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Strategic Planning on Productivity through Leadership Commitment and Employee Involvement

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Abstract

Empirical research studies that have examined the relationship between strategic planning and productivity have produced mixed results, with some studies presenting that strategic planning has a significant impact on productivity, while other studies have failed to find the relationship between strategic planning and productivity. This study attempted to clarify and understand the relationship between strategic planning and productivity by including some contingency variables considered relevant in the implementation of strategic planning namely leadership commitment and employee involvement using 156 sample data collected through questionnaires from management employees of Tanzania Zambia Railway Authority. Model fit, validity and reliability were tested using regression analysis, principal component analysis and factor analysis using Jamovi software. The study presents that strategic planning and leadership commitment have a significant impact on productivity and that leadership commitment mediates the association between strategic planning and productivity. This study provides empirical evidence on the nature of the relationship between strategic planning and productivity. This study also gives evidence that leadership commitment is very relevant in the strategic planning process at all stages and that no manager should isolate themselves from the strategic planning process.

Introduction

The dynamics of the 21st century environment are unique and different from those of other centuries, making business competition very tense and fierce. Organisations are striving to have strategies that would help them achieve competitiveness through productivity. This has led to the formulation and implementation of strategic planning in various organisations. The emphasis on the strategic planning process has been emphasised and supported by many researchers, some of which link the direct involvement of the leadership in the

strategic planning process (Kantardjieva, 2015; Line, 1994; Yangailo & Kaunda, 2021), while other studies emphasise the importance of involving employees in the strategic planning process (Ketokivi & Castaner, 2004; Kohtamäki et al., 2012).

Purpose of Study

Even though organisations have been using strategic plans for several decades, not all organisations benefit from them. Bryson and Alston (2011) attributed the failure of organisations to benefit from strategic planning to a half-hearted approach to the practice and a lack of resources. This suggests that the benefits of strategic planning cannot be realised if the process of strategic planning is not well known or understood, and if adequate investment has not been made in the process and implementation of the strategic plan. More research is therefore needed to understand how strategic planning promotes productivity.

Although most empirical studies show a positive significant effect of strategic planning on productivity (George et al., 2019; Yangailo, 2023; Baker, 2003), other studies have failed to find the link between this relationship (Robinson & Pearce, 1983; Miller et al., 2004). The mixed and inconclusive results suggest that there is no established evidence to support the link between strategic planning (SP) and productivity.

This study examined the mediating effect of transformational leadership and employee involvement on the relationship between strategic planning and productivity. The two variables were included because they have been supported by some researchers (see Kantardjieva, 2015; Yangailo & Kaunda, 2021) as the relevant variables that contribute to the successful implementation of the strategic planning process, although none of the studies empirically tested them on this association.

Based on the researcher's knowledge, none of the studies that attempted to examine the effect of strategic planning on productivity included the two variables of leadership commitment and employee involvement as mediators.

Research Objectives

In order to address the gap identified in the literature, this study developed the following objectives:

1. To relate strategic planning with productivity
2. To determine whether leadership commitment mediates the relationship between strategic planning and productivity.
3. To determine whether employee involvement mediates the relationship between strategic planning and productivity.

Literature Review

Strategic Planning

Strategic planning is an approach that helps an organisation to find its future and its destination (Barry, 1997). Strategic planning is the process of authenticating and setting a direction for entrepreneurial activities by assessing both the present and future goals (Henderson & Hines, 2019). Strategic planning helps organisations to know what to do, why to do it and how to do it. Strategic planning influences the selection of goals that determine the company's strategy (Yangailo, 2022a).

Productivity

Productivity is defined as a measure of efficiency in the production of goods and/or services. It can also be expressed as success in terms of effectiveness, efficiency and performance. Productivity is the relationship between the amount of output produced and the amount of input required to produce it (Yangailo, 2022c).

Top Leadership Commitment

Top management leadership is the degree to which top management sets objectives and strategies, provides and allocates the necessary resources, participates in quality improvement efforts, and evaluates the implementation and performance of quality management (Saraph et al, 1989). Top management must provide unity of purpose and direction for the organisation. Their responsibilities include, but are not limited to, encouraging employees to embrace change, to make their own decisions, to communicate a commitment to quality, and to motivate all employees to successfully formulate and implement the strategic planning process.

Employee Involvement

Employee involvement is the direct participation of employees in helping an organisation to fulfil its mission and achieve its goals by using their own expertise, ideas and efforts to solve problems and make decisions. Employee involvement is a process of participation and empowerment of employees to use their contributions to achieve higher individual and organisational performance (Sofijanova & Zabijakin-Chatleska, 2013). This includes employee participation in both decision making and decision making, as well as increased autonomy in work processes. As a result, employees are more committed, motivated and productive because they are more satisfied with their work.

Strategic Planning and Productivity

George et al. (2019) conducted a study to determine whether strategic planning improves performance in an organisation, using a meta-analytic research approach. The result of the study shows that strategic planning has a positive impact on the performance of any organisation.

