

IMPACT OF LEADERSHIP STYLE IN START-UP ENTERPRISES ON EMPLOYEE PERFORMANCE IN CHINA

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Abstract: This study examined the relationships between transformational leadership, transactional leadership, work engagement, and employee performance. Additionally, the direct and indirect effects of transformational leadership, transactional leadership, and work engagement, as well as their impact on employee performance, are analysed. The study participants comprise centre-level administrators in 9,601 retail startups across 14 urban areas in Guangxi Province, China. Five hundred forty-one centre-level administrators from these retail startups were chosen for the analysis. The data were analysed using the Structure Modelling Technique. Results suggested that both leadership styles significantly affect work engagement, confirming the importance of leadership in motivating employees and enabling a more engaged workforce. Furthermore, work engagement is also very important in improving employee performance, emphasising its mediating role in workplace outcomes. Both forms of leadership —whether transformational or transactional—directly impact employee performance. This is further confirmed by the mediation analysis, which found that work engagement is a significant link between leadership styles and employee performance, highlighting work engagement as a crucial factor in this relationship. The findings emphasise the need for effective leadership strategies to be implemented at all levels of the organisation to enhance employee engagement and performance.

Keywords: Transformational Leadership; Transactional Leadership; Work Engagement; Employee Performance; Chinese Start-up Enterprises.

INTRODUCTION

With the development of the global economy, many new enterprises are established worldwide every year (Dunning and Lundan, 2008). They can adapt to market changes quickly, meet consumer needs, and drive industrial upgrading and transformation (Westphal, 2002). Start-ups play a crucial role in driving technological progress, creating innovative business models, and addressing social problems (Hu et al., 2023). In today's integrated global economy and increasingly competitive market, China's startups have demonstrated significant growth, particularly in the Internet, artificial intelligence, and new energy sectors (Jiang et al., 2023). The number of startups has been increasing, and their innovation ability and market competitiveness have been gradually improving. They promote industrial upgrading and transformation, providing numerous job market opportunities (Dunning and Lundan, 2008). However, startups also face several challenges during the development process, including a lack of competitiveness, insufficient capital, inadequate talent, ineffective leadership, and poor employee performance improvement (Hu et al., 2023).

In recent years, the number of start-ups in the retail sector has increased significantly in Guangxi Province. As a border province in China, Guangxi is actively developing its local retail industry to drive economic growth and regional development (Chen et al., 2022). According to the Department of Commerce of Guangxi Province, the number of retail sector startups in Guangxi Province grew by about 8 per cent in 2023 compared to the previous year (Jiang, 2023). This growth is attributed to the gradual improvement of the regional economy and policy support (Guangxi Daily, 2023). Guangxi's geographical location and policy advantages expose retail startups to many market opportunities. As a region bordering China and Southeast Asian countries, Guangxi has good prospects for foreign trade development. Under the Belt and Road Initiative, the Guangxi provincial government has implemented various support policies to facilitate the market expansion and internationalisation of retail startups (Guangxi Daily, 2023). Retail start-ups in Guangxi also face talent shortages and poor employee performance. As startups typically offer low salaries and high work pressure, attracting and retaining top-quality talent can be challenging. Additionally, deficiencies in employee performance management and incentives hinder firms' ability to enhance overall employee performance. Poor employee performance affects enterprises' operational efficiency and market competitiveness (Guangxi Human Resources and Social Security Department, 2024).

Therefore, studying start-ups in the retail industry in Guangxi Province, China, to enhance their competitive advantage and employee performance is not only of significant theoretical value but also of urgent practical significance. Leadership style has long been recognised as a key factor for startups to enhance their competitive advantage and performance; an effective leadership style is crucial for leading a company to success (Lai et al., 2020). First of all, leadership style directly affects team members' motivation and work efficiency. A positive and open leadership style can inspire team members to be more innovative and enthusiastic, and increase their commitment to pursuing common goals (Bakker et al., 2023). On the contrary, a negative or authoritarian leadership style may lead to low morale, a lack of sense of belonging, and reduced motivation among team members (Harms et al., 2018). Second, leadership style also affects the decision-making efficiency and execution ability of an organisation (Bakker et al., 2023). A democratic, participatory leadership style encourages team members to offer opinions and suggestions, which helps to brainstorm and improve the quality of decision-making (Lai et al., 2020). At the same time, this leadership style also helps cultivate team members' autonomy and sense of responsibility, as well as improve the enterprise's execution ability (Bakker et al., 2023). Additionally, leadership style is a crucial factor in shaping corporate culture. Corporate culture is crucial to the success of a start-up, as it can unite people's hearts and form common values and behavioural norms (Posner et al., 1985). The leader's behaviour and leadership style will directly affect the formation and development of corporate culture (Ogbonna and Harris, 2000). Therefore, for start-ups, leaders need to flexibly adjust their leadership style according to the actual situation of the enterprise to maximise leadership effectiveness and enhance the competitive advantage and performance of the enterprise (Harms et al., 2018). Hence, the Impact of leadership style on employee performance in start-up enterprises in China is a topic worthy of in-depth study.

