





“Relationships between leadership style, career development, work stress, and turnover intention in a high-tech industry: Moderating role of psychological contract”

AUTHORS	Liu Ru  Hadziroh Ibrahim  
ARTICLE INFO	Liu Ru and Hadziroh Ibrahim (2024). Relationships between leadership style, career development, work stress, and turnover intention in a high-tech industry: Moderating role of psychological contract. <i>Problems and Perspectives in Management</i> , 22(4), 253-267. doi: 10.21511/ppm.22(4).2024.20
DOI	http://dx.doi.org/10.21511/ppm.22(4).2024.20
RELEASED ON	Tuesday, 12 November 2024
RECEIVED ON	Monday, 01 July 2024
ACCEPTED ON	Friday, 11 October 2024
LICENSE	 This work is licensed under a Creative Commons Attribution 4.0 International License
JOURNAL	"Problems and Perspectives in Management"
ISSN PRINT	1727-7051
ISSN ONLINE	1810-5467
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

65



NUMBER OF FIGURES

3



NUMBER OF TABLES

5

© The author(s) 2024. This publication is an open access article.



BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine
www.businessperspectives.org

Received on: 1st of July, 2024

Accepted on: 11th of October, 2024

Published on: 12th of November, 2024

© Liu Ru, Hadziroh Ibrahim, 2024

Liu Ru, Ph.D. Student, School of Business Management, University Utara Malaysia, Malaysia. (Corresponding author)

Hadziroh Ibrahim, Dr., Associate Professor, School of Business Management, University Utara Malaysia, Malaysia.

Liu Ru (Malaysia), Hadziroh Ibrahim (Malaysia)

RELATIONSHIPS BETWEEN LEADERSHIP STYLE, CAREER DEVELOPMENT, WORK STRESS, AND TURNOVER INTENTION IN A HIGH-TECH INDUSTRY: MODERATING ROLE OF PSYCHOLOGICAL CONTRACT

Abstract

Employee turnover is an unavoidable part of business development, costing important human resources and impeding long-term growth and strategy implementation. To maintain a steady workforce, businesses must prioritize understanding and addressing this issue. The objective of this study is to examine the impact of leadership style, career development, and work stress on turnover intention in the high-tech industry and to investigate the moderating role of psychological contracts in these relationships. The sample consists of 380 employees of the R&D departments in high-tech companies in Shenzhen, Guangdong province, China, mainly engaged in the electronic information, advanced manufacturing, and automation sectors. The data were gathered via an online questionnaire, and the Smart-PLS approach was used to analyze the data. The empirical findings indicate that transactional leadership, transformational leadership, and career development are significantly and negatively related to turnover intention, whereas work stress has a significant positive effect. The psychological contract moderates the relationship between career development and turnover intention; the higher the psychological contract, the stronger the relationship. In addition, the psychological contract moderates the relationship between work stress and turnover intention, whereby the higher the psychological contract, the weaker the relationship. However, no empirical evidence suggests that the psychological contract moderates the relationship between leadership styles and turnover intention. The R^2 value is 0.485, indicating moderate explanatory power, and with a GOF index of 0.492, the model also demonstrates a good fit with the data. This study offers considerable implications for both theoretical and practical applications.

Keywords

leadership style, career development, work stress, turnover intention, psychological contract, high-tech industry

JEL Classification

D23, J63, L63

INTRODUCTION

The government has strongly supported the rise of China's high-tech industry, which has grown significantly and is now a main driver of economic prosperity and technical innovation. The rapid rise of the high-tech industry increases the demand for talent, making talent competition more intense. In this setting, the issue of personnel turnover has become increasingly obvious. Research and development (R&D) is a key department in the high-tech industry, and R&D personnel play a critical role in the development of regional high-tech industries (Wan et al., 2023). The loss of such personnel diminishes a company's capacity to innovate, elevates the likelihood of disclosing core technology and business secrets, and impairs the company's



This is an Open Access article, distributed under the terms of the [Creative Commons Attribution 4.0 International license](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted re-use, distribution, and reproduction in any medium, provided the original work is properly cited.



Conflict of interest statement:

Author(s) reported no conflict of interest

cohesion. It is, therefore, imperative that human resource managers implement effective strategies to alleviate the phenomenon of employee turnover.

To reduce actual turnover, it is vital to direct research attention to turnover intention. Turnover intention often indicates a worker's intention to move from one organization to another in the near future (Nadiri & Tanova, 2010), and it is the most accurate predictor of employee turnover behavior in an organization (Cohen et al., 2016). Leadership style, career development, and work stress are essential factors of turnover intention (Park & Pierce, 2020; Yang, 2023; Yukongdi & Shrestha, 2020). However, some controversy remains, possibly due to differences in testing procedures, study samples, and research contexts (Manoppo, 2020). Although the factors leading to turnover intention are well documented in the literature, more research is needed to address controversial issues and generalize the findings of previous studies.

Additionally, companies must manage their employees' psychological changes when implementing HRM practices. A psychological contract is an informal psychological relationship between employees and the company that specifies the individual's expectations, responsibilities, and obligations, as well as the company's rewards and promises. It has yet to be determined whether a well-aligned psychological contract improves the relationship between leadership style, career development, work stress, and turnover intention. Further research on the psychological contract's moderating effects, particularly empirical studies in local contexts, can give useful theoretical and practical insights for boosting management effectiveness and lowering employees' turnover intentions.

1. LITERATURE REVIEW AND HYPOTHESES

Leadership style refers to the approach a manager or supervisor takes in interacting with and guiding their employees or subordinates (Mullins, 2000 cited in Belete, 2018). It is applied by leaders to exercise their leadership function (Armstrong, 2012) and to inspire their subordinates to achieve the organization's targets (Ng'ethe et al., 2012). Leadership style is a combination of a range of leadership behaviors that adapt to different leadership situations (Ding et al., 2020).

Organizational literature has extensively discussed transactional and transformational leadership, sparking some debate (Hamstra et al., 2014). Transactional leadership is built on a reward basis, motivating followers through an immediate exchange. In this style, the leader clearly indicates the direction of the employee's work, meets the employee's needs, and motivates them to work hard. On the other hand, transformational leadership is characterized by the ability of a manager or supervisor to transform the values of their employees or subordinates to accomplish the objectives and goals of the organization (Bass, 1985).

Leadership style has been proven to have a significant impact on an employee's decision to stay or leave their work, although a variety of factors can influence employees' turnover intentions (Alatawi, 2017). Empirical studies have demonstrated that a transformational leadership style is significantly and negatively associated with turnover intention (Ali & Ahmad, 2021; Alkarabsheh et al., 2022; Guo et al., 2018). It has also been demonstrated to mitigate both the intention to turnover and the actual turnover (Sun & Wang, 2017). Some studies have asserted that employee turnover intention is adversely linked to transactional leadership (Ali et al., 2014; Gul et al., 2012; Sulamuthu & Yusof, 2018). However, Long et al. (2012) and Manoppo (2020) have claimed the connection between transformational leadership and turnover intention is statistically insignificant, and it can be discovered that transactional leadership style also has no association with the intention to leave (Maaitah, 2018; Magbity et al., 2020). Additionally, Masood et al. (2020) observed no significant relationship between transformational and transactional leadership styles and turnover intention.