Baker (2003) conducted a study in the food processing industry to understand the impact of strategic planning on financial performance. The study revealed that strategic planning tools have a positive and significant impact on financial performance.

In the United States, Robinson and Pearce (1983) examined the impact of strategic planning on the financial performance of small organisations. The study found no significant relationship between the strategic planning process and improved performance.

In the United Kingdom, Miller et al (2004) found that careful managerial planning does not guarantee successful outcomes in a firm. This study was conducted on 55 companies.

Based on the studies presented above, it is evident that there are conflicting results regarding the relationship between strategic planning and productivity, indicating the need for further research.

Leadership Involvement and Productivity

High levels of employee engagement will increase commitment and interest in the workplace, resulting in a motivated workforce that will work together to achieve the organisation's goals (Patro, 2013). Employee engagement is a stronger predictor of positive organisational performance (Markos & Sridevi, 2010). In today's dynamic marketplace, it is simply not enough to recruit skilled workers; much more needs to be done to keep them engaged and motivated to support the organisation's goals (Patro, 2013). Engagement is therefore a state in which a person is not only emotionally invested in his or her work, but also intellectually committed to it, going above and beyond the call of duty to advance the interests of the organisation. Work engagement has been shown to mediate the relationship between organisational commitment and rewards and pay, and between performance appraisal and organisational commitment (Aboramadan et al., 2020).

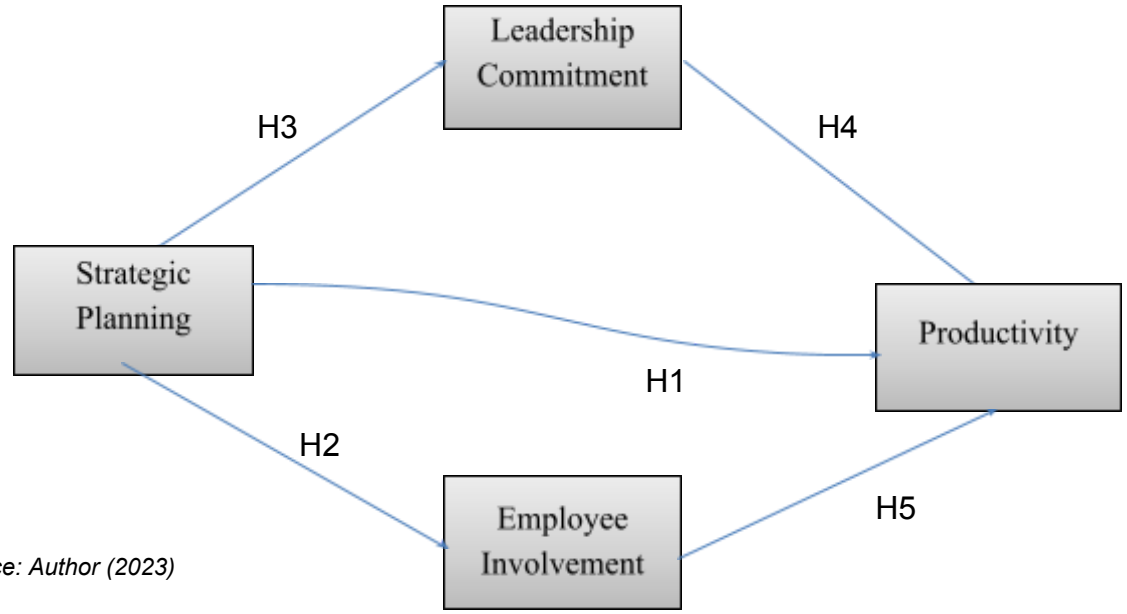
Leadership Commitment and Employee Involvement

The emphasis on the strategic planning process has been highlighted and supported by many researchers, with some linking the direct involvement of leadership in the strategic planning process (Yangailo & Kaunda, 2021; Kantardjieva, 2015), while other studies have highlighted the importance of employee involvement in the strategic planning process (Ketokivi & Castaner, 2004; Kohtamäki et al., 2012) as a key to achieving higher productivity in organisations.

Conceptual Framework

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

Figure 1 Hypothesised Model



Source: Author (2023)

Hypotheses

The following hypotheses are based on the aim of this study, the results of the literature review and the hypothesised model.

1. Hypothesis 1: Strategic Planning has a positive significant effect on productivity.
2. Hypothesis 2: Strategic planning has a positive significant relationship with employee involvement.
3. Hypothesis 3: Strategic planning has a positive significant relationship with leadership commitment.
4. Hypothesis 4: Leadership commitment has a positive significant effect on productivity.
5. Hypothesis 5: Employee involvement has a positive significant effect on productivity.
6. Hypothesis 6: Leadership commitment mediates the relationship between strategic planning and productivity.
7. Hypothesis 7: Employee involvement mediates the relationship between strategic planning and productivity.