To enhance the competitive advantage and employee performance of startups, this study will combine TFL theory, TSL theory, and qualitative and quantitative research methods based on the actual situation of Chinese startups to explore the relationship between leadership style, work engagement, and employee performance in-depth, and establish a corresponding theoretical model to gain a deeper understanding of the mechanism of the impact of leadership style on employee performance. Ultimately, this study has proposed effective leadership style improvement strategies to enhance employee performance. These strategies could guide organisations to improve their leadership styles to enhance employee productivity and overall corporate performance. Through this study, we aimed to provide strong support for the development of Chinese startups, especially those in the retail industry in Guangxi Province, and promote their continuous improvement in competitiveness and performance.

LITERATURE REVIEW

Basic concepts

The importance of entrepreneurship in startup business has, in recent years, received considerable academic and industry interest due to the role that it plays in innovation, economic growth, and job creation (Chen et al., 2022). Start-up Enterprises are newly established companies, usually founded by entrepreneurs, and focused primarily on developing and marketing new products or services (Harms et al., 2018). Most startup businesses operate in volatile and uncertain spaces, seeking to scale rapidly and disrupt the market, which is distinct from traditional businesses. We have seen academia covering multiple aspects of start-ups, from start-up formation to growth, funding, and challenges, among others. Regarding Transformational Leadership (TFL), Burns (1978) mentioned that TFL refers to the process of interaction between leaders and followers in which the leader stimulates higher-level needs and motivations in their followers through his charisma and personalised consideration for them. TFL consists of four dimensions: morale modelling (MM), visionary motivating (VM), charisma leadership (CL), and individualised consideration (IC) (Issa et al., 2024). Moreover, Burns (1978) stated that TSL refers to a style of leadership based on an exchange process in which leaders and followers work through a series of exchange relationships to achieve their respective goals. TSL refers to a style of leadership based on the social exchange theory, in which the relationship between leaders and followers is based on a series of economic, political, and psychological exchanges, and transactional leaders motivate their followers to achieve the organizational goals by clarifying the requirements of the tasks, setting the standards of the work, and providing the corresponding rewards and punishments. TSL consists of four main dimensions: contingent reward (CR), management by exception (ME), contingent punishment (CP), and Process Control (PC) (Rich, 2003).

Regarding Work Engagement (WE), van Wingerden et al. (2017) noted that WE refers to a concept of motivation characterised by a positive, fulfilling, and work-related state of mind, marked by energy, dedication, and commitment. The WE refer to the positive cognitive state of an employee's work, the positive and complete emotion of the work, the strong sense of responsibility that he or she has for his or her own work performance, as well as the vision of commitment to work performance and the energy invested in the work for the sake of this sense of responsibility. The WE includes four dimensions: Vigour (VI), Dedication (DE), Absorption (AB), and Work Meaningfulness (WM) (Vitasari and Yustina, 2023). Employee Performance (EP) refers to the behaviours, results, and outcomes employees demonstrate in achieving organisational goals, which can be measured through objective and subjective assessment methods (J, 2014). Employee Performance consists of four main dimensions: Task Performance (TP), Relationship Performance (RP), Learning Performance (LP), and Innovative Performance (IP) (Geue, 2018).

Relation of TFL and Work Engagement

TFL on employee work engagement has been widely studied. Karatepe and Olugbade (2016) studied this relationship with the case in mind, supporting psychological capital as a mediating factor. Their results indicate that transformational leaders help employees build their psychological capital — defined as self-efficacy, hope, resilience, and optimism — by providing inspirational guidance, motivational direction, and individual support. This, in turn, increases employees' commitment to their work. Similarly, (Udin, 2023) investigated how TFL influences work engagement and the moderating effects of person-organization fit and perceived organizational support. This research confirmed that TFL is positively associated with employee engagement. Based on these findings, the current study hypothesises that:

H1: TFL has a direct effect on Work Engagement.

Relation of TFL and Employee Performance

Magasi (2021) explored the impact of TFL on employee performance. It examined the mediating and moderating roles of organisational learning and organisational innovation climate. It was found that the TFL style has a positive impact on both organisational learning and employee performance. Cai et al. (2018) examined the relationship between TFL and employee performance in the context of the digital age, testing a moderated mediation model. The findings suggest that the TFL style continues to have a positive impact on employee performance in the digital age. From the above analysis, this study proposes the following hypothesis:

H2: TFL has a direct effect on Employee Performance.

