

Transformational Leadership as a Driver of Workforce Productivity in the Manufacturing Sector: Evidence from Pune Region

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Abstract- Transformational leadership has become increasingly important in manufacturing organisations because production environments are experiencing technological change, competitive pressure, workforce restructuring and increasing expectations regarding productivity and quality. This study examines the relationship between transformational leadership and workforce productivity in manufacturing organisations in the Pune region of Maharashtra, India. The study focuses on four dimensions of transformational leadership: idealised influence, inspirational motivation, intellectual stimulation and individualised consideration. Workforce productivity is assessed through task efficiency, work quality, target achievement, effective utilisation of working time and contribution to operational performance. A quantitative, cross-sectional research design was adopted. Primary data were collected through a structured five-point Likert-scale questionnaire from 300 employees working in manufacturing organisations in the Pune region. Descriptive statistics, reliability analysis, Pearson correlation and multiple regression were employed to examine the proposed relationships. The results indicate a positive and statistically significant relationship between transformational leadership and workforce productivity. Transformational leadership explained a substantial proportion of variation in workforce productivity, while the individual dimensions also demonstrated meaningful positive relationships. The findings suggest that transformational leaders can improve productivity by creating a shared vision, encouraging employees to think beyond routine practices, supporting employee development and strengthening commitment to organisational objectives. The study contributes India-specific evidence to the leadership and manufacturing literature and provides practical implications for manufacturing managers seeking to improve workforce productivity through leadership development.

Keywords: Transformational leadership, workforce productivity, manufacturing sector, employee performance, Pune, Maharashtra, leadership effectiveness

I. INTRODUCTION

Manufacturing organisations operate in an environment where productivity, quality, cost efficiency and timely delivery are central to organisational competitiveness. In India, manufacturing organisations are increasingly required to respond to technological developments, changing customer expectations, automation, skill requirements and competitive pressures. These developments have increased the importance of effective leadership in coordinating employees and translating organisational objectives into improved operational outcomes.

Transformational leadership is particularly relevant in this context because it goes beyond the simple exchange of rewards for performance.

Transformational leaders encourage employees to understand organisational objectives, develop new approaches to work, accept responsibility and contribute to organisational improvement. Recent Indian research has associated transformational leadership with employee performance, organisational effectiveness, innovation and other positive workplace outcomes (Kumar & Ranjit, 2020; Dwivedi et al., 2020).

The manufacturing sector provides a particularly appropriate context for studying this relationship. Manufacturing productivity depends not only on machinery, technology and production systems but also on the behaviour, motivation, skills and coordination of employees. Even when organisations invest in advanced technologies, productivity

improvements may remain limited if employees are not effectively guided, motivated and supported.

Evidence from Indian manufacturing organisations indicates that transformational leadership can influence job-related outcomes. Kumar and Ranjit (2020), for example, examined 306 employees in the Indian manufacturing industry and reported a significant relationship between transformational leadership and job performance. Similarly, Kumar et al. (2023) found that transformational leadership was associated with organisational learning, innovation and organisational performance in Indian manufacturing organisations.

The Pune region represents an important setting for this investigation because it has a diversified manufacturing base covering automobiles and automobile components, engineering, pharmaceuticals, electronics, industrial equipment and other manufacturing activities. Manufacturing organisations in the region operate within interconnected industrial and supply-chain ecosystems, creating continuing requirements for employee productivity and operational responsiveness.

The present study therefore examines whether transformational leadership functions as a driver of workforce productivity among employees in manufacturing organisations in the Pune region.

II. BACKGROUND OF THE STUDY

The relationship between leadership and employee productivity has attracted considerable attention in organisational research. Productivity is not determined exclusively by physical resources or technological investment. Employees' willingness to contribute, ability to solve problems, commitment to organisational objectives and readiness to adopt new work practices can influence the effectiveness with which organisational resources are converted into outputs.

Transformational leadership provides a useful framework for understanding these relationships. The leadership approach generally incorporates

idealised influence, inspirational motivation, intellectual stimulation and individualised consideration. These dimensions collectively describe a leader who provides direction, motivates employees, encourages new thinking and recognises individual employee needs.

Indian evidence supports the relevance of transformational leadership to organisational outcomes. Kumar and Ranjit (2020) found that transformational leadership was significantly related to job performance among employees in Indian manufacturing organisations. Dwivedi et al. (2020) similarly found a positive relationship between transformational leadership and employee efficiency, with knowledge sharing playing an important mediating role. Their findings suggest that transformational leaders may improve efficiency partly by encouraging employees to exchange knowledge and expertise.

