

TRANSFORMATIONAL LEADERSHIP AND MANAGEMENT COMMITMENT IN THE RAILWAY SECTOR: PROCESS MANAGEMENT AS A MEDIATOR OF PRODUCTIVITY IN A DEVELOPING COUNTRY CONTEXT

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ABSTRACT

This study examines the relationships between transformational leadership, top leadership commitment, process management and productivity within the Tanzania Zambia Railway Authority (TAZARA). While previous research has predominantly focused on the direct effects of transformational leadership and leadership commitment on organisational outcomes, this study introduces process management as a mediating factor, providing a more comprehensive understanding of how leadership behaviours translate into productivity gains. Using a quantitative approach, data were collected from 157 managers and analysed using Jamovi for regression and mediation analysis. The results show that both transformational leadership and top leadership commitment significantly increase productivity, with process management playing a key mediating role. Transformational leadership promotes productivity by inspiring employees and optimising processes, while top leadership commitment provides strategic direction and resource allocation, which further enhances process efficiency. These findings contribute to the theoretical understanding of leadership dynamics and provide practical insights for organisations seeking to improve productivity through integrated leadership and process management strategies. The study highlights the importance of adopting a synergistic approach that combines transformational leadership, strong top management commitment and effective process management to achieve sustainable organisational success.



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1. INTRODUCTION

Leadership plays a critical role in shaping organisational commitment, productivity and performance. Among the various leadership styles, transformational leadership has emerged as a key approach that fosters innovation, motivation and employee engagement. Transformational leadership is characterised by its ability to inspire and challenge employees, increase their sense of purpose and

promote long-term organisational success. Research suggests that transformational leadership is strongly associated with increased organisational commitment and productivity across a range of industries, including business, education, healthcare, and public administration (Korejan & Shahbazi, 2016). The relationship between transformational leadership and leadership commitment has been extensively studied. Yucel et al. (2014) examined the impact of CEO

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transformational leadership on top executive commitment in Turkish organisations and found a non-linear, J-shaped relationship. Moderate levels of transformational leadership were associated with decreased normative commitment, while both low and high levels were correlated with increased commitment. This relationship was mediated by affective commitment, highlighting the emotional connection as a critical factor in leadership commitment. Similarly, Korek et al. (2010) investigated transformational leadership in the pharmaceutical sector and found that strong leadership and high consensus positively influenced affective and normative commitment through mechanisms such as meaningful work and a positive organisational climate. Other studies (Eliyana & Ma'arif, 2019; Alzoraiki et al., 2023) further reinforce the importance of transformational leadership in enhancing organisational commitment, although some findings suggest complexity in its direct influence on work performance.

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The relationship between transformational leadership and leadership commitment has been extensively studied. Yucel et al. (2014) examined the impact of CEO transformational leadership on top executive commitment in Turkish organisations and found a non-linear, J-shaped relationship. Moderate levels of transformational leadership were associated with decreased normative commitment, while both low and high levels were correlated with increased commitment. This relationship was mediated by affective commitment, highlighting the emotional connection as a critical factor in leadership commitment. Similarly, Korek et al (2010) investigated transformational leadership in the pharmaceutical sector and found that strong leadership and high consensus positively influenced affective and normative commitment through mechanisms such as meaningful work and a positive organisational climate. Other studies (Eliyana & Ma'arif, 2019; Alzoraiki et al., 2023) further reinforce the importance of transformational leadership in enhancing organisational commitment, although some findings suggest complexity in its direct influence on work performance.

Given the central role of transformational leadership in promoting leader commitment, organisational productivity and process management, this study aims to further explore the complex relationships between these variables. By integrating findings from previous research, this study examines how transformational

leadership and leadership commitment influence productivity, with process management serving as a mediating factor. Notably, this research is the first empirical study to comprehensively test these relationships.

2. LITERATURE REVIEW

2.1 Transformational leadership

Innovative, creative and inspiring, a transformational leader helps people to be the best they can be in their organisations, while encouraging innovation and creativity in their industries. Transformational leaders enable their followers to see their own potential. According to theorists and scholars, transformational leadership is far more successful than pragmatic leadership (Korejan & Shahbazi, 2016).

2.2 Process Management

Process management is a comprehensive strategy that aims to eliminate piecemeal improvements in specific business process areas, which typically lead to less than ideal results. It looks at how people, processes, technology and strategy are interdependent in achieving business goals (Hung, 2006). One of the best management strategies for organisations seeking to maintain a competitive edge is business process management. The conventional definition of a process is process management, which is a set of actions that transform inputs into outputs. Organisations need to improve the process to increase quality because one process output can be used as an input for another.

2.3 Productivity

Productivity is a measure of how efficiently goods and services are produced. Effectiveness, performance and efficiency are also used to describe success. The ratio of output to input required for production is known as productivity. Yangailo (2022). "Productivity is a multifaceted concept whose interpretation may differ depending on the context of its application" (Prasad et al., 2015).

2.4 Top management Leadership Commitment

Top management leadership refers to the extent to which senior management formulates quality management objectives and strategies, allocates critical resources, engages in quality improvement initiatives and evaluates the implementation and effectiveness of quality management (Saraph et al., 1989). Ahire and O'Shaughnessy (1998) argue that firms with strong top management commitment produce high quality products regardless of individual differences, and that in firms with weak top management commitment, four additional factors - customer focus, supplier quality management, empowerment and use of internal quality information - are important predictors of product quality. Top management commitment is often essential for the implementation and use of total quality management to

improve organisational performance (Ahire & Ravichandran, 2001). Implementing QM and improving performance is impractical without strong support from senior management (Flynn et al., 1994).

2.5 Empirical Review

2.5.1 Transformational Leadership and Top leadership Commitment

The study by Yucel et al. (2014) applied social exchange theory to examine the relationship between CEO transformational leadership and top executive commitment in Turkish organisations, identifying a non-linear, J-shaped pattern. The results indicate that moderate levels of transformational leadership are associated with lower normative executive commitment, while both low and high levels of transformational leadership correspond to higher commitment. Moreover, this relationship is fully mediated by affective commitment, highlighting the central role of emotional connection in shaping leaders' sense of obligation. The study underscores the complexity of leadership effects and highlights the need for further research into factors influencing normative commitment.