Methodology

The railway sector has received little research attention in the focus area (Yangailo & Kaunda, 2021; Yangailo & Mkandawire, 2023; Yangailo et al., 2023), hence the relevance of this study in this sector. The Tanzania Zambia Railway Authority (TAZARA) was selected for this study. TAZARA is owned by two states, Tanzania and Zambia on a 50/50 basis and has been in operation since 1975. The Tanzania-Zambia Railway (TAZARA) offers a number of benefits to both Zambia and Tanzania. TAZARA is vital to the growth and cooperation between Tanzania and Zambia, helping to facilitate trade, stimulate economic growth, improve regional connectivity and promote cultural exchange. A structured questionnaire was

distributed to 198 respondents who were management staff out of a target population of 240. 156 respondents completed and returned the questionnaire. A quantitative research approach was used to analyse the data collected using Jamovi software. With the help of Jamovi software, regression analysis, principal component analysis, and factor analysis were used to verify the model's fit, validity and reliability. This software has been widely used by different researchers in different studies in similar and different settings (see Ahmed & Muhammad, 2021; Abbasnasab Sardareh et al, 2021; Hassen & Ramakrishna, 2020; Şahin & Aybek, 2019; Yangailo, 2022b; Yangailo, 2023; Yangailo & Chambani, 2023; Kaunda & Yangailo, 2023). The sample of 156 against the population target of 240 exceeded the minimum required threshold recommended by Morgan and Krejcie (1970) to conduct scientific research. See Table 1 for further verification of the suggested sample size according to Morgan and Krejcie's (1970) formula:

Table 1 Determine Size of the sample of a given Population

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	1000000	384

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

Measures

Five-point Likert scales were adopted and used to assess constructs with strongly agree (5), while strongly disagree (1). Measures for strategic planning, leadership commitment and employee involvement were adopted from quite a number of studies (Coşkun, 2011; Aquilani et al., 2017; Ang et al., 2000; Prajogo & Sohal, 2006; Terziovski, 2006). The measures of productivity were taken from Grayson et al. (2016).

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.

The Response Rate

Of the 198 questionnaires distributed to the target population of 240, a total of 156 respondents completed and returned the questionnaire, representing 82.5%.

Demographic Characteristics

The demographic profile of the 156 respondents who participated in the study, based on gender and experience, is shown in Table 2.

Table 2 Demographic Profile

Description	Frequency	Percentage
Gender		
Male	130	83.3
Female	26	16.7
Total	**156**	**100**
Years of Experience		
< 10	48	30.8
10-20	58	37.2
> 20	50	32.0
Total	**156**	**100**

Source: Author (2023)

Of the 156 respondents, 26(16.7%) were female and 130(83.3%) were male. Regarding the number of years in the company, of the 156 respondents, 48 (30.8%) had more than 20 years of work experience, 58 (37.2%) had 10 to 20 years of work experience, while 50 (32.0%) had less than 10 years of work experience.

Descriptive Statistics

The mean, skewness, kurtosis and standard deviation of the constructs are shown in Table 3.

Table 3: Mean, Kurtosis & Skewness of Constructs (N = 156)

	P	SP	TLC	ERI
N	156	156	156	156
Mean	2.91	3.23	3.26	3.14
Standard deviation	0.734	0.718	0.767	0.774
Skewness	0.00340	-0.179	-0.225	-0.0817
Std. error skewness	0.194	0.194	0.194	0.194
Kurtosis	0.255	0.396	0.0231	-0.195
Std. error kurtosis	0.386	0.386	0.386	0.386

Source: Author (2023)

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.

Validity and Reliability

A minimum of 150 cases is usually required to conduct principal component analysis (Fan et al., 2008), therefore our sample size of 156 was sufficient to conduct component analysis. The Cronbach alpha for the four-construct scale was calculated by conducting reliability analysis with the required threshold of (0.7) point seven (Hair et al., 2006) in order to obtain reliable measures to determine good internal fit and consistency of the measures.

The instrument factorability of 30 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 0.884 above the value of 0.6, while Bartlett's test of sphericity was significant ($\chi 2$ (435) = 2217, $p < .001$). Principal component analysis of the 30 items was appropriate, as shown in Table 4.

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

Kaiser-Meyer-Olkin and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.884
Bartlett's Test of Sphericity	Approx. Chi-Square	2217
	Degrees of freedom	435
	Significance	.000

Source: Author (2023)

The Cronbach's alpha for the instrument was well above the required threshold of 0.7 (Hair et al., 2006). The instrument alpha coefficients ranged from 0.754 to 0.890. The alpha coefficient for the leadership commitment scales was 0.754, the alpha coefficient for the employee involvement scales was 0.761, the

alpha coefficient for the strategic planning scales was 0.890 and the alpha coefficient for the productivity scales was 0.858. All four Cronbach alpha coefficients were within the required acceptable range of above 0.7 as shown in Table 5.

Table 5 Results of Cronbach Alpha

Items	Cronbach's Alpha	Number of Items	Comment
Overall	.933	30	Accepted
Leadership Commitment	.754	5	Accepted
Employee Involvement	.761	5	Accepted
Strategic Planning	.890	11	Accepted
Productivity	.858	9	Accepted

Source: Author (2023)

Linearity

The linearity assumption was verified by calculating Pearson correlation coefficients as shown in Table 6.