Relation of TSL and Work Engagement

The Influence of Leadership Styles on Employee Work Engagement. TFL has been one of the most studied topics, but TSL has also been noted to have positive effects. Nurtjahjani et al. (2022) stated the relationship between transformational leadership, employee work engagement, and the mediating effect of psychological capital. Research demonstrates that transformational leaders increase employees' self-efficacy, hope, resilience, and optimism by providing vision, motivation, and individual attention, resulting in greater engagement. Similarly, Jehanzeb (2020) studied the influence of TFL behaviour on work engagement while testing person-organisation fit and perceived organisational support as moderators. Their empirical findings illustrated that TSL can considerably improve work engagement, especially when employees perceive organisational practices as fair. This implies that, in combination, both transformational leadership and TSL play significant roles in employees' work engagement, but through different mechanisms (Hu and Bentler, 1999). TFL contributes to higher levels of engagement by developing psychological capital, catering to psychological well-being, and offering a unified work setting, as well as transactional leadership, which fosters fairness and helps maintain structure and regulations. From the above analysis, this study proposes the following hypothesis:

H3: TSL has a direct effect on Work Engagement.

Relation of TSL and Employee Performance

Effective leadership makes a significant contribution to employee engagement and performance. Although TFL has received more attention in the research for its effects on work engagement, TSL has also been recognized as part of the research for its effectiveness in boosting employee outcomes. Strom et al. (2013) investigated the influence of TFL on employee engagement, emphasising the importance of organisational justice. These findings showed that TSL is likely to increase work engagement when employees believe fairness prevails concerning organizational practices. In addition to work engagement, TSL is also linked to employee performance. Al-refaei et al. (2023) studied this relationship, incorporating job satisfaction and organisational commitment as mediating variables and managerial support as a moderating variable. The study found that TSL has a strong, positive impact on individual performance across various industries. Hence, TFL can foster engagement by enhancing psychological resources and aligning employees with a shared vision. In contrast, transactional leadership can improve engagement and performance through structured expectations, fairness, and support. It is hypothesised that:

H4: TSL has a direct effect on Employee Performance.

Relation of Work Engagement and Employee Performance

Rich et al. (2010) investigated the factors contributing to work engagement and their influence on employee performance. Their study found that their overall performance improves significantly when employees are more engaged in their jobs, meaning they are emotionally, cognitively, and physically invested in their work. This suggests that fostering job engagement can lead to higher productivity and better workplace outcomes. Similarly, Shen and Liu (2023) examined the direct impact of work engagement on employee performance while also considering how job characteristics—such as task variety, autonomy, and workload—moderate this relationship. Their findings confirmed that engaged employees tend to perform better, regardless of job characteristics, reinforcing the idea that work engagement is a key driver of employee success. From the above discussion, this study proposes the following hypothesis:

H5: The Work Engagement has a direct effect on Employee Performance.

Relation of Transformational Leadership, Work Engagement, and Employee Performance

The roles of work engagement, transformational leadership, and employee performance were examined by Basit and Hasan (2022). Their results indicate that TFL enhances employee performance and that higher levels of work engagement mediate this relationship. Accordingly, transformational leaders foster an engaged workforce by inspiring, motivating, and supporting employees, which in turn leads to improved performance. Nevertheless, it turned out that the mediation was only partial, suggesting that engagement is a significant part of the story but

that other factors are likely contributing to explain the leadership-performance link as well. Similarly, Wang et al. (2022) continued their line of reasoning by adding organisational support as a moderating variable in the relationship. Using a moderated mediation model, they found that TFL leads to enriched work engagement, thereby enhancing employee performance. Furthermore, their findings indicate that the positive relationship between TFL and work engagement is amplified when employees perceive high levels of organisational support (e.g., resources, fairness, and encouragement). It highlights the importance of both leadership style and systems of support in the workplace in driving engagement and performance. From the above analysis, this study proposes the following hypothesis:

H6: TFL indirectly affects Employee Performance through Work Engagement.

Relation of TSL, Work Engagement, and Employee Performance

According to Kim and Park (2022), TSL affected employee performance, and they proposed that work engagement and psychological empowerment served as mediators in the model. TSL, which is characterised by delineated rewards, well-founded expectations, and performance-based incentives, was positively correlated with employees' engagement and sense of empowerment, they found. Notably, work engagement emerged as a critical mediator between TSL and enhanced employee performance, indicating that engaged employees were more enthusiastic about leveraging their performance when under the guidance of transactional leaders who have a clear set of expectations and rewards. In a similar vein, Zhao and Xu (2023) explored the indirect effects of TSL on employee performance through work engagement as a mediator. Their findings strengthen the notion that TSL does not directly increase performance at work, but rather does so by inducing higher employee engagement. Therefore, when employees are engaged, they are more motivated and productive, which directly translates into better performance.

H7: TSL indirectly affects Employee Performance through Work Engagement.