Notably, few studies have used both types of leadership to comparatively examine the relationship between leadership style and employee turnover

intentions in the high-tech industry. Therefore, this study employed both transactional and transformational leadership styles to investigate their influence on turnover intention and to compare and analyze the outcomes of these two leadership styles, which also echoes the suggestion of Park and Pierce (2020). Comparing the two types of leadership, the transformational leadership style can be utilized to reduce turnover intentions in hospitals, as opposed to transactional leadership, which has a positive relationship with turnover intention (Naseer et al., 2017). In addition, Li and Chen (2021) revealed that a transformational leadership style proved to be more effective than a transactional leadership style for new generations of hotel employees. Adopting the proper leadership styles might thereby increase employees' retention in organizations. An effective and appropriate leadership style is needed to reduce turnover in today's worldwide competitive environment (Nanjundeswaraswamy & Swamy, 2014).

Career development is critical for employees to be loyal to the company (Zahari et al., 2020). Investing in employee career development is one way companies try to reduce voluntary turnover, as it offers organizations a competitive advantage and increases employee commitment and motivation (Kuvaas & Dysvik, 2010). In an organization, an employee's career development is reflected in four dimensions: career goal process, professional ability development, promotion speed, and remuneration growth (Weng & McElroy, 2012).

Extensive studies (Chin, 2018; Dewi & Nurhayati, 2021; Pratiwi & Lo, 2020) have demonstrated a negative relation between career development and turnover intention. It can be inferred that the provision of a career development program by the organization can mitigate the willingness of employees to leave. Nonetheless, several scholars, like Elian et al. (2020), Situmorang et al. (2023), and Yuningsih (2020), argue that professional growth has no substantial impact on turnover intention.

French and Kahn (1962) introduced the notion of stress into company management to analyze workplace stress. Stress is defined as a psychological state of tension or anxiety that employees experience as a result of their occupational duties. Work stress is related to the contents and components of

an employee's job and the stress that people feel as a result of their organizational responsibilities. This can include a range of pressures, such as time and anxiety (Shukla et al., 2016).

Work-related stress is well documented to cause physical and psychological imbalances in employees, affecting their cognitive function, emotional state, and sense of well-being (Bawono & Lo, 2020; Kurniawaty et al., 2019). According to Soelton and Atnani (2018), a connection was identified between work stress and the intention to leave one's position. It is widely acknowledged that work stress has an influence on turnover intention. The greater the work stress, the more likely the individual is to consider leaving the company. However, Alias et al. (2018) claimed that work stress is not a factor of turnover intention because stress varies according to the individual and the situation.

The psychological contract, as a psychological link that maintains employees' loyalty to the company, provides significant psychological and emotional support that strengthens the relationship between employees and the organization (Estreder et al., 2020). Employees seek a match between what is promised and what is experienced. The attitudes and behaviors of employees can be influenced by a number of factors, including the presence of imbalances within the workplace. Gerçek (2018) found that employees assess whether different leadership styles are consistent with their personal style or work values, as well as whether they are in alignment with their implicit expectations of the organization. A psychological contract, which is an implicit expectation, influences the decision of employees to remain loyal to their positions. Bravo et al. (2019) asserted that psychological contract breaches moderate the paths from transactional contract to satisfaction and from satisfaction to turnover intention, emphasizing the importance of sustaining a balanced and fulfilling psychological contract.

In the face of severe market rivalry, employees today exhibit greater competitive awareness and have higher expectations for personal growth and development (Merchant Jr, 2010) rather than maintaining a long-term and secure employment relationship with the company. Cao et al. (2023) discovered that psychological contract fulfillment

for career growth is directly related to organizational attraction. This means that companies providing greater career development opportunities and fitting with employees' career development goals can increase employee satisfaction and lower turnover. Alternatively, if the company fails to satisfy its responsibilities for employee career development or provides career development that is not expected, the employees will reconsider their relationship with the company and make new decisions (Chang et al., 2017).

Employees' perceived work stress and how it aligns with their expectations influence their intention to leave. Dwiyanti et al. (2019) discovered that fulfilling the psychological contract lowers employee turnover intention. This is because meeting employees' expectations reduces stress and increases job satisfaction. Psychological contract breach was discovered to be associated with higher levels of work stress by Duran et al. (2019). In other words, employees may be more likely to leave the company because they perceive more work stress when a psychological contract violation occurs. Conversely, a strong psychological contract, which is characterized by a reciprocal relationship in which the company meets employees' expectations, may make employees feel valued and more engaged in their work (Wibowo, 2022). As a result, employees may not leave their jobs even under significant pressure if their psychological contract is maintained.

This study examines the effects of leadership styles, career development, and work stress on turnover intention while also exploring the moderating effect of psychological contracts, specifically within high-tech companies in Shenzhen, China. The aim is to better understand the role of psychological contracts and how to use them effectively in human resource management practices. The research hypotheses and theoretical framework (Figure 1) are presented as follows:

- H1: Transactional leadership style has a negative relationship with turnover intention.
- H2: Transformational leadership style has a negative relationship with turnover intention.
- H3: Career development has a negative relationship with turnover intention.
- H4: Work stress has a positive relationship with turnover intention.
- H5: Psychological contract moderates the relationship between transactional leadership and turnover intention.
- H6: Psychological contract moderates the relationship between transformational leadership and turnover intention.

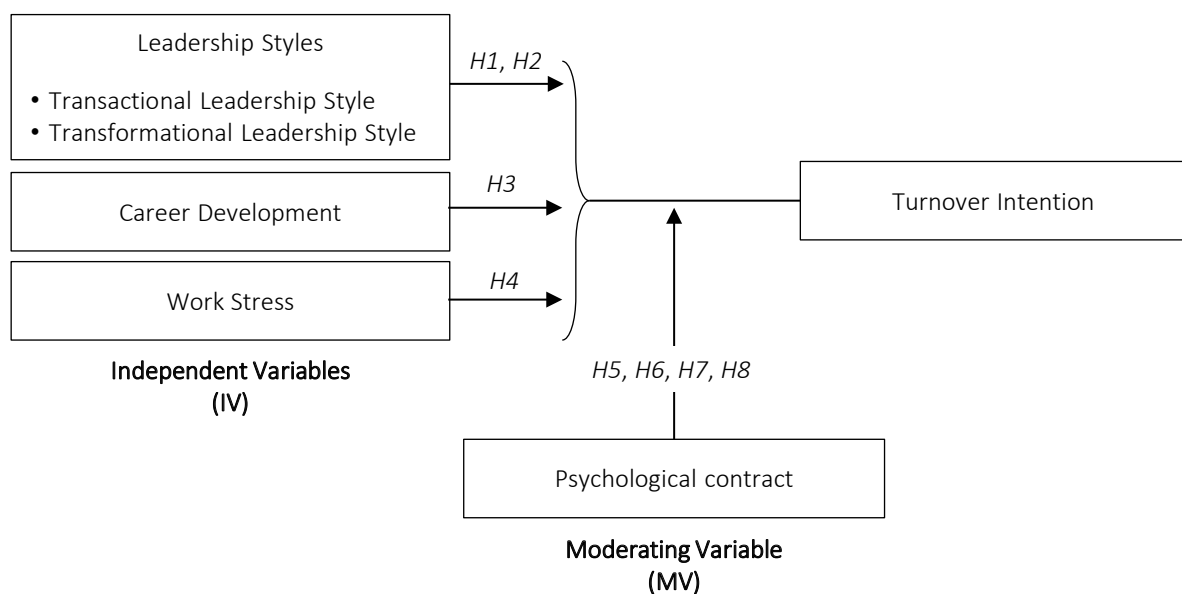


Figure 1. Theoretical framework

H7: *Psychological contract moderates the relationship between career development and turnover intention.*

H8: *Psychological contract moderates the relationship between work stress and turnover intention.*

2. METHODS

The focus of this study is on the personnel working in the R&D departments of high-tech companies in Shenzhen. Situated in one of China's major economic development regions, Shenzhen is home to economically prosperous areas and a significant concentration of high-tech companies. The city plays a vital role in China's economic development. Consequently, employee turnover has a detrimental impact on both the region's and the nation's overall growth. The electronic questionnaire was distributed to the personnel in R&D departments of high-tech companies in Shenzhen via email and social media, using links or QR codes. Finally, Smart-PLS was employed to analyze 380 valid questionnaires.