Table 6. Correlation Matrix

		P	TLC	ERI	SP
P	Pearson's r	—			
	Spearman's rho	—			
	N	—			
TLC	Pearson's r	0.552***	—		
	Spearman's rho	0.484***	—		
	N	156	—		
ERI	Pearson's r	0.414***	0.593***	—	
	Spearman's rho	0.367***	0.542***	—	
	N	156	156	—	
SP	Pearson's r	0.684***	0.655***	0.533***	—
	Spearman's rho	0.621***	0.558***	0.479***	—
	N	156	156	156	—

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

Source: Author (2023)

The results show significant positive correlations between strategic planning, leadership commitment, employee involvement and productivity. Productivity and leadership commitment have a positive significant Pearson coefficient of 0.552, productivity and employee involvement have a positive significant Pearson coefficient of 0.414, leadership commitment and employee involvement have a positive significant Pearson coefficient of 0.593, leadership commitment and strategic planning have a positive significant Pearson coefficient of 0.655, employee involvement and strategic planning have a positive significant

Pearson coefficient of 0.533. Productivity and strategic planning have a positive and significant Pearson correlation coefficient of 0.684.

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).

Fitness of the Model

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

Overall Regression Model Test

The regression models were tested with the following hypotheses

H0: β1=β2= β3 ..... Bi = 0

Ha: One of the regression coefficients is at least non-zero.

Table 7 Summary of Regression Model Fit Measure

					Overall Model Test	
Model		**R**	**R^2**	**Adjusted R^2**	**F**	**P**
1	SP predicting P	0.684	0.468	0.465	136	< .001
2	ERI predicting P	0.414	0.171	0.166	31.8	<. .001
3	TLC predicting P	0.552	0.304	0.300	67.3	< .001
4	TLC predicting SP	0.655	0.429	0.425	166	< .001
5	ERI predicting SP	0.533	0.284	0.279	61.1	< .001
SP= Strategic Planning						
p = Productivity						
ERI= Employee Responsibility and Involvement						
TLC= Top Leadership Commitment						

Source: Author (2023)

Table 7 shows that there were strong significant relationships between the constructs based on the regression analyses carried out. The first model, which shows the proposed effect of strategic planning on productivity, has a good fit with significant values of R(0.684), R^2(0.468) and a significant F-value of 136. This indicates that strategic planning explains 47% of the variation in productivity. The second model, which suggests the impact of employee responsibility and involvement on productivity, shows good fit significant values of R(0.414), R^2(0.171) and significant F-value of 31.8. This indicates that employee responsibility and involvement explains 17% of the variation in productivity. The third model that suggests the impact of top leadership commitment on productivity shows good fit significant values of R (0.552), R^2(0.304) and significant F-value of 67.3. This indicates that top leadership commitment explains 30% of the variation in

productivity. The fourth model that suggests the impact of top leadership commitment on strategic planning shows good fit significant values of R (0.655), R^2(0.429) and significant F-value of 166. This indicates that top leadership commitment explains 43% of the variation in strategic planning. The last model that proposed the effect of employee responsibility and involvement on strategic planning shows good fit significant values of R(0.533), R^2(0.284) and significant F-value of 61.1. This indicates that employee empowerment and involvement explains 28% of the variation in strategic planning.

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

				95% C.I. (a)				
Type	**Effect**	**Estimate**	**SE**	**Lower**	**Upper**	**β**	**z**	**p**
Indirect	SP ⇒ ERI ⇒ P	0.00420	0.0400	-0.07413	0.0825	0.00411	0.105	0.916
	SP ⇒ TLC ⇒ P	0.11899	0.0560	0.00916	0.2288	0.11637	2.123	0.034
Component	SP ⇒ ERI	0.57460	0.0730	0.43145	0.7178	0.53296	7.867	< .001
	ERI ⇒ P	0.00731	0.0695	-0.12900	0.1436	0.00770	0.105	0.916
	SP ⇒ TLC	0.69942	0.0647	0.57270	0.8261	0.65468	10.817	< .001
	TMCL ⇒ P	0.17013	0.0786	0.01616	0.3241	0.17776	2.166	0.030
Direct	SP ⇒ P	0.57663	0.0798	0.42015	0.7331	0.56394	7.223	< .001
Total	SP ⇒ P	0.69982	0.0599	0.58246	0.8172	0.68442	11.687	< .001

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

Note. Betas are completely standardised effect sizes

Table 9 Hypotheses

No	Hypothesis	Results
1.	Hypothesis 1: Strategic Planning has a positive significant effect on Productivity	Supported
2.	Hypothesis 2: Strategic planning has a positive significant relationship with employee involvement	Supported
3.	Hypothesis 3: Strategic planning has a positive significant relationship with leadership commitment	Supported
4.	Hypothesis 4: Leadership commitment has a positive significant effect on productivity	Supported
5.	Hypothesis 5: Employee involvement has a positive significant effect on productivity	Not Supported
6.	Hypothesis 6: Leadership commitment mediates the relationship between strategic planning and productivity	Supported
7.	Hypothesis 7: Employee involvement mediates the relationship between strategic planning and productivity	Not Supported

Source: Author(2023)

The significance, insignificance and path coefficients for the model of this study are presented in Table 8.