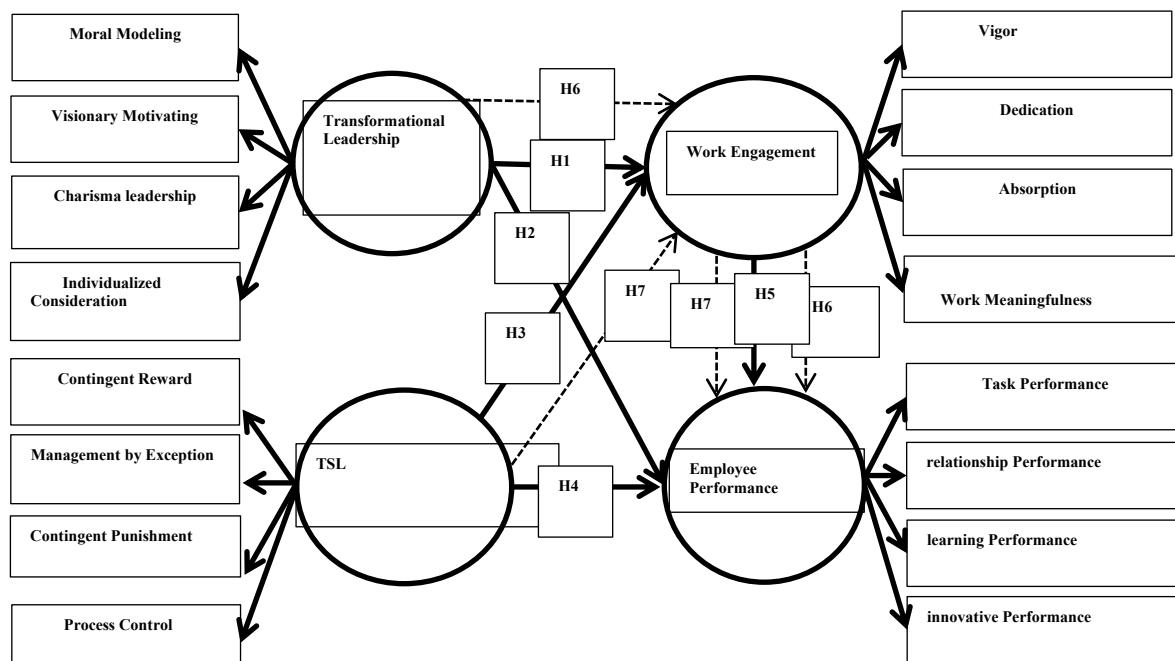


Figure 1. Research Framework

RESEARCH METHODOLOGY

Samples and Data Collection

For this study, the middle-level administrators came from 9,601 retail start-ups operating in 14 cities in Guangxi Province, China, namely, Nanning, Liuzhou, Guilin, Wuzhou, Beihai, Fangchenggang, Qinzhou, Guigang, Yulin, Baise, Hezhou, Hechi, Laibin, and Chongzuo. This led to an initial determination of the sample size using the formula sample size = Variables \times 20, yielding $n = 20 \times 20 = 400$ respondents (Tumiran, 2024). Nonetheless, according to pivotal statistical principles, such as the Law of Large Numbers and the Central Limit Theorem, a minimum of 30 samples is recommended to perform valid statistical inference, particularly if the population is not large (Zhang et al., 2023). The target sample size was enlarged to 541 middle-level administrators to enhance efficiency and the generalizability of the results. Due to the wide geographic spread of the respondents and some being in hard-to-reach, remote locations, the study employed an online survey method. Responses were collected using a questionnaire, an online survey tool, which allowed for wider accessibility and efficiency in response collection.

Measurement

The questionnaire was designed for this study, which was to review a large amount of literature and conduct in-depth expert interviews. The questionnaire was designed to collect quantitative data from Middle-level administrators in 9,601 retail start-ups in Guangxi Province, China. The survey covered various aspects of leadership styles and their impact on employee performance, including Transformational, Transactional, Work Engagement, and Employee Performance. The questionnaire was administered online or in person, depending on the participants' preferences and accessibility. The collected data was then analysed using statistical techniques to identify patterns, trends, and significant relationships between leadership styles and employee performance. The questionnaire was divided into two parts: Part 1, which included a survey about the personal information of respondents, classified by gender and educational background, among other details. Part 2: Survey the current "Impact of Leadership Style Start-up Enterprises on Employee Performance in China." A 5-point Likert scale of estimation characterised the questions in this questionnaire.

Data Analysis

This survey used online research methods to collect samples. A total of 600 questionnaires were distributed, and the final number of valid samples was 541, with a sample validity rate of 90.17%. Statistical software was used to analyse the data. Specific analysis methods included frequency analysis, descriptive analysis, confirmatory factor analysis (CFA), Correlation analysis, path analysis, and SEM.

RESULTS AND DISCUSSION

Demographics information of Respondents and startups

The results in Table 1 indicate that the workforce is predominantly female (60.81%), suggesting that women play a significant role in startups, particularly in sectors such as education, healthcare, and customer service. Most employees are between 31 and 40 years old (43.44%), followed by those between 41 and 50 years old (27.73%). A highly educated workforce is evident, with 48.24% holding a bachelor's degree and a significant proportion holding higher degrees, including master's (10.72%) and doctorate (7.39%) degrees. This suggests that TFL focusing on vision, personal development, and autonomy may effectively engage such employees. Married employees (59.15%) outnumber single employees (40.85%), indicating a workforce with stable life priorities, likely valuing job security and a work-life balance. The largest departments are purchasing (25.88%), marketing (19.96%), and sales (13.86%), highlighting that operational and revenue-generating roles are central to startup structures, requiring adaptable leadership approaches. Most employees work in startups aged 4-5 years (66.36%), reflecting rapid growth and leadership challenges in sustaining long-term stability and employee retention. A high turnover rate is evident, with 29.02% of employees having less than one year of tenure, while only 21.63% stay for 4-5 years, a common trend in fast-paced startup environments.