Korek et al. (2010) investigated the impact of transformational leadership in the pharmaceutical sector, focusing on how both the general level of transformational leadership exhibited by CEOs and the degree of consensus among employees regarding the leadership style influence organisational commitment. The results show that strong transformational leadership and high consensus positively predict affective and normative commitment, fostering both emotional attachment and a sense of obligation among employees. In particular, the perception of meaningful work mediates the relationship between transformational leadership and affective commitment, while a positive organisational climate partially mediates the effect of consensus. However, continuance commitment, which reflects employees' perceived need to stay due to limited alternatives, is not significantly affected. These findings suggest that pharmacy CEOs can enhance employee commitment by strengthening transformational leadership, fostering consensus, ensuring meaningful work, and cultivating a positive organizational climate.

Eliyana and Ma'arif (2019) explore the role of transformational leadership in shaping job performance among middle-level leaders in Pelabuhan Indonesia III Inc. Using questionnaires and structural equation modelling (SEM) with partial least squares (PLS) on a sample of 30 respondents, the study found that transformational leadership significantly increases job satisfaction and organisational commitment. However, contrary to expectations, transformational leadership does not directly improve job performance, nor does organisational commitment serve as a significant mediator in this relationship. These findings suggest that while transformational leadership promotes positive attitudes towards the workplace, its direct impact on job performance in this context is limited.

Alzoraiki et al. (2023) examined the influence of transformational leadership on sustained teacher performance in developing countries, focusing on the mediating role of teacher commitment. Analysing data from 374 teachers using PLS-SEM, the study finds that transformational leadership positively affects both teacher commitment and teaching performance. Furthermore, teacher commitment significantly enhances sustained teaching performance and mediates the relationship between transformational leadership and sustained performance. These findings underscore the importance of transformational leadership in educational settings and provide valuable insights for school administrators and policymakers seeking to improve teaching effectiveness and sustainability.

Lo et al. (2010) examined the impact of transformational leadership on employees' organisational commitment to change in the Malaysian higher education sector. In the context of challenges related to university rankings, this study surveyed 458 lecturers. The results show that two dimensions of transformational leadership - idealized influence and inspirational motivation - are positively correlated with personal commitment to change. These findings highlight the potential of transformational leadership in fostering adaptability and commitment in higher education institutions undergoing organisational change.

Salamat et al. (2013) investigated the relationship between perceived transformational leadership and organisational commitment among secondary school teachers in Klang district. Using a two-stage random sampling approach, the study surveyed 186 teachers and found that both perceived transformational leadership and organizational commitment were high. A strong positive linear relationship between these variables suggests that transformational leadership behaviours exhibited by principals significantly enhance teacher commitment, thereby contributing to improved school effectiveness and educational reform.

Mesu et al. (2015) analyse the impact of transformational leadership on organizational commitment in small and medium-sized enterprises (SMEs) in the Netherlands, distinguishing between manufacturing and service industries. Based on data from 588 employees in 35 SMEs, the study finds that transformational leadership is positively associated with organizational commitment in service SMEs, while there is no significant relationship in manufacturing SMEs. Furthermore, although participative leadership does not moderate this relationship, a directive leadership style strengthens the positive influence of transformational leadership on commitment in manufacturing SMEs. These findings suggest that leadership strategies should be tailored to industry-specific needs, with service SMEs benefiting directly from transformational leadership and manufacturing SMEs requiring a combination of transformational and directive leadership for optimal commitment outcomes.

The reviewed studies collectively highlight the significant role of transformational leadership in

promoting organisational commitment in various sectors, including business, education and healthcare. While transformational leadership generally enhances affective and normative commitment, its effects vary depending on contextual factors such as industry type, leadership consensus, and the presence of mediating variables such as meaningful work, organizational climate, and emotional connection. In addition, some studies show non-linear or insignificant direct effects, indicating the complexity of leadership dynamics in influencing commitment and performance outcomes. Given the central role of leadership commitment in organisational success, further research is needed to refine our understanding of the mechanisms through which transformational leadership influences leader commitment.

2.5.2 Leadership commitment and Productivity

This study by Mitchell (2015) examined the impact of five transformational leadership behaviours on organisational commitment, job satisfaction and productivity within an investment services company. Using the Leadership Practices Inventory (LPI) and questionnaires from 23 directors and 251 employees, the study found that challenging the process was the most prevalent transformational leadership behavior. While the relationships between leadership behaviours and outcomes were moderately weak to moderate, a t-test revealed that 'enabling others to act' had a significant individual effect on job satisfaction. In essence, while transformational leadership was present, its overall effect was mixed, with 'enabling others to act' specifically increasing job satisfaction.

The study by Ahmad et al. (2023) determine and analyse the influence of leadership, commitment, budaya commitment on employee productivity at the Department of Rural Community Empowerment of North Morowali Regency. Penelitian ini mengguna-This study uses a quantitative descriptive approach with a population of 33 people by sampling using the saturated sample method. The analysis method used is linear regression analysis method. The results obtained are leadership has no significant effect on employee productivity, commitment positif positif significant effect on employee productivity, BUpower of work has no significant effect on employee productivity. Commitment is the dominant variable affecting employee performance and at the same time the three variables studied have a positive and significant effect on employee productivity.

This qualitative study by Lozada (2024) aims to explore the relationship between employee engagement and productivity within the public sector in Los Angeles County, specifically focusing on the Departments of Beaches and Harbors (DBH) and Child Support Services (CSSD). Through interviews with 20 employees, the research will examine how factors such as employee trust, organisational culture, leadership and work-life balance influence employee engagement and, consequently, productivity. By prioritising flexibility and confidentiality, the study aims to provide detailed

insights into these dynamics and contribute to the limited existing research on engagement and productivity in public sector organisations.