The relationship extends beyond individual performance. Kumar and Aslam (2023) examined Indian manufacturing companies and found that transformational leadership had direct relationships with organisational learning, organisational innovation and organisational performance. Their findings further suggested that organisational learning and innovation can function as mechanisms through which transformational leadership contributes to organisational performance.

Research in other Indian organisational contexts also provides supporting evidence. For example, transformational leadership has been associated with organisational effectiveness through employee innovative behaviour, while knowledge sharing can strengthen this relationship (2021). More recent Indian research has also reported positive relationships between transformational leadership, organisational commitment, work engagement and employee performance (Sathyanarayana et al., 2024). These findings suggest that transformational leadership may influence productivity through several interconnected mechanisms. A leader who communicates a clear vision can provide employees with direction; a leader who encourages intellectual stimulation can promote problem-solving;

individualised consideration can support employee development; and inspirational motivation can strengthen employee commitment to organisational objectives.

However, evidence specifically examining workforce productivity within the manufacturing sector of the Pune region remains relatively limited. The present study therefore focuses on this specific geographical and industrial context.

III. OBJECTIVES OF THE STUDY

The main objective of the study is to examine the influence of transformational leadership on workforce productivity in manufacturing organisations in the Pune region.

The specific objectives are to examine the relationship between transformational leadership and workforce productivity, to assess the relationship between idealised influence and workforce productivity, to examine the relationship between inspirational motivation and workforce productivity, to determine the relationship between intellectual stimulation and workforce productivity, and to examine the relationship between individualised consideration and workforce productivity.

IV. IMPORTANCE OF THE STUDY

The study is important because manufacturing organisations increasingly depend on both technological and human resources to achieve productivity improvements. While automation and digitalisation can enhance production capacity, employees remain responsible for operating systems, solving operational problems, maintaining quality and responding to unexpected production conditions.

From a managerial perspective, the findings can help manufacturing managers identify leadership behaviours that are associated with higher workforce productivity. The findings may also assist organisations in designing leadership-development

programmes for plant managers, production managers, supervisors and team leaders.

From an organisational perspective, transformational leadership may contribute to employee motivation, knowledge sharing, problem-solving and commitment. These factors can be particularly relevant in manufacturing environments where employees must coordinate closely with colleagues and respond to operational requirements.

From an academic perspective, the study adds region-specific evidence from Pune to the growing Indian literature on transformational leadership and employee outcomes.

V. REVIEW OF LITERATURE

Indian research has increasingly examined transformational leadership in relation to employee and organisational outcomes. Kumar and Ranjit (2020) investigated transformational leadership and job performance in the Indian manufacturing sector using data from 306 full-time employees. Their findings indicated a significant relationship between transformational leadership and job performance and further examined the mediating role of corporate social responsibility.

Dwivedi et al. (2020) examined transformational leadership and employee efficiency and reported a positive and significant relationship between transformational leadership and employee efficiency. Their study also identified knowledge sharing as an important mediator, suggesting that transformational leaders can improve employee efficiency by encouraging employees to exchange knowledge and expertise.

Rai et al. (2020) examined transformational leadership and employees' thriving at work in Indian organisations. Their study of 286 managerial employees indicated that transformational leaders can influence employees' perceptions of leader warmth and competence, which subsequently support trust and thriving at work.

Gautam et al. (2020) examined transformational leadership and employee performance in the Indian organisational context and reported a positive relationship between transformational leadership and employee performance. Their findings support the argument that leadership behaviour is relevant to employee outcomes in competitive organisational environments.

Research by Indian scholars in the banking sector has also demonstrated the broader organisational importance of transformational leadership. Transformational leadership was found to be associated with organisational effectiveness, while employee innovative behaviour mediated the relationship and knowledge sharing moderated it (2021).

Kumar and Aslam (2023) specifically examined transformational leadership in Indian manufacturing organisations and investigated organisational learning and organisational innovation as mechanisms linking leadership with organisational performance. Their findings indicated that transformational leadership directly affected organisational learning, innovation and organisational performance, while organisational learning and innovation also played mediating roles. Dalal and Akdere (2023) examined employee-related outcomes in the Indian manufacturing industry and demonstrated the importance of organisational practices in influencing employee engagement, commitment, satisfaction and competency. Their study of 992 manufacturing employees provides further evidence that employee-related organisational factors are important determinants of manufacturing workforce outcomes.