Table 1 Demographic information

Demographics	Category	Frequency	Percentage (%)
Gender	(1) Male	212	39.19
	(2) Female	329	60.81
Age	(2) 21 to 30	100	18.48
	(3) 31 to 40	235	43.44
	(4) 41 to 50	150	27.73
	(5) 51 years old or up	56	10.35
Status	(1) single	221	40.85
	(2) married	320	59.15
Education	(1) high school.	28	5.18
	(2) College degree	154	28.47
	(3) Bachelor's degree	261	48.24
	(4) A master's degree	58	10.72
	(5) Doctoral degree	40	7.39
Working sector	(1) Sales Department	75	13.86
	(2) Purchasing Department	140	25.88
	(3) Marketing Department	108	19.96
	(4) Customer Service Department	40	7.39
	(5) Department of Administration	20	3.70
	(6) Human Resources Department	71	13.12
	(7) Finance Department	12	2.22
	(8) Logistics and Supply Chain Management Department	20	3.70
	(9) Information Technology (IT) Department	55	10.17
Number of years the company has been in existence	(1) 1 year	16	2.96
	(2) 2 years	79	14.60

Demographics	Category	Frequency	Percentage (%)
	(3) 3 years	87	16.08
	(4) 4 years	154	28.47
	(5) 5 years	205	37.89
Years of service in current company	(1) within 1 year	157	29.02
	(2) 1 to 2 years	92	17.01
	(3) 2 to 3 years	104	19.22
	(4) 3 to 4 years	71	13.12
	(5) 4 to 5 years	117	21.63

Reliability and Validity Analysis

Table 2 shows that according to the results of the analysis of Cronbach's alpha coefficient, the internal consistency of the four dimensions of TFL (0.905), TSL (0.926), work engagement (0.929), and employee performance (0.932) reached an excellent level, which was all much higher than the general standard of 0.70. This indicates that the questionnaire scales used in the study have extremely high reliability and can accurately reflect the characteristics of each dimension. The high KMO values validate the factor analysis potential of the questionnaire, indicating that the underlying structure of the dimensions can be effectively extracted. This complements the Cronbach's alpha coefficients mentioned earlier, demonstrating the high quality of the data together.

Table 2 Reliability and Validity analysis

Dimensions	Cronbach's alpha coefficient	KMO
Transformational Leadership	0.905	0.923
Transactional Leadership	0.926	0.935
Work Engagement	0.929	0.932
Employee Performance	0.932	0.946

Descriptive statistics of the study variables

TFL dimensions exhibit strong mean scores, with Visionary Motivating (VM) achieving the highest mean score of 3.905, indicating that employees feel strongly motivated by their leaders' vision. This outcome is consistent with the notion that transformational leaders enhance employee engagement and performance by providing an appealing and inspiring vision for the future. Within the framework of TSL, the scores are still high, but the mean average is relatively low compared to TFL scores. The highest Process Control (PC) score in the bifurcations of process TSL earned a mean score of 3.594. This indicates that subordinates tend to appreciate the structures and controls designed by their leaders to achieve efficiency and high performance. Work engagement is significantly higher across all dimensions, with the Work Meaningfulness (WM) dimension having the highest mean score of 3.821. This illustrates that, as a whole, employees find their work extremely meaningful, which is important for motivation and commitment to performance within the organisation. The high score suggests that employees in the study strongly believe that they have an impactful purpose in their respective roles, which is needed for sustained engagement and employee performance (EP). Regarding employee performance, the average performance score is high across all defined segments, indicating that employees believe they are performing well in their roles. The highest mean Learning Performance (LP) score indicates that the master's new knowledge and skills are being applied in the workplace, with a score of 3.744. This finding is supported by the high engagement scores, more specifically Absorption, which implies that employees put forth some effort not only in accomplishing their tasks but also actively seek to learn and develop.