This quantitative study by Nasomboon (2014) examined the relationships between leadership commitment, organisational performance and employee engagement in 26 petrochemical companies, focusing on the mediating roles of employer branding, strategic alignment, organisational agility and human resource practices. Using structural equation modelling (SEM), the research found that leadership commitment has a direct impact on both organisational performance and employee engagement. Furthermore, employer branding, strategic alignment, organisational agility and human resource practices mediate these relationships. In particular, strategic alignment indirectly influences HR practices through employer branding and organisational agility. The study concludes that strong leadership commitment, characterised by commitment to the organisation, goal achievement and organisational change, significantly enhances organisational performance and employee engagement.

2.5.3 Transformational leadership and Productivity

This study by Masi and Cooke (2000) examined the relationships between transformational and transactional leadership styles, subordinate motivation and commitment to quality, empowering norms, organisational productivity, and leaders' self-image within the United States Army Recruiting Command. Using survey data from mid-level leaders, station commanders, and recruiters, supplemented by productivity measures, the research tested an integrative leadership model. The results partially supported the hypotheses, indicating that leadership styles do influence these factors, although not consistently across all domains. The study highlights the complexity of leadership effectiveness in a military setting and provides implications for both research and practice, while acknowledging its limitations.

This cross-sectional study by Vatankhah et al. (2017) investigated the impact of transformational leadership on employee productivity in teaching hospitals affiliated with Iran University of Medical Sciences. Using standard questionnaires and structural equation modelling (SEM) on data from 254 participants, the research found a significant positive relationship between transformational leadership and employee productivity. The analysis showed that a transformational leadership style significantly increased employee performance. The study concludes that hospitals should prioritise training programmes to cultivate and promote transformational leadership behaviours, ultimately leading to increased employee productivity.

This study by Sayan and Sürücü (2024) examined the influence of transformational leadership on logistics performance in the Turkish courier industry and the moderating role of employee productivity. Using an online survey of 347 motor couriers, the study found that transformational leadership had a positive and significant

effect on logistics performance. Furthermore, employee productivity was shown to moderate this relationship, suggesting that higher employee productivity strengthens the positive effect of transformational leadership on logistics performance. This research, unique in its focus on logistics performance within the courier industry, provides valuable insights for managers seeking to improve organisational performance through effective leadership and improved employee productivity.

This study by Narulita et al. (2019) aims to identify the partial and joint effects of principal transformational leadership and teacher work motivation on teacher work productivity in state primary schools in Sambas subdistrict. The research method used is a quantitative approach with a type of causal-comparative research or correlational study. The research was carried out in 18 state primary schools in Sambas sub-district with the criteria of at least a B accredited school. The sample consisted of 100 people with criteria as civil servants and with teaching experience of more than five years. The instruments used are in the form of questionnaires. The data collection procedures and techniques used were questionnaires. While the data analysis technique is used inferential parametric statistics with the hypothesis testing technique is correlation analysis and multiple regression analysis with the help of IBM SPSS Statistics 20 (SPSS 20). The conclusions of this research are (1) The principle of transformational leadership of government primary schools in Sambas sub-district tends to be low (not good). (2) The work motivation of the teachers in the primary schools in Sambas sub-district tends to be good. (3) The work productivity of teachers in primary schools in Sambas subdistrict tends to be moderate. (4) The principal of transformational leadership influences the work productivity of government primary school teachers in Sambas Sub-district. (5) Students' work motivation influences the work productivity of government primary school teachers in Sambas sub-district. (6) The principal of transformational leadership and the work motivation of teachers jointly affect the work productivity of government primary school teachers in Sambas sub-district.

This study by Strukan et al. (2017) investigated the impact of transformational leadership on business performance, specifically financial performance and new product development, in companies in Bosnia and Herzegovina. Through a survey of 127 top managers, using descriptive statistics and correlation analysis, the study found a positive relationship between transformational leadership and both financial performance and new product development. However, the study also found that leaders in the region tend to prioritise tasks over people. The researchers recommend that these leaders adopt a more transformational approach, focusing on change, vision, long-term planning and employee development to further improve business performance.

2.5.4 Process Management and Productivity

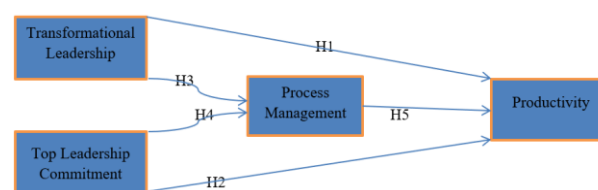
This study by Benner and Tushman (2003) presents a contingency view of process management, arguing that its impact on innovation and organisational adaptation depends on the stability of the organisational context. While process management is beneficial in stable environments, it can hinder radical innovation and change. The authors propose that because dynamic capabilities require both exploitation and exploration, process management (associated with exploitation) should be buffered from exploratory activities. They suggest that ambidextrous organisational structures, which allow the simultaneous pursuit of both exploitation and exploration, are necessary for these conflicting activities to coexist effectively.

This study by Benner and Tushman (2015) revisits the authors' influential 2003 paper on exploitation, exploration and process management and reflects on its continuing impact and relevance. They discuss the original context of the paper, highlighting the theoretical and practical challenges of balancing efficiency and innovation. The authors then consider how the innovation landscape has evolved through changes in communication, information processing and product modularity. They argue that these changes have altered the nature and location of innovation, leading to a disconnect between existing theories and current phenomena. The authors conclude by urging researchers to re-examine the fundamental processes of innovation in light of these changes.

This study by Armistead and Machin (1998) examines the impact of business process management (BPM), which stems from business process reengineering (BPR) and total quality management (TQM), on service productivity. It looks at how adopting a process-centric view changes the way an organisation looks at and manages productivity. The article reviews the nature of BPR and the evolution of BPM approaches, drawing on existing literature, and presents a case study of the Royal Mail to illustrate these concepts. In essence, it examines how service organisations can use process management to improve productivity.