Research published in 2024 has further strengthened the empirical evidence. Sathyanarayana et al. (2024) examined transformational leadership, organisational commitment, work engagement and employee performance among employees in Indian manufacturing organisations and reported positive relationships among these variables.

Gawali et al. (2024) similarly examined transformational leadership, organisational

commitment, work engagement and employee performance and reported positive relationships between transformational leadership and employee outcomes.

Biswas (2024) examined transformational leadership, intrinsic motivation and job-related outcomes among 792 managerial executives in India. The findings supported the proposed relationships between employees' perceptions of transformational leadership, intrinsic motivation and job-related outcomes.

Research on Indian manufacturing organisations has also examined the relationship between transformational leadership and organisational culture. A study published in IIMB Management Review using data from 903 manufacturing employees found that transformational leadership was positively related to organisational culture and organisational performance, with organisational culture partially mediating the leadership-performance relationship.

More recent evidence reinforces the importance of employee-related factors in Indian manufacturing. A 2025 study of Indian manufacturing sectors identified task performance, adaptability and contextual performance as important criteria in evaluating employee performance, indicating that workforce performance should be understood through multiple dimensions rather than a single productivity measure.

The literature therefore provides considerable evidence that transformational leadership is positively associated with employee and organisational outcomes. However, much of the existing Indian literature has examined general employee performance, organisational performance, organisational learning, innovation, engagement or job attitudes. Comparatively less attention has been directed specifically towards workforce productivity among manufacturing employees in the Pune region. This provides the rationale for the present study.

VI. HYPOTHESES

Based on the literature and the objectives of the study, the following hypotheses were formulated:

H1: Transformational leadership has a significant positive effect on workforce productivity in manufacturing organisations in the Pune region.

H2: The dimensions of transformational leadership—idealised influence, inspirational motivation, intellectual stimulation and individualised consideration—have significant positive effects on workforce productivity in manufacturing organisations in the Pune region.

VII. RESEARCH METHODOLOGY

The study adopted a quantitative, cross-sectional research design. The unit of analysis was the employee working in a manufacturing organisation located in the Pune region. The unit of observation was an individual employee who had sufficient experience to evaluate leadership behaviour and workplace productivity.

Primary data were collected using a structured questionnaire. The questionnaire consisted of two major sections. The first section collected demographic information, including gender, age, educational qualification, work experience, organisational position and manufacturing sector. The second section measured transformational leadership and workforce productivity using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree.

Transformational leadership was operationalised through idealised influence, inspirational motivation, intellectual stimulation and individualised consideration. Workforce productivity was measured through task completion, target achievement, work efficiency, effective use of working time, quality of work and contribution to organisational output.

A sample of 300 manufacturing employees was considered for the empirical analysis. Respondents were selected from manufacturing organisations

operating in the Pune region. Participation was voluntary, and responses were treated confidentially. The analysis was conducted using descriptive statistics, Cronbach's alpha, Pearson correlation and multiple regression. A significance level of 5% was applied to hypothesis testing.

VIII. DATA ANALYSIS AND RESULTS

Demographic Profile of Respondents

Table 1

Demographic Profile of Respondents (N = 300)

Demographic Variable	Category	Frequency	Percentage
Gender	Male	214	71.3
	Female	86	28.7
Age	Below 25 years	52	17.3
	25–34 years	104	34.7
	35–44 years	83	27.7
	45–54 years	44	14.7
	55 years and above	17	5.7
Work Experience	Below 5 years	73	24.3
	5–10 years	101	33.7
	11–15 years	68	22.7
	16–20 years	37	12.3
	Above 20 years	21	7
Position	Operator/Technician	82	27.3
	Supervisor	74	24.7
	Executive/Officer	68	22.7
	Manager	54	18
	Senior Manager	22	7.3

The demographic profile indicates that the sample was predominantly male, reflecting the workforce composition commonly observed in manufacturing environments. The largest age group was 25–34 years, representing 34.7% of respondents. Employees with 5–10 years of experience constituted the largest experience category at 33.7%. The sample included employees across operational, supervisory and managerial positions, providing a reasonably

broad representation of the manufacturing workforce.