Table 3 Sample statistical characteristics(n=541)

Constructs	Latent variable	Mean	S.D.	MIN	MAX	SK	KU	Levels
TFL	MM	3.612	0.914	1.200	5.000	-0.613	-0.220	high level
	VM	3.905	0.740	1.000	5.000	-0.919	1.830	high level
	CL	3.554	1.032	1.000	5.000	-0.774	-0.759	high level
	IC	3.886	0.902	1.000	5.000	-0.730	-0.020	high level
	Total	3.739	0.700	1.363	4.938	-0.728	0.242	high level
TSL	CR	3.580	1.098	1.250	5.000	-0.681	-0.989	high level
	ME	3.484	1.145	1.000	5.000	-0.569	-1.232	high level
	CP	3.474	1.146	1.000	5.000	-0.626	-1.174	high level
	PC	3.594	0.924	1.250	5.000	-0.623	-0.362	high level
	Total	3.533	0.865	1.125	5.000	-0.505	-0.506	high level
WE	VI	3.611	1.054	1.000	5.000	-0.591	-0.642	high level
	DE	3.669	0.957	1.000	5.000	-1.051	1.005	high level
	AB	3.693	1.061	1.000	5.000	-1.064	0.426	high level

Constructs	Latent variable	Mean	S.D.	MIN	MAX	SK	KU	Levels
WM	WM	3.821	0.925	1.000	5.000	-0.875	0.566	high level
	Total	3.699	0.803	1.063	5.000	-0.781	0.644	high level
EP	TP	3.584	0.971	1.000	5.000	-0.428	-0.675	high level
	RP	3.736	0.831	1.000	5.000	-1.024	1.577	high level
LP	LP	3.744	0.968	1.000	5.000	-1.157	1.069	high level
	IP	3.571	0.936	1.250	5.000	-0.566	-0.487	high level
	Total	3.659	0.750	1.267	5.000	-0.995	1.055	high level

Confirmatory factor analysis

To verify the structural validity of the variables and measurement model, this study conducted a Confirmatory Factor Analysis (CFA). The results indicate that all constructs and dimensions demonstrated good model fit, adhering to statistical standards and supporting the validity of the measurement models. TFL encompasses four dimensions: Morale Modelling, Visionary Motivation, Charismatic Leadership, and Individualised Consideration. The CFA results revealed high loading coefficients for all dimensions, ranging from 0.687 to 0.800, indicating that these dimensions effectively measure the TFL construct. The AVE (Average Variance Extracted) values ranged from 0.522 to 0.594, which meets the threshold of AVE greater than 0.50, suggesting good convergent validity (Fornell and Larcker, 1981). Additionally, the Composite Reliability (CR) of each dimension ranged from 0.828 to 0.871, indicating good internal consistency. These results are consistent with previous studies, highlighting the effectiveness of the four dimensions of transformational leadership. These dimensions explain how leaders motivate and support employees, enhancing their work motivation and performance (Bass and Riggio, 2006). TSL has four dimensions: Contingent Reward, Management by Exception, Contingent Punishment, and Process Control. The CFA results indicated loading coefficients for each dimension ranging from 0.745 to 0.803, suggesting that these dimensions adequately capture the TSL construct. The AVE values for each dimension ranged from 0.555 to 0.645, confirming convergent validity, while CR values ranged from 0.858 to 0.887, indicating strong internal consistency. This result supports the validity of the TSL dimensions and aligns with previous research, which shows that contingent reward and managerial behaviours positively impact employee performance (Judge and Piccolo, 2004). For example, Management by Exception and Process Control have been found to improve work discipline and efficiency, thereby enhancing employee performance (Kim and Lee, 2011).

Work engagement includes four dimensions: Vigour, Dedication, Absorption, and Work Meaningfulness. CFA results revealed high loading coefficients, ranging from 0.633 to 0.879, indicating that these dimensions effectively measure work engagement. The AVE values ranged from 0.586 to 0.733, meeting the threshold for convergent validity, and CR values ranged from 0.834 to 0.916, showing excellent internal consistency. These findings are consistent with established theories of work engagement, which emphasise the importance of Vigour, Dedication, and Absorption in driving employee performance and motivation (Nguyen, 2020). Research indicates that Absorption and Dedication help employees maintain high energy and motivation, enhancing their work performance (Nguyen, 2020). Employee performance includes four dimensions: Task Performance, Relationship Performance, Learning Performance, and Innovative Performance. CFA results indicated high loading coefficients for each dimension, ranging from 0.692 to 0.808, suggesting that these dimensions adequately represent employee performance. The AVE values ranged from 0.585 to 0.653, meeting the threshold for convergent validity, while CR values ranged from 0.862 to 0.902, indicating strong internal consistency. These results support the concept of employee performance as multi-dimensional, in line with established theories (Rich et al., 2010). Task, Relationship, Learning, and Innovative Performance are key to evaluating overall employee effectiveness. This study emphasised Innovative and Learning Performance as indicators of employees' ability to adapt and contribute to long-term organisational success (Afsar and Umrani, 2020).