2.6 Conceptual Framework

Based on the association among variables used in this study and literature review, a hypothesised model was formulated as shown on Figure 1.



Source: Author (2026)

Figure 1 Hypothesised Model

2.7 Hypotheses

The following are the hypotheses developed based on the previous studies and the hypothesised model of this study:

1. Hypothesis 1: Transformational leadership has a positive significant effect on productivity
2. Hypothesis 2: Top leadership commitment has a positive significant effect on productivity
3. Hypothesis 3: Transformational leadership has a positive significant relationship with process management.
4. Hypothesis 4: Top leadership commitment has a positive significant relationship with process management.
5. Hypothesis 5: Process management has a positive significant impact on productivity
6. Hypothesis 6: Process management has a mediating effect on the relationship between transformational leadership and productivity
7. Hypothesis 7: Process management has a mediating effect on the relationship between top leadership commitment and productivity

3. METHODOLOGY

The Tanzania Zambia Railway Authority (TAZARA) was selected for this study. TAZARA has been operating under the 50:50 ownership of Zambia and Tanzania since its inception in 1975. A structured questionnaire was presented to 180 management respondents out of a target population of 240. 157 completed and returned the questionnaire. A quantitative research approach was used to analyse the data and Jamovi software was used for calculations as this study involved modelling. As recommended by Krejcie and Morgan (1970), the sample size of 157 out of 240 individuals met and exceeded the minimum number required to conduct scientific research. Table 1 provides additional validation of the suggested sample size derived from the Krejcie and Morgan (1970) formula:

Table 1. Determine Size of the sample of a given Population using Morgan and Krejcie (1970) formula

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note: S is sample size, N is size of population Krejcie and Morgan (1970)

Measures

The constructs were assessed using five-point Likert scales, with strongly disagree (1) and strongly agree (5). A number of studies (Coşkun, 2011; Aquilani et al., 2017; Ang et al., 2000; Grayson et al., 2016; Prajogo & Sohal, 2006; Porter & Parker, 1993; Bayraktar et al., 2008; Siu Mane David Lai Wai et al., 2011) employed measures of transformational leadership, top leadership commitment, process management, and productivity.

4. DATA PRESENTATION AND ANALYSIS

The analysis of the results of this study was based on statistical methods using Jamovi software. The results are presented in the form of descriptive statistics, figures, tables and hypothesis tests.

4.1 The Response Rate

Of the 180 questionnaires distributed to the target population of 240, a total of 157 respondents completed and returned the questionnaire, representing a response rate of 87.22%.

4.2 Demographic Characteristics

Demographic profile of 157 respondents that participated in the study based on their gender are shown on Table 2. Of the 157 respondents, 26 (16.6%) were female and 131 (83.4%) were male.

Table 2. Demographic Profile

Description	Frequency	Percentage
Gender		
Male	131	83.4
Female	26	16.6
Total	157	100

4.3 Descriptive Statistics

The four constructs' mean, skewness, kurtosis and standard deviation, are presented on Table 3.

Table 3. Mean, Kurtosis & Skewness of Constructs (N = 157)

	P	TL	TMCL	PM
N	157	157	157	157
Mean	2.90	3.10	3.27	3.34
Median	2.89	3.00	3.20	3.33
Standard deviation	0.735	0.853	0.756	0.738
Minimum	1.00	1.00	1.00	1.00
Maximum	4.89	5.00	5.00	5.00
Skewness	0.0131	0.0123	-0.221	-0.54
Std. error skewness	0.194	0.194	0.194	0.194
Kurtosis	0.219	-	0.0982	0.855
Std. error kurtosis	0.385	0.385	0.385	0.385

Table 3. Mean, Kurtosis & Skewness of Constructs (N = 157)

	P	TL	TMCL	PM
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The mean values for all four constructs indicate that respondents responded positively. Both kurtosis and skewness are within the recommended range of -2 to +2, indicating no serious deviation from normality for the four constructs.

4.4 Validity and Reliability

The instrument factorability of 23 items was measured and it was found that all items correlated at least 0.3 with another item, indicating good factorability. The measure of sampling adequacy (Kaiser Meyer Olkin) was 0.885 above the value of 0.6, while Bartlett's test of sphericity was significant ($\chi^2(253) = 1614, p < .001$). Principal components analysis was appropriate for the 23 items, as shown in Table 4.

Table 4. Test results of Kaiser-Meyer-Olkin and Bartlett's

Kaiser-Meyer-Olkin and Bartlett's Test				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.				.885
Bartlett's Test of Sphericity	Approx. Chi-Square			1614
	Degrees of freedom			253
	Significance			.000

A minimum of 150 cases is usually required to conduct principal component analysis (Fan et al., 2008), therefore our sample size of 157 was sufficient to conduct component analysis. Cronbach alpha for the four construct scale was calculated by conducting reliability analysis with the required threshold of (0.6) point six (Gallais et al., 2017; Straub et al., 2004; Taherdoost, 2016) to obtain reliable measures to determine good internal fit and consistency of the measures. The alpha coefficients of the instrument ranged between 0.672 and 0.861. The alpha coefficient for the transformational leadership scale was 0.839, the alpha coefficient for the leadership commitment scale was 0.748, the alpha coefficient for the process management scale was 0.672, and the alpha coefficient for the productivity scale was 0.861. All four Cronbach alpha coefficients were within the required acceptable range of over 0.6, as shown in Table 5.

Table 5. Test Results of Cronbach Alpha

Items	Cronbach's Alpha	Number of Items	Comment
Overall	.918	27	Accepted
Transformational Leadership	.839	6	Accepted
Top Leadership Commitment	.748	5	Accepted
Process Management	.672	3	Accepted
Productivity	.861	9	Accepted

Source: Jamovi computations

Linearity

The linearity assumption was verified by the computation of Pearson correlation coefficients as presented in Table 6.