Table 1 provides an overview of the demographic characters of the respondents in this study. This includes information on their gender, age, marital status, qualification, tenure of current company and position.

Table 1. Respondent demographics

Items	Frequency	Percentage
Gender		
Male	210	55.3
Female	170	44.7
Age		
22-29 years	141	37.1
30-39 years	115	30.3
40-49 years	87	22.9
50-60 years	29	7.6
61 years and above	8	2.1
Marital Status		
Single	124	32.6
Married	229	60.3
Divorced	27	7.1
Qualification		
Diploma	98	25.8
Bachelor's degree or equivalent	231	60.8

Items	Frequency	Percentage
Master's degree or equivalent	31	8.2
Doctoral degree	20	5.3
Tenure of Current Company		
Less than 1 year	61	16.1
1-5 years	146	38.4
6-10 years	100	26.3
11-15 years	47	12.4
16 and above years	26	6.8
Position		
Department Leadership	118	31
R&D Engineers	161	42.4
R&D Project Management	11	2.9
R&D Designer	15	3.9
R&D Support Personnel	68	17.9
Technical Experts/Consultants	2	0.5
Other	5	1.3

The model in this study was verified using Smart-PLS, which included both measurement and structural model testing. In assessing the measurement model, the reliability and validity of the constructs were examined by calculating the construct reliability (CR) and average variance extracted (AVE) values. Additionally, the Heterotrait-Monotrait Ratio (HTMT) method was used to assess discriminant validity. Finally, the overall framework and the relationships between variables were examined.

The study employed six instruments to measure these variables. The Multifactor Leadership Questionnaire (MLQ), developed by Bass and Avolio (1995), was employed to assess both transactional and transformational leadership. Career development was evaluated with an instrument created by Weng and McElroy (2012). Work stress was measured using a scale based on the work of Shukla et al. (2016). Farh et al. (1998) created a measure for assessing turnover intention. The psychological contract was assessed using Millward and Hopkins' (1998) Psychological Contract Scale (PCS). All of these factors were evaluated on a five-point Likert scale.

3. RESULTS

The data shown in Table 2 demonstrate the internal consistency reliability test results for each construct, as indicated by composite reliability (CR) values. The results demonstrate that all constructs exhibit an adequate level of reliability, as indicat-

ed by a CR value exceeding 0.70, in alignment with the recommendations set forth by Hair et al. (2011). To determine convergent validity, the Average Variance Extracted (AVE) test was em-

ployed. The results indicate that all constructs exceed the Fornell and Larcker (1981) threshold of 0.5, suggesting that convergent validity is satisfactory.

Table 2. Assessment result for the measurement model

Constructs		Items	Loadings	Composite Reliability	Average Variance Extracted
LOC	HOC				
Contingency Reward (CR)	Transactional Leadership (TSL)	TSL1	0.847	0.903	0.7
		TSL2	0.81		
		TSL3	0.863		
		TSL4	0.827		
Positive Exception Management (PEM)		TSL5	0.876	0.924	0.754
		TSL6	0.86		
		TSL7	0.867		
		TSL8	0.869		
Negative Exception Management (NEM)		TSL9	0.818	0.905	0.705
		TSL10	0.835		
		TSL11	0.842		
		TSL12	0.862		
Idealized Influence (II)	Transformational Leadership (TFL)	TFL1	0.869	0.952	0.713
		TFL2	0.863		
		TFL3	0.835		
		TFL4	0.844		
		TFL5	0.847		
		TSL6	0.85		
		TFL7	0.831		
		TFL8	0.812		
Inspiring Motivation (IM)		TFL9	0.835	0.92	0.742
		TFL10	0.885		
		TFL11	0.861		
		TFL12	0.864		
Individualized Consideration (IC)		TFL13	0.888	0.925	0.756
		TFL14	0.864		
		TFL15	0.851		
		TFL16	0.873		
Intellectual Stimulation (IS)	TFL17	0.876	0.922	0.746	
	TFL18	0.875			
	TFL19	0.855			
	TFL20	0.849			
Career Goal Process (CGP)	Career Development (CD)	CD1	0.914	0.937	0.788
		CD2	0.876		
		CD3	0.89		
		CD4	0.869		
Professional Ability Development (PAD)		CD5	0.869	0.922	0.746
		CD6	0.869		
		CD7	0.855		
		CD8	0.862		
Promotion Speed (PS)		CD9	0.875	0.923	0.749
		CD10	0.862		
		CD11	0.864		
		CD12	0.86		
Remuneration Growth (RG)	CD13	0.878	0.916	0.784	
	CD14	0.897			
	CD15	0.882			

Table 2 (cont.). Assessment result for the measurement model

Constructs		Items	Loadings	Composite Reliability	Average Variance Extracted
LOC	HOC				
Work Stress (WS)		WS1	0.841	0.955	0.701
		WS2	0.843		
		WS3	0.834		
		WS4	0.835		
		WS5	0.827		
		WS6	0.828		
		WS7	0.846		
		WS8	0.84		
		WS9	0.844		
Turnover Intention (TI)		TI1	0.908	0.943	0.806
		TI2	0.888		
		TI3	0.896		
		TI4	0.9		
Relational Contract (RC)	Psychological Contract (PC)	PC1	0.894	0.962	0.782
		PC2	0.895		
		PC3	0.877		
		PC4	0.874		
		PC5	0.887		
		PC6	0.889		
		PC7	0.872		
Transactional Contract (TC)	Psychological Contract (PC)	PC8	0.848	0.964	0.728
		PC9	0.829		
		PC10	0.835		
		PC11	0.878		
		PC12	0.865		
		PC13	0.853		
		PC14	0.857		
		PC15	0.838		
		PC16	0.848		
		PC17	0.879		

The Heterotrait-Monotrait (HTMT) ratio is utilized for testing discriminant validity, offering a quantitative assessment of concept differentiation. Henseler et al. (2015) indicated that when the HTMT ratio is less than 0.9, discriminant validity is often satisfactory. As illustrated in Table 3, all HTMT values are less than the established threshold, thereby substantiating the assertion that the data possess robust discriminant validity.

Prior to hypothesis testing, the effect of potential collinearity issues on the model was assessed. This was conducted to determine the extent to which common method bias could influence the outcomes. Table 4 displays the inner variance inflation factor (VIF) values for all constructs in this study, which ranged from 1.215 to 1.897. Hair et al. (2011) recommend a threshold of 5, and all of these values fall below that level. As a result, it is

possible to conclude that this study is free of collinearity difficulties.