Table 4 Confirmatory Factor Analysis

Constructs	Latent Variables	Loading coefficient	R2	AVE	CR
TFL	MM	0.8	0.64	0.562	0.837
	VM	0.687	0.472		
	CL	0.737	0.543		
	IC	0.771	0.594		
TSL	CR	0.802	0.643	0.603	0.859
	ME	0.745	0.555		
	CP	0.755	0.57		
	PC	0.803	0.645		
WE	VI	0.738	0.545	0.586	0.85
	DE	0.78	0.608		

Constructs	Latent Variables	Loading coefficient	R2	AVE	CR
	AB	0.8	0.64		
	WM	0.742	0.551		
EP	TP	0.775	0.601	0.611	0.863
	RP	0.765	0.585		
	LP	0.808	0.653		
	IP	0.778	0.605		

Model fit analysis

All models demonstrated good fit indices based on the CFA results (Table 5). The model for TFL showed excellent fit ($CFI = 0.997$, $RMSEA = 0.013$). TSL ($CFI = 0.995$, $RMSEA = 0.020$) and Work Engagement ($\chi^2/df = 1.241$, $CFI = 0.996$, $RMSEA = 0.021$) also exhibited strong fit indices. Employee Performance ($CFI = 0.997$, $RMSEA = 0.015$) further supports the stability and adaptability of the models. These results confirm the robustness of the measurement models and provide a solid foundation for the subsequent Path Analysis.

Table 5 Confirmatory Factor Analysis for the model

Statistics	TFL	TSL	WE	EP
χ^2	126.085	138.984	124.055	165.513
P-Value	0.226	0.063	0.052	0.154
SRMR	0.027	0.024	0.031	0.026
CFI	0.997	0.995	0.996	0.997
TLI	0.997	0.995	0.995	0.997
RMSEA	0.013	0.02	0.021	0.015

Correlation analysis

In Table 5, which presents the Pearson correlation analysis, various leadership, motivation, and performance-related variables exhibit significant positive relationships. Statistically significant results have been obtained, with a predetermined cut-off set at 0.01. The p-value for most correlations is less than 0.01, indicating a strong association. These findings suggest that the major leadership variables, MM, VM, CL, and IC, are interrelated, exhibiting a high correlation, which indicates that transformational and TSL components are related to each other. It is also observed that MM strongly correlates with VM (.456), CL (.503), and IC (.534). Emphasising the collective influence of all of these variables on leadership effectiveness. Similarly, work motivation (WM) has a strong correlation with various measures of performance, such as task performance (TP), role performance (RP), and leadership performance (LP), thus indicating that the more motivated an employee is, the more likely he or she would be to excel in the performance of their responsibilities.

Table 6 Pearson Correlation analysis for variables

	MM	VM	CL	IC	CR	ME	CP	PC	VI	DE	AB	WM	TP	RP	LP	IP
MM	1															
VM	.456**	1														
CL	.503**	.435**	1													
IC	.534**	.453**	.461**	1												
CR	.252**	.160**	.206**	.259**	1											
ME	.214**	.160**	.155**	.250**	.531**	1										
CP	.203**	.173**	.174**	.270**	.520**	.503**	1									
PC	.223**	.163**	.168**	.258**	.556**	.508**	.531**	1								
VI	.304**	.237**	.180**	.238**	.286**	.299**	.276**	.286**	1							
DE	.332**	.275**	.286**	.307**	.312**	.296**	.292**	.265**	.562**	1						
AB	.330**	.283**	.266**	.324**	.329**	.352**	.298**	.301**	.536**	.556**	1					
WM	.310**	.273**	.199**	.272**	.323**	.345**	.264**	.348**	.455**	.496**	.555**	1				
TP	.262**	.177**	.242**	.293**	.335**	.304**	.274**	.254**	.309**	.332**	.451**	.398**	1			
RP	.303**	.207**	.249**	.295**	.307**	.332**	.287**	.336**	.347**	.422**	.433**	.406**	.528**	1		
LP	.309**	.213**	.184**	.256**	.296**	.335**	.297**	.325**	.374**	.320**	.451**	.380**	.539**	.575**	1	
IP	.314**	.212**	.253**	.285**	.315**	.319**	.266**	.280**	.350**	.373**	.426**	.339**	.551**	.510**	.533**	1

Note: * $p < 0.05$ ** $p < 0.01$

SEM Model Results

Transformational Leadership (TFL) and Work Engagement (WE)

The results in Table 5 show a positive relationship between TFL and Work Engagement ($\beta = 0.384$, $p < 0.001$). Moreover, the H1: TFL has a direct effect on Work Engagement is accepted (Table 6). This finding is consistent with existing literature, which suggests that TFL enhances employees' work engagement levels. Through inspiration and support, transformational leaders help employees increase their enthusiasm, vitality, and engagement at work (Bass and Riggio, 2006). Studies have shown that TFL motivates employees by providing a vision, encouraging innovation, and supporting personal growth, thus stimulating higher work engagement (Afsar and Umrani, 2020).

TSL and Work Engagement (WE)

The results in Table 5 indicate that TSL also has a significant impact on Work Engagement ($\beta = 0.415$, $p < 0.001$). This finding further confirms TSL's effectiveness in providing external incentives and enhancing employee engagement by offering structured and normative support (Kim and Park, 2022). Research has shown that TSL can inspire employees to engage more actively in their work by clarifying task requirements, offering rewards, and managing exceptions, thereby increasing work performance (Kim and Lee, 2011).