Table 6. Correlation Matrix

		P	TL	TMCL	PM
P	Pearson's r	—			
	df	—			
	p-value	—			
	Spearman's rho	—			
TL	Pearson's r	0.551 ***	—		
	df	155	—		
	p-value	<.001	—		
	Spearman's rho	0.472 ***	—		
TMCL	Pearson's r	0.562 ***	0.720 ***	—	
	df	155	155	—	
	p-value	<.001	<.001	—	
	Spearman's rho	0.493 ***	0.682 ***	—	
PM	Pearson's r	0.552 ***	0.492 ***	0.483 ***	—
	df	155	155	155	—
	p-value	<.001	<.001	<.001	—
	Spearman's rho	0.523 ***	0.493 ***	0.446 ***	—
	df	155	155	155	—
	p-value	<.001	<.001	<.001	—

Note. * p < .05, ** p < .01, *** p < .001

The results show significant positive correlations between top leadership commitment, transformational leadership, process management, and productivity. Productivity and transformational leadership have a positive significant Pearson coefficient of 0.55, productivity and top leadership commitment have a positive significant Pearson coefficient of 0.562, and productivity and process management have a positive significant Pearson coefficient of 0.552. Transformational leadership and top leadership commitment have a positive significant Pearson coefficient of 0.720, and transformational leadership and process management have a positive significant Pearson coefficient of 0.492. Top leadership commitment and process management have a positive significant Pearson coefficient of 0.483. The correlations show that there are no multicollinearity problems as the correlations are below the required acceptable cut-off of 0.85 (Hair et al., 2010).

4.5 Fitness of the Model

A regression model test was run before estimating proposed model of this study.

Overall Regression Model Test

Regression models were tested on the following hypotheses.

$$H_0 : \beta_1 = \beta_2 = \beta_3 \dots \dots \dots B_i = 0$$

H_a : One regression coefficients is at least not equal to zero

Table 7 shows that there were strong significant relationships between the constructs based on the regression analyses conducted. The first model, which

shows the proposed effect of top leadership commitment on productivity, has a good fit with significant values of $R(0.562)$, $R^2(0.316)$ and a significant F-value of 71.5. This indicates that top leadership commitment explains 31.6% of the variation in productivity. The second model that suggests the impact of transformational leadership on productivity shows good fit significant values of $R(0.551)$, $R^2(0.304)$ and significant F-value of 67.6. This indicates that transformational leadership explains 30.4% of the variation in productivity. The third model that suggests the impact of process management on productivity, shows good fit significant values of $R(0.552)$, $R^2(0.305)$ and significant F-value of 68.0. This shows that process management explains 30.5% of the variation in productivity. The fourth model that suggests the impact of transformational leadership on process management shows good fit significant values of $R(0.492)$, $R^2(0.242)$ and significant F-value of 49.5. This indicates that transformational leadership explains 24.2% of the variation in process management.

Table 7. Summary of Regression Model Fit Measure

Model		R	R ²	Adjusted R ²	Overall Model Test	
					F	P
1	TLC predicting P	0.562	0.316	0.311	71.5	<.001
2	TL predicting P	0.551	0.304	0.299	67.6	<.001
3	PM predicting P	0.552	0.305	0.300	68.0	<.001
4	TL predicting PM	0.492	0.242	0.237	49.5	<.001
5	TLC predicting PM	0.483	0.233	0.228	47.1	<.001

PM= Process Management
TLC = Top Leadership Commitment
TL= Transformational Leadership
P= Productivity

The Firth model that proposed the effect of top leadership commitment on process management shows good fit significant values of $R(0.483)$, $R^2(0.233)$ and a significant F-value of 47.1. This indicates that top leadership commitment explains 23.3% of the variation in process management.

4.6 Testing of the Hypotheses

The study tested seven hypotheses with respect to direct and mediation effects. Tables 8 and 9 show results of the hypotheses tested.

Table 8. Indirect and Total Effects

Type	Effect	Estimate	SE	95% C.I. (a)		β	z	p
				Lower	Upper			
Indirect	TL \Rightarrow PM \Rightarrow P	0.0848	0.0331	0.0199	0.150	0.0983	2.56	0.010
	TMCL \Rightarrow PM \Rightarrow P	0.0848	0.0361	0.0141	0.156	0.0872	2.35	0.019
Component	TL \Rightarrow PM	0.2597	0.0847	0.0938	0.426	0.3002	3.07	0.002
	PM \Rightarrow P	0.3263	0.0701	0.1890	0.464	0.3275	4.66	<.001
	TMCL \Rightarrow PM	0.2599	0.0955	0.0728	0.447	0.2664	2.72	0.006
Direct	TL \Rightarrow P	0.1771	0.0765	0.0271	0.327	0.2055	2.31	0.021
	TMCL \Rightarrow P	0.2489	0.0858	0.0807	0.417	0.2559	2.90	0.004
Total	TL \Rightarrow P	0.2619	0.0796	0.1059	0.418	0.3038	3.29	<.001
	TMCL \Rightarrow P	0.3337	0.0898	0.1578	0.510	0.3432	3.72	<.001

Note. Confidence intervals computed with method: Standard (Delta method)

Note. Betas are completely standardized effect sizes

The analysis in Table 8 provides significant insights into the relationships between transformational leadership (TL), top management commitment (TMCL), process management (PM) and productivity (P). The results highlight both direct and indirect effects, providing a nuanced understanding of how these variables interact to influence organisational outcomes.

The total effects provide a comprehensive view of the combined direct and indirect effects of transformational leadership and top management commitment on productivity. Transformational leadership has a significant total effect on productivity (TL \Rightarrow P: $\beta = 0.3038$, $p < 0.001$), indicating that its influence is both direct and mediated through process management. Similarly, top management commitment has a significant overall effect on productivity (TMCL \Rightarrow P: $\beta = 0.3432$, $p < 0.001$), indicating that its influence is also both direct and mediated. These results suggest that while leadership behaviour and commitment directly enhance productivity, their effects are further amplified through the optimisation of organisational processes.

