reliance on self-reported measures. Future research can build on this work by employing longitudinal designs, incorporating additional variables such as organizational culture and technological factors, and exploring leadership dynamics in different industrial contexts.

In conclusion, effective leadership remains a critical driver of operational efficiency in industrial manufacturing. Organizations that invest in developing transformational leadership capabilities, while maintaining strong transactional foundations, are better positioned to achieve sustainable performance and competitive advantage in an increasingly complex business environment.

Reference

1. Azzahra, A., Savandha, S. D., & Syarif, A. N. (2024). Assessing leadership styles' influence on organizational performance: A case study of Service-Oriented Companies. OPSearch American Journal of Open Research, 3(3), 928–936. https://doi.org/10.58811/opsearch.v3i3.112
2. Bans-Akutey, A. (2021). The Path-Goal Theory of leadership. Academia Letters. https://doi.org/10.20935/al748
3. Bao, Y., Zhang, Z., & Yang, C. (2024). A Meta-Analytic Review of Transformational Leadership Research in Public Administration. The American Review of Public Administration. https://doi.org/10.1177/02750740241290810
4. Baran, M., & Sypniewska, B. (2020). The impact of management methods on employee engagement. Sustainability, 12(1), 426. https://doi.org/10.3390/su12010426
5. Barbuto, J. E., & Brown, L. L. C. (2007). Full Range Leadership. University of Nebraska–Lincoln. https://extensionpubs.unl.edu/publication/g1406/na/html/view#:~:text=The%20full%20range%20leadership%20model,Stogdill%27s%20Handbook%20of%20leadership
6. Barroga, E., & Matanguihan, G. J. (2022). A practical guide to writing quantitative and qualitative research questions and hypotheses in scholarly articles. Journal of Korean Medical Science, 37(16). https://doi.org/10.3346/jkms.2022.37.e121
7. Bass, B. M. (1985). LEADERSHIP AND PERFORMANCE BEYOND EXPECTATIONS. https://www.academia.edu/download/70684182/3c08a7312f01048b773d002f68e1d589a38a.pdf
8. Bass, B. M., & Avolio, B. J. (1994). Transformational leadership and organizational culture. International Journal of Public Administration, 17(3–4), 541–554. https://doi.org/10.1080/01900699408524907
9. Bass, B. M., & Avolio, B. J. (1995). Multifactor Leadership questionnaire [Dataset]. In PsycTESTS Dataset. https://doi.org/10.1037/t03624-000
10. Battesini, M., Caten, C. S. T., & De Jesus Pacheco, D. A. (2021). Key factors for operational performance in manufacturing systems: Conceptual model, systematic literature review and implications. Journal of Manufacturing Systems, 60, 265–282. https://doi.org/10.1016/j.jmsy.2021.06.005
11. Beauvais, T. (2023). Hybrid representative sampling of social media. Bulletin of Sociological Methodology/Bulletin De Méthodologie Sociologique, 160(1), 57–70. https://doi.org/10.1177/07591063231196162
12. Benmira, S., & Agboola, M. (2021). Evolution of leadership theory. BMJ Leader, 5(1), 3–5. https://doi.org/10.1136/leader-2020-000296
13. Bernice, O. Y., Rildwan, O. B., & Ibrahim, A. (2023). The dimensional Context of leadership impact on the organizational performance of selected manufacturing companies in Lagos State, Nigeria. Journal of Contemporary Issues and Thought, 13(2), 32–43. https://doi.org/10.37134/jcit.vol13.2.4.2023
14. Berson, Y., & Linton, J. (2004). An examination of the relationships between leadership style, quality, and employee satisfaction in R&D environments. IEMC '03 Proceedings. Managing Technologically Driven Organizations: The Human Side of Innovation and Change, 410–414. https://doi.org/10.1109/iemc.2003.1252304
15. Bochner, R. (2025). Saudi Arabia's Industrial Transformation Since 1976; Industrialization, Diversification and Global Influence, An Empirical Analysis and Forward-Looking recommendations. Emirati Journal of Business Economics & Social Studies, 4(2), 40–55. https://doi.org/10.54878/pc7nxz30
16. Braun, S., Peus, C., Weisweiler, S., & Frey, D. (2012). Transformational leadership, job satisfaction, and team performance: A multilevel mediation model of trust. The Leadership Quarterly, 24(1), 270–283. https://doi.org/10.1016/j.leaqua.2012.11.006
17. Burns, J. M. (1978). Leadership. HarperCollins.
18. Caillier, J. G. (2020). Testing the influence of autocratic leadership, democratic leadership, and public service motivation on citizen ratings of an agency head's performance. Public Performance &