Work Engagement (WE) and Employee Performance (EP)

Work Engagement significantly influences Employee Performance ($\beta = 0.528$, $p < 0.001$). This result emphasises the crucial role of work engagement in enhancing employee performance. High levels of work engagement typically indicate that employees are highly focused and passionate about their tasks, which contributes to improved task performance, learning performance, and innovation capabilities (Basit and Hasan, 2022). These findings are consistent with previous studies that highlight the mediating role of work engagement in improving employee performance (Karatepe and Olugbade, 2016).

Direct Effects of TFL and TSL on Employee Performance (EP)

In terms of direct effects, TFL also has a significant positive impact on Employee Performance ($\beta = 0.124$, $p < 0.05$). This finding supports the idea that TFL can directly improve employee performance through motivation and support (Kim and Park, 2022). Research suggests that TFL not only enhances employee motivation but also creates a positive work environment, thereby improving overall performance (Lai et al., 2020). TSL shows a significant positive effect on Employee Performance ($\beta = 0.215$, $p < 0.001$). Although TSL primarily relies on rewards and punishments, this leadership style can still enhance employee performance by improving task execution and efficiency (Zhao and Xu, 2023).

Indirect Effects: The Mediating Role of Work Engagement

The indirect effects analysis reveals that TFL has a significant influence on Employee Performance through Work Engagement ($\beta = 0.203$, $p < 0.001$). This finding is consistent with existing research, which highlights the mediating role of work engagement in the relationship between TFL and employee performance (Lai et al., 2020). Similarly, TSL also shows a significant indirect effect on Employee Performance through Work Engagement ($\beta = 0.219$, $p < 0.001$), further validating that TSL enhances employee performance by increasing engagement (Kim and Park, 2022).

Total Effects

Finally, the total effects of TFL and TSL on Employee Performance are 0.326 and 0.435, respectively, both showing a strong influence. This result suggests that while TFL and TSL differ in their direct and indirect effects, both leadership styles significantly contribute to shaping employee performance (Magasi, 2021). The path analysis results of this study indicate that both TFL and TSL have a significant impact on Work Engagement and Employee Performance, with Work Engagement acting as a mediator between leadership style and employee performance. The findings underscore the crucial role of leadership style in influencing employee performance and further demonstrate that Work Engagement is a key mechanism in this process.

Table 7 Model Results

Relationship		Effect	95% CI		SE	p-value
			Lower	Upper		
TFL-->WE-->EP	Indirect	0.203	0.133	0.294	0.041	0.00**
TFL-->EP	Direct	0.124	0.004	0.243	0.061	0.04*
TFL-->EP	Total	0.326	0.21	0.431	0.056	0.00**
TSL-->WE-->EP	Indirect	0.219	0.149	0.304	0.039	0.00**
TSL-->EP	Direct	0.215	0.104	0.322	0.056	0.00**
TSL-->EP	Total	0.435	0.328	0.53	0.052	0.00**

Note: * $p < 0.05$ ** $p < 0.01$

Hypothesis Results

This study contributes to the growing literature on leadership effectiveness and work engagement by empirically validating the structural relationships among the variables. The findings support the entrepreneurial leadership models discussed by Muangmee et al. (2023), emphasising the importance of visionary leadership in engagement

and performance. All the hypotheses stated are accepted (Table 8). By confirming that the proposed SEM accurately reflects the hypothesised relationships, this study provides valuable theoretical and practical insights for organisations aiming to enhance leadership strategies, strengthen employee engagement, and optimise overall performance.

Table 8. Summary of Hypothesis

Hypothesis	Results
H1: The TFL has a direct effect on Work Engagement	Accepted
H2: The TFL has a direct effect on Employee Performance	Accepted
H3: The TSL has a direct effect on Work Engagement	Accepted
H4: The TSL has a direct effect on Employee Performance	Accepted
H5: The Work Engagement has a direct effect on Employee Performance	Accepted
H6: The TFL has an indirect effect on Employee performance through Work Engagement	Accepted
H7: The TSL has an indirect effect on Employee Performance through Work Engagement	Accepted

CONCLUSION

This study reveals how transformational leadership and TSL impact overall employee engagement and performance, while also highlighting the role of work engagement as a mediator. The results showed that leadership style is crucial to the growth and sustainability of start-ups within Guangxi Province. To enhance growth and improve employee motivation, leaders in start-ups should adopt a transformational leadership approach. Such leaders should practice ethical leadership and mentorship, and establish an inclusive culture alongside TSL that provides clearly defined rewards and a structured performance management system. Moreover, recognition and other professional growth opportunities can improve employees' engagement and productivity. Effective leadership that encourages e-learning and innovation can foster the business's long-term growth. Although the study makes a significant contribution to existing knowledge, its focus is limited to middle-level managers in retail businesses of Guangxi Province. Subsequent work should involve top managers and frontline workers from various industries and examine cross-cultural variations in the impact of different leadership styles across different locations. Additionally, the effects of servant and charismatic leadership on employee's organizational commitment and performance would also be interesting to study, along with the organizational culture and personality traits of the employees. Therefore, these findings can improve management practices and enhance the use of effective leadership to achieve broader business goals.

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