Top management commitment has a stronger overall impact on productivity than transformational leadership. This is because top management commitment not only directly influences productivity through strategic direction and resource allocation, but also indirectly supports productivity by enabling effective process management. Transformational leadership, while influential, works primarily through employee engagement and process optimisation, which are slightly less influential than the combined strategic and operational contributions of top management commitment.

The direct effects show that both transformational leadership and top management commitment independently contribute to productivity. Transformational leadership has a significant direct effect on productivity (TL \Rightarrow P: $\beta = 0.2055$, $p = 0.021$), suggesting that leaders who inspire, motivate and empower their teams can directly improve organisational outcomes. Similarly, top management commitment has a significant direct effect on productivity (TMCL \Rightarrow P: $\beta = 0.2559$, $p = 0.004$), highlighting the importance of leadership support and resource allocation in achieving high performance. These direct effects highlight the complementary roles of transformational leadership and top management commitment in driving productivity.

Top management commitment has a stronger direct effect on productivity than transformational leadership. This is likely because top management commitment provides the strategic direction, resource allocation and organisational support necessary for productivity improvements, whereas transformational leadership influences productivity primarily through employee motivation and engagement.

The component effects further clarify the pathways through which these relationships operate. Transformational leadership has a significant positive effect on process management (TL \Rightarrow PM: $\beta = 0.3002$, $p = 0.002$), suggesting that transformational leaders are

effective in optimising and streamlining organisational processes. Similarly, top management commitment significantly influences process management (TMCL \Rightarrow PM: $\beta = 0.2664$, $p = 0.006$), highlighting the importance of leadership support in establishing efficient workflows. In addition, process management itself has a strong and significant direct effect on productivity (PM \Rightarrow P: $\beta = 0.3275$, $p < 0.001$), reinforcing the idea that well-managed processes are a key driver of organisational performance.

The indirect effects demonstrate the mediating role of process management in the relationship between transformational leadership, top management commitment and productivity. Specifically, the indirect effect of transformational leadership on productivity through process management (TL \Rightarrow PM \Rightarrow P) is statistically significant ($\beta = 0.0983$, $p = 0.010$). This suggests that transformational leaders increase productivity by improving process management, which in turn increases organisational efficiency. Similarly, the indirect effect of top management commitment on productivity through process management (TMCL \Rightarrow PM \Rightarrow P) is also significant ($\beta = 0.0872$, $p = 0.019$). This suggests that when top management is committed to the organisation's goals, it promotes better process management practices, which subsequently increases productivity. These findings highlight the critical role of process management as a mediator linking leadership behaviours to productivity outcomes.

The indirect effects of both transformational leadership and top management commitment are significant, but transformational leadership has a slightly stronger indirect effect on productivity through process management. This suggests that transformational leaders are particularly effective at driving process improvements, which then increase productivity. However, the difference in their indirect effects is relatively small, suggesting that both leadership behaviours contribute significantly to process optimisation.

Table 9. Hypotheses

No	Hypothesis	Results
1.	Hypothesis 1: Transformational leadership has a positive significant effect on productivity	Supported
2.	Hypothesis 2: Top leadership commitment has a positive significant effect on productivity	Supported
3.	Hypothesis 3: Transformational leadership has a positive significant relationship with process management.	Supported
4.	Hypothesis 4: Top leadership commitment has a positive significant relationship with process management.	Supported
5.	Hypothesis 5: Process management has a positive significant impact on productivity	Supported
6.	Hypothesis 6: Process management has a mediating effect on the relationship between transformational leadership and productivity	Supported
7.	Hypothesis 7: Process management has a mediating effect on the relationship between top leadership commitment and productivity	Supported

In a nutshell, top management commitment (TMCL) has a greater overall impact on productivity than transformational leadership (TL). While both factors are important, top management commitment provides the strategic and operational foundation necessary for high performance, while transformational leadership enhances productivity through employee engagement and process optimisation. Organisations should prioritise

strengthening top management commitment while fostering transformational leadership to create a synergistic effect that drives productivity.

4.7 Discussion

The findings of this study provide valuable insights into the relationships between transformational leadership, top leadership commitment, process management and productivity. The findings are consistent with and extend previous research, while also introducing innovative perspectives on the mediating role of process management in enhancing organisational productivity.

The results of the study are consistent with previous research that highlights the positive impact of transformational leadership on organisational outcomes. For example, Yucel et al. (2014) and Korek et al. (2010) showed that transformational leadership increases affective and normative commitment, which is consistent with our finding that transformational leadership significantly affects productivity both directly and indirectly through process management. Similarly, the study by Vatankhah et al. (2017) found a positive relationship between transformational leadership and employee productivity in healthcare settings, which is consistent with our findings. However, our study goes further by introducing process management as a critical mediator, a dimension that has not been extensively explored in previous research.

The non-linear relationship between transformational leadership and commitment observed by Yucel et al. (2014) contrasts with our linear findings. This discrepancy may be due to differences in context, as this study focused on a railway sector, whereas Yucel et al. (2014) studied Turkish organisations. This highlights the importance of contextual factors in shaping leadership outcomes, a point further emphasised by Mesu et al. (2015), who found that the impact of transformational leadership varied across industries.

The role of top leadership commitment in driving productivity is also supported by previous research. For example, Nasomboon (2014) found that leadership commitment directly influences organisational performance and employee engagement, which is consistent with our findings. However, our study uniquely identifies process management as a mediating mechanism, providing a more nuanced understanding of how leadership commitment translates into productivity gains. This adds a layer of complexity to the existing literature, which has primarily focused on direct relationships.

While many studies, such as those by Eliyana and Ma'arif (2019) and Alzoraiki et al. (2023), have examined the direct effects of transformational leadership on job performance and commitment, few have examined the mediating role of process management. Our study addresses this gap by demonstrating that process management significantly mediates the relationship between transformational leadership, leader commitment, and productivity. This finding contrasts with studies such as Eliyana and Ma'arif (2019), who

found no direct effect of transformational leadership on job performance. Our findings suggest that the indirect effects of leadership through process optimisation may explain these inconsistencies.