Management Review, 43(4), 918–941. https://doi.org/10.1080/15309576.2020.1730919
19. Cakir, F. S., & Adiguzel, Z. (2020). Analysis of leader effectiveness in organization and knowledge sharing behavior on employees and organization. SAGE Open, 10(1). https://doi.org/10.1177/2158244020914634
20. Cheng, J., Sun, J., Yao, K., Xu, M., & Cao, Y. (2021). A variable selection method based on mutual information and variance inflation factor. Spectrochimica Acta Part a Molecular and Biomolecular Spectroscopy, 268, 120652. https://doi.org/10.1016/j.saa.2021.120652
21. Cherry, K. (2024, June 26). The pros and cons Laissez-Faire leadership? Verywell Mind. https://www.verywellmind.com/what-is-laissez-faire-leadership-2795316#:~:text=Laissez,Lack%20of%20role
22. Cook, K. S., Cheshire, C., Rice, E. R. W., & Nakagawa, S. (2013). Social exchange theory. In Handbooks of sociology and social research (pp. 61–88). https://doi.org/10.1007/978-94-007-6772-0_3
23. Coykendall, J., Hardin, K., & Morehouse, J. (2024). 2025 Manufacturing Industry Outlook. Deloitte Research Center for Energy & Industrials. https://www2.deloitte.com/us/en/insights/industry/manufacturing/manufacturing-industry-outlook.html
24. Cropanzano, R., & Mitchell, M. S. (2005). Social Exchange Theory: An Interdisciplinary Review. Journal of Management, 31(6), 874–900. https://doi.org/10.1177/0149206305279602
25. Dagnaw, M. A., Gebreab, F. T., Melisew, C. G., Kiros, H. W., Tekle, K. C., & Ridzki, M. M. (2025). The effect of product development on operational performance: A case research of Ultimate Motors. Journal Transnational Universal Studies, 3(1), 47–66. https://doi.org/10.58631/jtus.v3i1.147
26. Daouk, A., Farmanesh, P., & Zargar, P. (2021). The Relationship between Transactional Leadership and OCB: A Conditional analysis of organizational justice perception and psychological contract Fulfillment. SAGE Open, 11(4), 215824402110615. https://doi.org/10.1177/21582440211061563
27. Dare, P. S., & Saleem, A. (2022). Toward Success While Tackling the change in a pandemic Age: Path-Goal Theory Leadership as a Win-Win Gadget. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.944145
28. Deinert, A., Homan, A. C., Boer, D., Voelpel, S. C., & Gutermann, D. (2015). Transformational leadership sub-dimensions and their link to leaders' personality and performance. The Leadership Quarterly, 26(6), 1095–1120. https://doi.org/10.1016/j.leaqua.2015.08.001
29. Deng, C., Gulseren, D., Isola, C., Grocutt, K., & Turner, N. (2022). Transformational leadership effectiveness: an evidence-based primer. Human Resource Development International, 26(5), 627–641. https://doi.org/10.1080/13678868.2022.2135938
30. Densten, I. L. (2006). Negotiating extra effort through contingent rewards. Leadership & Organization Development Journal, 27(1), 38–49. https://doi.org/10.1108/01437730610641359