The first hypothesis 1 on the effect of strategic planning on productivity shows that it is statistically significant (γ = 0.700, p< .001), so hypothesis 1 is supported. After the mediation effect of both employee involvement and leadership commitment, the direct effect is also statistically significant (γ = 0.58, p< .001).

Second, strategic planning has a positive significant relationship with employee involvement (γ =0.575, p<0.001), so hypothesis 2 is supported. Thirdly, strategic planning has a positive significant relationship with leadership commitment (γ =0.700, p<0.001), therefore Hypothesis 3 is supported. Fourth, leadership commitment has a positive significant effect on productivity (γ =0.170, p<0.05), thus supporting Hypothesis 4. Fifth, employee involvement has an insignificant effect on productivity (γ =0.007, p>0.05), therefore Hypothesis 5 is not supported.

The Analysis of Mediating Effects

The indirect effect of strategic planning on productivity through leadership commitment is positive and statistically significant (p <0.05, γ = 0.120; 95% CI: [0.00916, 0.2288]; ratio effect=0.1700). This indicates a partial mediation effect of leadership commitment, thus supporting hypothesis 6.

The indirect effect of strategic planning on productivity through employee involvement is positive and insignificant (p> 0.05, γ = 0.004; 95% CI: [-0.07413, 0.0825]; ratio effect = 0.006). This indicates that there is no mediation effect of employee involvement, so hypothesis 7 is not supported.

Discussion

It is evident that the majority of males occupy more management positions than females in TAZARA, while the majority of employees with 10 to 20 years of work experience are in the majority, followed by those with more than 20 years of work experience, indicating that the company has experienced employees in management.

The results show that among the concepts studied, leadership commitment had the highest implementation in TAZARA, followed by strategic planning, then employee involvement and then productivity.

Regarding the first objective of this study, the study revealed that strategic planning has a positive and significant effect on productivity. The results proved and confirmed that strategic planning has a positive significant effect on productivity. This result was consistent with previous studies that presented that strategic planning has a significant effect on productivity (see Baker, 2003; George et al., 2019; Yangailo, 2023) and also inconsistent with studies that failed to link strategic planning to productivity (see Miller et al., 2004; Robinson & Pearce, 1983).

The study results also show that strategic planning has a positive and significant relationship with employee involvement. This result is consistent with previous studies that have presented the importance of employee involvement in the strategic planning process (see Ketokivi & Castaner, 2004; Kohtamäki et al., 2012).

To determine whether strategic planning has a positive significant relationship with leadership commitment, the study found that strategic planning has a positive significant relationship with leadership. This also supports previous studies that have

highlighted the importance of leadership commitment to the strategic planning process (see Kantardjieva, 2015; Yangailo & Kaunda, 2021).

The study also shows that leadership commitment has a positive significant effect on productivity and that employee involvement does not have a significant effect on productivity. The insignificant result does not negate the importance of employee involvement in promoting higher productivity.

Regarding the second objective of this study, the study found that leadership commitment mediates the relationship between strategic planning and productivity. This result shows that leadership commitment partially mediates the relationship between strategic planning and productivity. This finding is a major contribution to the literature as it is the first empirical test of this relationship specifically in the railway sector.

Regarding the third and final objective of this study, the study found that employee involvement does not mediate the relationship between strategic planning and productivity. This finding is a major contribution to the literature and calls for more research to be conducted in other sectors to further verify this result. However, this finding supports other studies that have strictly associated employee involvement with total quality management (TQM), while leadership commitment is associated with both TQM and strategic planning (see Kantardjieva, 2015; Line, 1994; Yangailo & Kaunda, 2021).

Theoretical Managerial Implications

The findings of this study are relevant to management practice. The results show the importance of leadership commitment in the successful implementation of strategic planning processes. Strategic planning should not be left to the planners or the planning manager for implementation, but to the entire management of an organisation.

Conclusion

This research is the first to examine the relationship between strategic planning, leadership commitment, employee involvement and productivity. The study shows that strategic planning and leadership commitment have a significant impact on productivity and that leadership commitment mediates the relationship between strategic planning and productivity.

This study provides empirical evidence on the nature of the relationship between strategic planning and productivity. This study provides evidence that leadership commitment is very relevant in the strategic planning process at all stages and that no manager should isolate himself from the strategic planning process.

The Limitations and Future Research

This was a case study of TAZARA. This limits the generalisability of the findings to other industries. It is strongly recommended that the study be replicated in other railway companies and other industries. Future research studies should also include other contingency variables to gain more insight into the nature of this relationship.