The hypotheses were tested with a bootstrap process, and the findings are shown in Table 4, which reveals the relationships between each path in the model. The results show that transactional leadership style has a significant negative connection with turnover intention ($t = 2.346, p = 0.019$), implying that higher levels of transactional leadership are linked with lower turnover intention. Similarly, transformational leadership negatively influences turnover intention ($t = 3.136, p = 0.002$), implying that higher levels of transformational leadership lead to lower turnover intention.

Table 4 also shows a significant negative connection between career development and turnover intention ($t = 2.566, p = 0.01$), implying that good

Table 3. Criterion for discriminant validity (HTMT)

	CR	PEM	NEM	II	IM	IC	IS	CGP	PAD	PS	RG	WS	TI	RC	TC
CR															
PEM	0.651														
NEM	0.457	0.633													
II	0.301	0.299	0.347												
IM	0.399	0.276	0.29	0.455											
IC	0.297	0.23	0.253	0.324	0.441										
IS	0.404	0.333	0.424	0.488	0.44	0.453									
CGP	0.377	0.324	0.387	0.365	0.326	0.321	0.343								
PAD	0.411	0.365	0.367	0.355	0.415	0.321	0.436	0.492							
PS	0.367	0.297	0.291	0.378	0.343	0.287	0.42	0.366	0.524						
RG	0.434	0.359	0.384	0.322	0.375	0.22	0.303	0.471	0.487	0.43					
WS	0.306	0.29	0.301	0.256	0.266	0.242	0.289	0.24	0.33	0.318	0.144				
TI	0.406	0.407	0.464	0.366	0.38	0.362	0.509	0.427	0.443	0.408	0.29	0.523			
RC	0.215	0.141	0.136	0.109	0.049	0.158	0.164	0.174	0.176	0.252	0.04	0.198	0.286		
TC	0.217	0.159	0.171	0.145	0.045	0.092	0.155	0.215	0.194	0.252	0.087	0.196	0.265	0.781	

Note: CR = Contingency Reward; PEM = Positive Exception Management; NEM = Negative Exception Management; II = Idealized Influence; IM = Inspiring Motivation; IC = Individualized Consideration; IS = Intellectual Stimulation; CGP = Career Goal Process; PAD = Professional Ability Development; PS = Promotion Speed; RG = Remuneration Growth; WS = Work Stress; TI = Turnover Intention; RC = Relational Contract; TC = Transactional Contract.

Table 4. Structural model assessment

Hypothesis	Path	Original Sample	Standard Deviation	T-value	P-value	VIF	Decision
H1	TSL → TI	-0.131	0.056	2.346	0.019	1.658	Supported
H2	TFL → TI	-0.192	0.061	3.136	0.002	1.666	Supported
H3	CD → TI	-0.155	0.061	2.566	0.01	1.897	Supported
H4	WS → TI	0.24	0.045	5.35	0	1.268	Supported
H5	PC x TSL → TI	-0.045	0.053	0.834	0.405	1.605	Not Supported
H6	PC x TFL → TI	-0.011	0.06	0.186	0.852	1.809	Not Supported
H7	PC x CD → TI	-0.201	0.06	3.361	0.001	1.89	Supported
H8	PC x WS → TI	-0.11	0.042	2.6	0.009	1.215	Supported

Note: TSL =Transactional Leadership; TFL = Transformational Leadership; CD = Career Development; WS = Work Stress; TI = Turnover Intention; PC = Psychological Contract.

career development leads to reduced turnover intention. Furthermore, a significant positive relationship exists between work stress and turnover intention ($t = 5.35, p = 0$), implying that higher levels of work stress are linked to increased turnover intention. Based on these findings, hypotheses 1, 2, 3, and 4 were validated.

The psychological contract was found to have no significant moderating effect on the relationship between transactional leadership and turnover intention, with a t -value ($t = 0.834$) less than 1.96 and a p -value ($p = 0.405$) greater than 0.05. Consequently, hypothesis 5 is rejected. Similarly, the psychological contract has no moderating effect on the connection between transformational leadership and turnover intention ($t = 0.186, p = 0.852$). Therefore, hypothesis 6 is rejected. However,

the psychological contract was found to moderate the connections between career development and turnover intention ($t = 3.361, p = 0.001$), as well as work stress and turnover intention ($t = 2.6, p = 0.009$). These findings support hypotheses 7 and 8.

Figure 2 more clearly depicts the psychological contract’s moderating impact on the relationship between career development and turnover intention, in which the three linear curves indicate variations in this relationship at low, medium, and high levels of the psychological contract. At low levels of the psychological contract, the relationship between career development and turnover intention is modestly positive. Once the psychological contractual level reaches a medium level, the relationship between career development and turnover intention is observed to decline.

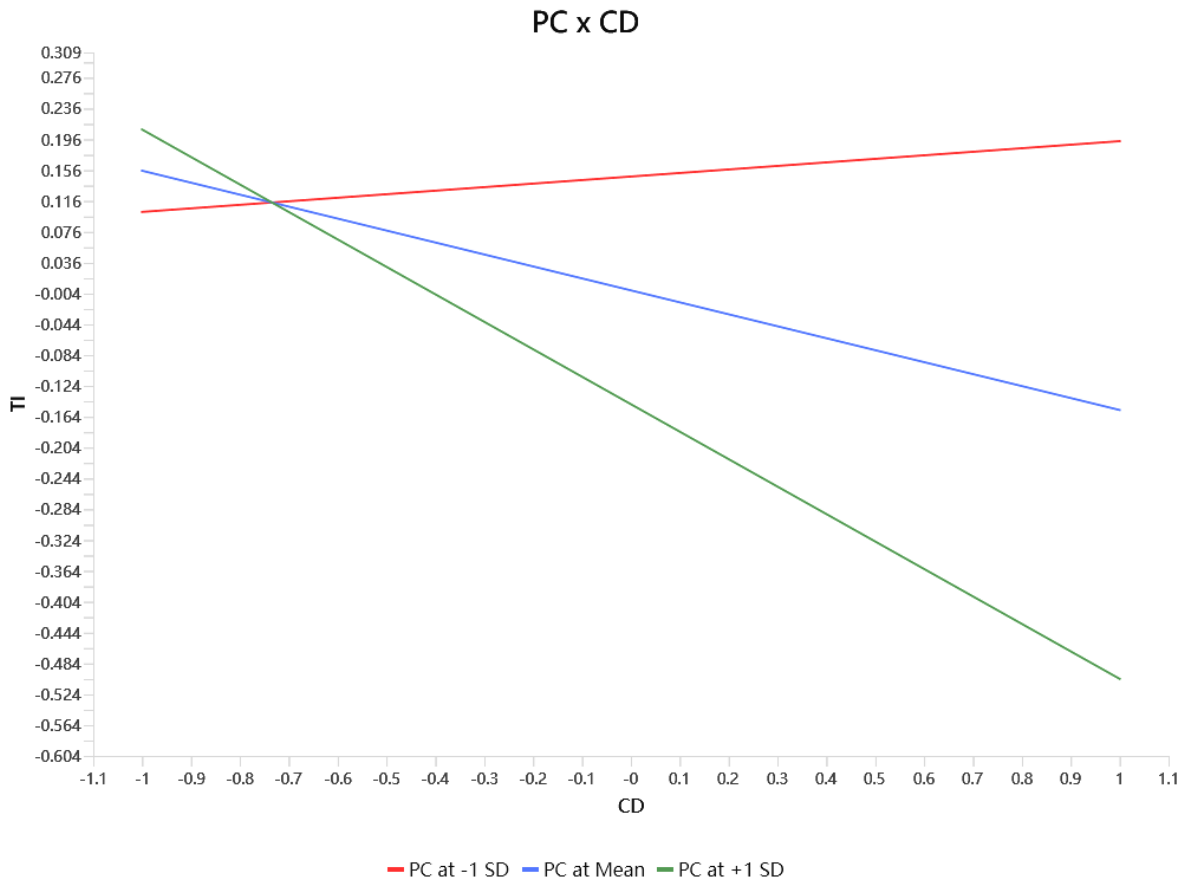


Figure 2. Moderation effect of psychological contract on the relationship between career development and turnover intention