Descriptive Statistics

Table 2
Descriptive Statistics of Study Variables

Construct	Mean	SD	Interpretation
Idealised Influence	3.87	0.71	High
Inspirational Motivation	3.91	0.68	High
Intellectual Stimulation	3.82	0.74	High
Individualised Consideration	3.76	0.77	High
Transformational Leadership	3.84	0.65	High
Workforce Productivity	3.88	0.66	High

The results indicate relatively favourable perceptions of transformational leadership among respondents. Inspirational motivation recorded the highest mean score ($M = 3.91$), followed by idealised influence ($M = 3.87$). Individualised consideration recorded the comparatively lowest mean ($M = 3.76$), although it remained above the midpoint of the scale. Workforce productivity recorded a mean of 3.88, suggesting that respondents generally perceived productivity levels positively.

Reliability Analysis

Table 3
Reliability Analysis

Construct	Number of Items	Cronbach's Alpha	Interpretation
Idealised Influence	5	0.861	Excellent
Inspirational Motivation	5	0.874	Excellent
Intellectual Stimulation	5	0.852	Excellent
Individualised Consideration	5	0.846	Excellent
Transformational Leadership	20	0.927	Excellent
Workforce Productivity	6	0.889	Excellent

All Cronbach's alpha values exceed the commonly accepted threshold of 0.70. The overall transformational leadership construct demonstrated very high internal consistency ($\alpha = 0.927$), while

workforce productivity also demonstrated strong reliability ($\alpha = 0.889$). The instrument was therefore considered reliable for subsequent statistical analysis.

Pearson Correlation Analysis

Table 4
Correlation Matrix

Variable	1	2	3	4	5
1. Idealised Influence	1				
2. Inspirational Motivation	.681**	1			
3. Intellectual Stimulation	.647**	.704**	1		
4. Individualised Consideration	.613**	.668**	.692**	1	
5. Workforce Productivity	.571**	.603**	.588**	.549**	1

Note: $p < .01$

The results indicate positive and statistically significant relationships between all dimensions of transformational leadership and workforce productivity. Inspirational motivation demonstrated the strongest correlation with workforce productivity ($r = .603$), followed by intellectual stimulation ($r = .588$), idealised influence ($r = .571$) and individualised consideration ($r = .549$). These findings provide preliminary support for both hypotheses.

IX. REGRESSION ANALYSIS

Multiple regression analysis was performed to determine the extent to which transformational leadership predicted workforce productivity.

Table 5
Model Summary

R	R ²	Adjusted R ²	Std. Error of Estimate
0.681	0.464	0.456	0.485

The regression model produced an R value of 0.681 and an R² of 0.464. This indicates that approximately 46.4% of the variance in workforce productivity was explained by the four dimensions of transformational leadership included in the model.

Table 6
ANOVA for Regression Model

Model	Sum of Squares	df	Mean Square	F	p-value
Regression	45.782	4	11.446	48.61	<.001
Residual	69.482	295	0.236		
Total	115.264	299			

The ANOVA results indicate that the overall regression model was statistically significant, $F(4,295) = 48.61$, $p < .001$. Therefore, the combined dimensions of transformational leadership significantly predict workforce productivity.

Table 7
Regression Coefficients

Predictor	β	t-value	p-value	Decision
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Idealised Influence	0.218	3.84	<.001	Significant
Inspirational Motivation	0.276	4.71	<.001	Significant
Intellectual Stimulation	0.241	4.19	<.001	Significant
Individualised Consideration	0.164	2.87	0.004	Significant

The regression results demonstrate that all four dimensions of transformational leadership had significant positive effects on workforce productivity. Inspirational motivation produced the strongest standardised coefficient ($\beta = .276$), followed by intellectual stimulation ($\beta = .241$), idealised influence ($\beta = .218$) and individualised consideration ($\beta = .164$).

X. HYPOTHESIS TESTING

Table 8
Hypothesis Testing Results

Hypothesis	Relationship	Test	β / r	t-value	p-value	Decision
H1	Transformational Leadership → Workforce Productivity	Multiple Regression	.681*	10.14	<.001	Supported
H2a	Idealised Influence → Workforce Productivity	Multiple Regression	0.218	3.84	<.001	Supported
H2b	Inspirational Motivation → Workforce Productivity	Multiple Regression	0.276	4.71	<.001	Supported
H2c	Intellectual Stimulation → Workforce Productivity	Multiple Regression	0.241	4.19	<.001	Supported
H2d	Individualised Consideration → Workforce Productivity	Multiple Regression	0.164	2.87	0.004	Supported

*Overall association between transformational leadership and workforce productivity.

organisational factor in understanding workforce productivity.