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Appendices

Principal Component Analysis

Component Loadings

	Component				Uniqueness
	1	2	3	4	
SP1		0.612	0.312		0.459
SP2	0.362	0.588			0.435
SP3		0.549	0.319		0.515
SP4	0.368		0.445		0.611
SP5	0.537	0.469			0.407
SP6	0.491	0.514	0.326		0.386
SP7		0.550			0.539
SP8		0.661			0.374
SP9	0.306	0.720			0.362
SP10		0.631		0.366	0.413
SP11	0.345	0.502		0.350	0.474
P1	0.464		0.393		0.577
P2	0.674				0.453
P3	0.673	0.327			0.436
P4	0.599				0.513
P5	0.471		0.380	0.399	0.472
P6	0.567		0.361	0.423	0.369
P7	0.678		0.316		0.430
P8	0.479			0.541	0.462
P9	0.760				0.376
TLC1			0.347	0.473	0.501
TLC2			0.397	0.454	0.543
TLC3				0.708	0.426
TLC4		0.334	0.436	0.447	0.497

Component Loadings

	Component				
	1	2	3	4	Uniqueness
TLC5		0.321	0.470		0.647
ERI1			0.666		0.504
ERI2			0.603		0.607
ERI3			0.594		0.556
ERI4			0.613		0.542
ERI5			0.684		0.485

Note. 'varimax' rotation was used

Assumption Checks

Bartlett's Test of Sphericity

χ^2	df	p
2217	435	< .001

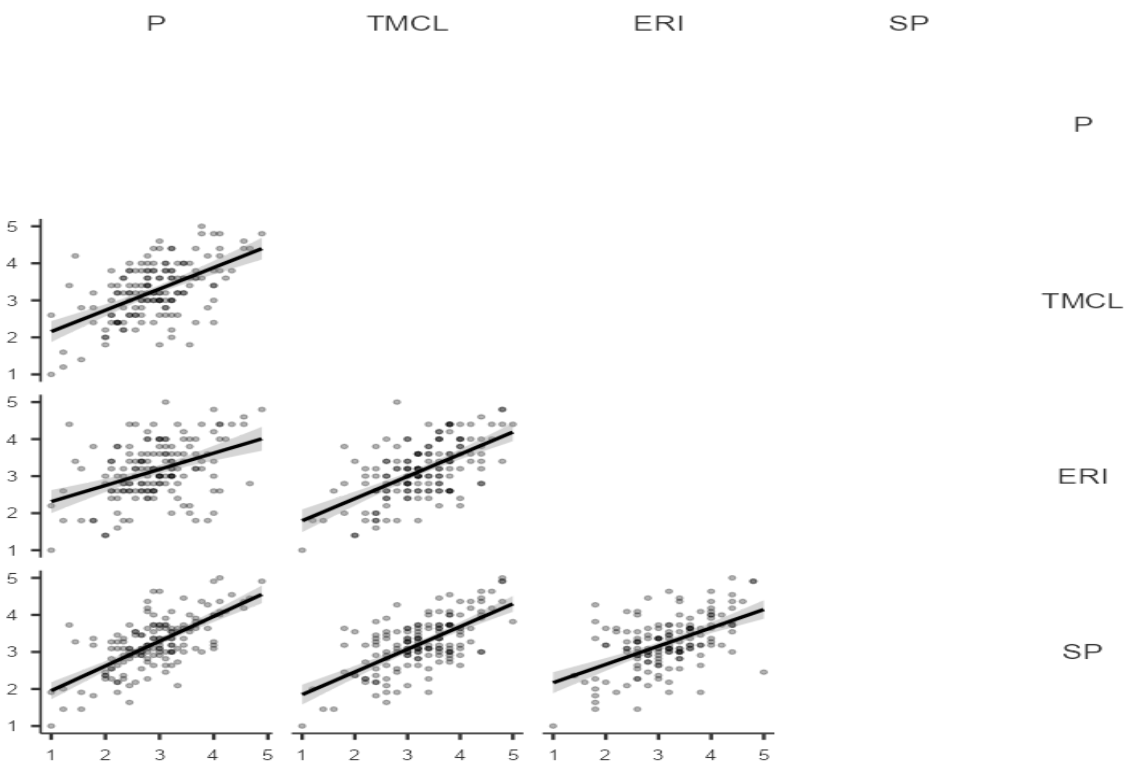
KMO Measure of Sampling Adequacy

	MSA
Overall	0.884
SP1	0.860
SP2	0.947
SP3	0.926
SP4	0.924
SP5	0.905
SP6	0.914
SP7	0.910
SP8	0.932
SP9	0.921
SP10	0.844
SP11	0.934
P1	0.911
P2	0.900
P3	0.880
P4	0.860

Bartlett's Test of Sphericity

	χ^2	df	p
P5			0.823
P6			0.919
P7			0.885
P8			0.882
P9			0.824
TLC1			0.902
TLC2			0.836
TLC3			0.896
TLC4			0.837
TLC5			0.829
ERI1			0.806
ERI2			0.717
ERI3			0.905
ERI4			0.877
ERI5			0.874