Furthermore, as the psychological contract level approaches +1 standard deviation, the negative relationship between career development and turnover intention strengthens. It is evident that the slope is steeper at this point.

Figure 3 depicts the psychological contract’s moderating effect on the connection between work stress and turnover intention. Work stress has the greatest impact on turnover intention when the psychological contract level is -1 (lower). When the psychological contract level is average, work stress exerts a second-highest effect on turnover intention. When the psychological contract level is +1 standard deviation (higher), work stress has a small effect on turnover intention, which shows that the psychological contract moderates the influence of work stress on turnover intention. In particular, increasing the level of the psychological contract leads to a decrease in the negative effect of job stress on turnover intention.

The coefficient of determination (R^2) assesses the explanatory power of a regression model (Hair et al., 2019). It indicates how much of the overall variation in the dependent variable is explained by the model. A high R^2 score (near 1) indicates the model’s great prediction power for the data. A low R^2 value (approaching 0) indicates that the model’s explanatory power for the data is limited. R^2 values of 0.67, 0.33, and 0.19 are classified as substantial, moderate, and weak, respectively (Chin, 1988). The R^2 value for this study is 0.485, as indicated in Table 5, which signifies that the model explains a significant 48.5% of the total variation observed in regard to the dependent variable. This value is categorized as moderate explanatory power in Chin’s criterion of having relatively good explanatory power.

Table 5. R-Square

Variable	R-Square
Turnover Intention	0.485

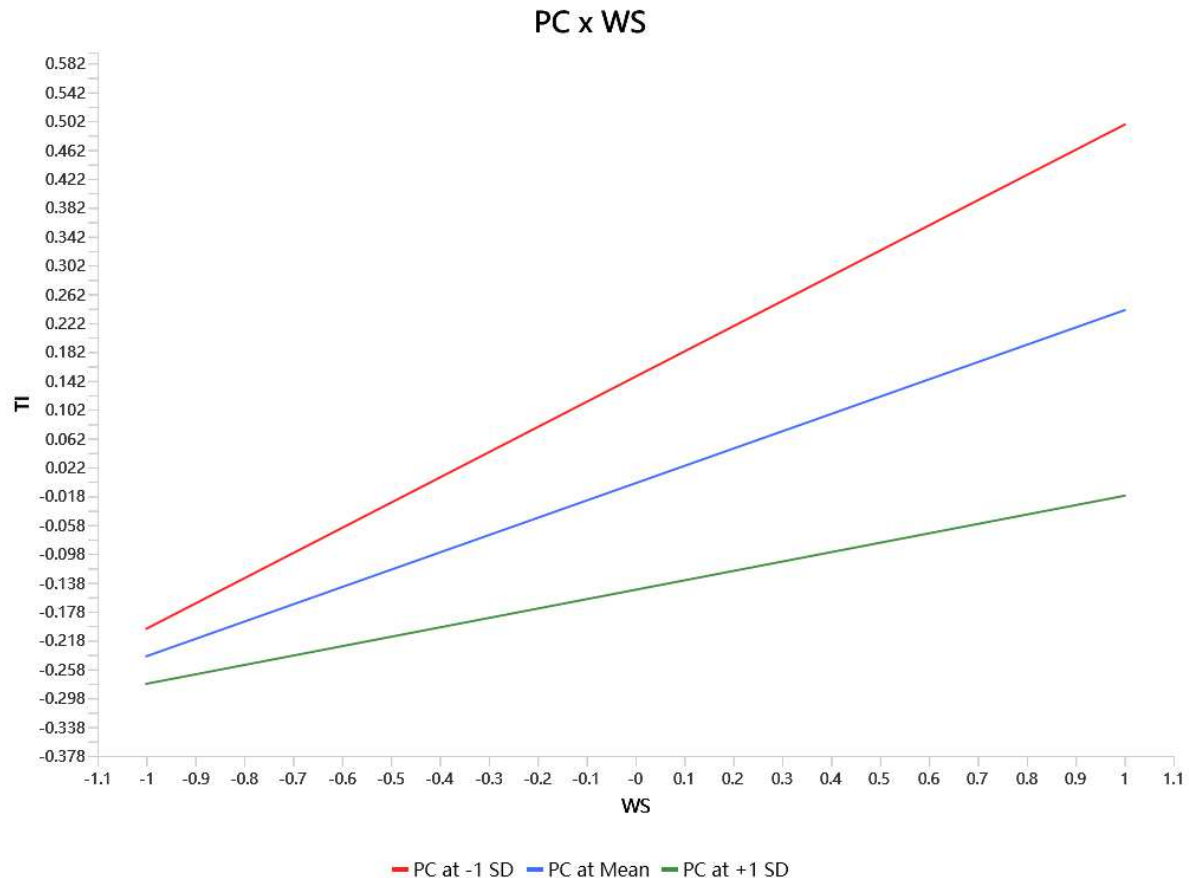


Figure 3. Moderation effect of psychological contract on the relationship between work stress and turnover intention

The GoF index is used to assess the overall goodness of fit for the structural equation model. It combines the observed variables with the coefficient of determination (R^2) of the endogenous variables. In the context of structural equation models, the term “communalities” refers to the proportion of each observed variable’s variance that the latent factors in the model can explain. It represents the proportion of the model’s variance that is shared by all observed variables. Fornell and Larcker (1981) established a typical communality value of 0.50. The study found $R^2 = 0.485$, with a GOF index of 0.492. This value is within the allowed range of the GoF criteria (between 0 and 1; values closer to 1 indicate a better fit). Consequently, the model demonstrates a good fit with the data.

4. DISCUSSION

The findings of this study indicate that transactional leadership and transformational leadership are associated with a reduction in employ-

ees’ turnover intentions. Employees’ turnover intentions decrease dramatically when the level of transactional or transformational leadership behavior increases. This outcome validates prior research by Alkarabsheh et al. (2022) and Pravichai and Ariyabuddhiphongs (2018). Furthermore, the findings indicate that the transformational leadership style has a stronger influence on employees’ turnover intentions than the transactional approach. It emphasizes the significance of developing transformational leadership behaviors in order to lower employees’ turnover intentions.