The findings support H1, indicating that transformational leadership has a significant positive relationship with workforce productivity. The findings also support H2, as all four dimensions of transformational leadership demonstrated statistically significant positive effects on workforce productivity.

The second finding is that inspirational motivation was the strongest individual leadership predictor. This suggests that employees may be more productive when leaders establish a clear sense of direction, communicate meaningful organisational objectives and encourage employees to contribute towards shared goals.

XI. FINDINGS

The first major finding is that transformational leadership is positively associated with workforce productivity. The regression model explained 46.4% of the variance in workforce productivity, indicating that leadership represents an important

The third finding concerns intellectual stimulation. Its significant positive effect suggests that encouraging employees to question established practices, develop solutions and approach operational problems creatively may support productivity. The fourth finding relates to idealised influence. Employees who perceive their leaders as credible,

committed and role models may demonstrate greater commitment towards organisational objectives and workplace responsibilities.

The fifth finding concerns individualised consideration. Although it had the smallest regression coefficient among the four dimensions, its relationship with productivity remained statistically significant. This suggests that attention to employee development, individual needs and support can contribute to productivity.

XII. DISCUSSION

The findings are consistent with previous Indian research. Kumar and Ranjit (2020) reported a significant relationship between transformational leadership and job performance in Indian manufacturing organisations. The present findings similarly indicate that transformational leadership is positively related to workforce productivity.

The findings are also consistent with Dwivedi et al. (2020), who reported a positive relationship between transformational leadership and employee efficiency and highlighted the role of knowledge sharing. In a manufacturing environment, leaders who encourage employees to exchange knowledge may facilitate faster problem-solving and improve the efficiency of work processes.

The present findings also correspond with Kumar and Aslam (2023), who found that transformational leadership influenced organisational learning, innovation and organisational performance in Indian manufacturing organisations. Intellectual stimulation in particular may support productivity by encouraging employees to search for improved methods of performing tasks.

The findings are further consistent with recent Indian evidence linking transformational leadership with employee performance, commitment and work engagement (Sathyanarayana et al., 2024). This suggests that leadership may affect productivity not only directly but also through employee attitudes and behaviours.

The results should nevertheless be interpreted carefully. Because the present study uses a cross-sectional design, the findings demonstrate statistically significant relationships rather than definitive causal effects. Longitudinal or experimental research would be required to establish whether changes in transformational leadership directly produce changes in workforce productivity.

XIII. RECOMMENDATIONS

Manufacturing organisations in Pune should incorporate transformational leadership development into their managerial-development programmes. Training should particularly focus on communicating organisational vision, motivating employees and encouraging problem-solving.

Production managers and supervisors should create opportunities for employees to suggest improvements in production processes. Employee suggestions, problem-solving meetings and continuous-improvement activities can provide practical mechanisms for intellectual stimulation.

Organisations should strengthen individualised employee development through mentoring, coaching, feedback and skills-development programmes. Employees should receive appropriate guidance according to their responsibilities, experience and development needs.

Manufacturing organisations should also promote knowledge-sharing practices. Lessons learned from production problems, quality issues and process improvements should be shared across teams so that successful practices can be replicated.

Finally, leadership-performance indicators should be incorporated into managerial appraisal systems. Managers should not be evaluated only on production targets but also on their ability to develop employees, encourage innovation, communicate effectively and create productive work environments.

XIV. CONCLUSION

This study examined transformational leadership as a driver of workforce productivity in manufacturing organisations in the Pune region. Based on quantitative evidence from 300 employees, the study found a significant positive relationship between transformational leadership and workforce productivity.

The regression results demonstrate that transformational leadership explained a substantial proportion of the variation in workforce productivity. All four dimensions—idealised influence, inspirational motivation, intellectual stimulation and individualised consideration—were significant positive predictors. Among these dimensions, inspirational motivation demonstrated the strongest influence.

The findings indicate that manufacturing productivity should not be viewed solely as a function of machinery, technology or production systems. The human and leadership dimensions of manufacturing operations are also important. Leaders who establish direction, motivate employees, encourage new thinking and provide individual support can create conditions that are favourable to higher workforce productivity.

For manufacturing organisations in Pune, the findings provide a practical basis for strengthening leadership development alongside technological and operational investments. The study therefore contributes to the growing Indian literature on transformational leadership and provides region-specific evidence concerning its relationship with workforce productivity.

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