Furthermore, while Benner and Tushman (2003) highlighted the role of process management in stable environments, our study extends this by demonstrating its relevance in a dynamic organisational context such as TAZARA. This challenges the traditional view that process management is only effective in stable environments and suggests its applicability in diverse environments.

This study introduces several innovative elements to the leadership and productivity literature. First, it is among the first to empirically test the mediating role of process management in the relationship between transformational leadership, top leadership commitment and productivity. In doing so, it provides a more comprehensive framework for understanding how leadership behaviours translate into organisational outcomes. This is a significant departure from previous studies which have largely focused on direct effects.

Second, the study's focus on a railway sector in a developing country context adds a unique perspective to the literature, which has predominantly examined these relationships in Western or developed settings. This contextual innovation enriches the global understanding of leadership dynamics, highlighting the universality of certain leadership principles while acknowledging contextual nuances.

4.8 Theoretical and Practical Implications

4.8.1 Theoretical Implications

The findings of this study contribute significantly to the theoretical understanding of leadership and organisational performance. First, the study advances the literature on transformational leadership by demonstrating its dual impact on productivity - both directly and indirectly through process management. While previous research has extensively explored the direct effects of transformational leadership on employee commitment and performance, this study introduces process management as a critical mediator, providing a more nuanced understanding of how transformational leaders drive organisational outcomes. This is consistent with and extends the work of scholars such as Yucel et al. (2014) and Korek et al. (2010), who have highlighted the emotional and motivational aspects of transformational leadership, but have not fully explored the operational mechanisms through which these effects are realised.

Second, the study reinforces the importance of top leadership commitment in shaping organisational productivity. While previous studies, such as those by Nasomboon (2014) and Ahire and O'Shaughnessy (1998), have highlighted the role of leadership commitment in quality management and performance, this study uniquely identifies process management as a mediating pathway. This finding bridges the gap between leadership theory and operational management,

suggesting that leadership commitment not only provides strategic direction, but also enhances productivity by promoting efficient processes. This integration of leadership and process management theories provides a more holistic framework for understanding organisational performance.

Finally, the study challenges the traditional view of process management as a tool primarily suited to stable environments, as proposed by Benner and Tushman (2003). By demonstrating its relevance in a dynamic organisational context such as TAZARA, the study expands the theoretical boundaries of process management and suggests its applicability in diverse settings. It contributes to the growing literature on ambidextrous organisations that balance exploitation (efficiency) and exploration (innovation), and highlights the adaptability of process management in achieving this balance.

4.8.2 Practical Implications

The findings of this study offer actionable insights for leaders and managers of organisations seeking to improve productivity. First, leaders should prioritise the development of transformational leadership behaviours, such as inspiring and motivating employees, fostering innovation and promoting a sense of purpose. These behaviours not only directly improve productivity, but also create a culture of engagement and commitment that is essential for long-term success. Training programmes and leadership development initiatives can be designed to cultivate these qualities, particularly in industries where employee motivation and creativity are critical.

Second, the study underlines the importance of senior leadership engagement in driving organisational performance. Senior leaders must actively demonstrate their commitment to organisational goals by allocating resources, setting clear objectives and supporting quality improvement initiatives. This commitment should be visible and consistent, as it not only has a direct impact on productivity, but also reinforces process management practices. Leaders can achieve this by regularly engaging with employees, providing feedback and aligning organisational processes with strategic goals.

Third, the study highlights the critical role of process management in translating leadership behaviours into productivity gains. Organisations should invest in process improvement by adopting business process management (BPM) best practices, such as streamlining workflows, leveraging technology and fostering cross-functional collaboration. This will ensure that leadership efforts are effectively translated into operational improvements. In addition, organisations should consider implementing performance metrics to monitor process efficiency and identify areas for improvement.

Finally, the study's findings suggest that a synergistic approach - combining transformational leadership, strong top management commitment and effective process management - can deliver the greatest productivity benefits. Leaders should adopt an integrated

strategy that aligns these elements to create a cohesive framework for organisational success. For example, transformational leaders can work closely with process managers to identify bottlenecks and implement innovative solutions, while top management provides the necessary support and resources. Data are presented in Appendices.

In conclusion, this study provides valuable theoretical and practical insights into the relationship between leadership, process management and productivity. By bridging the gap between leadership theory and operational practice, it provides a comprehensive framework for improving organisational performance. Leaders and managers can use these findings to create a culture of excellence, drive process improvement and achieve sustainable productivity gains.

5. CONCLUSION

This study has shed light on the complex relationships between transformational leadership, top leadership commitment, process management and productivity in the context of TAZARA. The findings underscore the significant direct and indirect effects of transformational leadership and top leadership commitment on productivity, with process management emerging as a critical mediator. Transformational leadership increases productivity by inspiring and motivating employees, while top leadership commitment provides the strategic direction and resources necessary for organisational success. Process management serves as the bridge that translates these leadership behaviours into tangible productivity gains, highlighting its importance in optimising workflows and promoting operational efficiency.

The theoretical contributions of the study lie in its integration of leadership and process management theories, providing a more holistic framework for

understanding organisational performance. By identifying process management as a mediator, the research addresses a gap in the literature and provides a nuanced perspective on how leadership behaviours influence productivity. In addition, the study's focus on a railway company in the context of two developing countries enriches the global understanding of leadership dynamics, demonstrating the universality of certain principles while acknowledging contextual nuances.

From a practical perspective, the findings provide actionable insights for leaders and managers. Organisations should prioritise the development of transformational leadership qualities such as inspiration and innovation, while ensuring strong top management commitment to strategic goals. Investing in process management practices, such as streamlining workflows and leveraging technology, is essential to translate leadership efforts into productivity improvements. A synergistic approach that combines transformational leadership, top management commitment and effective process management can create a culture of excellence and drive sustainable business success.