The study also demonstrates a negative association between the level of career development and employees’ intentions to leave their current positions. This finding aligns with previous research by Chin (2018), Dewi and Nurhayati (2021), and Pratiwi and Lo (2020). However, when the psychological contract is perceived as poor, a positive relationship emerges between career development and turnover intention. As a result,

even if an organization offers enough career development options, these opportunities may not be sufficient to reduce employee turnover intentions if the psychological contract is regarded to be poorly met. This is because failure to complete the psychological contract leads to lower satisfaction with the company (Azeem et al., 2020), which then results in decreasing trust (Herrera & De Las Heras-Rosas, 2021). This, in turn, raises the risk that personnel will leave the organization.

In contrast, there is a significant negative relationship between turnover intention and career development when there is a high level of psychological contract between the employee and the organization. The findings of the investigation indicate that the implementation of career development strategies can be more effective in decreasing the intentions of employees to leave their positions at high psychological contract levels. This is because employees exhibit a greater sense of trust and belonging to the company

when the psychological contract strength is at a higher level (Nnaji-Ihedinmah et al., 2020).

Additionally, this study found a notable positive association between work stress and turnover intention, in line with Bawono and Lo (2020) and Rahmania and Rohilayati (2023). This suggests that as employees experience increased work-related stress, they become more inclined to contemplate resigning from their positions. Moreover, the association between work stress and turnover intention is stronger when the psychological contract is poor. The results indicate that employees with lower psychological contract perceptions are more likely to leave when faced with workplace stress. On the other hand, employees who perceive a higher psychological contract have a significantly lower desire to leave when faced with job stress. In other words, when there is an adequate match between the psychological contract between employees and the company, employees are less likely to leave, even when they are under a lot of stress.

CONCLUSION

The objective of the study is to evaluate the impact of leadership style, career development, and work stress on turnover intention, with a particular emphasis on the moderating role of the psychological contract across these variables. The study results indicate a negative association between the following factors and turnover intention: transactional leadership, transformational leadership, and career development. Conversely, there is a positive association between work stress and turnover intention. In addition, psychological contracts moderate the relationships between career development and turnover intention, as well as work stress and turnover intention. Higher levels of psychological contracts strengthen the negative relationship between career development and turnover intentions and weaken the positive relationship between work stress and turnover intentions.

A unified analytical framework is used to incorporate the four variables, with the goal of gaining a more comprehensive understanding of their collective impact on employees' turnover intentions. This contributes to the understanding of leadership style, career development, work stress, and the psychological contract, especially within this specific industry, and also enhances the capacity to predict outcomes. By broadening the scope of the study, the paper provides a more nuanced and comprehensive understanding of how the psychological contract can be used as an effective tool for employee retention. Moreover, it is imperative to recognize and strengthen the importance of the psychological contract as a strategy for retaining R&D personnel.

There are some limitations to this research. The study employed a cross-sectional design, collecting all variables at a single point in time. Future research should consider a longitudinal approach to better understand the causal connections and dynamics between leadership style, career development, work stress, and turnover intention. Standardized surveys are insufficient as a moderating variable since the psychological contract is complicated and subjective. Future research should

employ a variety of assessment instruments to capture its subtleties and variations effectively. The findings may be context-specific to Shenzhen's high-tech economy, limiting their generalizability. Cross-cultural studies could look into these interactions in diverse cultural contexts, improving one's understanding of how cultural variety affects these processes.

AUTHOR CONTRIBUTIONS

Conceptualization: Liu Ru, Hadziroh Ibrahim.

Data curation: Liu Ru.

Formal analysis: Liu Ru.

Investigation: Liu Ru.

Methodology: Hadziroh Ibrahim.

Project administration: Hadziroh Ibrahim.

Resources: Liu Ru, Hadziroh Ibrahim.

Supervision: Hadziroh Ibrahim.

Visualization: Liu Ru, Hadziroh Ibrahim.

Writing – original draft: Liu Ru.

Writing – review & editing: Liu Ru, Hadziroh Ibrahim.

REFERENCES

1. Alatawi, M. A. (2017). Can transformational managers control turnover intention? *SA Journal of Human Resource Management*, 15(1), 1-6. Retrieved from <https://journals.co.za/doi/abs/10.4102/sajhrm.v15i0.873>
2. Ali, D. N., & Ahmad, S. (2021). The impact of transformational leadership style on subordinates turnover intention in private high schools of district Swat. *Ilkogretim Online*, 20(2), 1498-1510. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4691341
3. Ali, N., Ali, S., Ahsan, A., Rahman, W., & Kakakhel, S. J. (2014). Effects of leadership styles on job satisfaction, organizational citizenship behavior, commitment and turnover intention (empirical study of private sector schools' teachers). *Life Science Journal*, 11(4), 175-183. Retrieved from <https://www.researchgate.net/publication/260407089>
4. Alias, N. E., Rohmanan, N. H., Ismail, S., Koe, W. L., & Othman, R. (2018). Factors influencing turnover intention in a Malaysian manufacturing company. *KnE Social Sciences*, 771-787. <https://doi.org/10.18502/kss.v3i10.3171>
5. Alkarabsheh, O. H. M., Jaafar, A. H., Wei Fong, P., Attallah Almaaitah, D. A., & Mohammad Alkharabsheh, Z. H. (2022). The relationship between leadership style and turnover intention of nurses in the public hospitals of Jordan. *Cogent Business & Management*, 9(1). <https://doi.org/10.1080/23311975.2022.2064405>
6. Armstrong, M. (2012). *Armstrong's handbook of management and leadership: Developing effective people skills for better leadership and management*. Kogan Page Publishers.
7. Azeem, M. U., Bajwa, S. U., Shahzad, K., & Aslam, H. (2020). Psychological contract violation and turnover intention: The role of job dissatisfaction and work disengagement. *Employee Relations*, 42(6), 1291-1308. <https://doi.org/10.1108/ER-09-2019-0372>
8. Bass, B. M. (1985). Leadership: Good, better, best. *Organizational Dynamics*, 13(3), 26-40. [https://doi.org/10.1016/0090-2616\(85\)90028-2](https://doi.org/10.1016/0090-2616(85)90028-2)
9. Bass, B. M., & Avolio, B. J. (1995). *MLQ: Multifactor leadership questionnaire for research: Permission set*. Mind Garden.
10. Bawono, W., & Lo, S. J. (2020). Employee engagement as a mediator influences of work stress and career development to turnover intention in employee office of PT PKSS Central Office. *Dinasti International Journal of Management Science*, 1(5), 695-705. <https://doi.org/10.31933/dijms.v1i5.284>
11. Belete, A. K. (2018). Turnover intention influencing factors of employees: An empirical work review. *Journal of Entrepreneurship & Organization Management*, 5(7), 23-31. Retrieved from <http://www.ijrbsm.ijrsset.org/papers/v5-i7/3.pdf>
12. Bravo, G. A., Won, D., & Chiu, W. (2019). Psychological contract, job satisfaction, commitment, and turnover intention: Exploring the moderating role of psychological contract breach in national collegiate athletic association coaches. *International Journal of Sports Science & Coaching*, 14(3), 273-284. <https://doi.org/10.1177/1747954119848420>
13. Cao, Y., Lee, J., & Waung, M. (2023). Cultivating organizational attraction: A resource view on psychological contracts of career development among interns. *Personnel Review*, 52(1), 58-73.