Plot

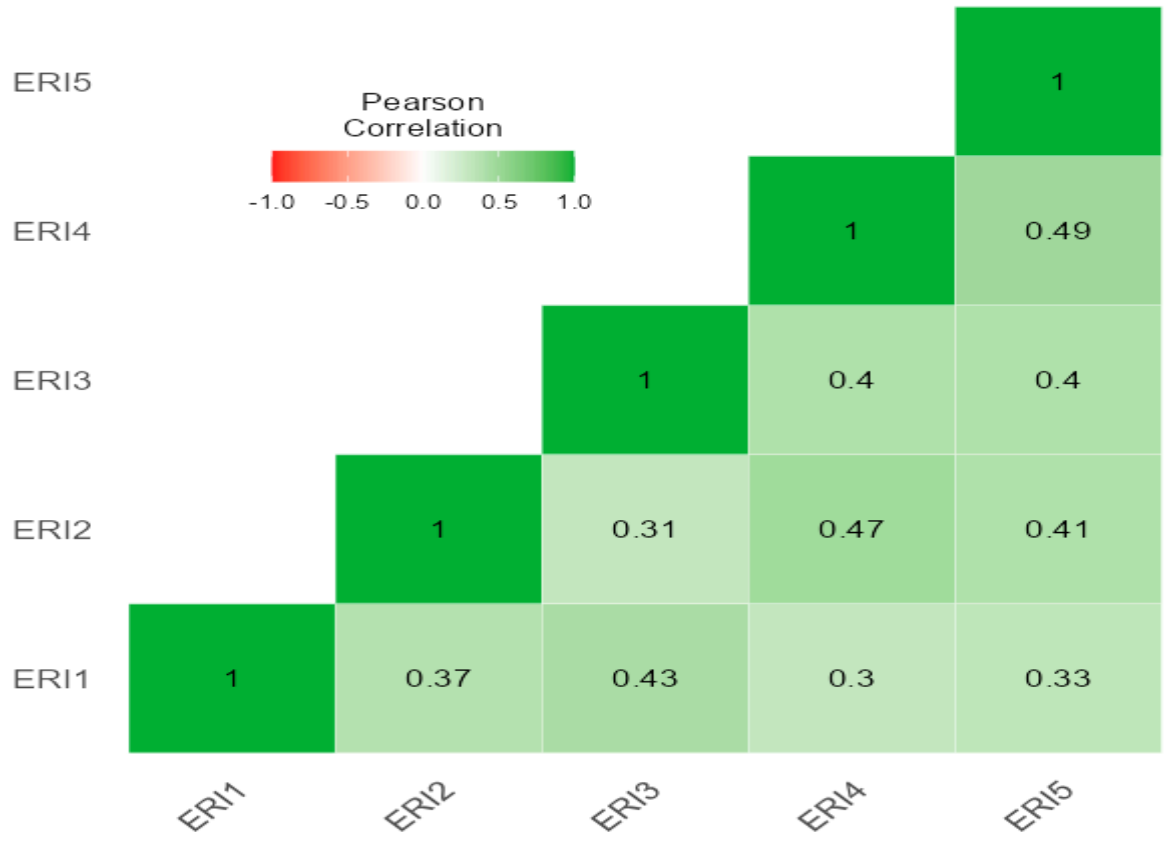


Reliability Analysis

Scale Reliability Statistics

	Mean	SD	Cronbach's α	McDonald's ω
scale	3.14	0.774	0.761	0.763

Correlation Heatmap

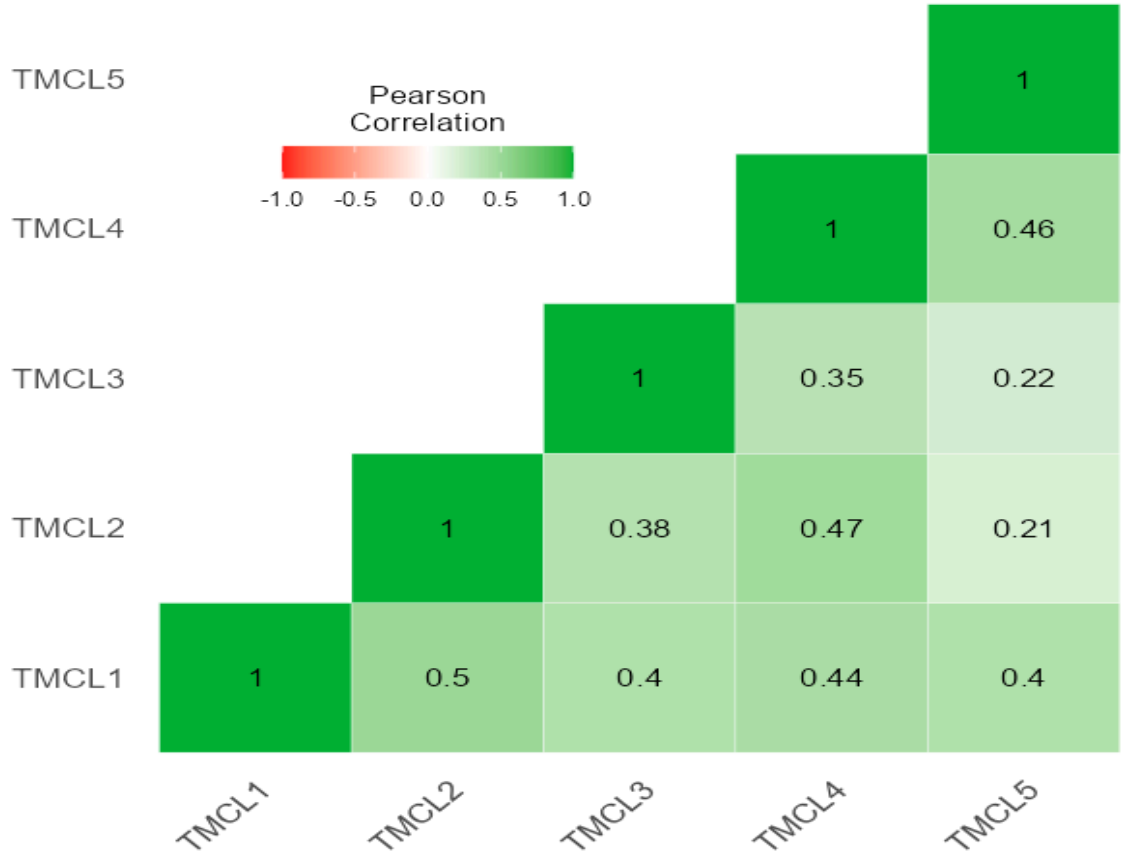


Reliability Analysis

Scale Reliability Statistics

	Mean	SD	Cronbach's α	McDonald's ω
scale	3.26	0.767	0.754	0.761