While the study provides valuable insights, it is not without limitations. The cross-sectional design limits the ability to establish causal relationships, and the focus on a single organisation may affect the generalisability of the findings. Future research could use longitudinal designs and explore these relationships in different organisational and cultural contexts to validate and extend the findings. Despite these limitations, this study makes a significant contribution to the leadership and organisational performance literature and provides a robust framework for both academics and practitioners. By integrating leadership and process management, organisations can unlock their full potential and achieve sustainable productivity gains.

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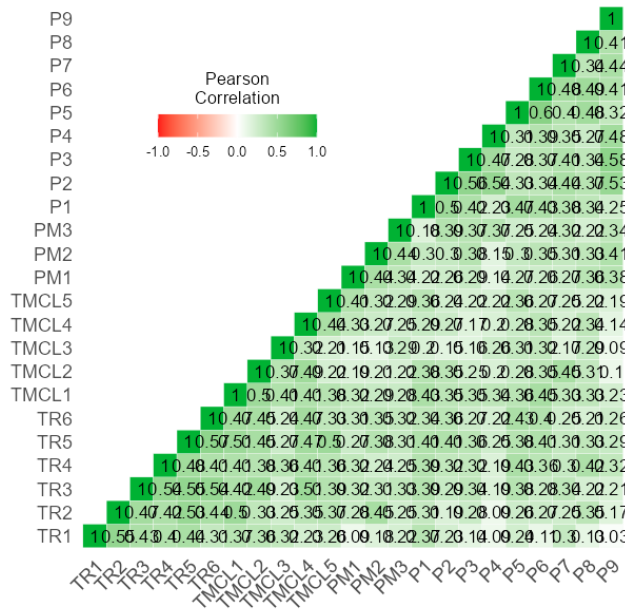
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Appendices

Reliability Analysis

Scale Reliability Statistics for all constructs

	Mea n	SD	Cronbach 's α	McDonald 's ω
scal e	3.09	0.64 2	0.918	0.919



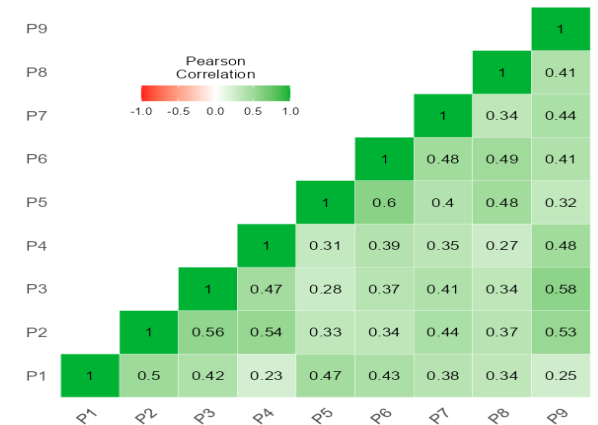
Scale Reliability Statistics for transformational leadership

	Mea n	SD	Cronbach 's α	McDonald 's ω
scal e	3.10	0.85 3	0.839	0.844



Scale Reliability Statistics for productivity

	Mea n	SD	Cronbach 's α	McDonald 's ω
scal e	2.90	0.73 5	0.861	0.863

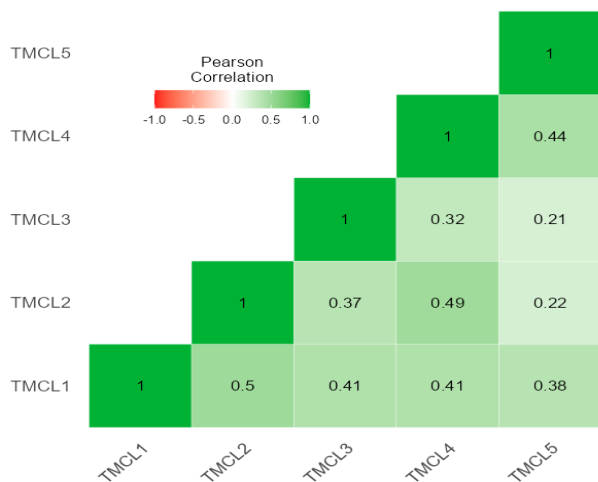


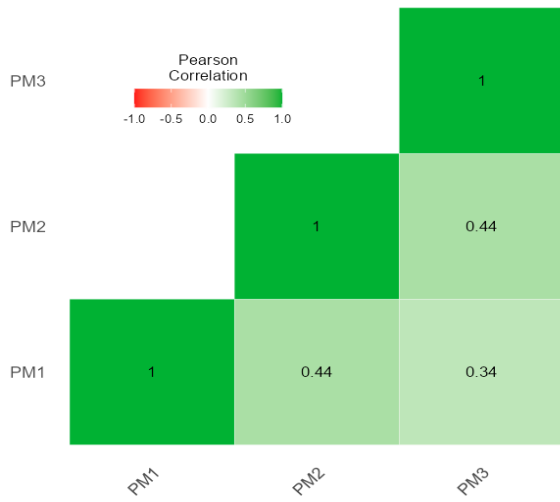
Scale Reliability Statistics for process management

	Mea n	SD	Cronbach 's α	McDonald 's ω
scal e	3.34	0.73 8	0.672	0.676

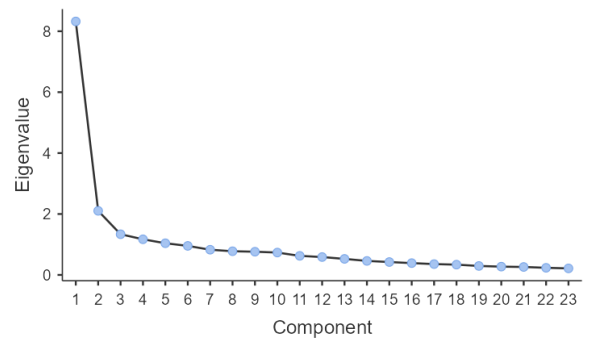
Scale Reliability Statistics for top leadership commitment

	Mea n	SD	Cronbach 's α	McDonald 's ω
scal e	3.27	0.75 6	0.748	0.755





**Eigenvalues
Scree Plot**



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