- <https://doi.org/10.1108/PR-04-2021-0301>
14. Chang, C. P., Chiu, L. Y., & Liu, J. (2017). A study on the relationship between well-being and turnover intentions among rural school teachers: School organizational climate as a moderating variable. *Creative Education*, 8(04), 523-538. <https://doi.org/10.4236/ce.2017.84041>
 15. Chin, C. L. (2018). The influence of job satisfaction on employee turnover intention in the manufacturing industry of Malaysia. *Journal of Arts & Social Sciences*, 1(2), 53-63. Retrieved from <https://ruijass.com/wp-content/uploads/2017/10/1-001CLC-Final.pdf>
 16. Chin, W.W. (1988). *The partial least squares approach to structural equation modeling*. Modern methods for business research. Lawrence Erlbaum Associates.
 17. Cohen, G., Blake, R. S., & Goodman, D. (2016). Does turnover intention matter? Evaluating the usefulness of turnover intention rate as a predictor of actual turnover rate. *Review of Public Personnel Administration*, 36(3), 240-263. <https://doi.org/10.1177/0734371X15581850>
 18. Dewi, R. S., & Nurhayati, M. (2021). The effect of career development on turnover intention with job satisfaction and organizational commitment as mediators, study at PT Control Systems Arena Para Nusa. *European Journal of Business and Management Research*, 6(4), 11-18. <https://doi.org/10.24018/ejbmr.2021.6.4.918>
 19. Ding, H., Yu, E., Chu, X., Li, Y., & Amin, K. (2020). Humble leadership affects organizational citizenship behavior: The sequential mediating effect of strengths use and job crafting. *Frontiers in Psychology*, 11(65). <https://doi.org/10.3389/fpsyg.2020.00065>
 20. Duran, F., Bishopp, D., & Woodhams, J. (2019). Relationships between psychological contract violation, stress and well-being in firefighters. *International Journal of Workplace Health Management*, 12(3), 120-133. <https://doi.org/10.1108/IJWHM-09-2018-0114>
 21. Dwiyantri, R., Hamzah, H. B., & Abas, N. B. (2019). Job satisfaction, psychological contracts, and turnover intention: Role of social support as a mediator. *International Journal of Research in Business and Social Science*, 8(6), 96-104. <https://doi.org/10.20525/ijrbs.v8i6.319>
 22. Elian, S., Paramitha, C. D., Gunawan, H., & Maharani, A. (2020). The impact of career development, work-family conflict, and job satisfaction on millennials' turnover intention in banking industry. *Journal of Business and Management Review*, 1(4), 223-247. Retrieved from <https://typeset.io/papers/the-impact-of-career-development-work-family-conflict-and-49ni6o4qe7>
 23. Estreder, Y., Rigotti, T., Tomás, I., & Ramos, J. (2020). Psychological contract and organizational justice: The role of normative contract. *Employee Relations*, 42(1), 17-34. <https://doi.org/10.1108/ER-02-2018-0039>
 24. Farh, J. L., Tsui, A. S., Xin, K., & Cheng, B. S. (1998). The influence of relational demography and Guanxi: The Chinese case. *Organization Science*, 9(4), 471-488. <https://doi.org/10.1287/orsc.9.4.471>
 25. Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50. <https://doi.org/10.1177/002224378101800104>
 26. French Jr, J. R., & Kahn, R. L. (1962). A programmatic approach to studying the industrial environment and mental health. *Journal of Social Issues*, 18(3), 1-47. <https://doi.org/10.1111/j.1540-4560.1962.tb00415.x>
 27. Gerçek, M. (2018). The effects of transformational and transactional leadership styles on psychological contract: A managerial perspective. *International Journal of Economics & Management*, 12(2), 393-405. Retrieved from https://www.researchgate.net/profile/Merve-Gercek/publication/331020927_The_Effects_of_Transformational_and_Transactional_Leadership_Styles_on_Psychological_Contract_A_Manual_Perspective/links/5c6172aca6fdccb608b8ca7a/The-Effects-of-Transformational-an
 28. Gul, S., Ahmad, B., Rehman, S. U., Shabir, N., & Razzaq, N. (2012). Leadership styles, turnover intentions and the mediating role of organizational commitment. *Information and Knowledge Management*, 2(7), 44-51. Retrieved from <https://www.iiste.org/Journals/index.php/IKM/article/view/3256>
 29. Guo, J., Qin, X. L., Huang, J., & Yin, J. C. (2018). A study of the impact of transformational leadership on employees' turnover intention. *Shandong Social Sciences*, 11, 166-171. <https://doi.org/10.14112/j.cnki.37-1053/c.2018.11.026>
 30. Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, 19(2), 139-152. Retrieved from https://www.researchgate.net/profile/Christian-Ringle/publication/236033273_PLS-SEM_Indeed_a_silver_bullet/links/00b7d52ecb004615ed000000/PLS-SEM-Indeed-a-silver-bullet.pdf
 31. Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2-24. <https://doi.org/10.1108/EBR-11-2018-0203>
 32. Hamstra, M. R., Van Yperen, N. W., Wisse, B., & Sassenberg, K. (2014). Transformational and transactional leadership and followers' achievement goals. *Journal of Business and Psychology*, 29, 413-425. <https://doi.org/10.1007/s10869-013-9322-9>
 33. Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43,