Correlation Heatmap

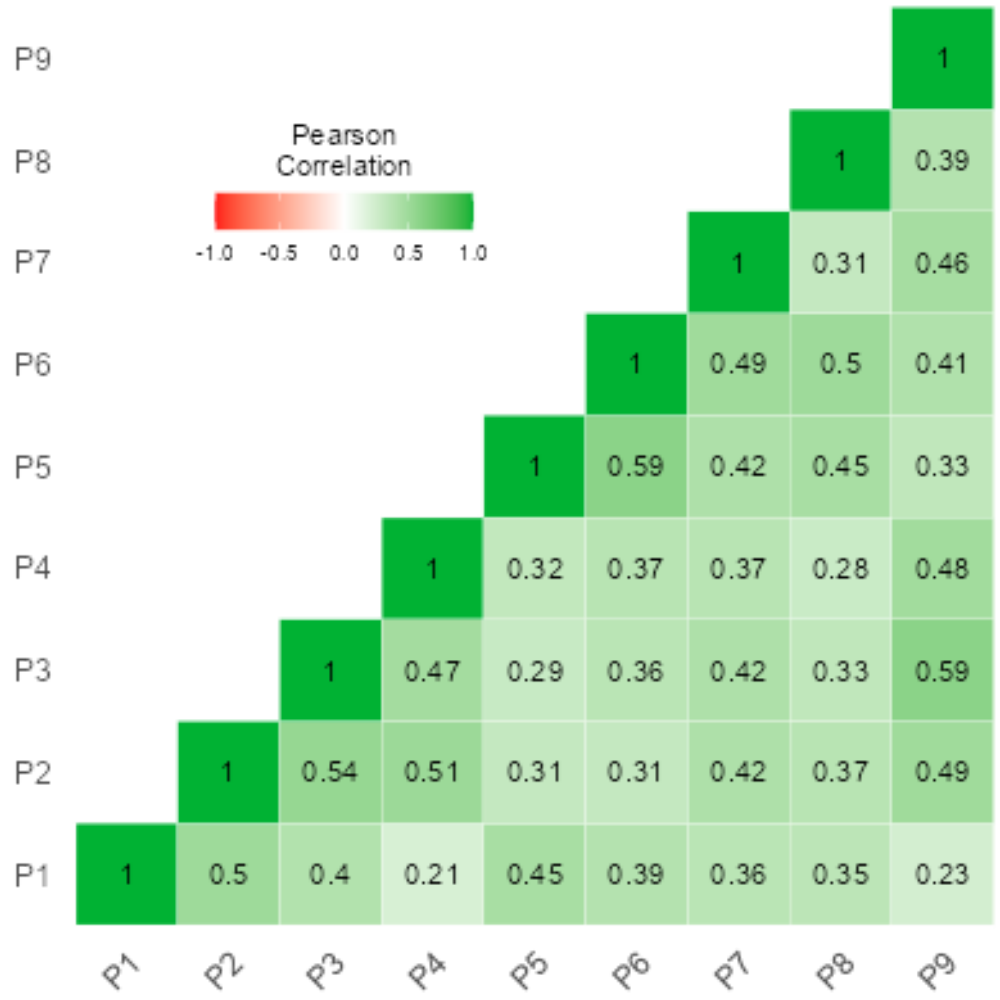


Reliability Analysis

Scale Reliability Statistics

	Mean	SD	Cronbach's α	McDonald's ω
scale	2.91	0.734	0.858	0.859

Correlation Heatmap



Reliability Analysis

Scale Reliability Statistics

	Mean	SD	Cronbach's α	McDonald's ω
scale	3.23	0.718	0.890	0.892

Correlation Heatmap