- 115-135. <https://doi.org/10.1007/s11747-014-0403-8>
34. Herrera, J., & De Las Heras-Rosas, C. (2021). The organizational commitment in the company and its relationship with the psychological contract. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.609211>
 35. Kurniawaty, K., Ramly, M., & Ramlawati, R. (2019). The effect of work environment, stress, and job satisfaction on employee turnover intention. *Management Science Letters*, 9(6), 877-886. Retrieved from https://www.growingscience.com/msl/Vol9/msl_2019_71.pdf
 36. Kuvaas, B., & Dysvik, A. (2010). Exploring alternative relationships between perceived investment in employee development, perceived supervisor support and employee outcomes. *Human Resource Management Journal*, 20(2), 138-156. <https://doi.org/10.1111/j.1748-8583.2009.00120.x>
 37. Li, Q. J., & Chen, X. (2021). Research on the influence of leadership style on turnover intention of new generation employees in hotels. *Journal of Huaiyin Teachers College: Social Sciences Edition*, 43(6), 574-578. Retrieved from <http://218.28.6.71:81/Qikan/Article/Detail?id=7106028633>
 38. Long, C. S., Thean, L. Y., Ismail, W. K. W., & Jusoh, A. (2012). Leadership styles and employees' turnover intention: Exploratory study of academic staff in a Malaysian College. *World Applied Sciences Journal*, 19(4), 575-581. Retrieved from [https://idosi.org/wasj/wasj19\(4\)12/19.pdf](https://idosi.org/wasj/wasj19(4)12/19.pdf)
 39. Maaitah, A. M. (2018). The role of leadership style on turnover intention. *International Review of Management and Marketing*, 8(5), 24-29. Retrieved from <https://www.proquest.com/openview/5d44d9556ce52519943dad67effd4a13/1?pq-origsite=gscholar&cbl=816339>
 40. Magbity, J. B., Ofei, A. M. A., & Wilson, D. (2020). Leadership styles of nurse managers and turnover intention. *Hospital Topics*, 98(2), 45-50. <https://doi.org/10.1080/00185868.2020.1750324>
 41. Manoppo, V. P. (2020). Transformational leadership as a factor that decreases turnover intention: A mediation of work stress and organizational citizenship behavior. *The TQM Journal*, 32(6), 1395-1412. <https://doi.org/10.1108/TQM-05-2020-0097>
 42. Masood, S., Siddiqui, G. K., Lodhi, H., & Shahbaz, S. (2020). Effect of leadership styles on organizational citizenship behavior and employee turnover intention. *Journal of Accounting and Finance in Emerging Economies*, 6(2), 487-495. <https://doi.org/10.26710/jafee.v6i2.1200>
 43. Merchant Jr, R. C. (2010). The role of career development in improving organizational effectiveness and employee development. *Florida Department of Law Enforcement*, 1(2), 1-17. Retrieved from <https://www.voced.edu.au/content/ngv%3A63905>
 44. Millward, L. J., & Hopkins, L. J. (1998). Psychological contracts, organizational and job commitment. *Journal of Applied Social Psychology*, 28(16), 1530-1556. <https://doi.org/10.1111/j.1559-1816.1998.tb01689.x>
 45. Nadiri, H., & Tanova, C. (2010). An investigation of the role of justice in turnover intentions, job satisfaction, and organizational citizenship behavior in hospital-ity industry. *International Journal of Hospitality Management*, 29(1), 33-41. <https://doi.org/10.1016/j.ijhm.2009.05.001>
 46. Nanjundeswaraswamy, T. S., & Swamy, D. R. (2014). Leadership styles. *Advances in Management*, 7(2), 57-62. Retrieved from https://www.researchgate.net/profile/DrNanjundeswaraswamy-2/publication/272509462_Leadership_styles/links/5b5e8707458515c4b25226d6/Leadership-styles.pdf
 47. Naseer, A., Perveen, K., Afzal, M., Waqas, A., & Gillani, S. A. (2017). The impact of leadership styles on staff nurses' turnover intentions. *International Journal of Academic Research in Business and Social Sciences*, 7(12). Retrieved from https://hrmars.com/papers_submitted/3702/The_Impact_of_Leadership_Styles_on_Staff_Nurses_Turnover_Intentions.pdf
 48. Ng'ethe, J. M., Namusonge, G. S., & Iravo, M. A. (2012). Influence of leadership style on academic staff retention in public universities in Kenya. *International Journal of Business and Social Science*, 3(21), 297-302. Retrieved from https://www.ijbssnet.com/journals/Vol_3_No_21_November_2012/31.pdf
 49. Nnaji-Ihedinmah, N., Osisioma, H., & Ugwu, K. E. (2020). Psychological contract and employee performance in the construction industry in South-East Nigeria. *The International Journal of Business & Management*, 8(2), 259-265. Retrieved from <https://ssrn.com/abstract=3660371>
 50. Park, T., & Pierce, B. (2020). Impacts of transformational leadership on turnover intention of child welfare workers. *Children and Youth Services Review*, 108, Article 104624. <https://doi.org/10.1016/j.childyouth.2019.104624>
 51. Pratiwi, F., & Lo, J. S. (2020). Job satisfaction as a mediator of effect job stress and career development on employee turnover intention PT PKSS. *Dinasti International Journal of Digital Business Management*, 1(4), 580-592. Retrieved from <https://dinastipub.org/DI-JDBM/article/view/368>
 52. Pravichai, S., & Ariyabuddhiphongs, V. (2018). Transformational leadership and turnover intention: The mediating effects of right speech (Samma Vaca) and trust in the leader. *Journal of Management, Spirituality & Religion*, 15(3), 253-272. <https://doi.org/10.1080/14766086.2017.1417892>
 53. Rahmania, & Rohilayati, D. (2023). Minimizing turnover intention with the approach of work pressure and work stress. *Journal of Management Research and Studies*, 1(1), 58-66. <https://doi.org/10.61665/jmrs.v1i1.26>
 54. Shukla, A., Srivastava, R., & Eldridge, D. (rev. ed.). (2016). Development of short questionnaire to measure an extended set of role expectation conflict, coworker support and work-life balance:

- The new job stress scale. *Cogent Business & Management*, 3(1). <https://doi.org/10.1080/23311975.2015.1134034>
55. Situmorang, N., Ramli, A. H., & Reza, H. K. (2023). Pengaruh pengembangan karir terhadap turnover intention melalui kinerja karyawan yang dimoderasi oleh budaya organisasi [The effect of career development on turnover intention through employee performance moderated by organizational culture]. *Jurnal Lentera Bisnis*, 12(3), 633-646. (In Indonesian). <https://doi.org/10.34127/jrlab.v12i3.890>
 56. Soelton, M., & Atnani, M. (2018). How work environment, work satisfaction, work stress on the turnover intention affect university management. *Journal Manajemen dan Bisnis Indonesia*, 5(3), 439-448. Retrieved from https://www.researchgate.net/publication/330086404_How_Work_Environment_Work_Satisfaction_Work_Stress_On_The_Turnover_Intention_Affect_University_Management
 57. Sulamuthu, G. A., & Yusof, H. M. (2018). Leadership style and employee turnover intention. *Proceedings of the International Conference on Industrial Engineering and Operations Management* (pp. 2298-2306). Retrieved from <https://ieomsociety.org/ieom2018/papers/584.pdf>
 58. Sun, R., & Wang, W. (2017). Transformational leadership, employee turnover intention, and actual voluntary turnover in public organizations. *Public Management Review*, 19(8), 1124-1141. <https://doi.org/10.1080/14719037.2016.1257063>
 59. Wan, Q., Yuan, L., Yao, Z., & Zeng, L. (2023). The impact of R&D elements flow and government intervention on China's hi-tech industry innovation ability. *Technology Analysis & Strategic Management*, 35(7), 857-874. <https://doi.org/10.1080/09537325.2021.1988554>
 60. Weng, Q., & McElroy, J. C. (2012). Organizational career growth, affective occupational commitment and turnover intentions. *Journal of Vocational Behavior*, 80(2), 256-265. <https://doi.org/10.1016/j.jvb.2012.01.014>
 61. Wibowo, T. S. (2022). Psychological contract theory relation to organizational citizenship behavior (OCB) of flight attendants. *International Journal of Science, Technology & Management*, 3(1), 144-152. <https://doi.org/10.46729/ijstm.v3i1.445>
 62. Yang, X. (2023). A study of the impact of employees' job happiness on turnover intention in high-tech enterprises. *Times of Economy and Trade*, 20(2), 100-102. <https://doi.org/10.19463/j.cnki.sdjtm.2023.02.018>
 63. Yukongdi, V., & Shrestha, P. (2020). The influence of affective commitment, job satisfaction and job stress on turnover intention: A study of Nepalese bank employees. *Review of Integrative Business and Economics Research*, 9(suppl_1), 88-98. Retrieved from https://buscompress.com/uploads/3/4/9/8/34980536/riber_9-s1_07_b19-126_88-98.pdf
 64. Yuningsih, N. (2020). The effect of job satisfaction, career development and commitment to turnover intention in Cakrawala Mitra Bersama. *Journal of Research in Business, Economics, and Education*, 2(1), 380-390. Retrieved from <https://garuda.kemdikbud.go.id/documents/detail/1742507>
 65. Zahari, A. E., Supriyati, Y., & Santoso, B. (2020). The influence of compensation and career development mediated through employee engagement toward turnover intention of the permanent officers employees at the head office of PT Bank Syariah Mandiri. *Journal of International Conference Proceedings*, 3(1), 22-40.