

Research on the Impact of Humble Leadership on Employee Engagement in the Construction Industry of Liaoning Province, China

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Abstract

Under the background of information globalization, the living environment of enterprises is becoming more and more complex and changeable. In order to stand out in the fierce competition, organizations cannot do without the hard work and active input of employees. On the basis of social cognitive theory, this paper introduces psychological empowerment perception as a potential intervening and moderating variable to construct a theoretical model, and explores the mechanism of humble leadership on employee engagement in Liaoning construction industry under the background of Chinese organizational culture, so as to provide theoretical and practical support for a more comprehensive explanation of the influence of humble leadership on employee job outcome variables. Humble leadership has a significant positive impact on employee engagement in Liaoning construction industry, and psychological empowerment plays a partial mediating role in the relationship between humble leadership and employee engagement. The leadership style and behavior should be effectively matched with employees' work behavior, so as to further develop the effectiveness of leadership and keep employees in a highly engaged state at work.

Key words: Psychological empowerment; Construction industry; Humble leadership; Employee's engagement.

Introduction

Since the reform and opening up, China's economy has developed rapidly and gradually integrated with the world economy, becoming one of the most eye-catching roles on the international economic stage (Breevaart K, Bakker A B, Demerouti E, et al. 2016). With China's economic development entering the new normal, the increase of labor and raw material costs and the slowdown of urbanization, the development of the construction industry is facing new challenges. Adjusting the development structure of the construction industry and building an industry competitive advantage with Chinese characteristics are important tasks for the development of China's construction industry



(Mauno S, Ruokolainen M, Kinnunen U, et al, 2016) Since entering the era of knowledge economy, the market environment has become more and more complex, and the comprehensive strength of competition among enterprises is no longer the same as before, but only the comparison of products, services and technology (Haynie J J, Flynn C B, Mauldin S.,2017) If enterprises want to remain invincible in the fierce market competition and can quickly adapt to the changes of the market, they must constantly reform and innovate. Innovation ideas come from leaders, employees, competitors, external environment and other aspects, among which employees are also an important source of enterprise innovation ideas (Riggs B S, Porter C O L H.,2016). Employee engagement has become an important issue in organizational management for academic researchers and managers in practical fields. Highly dedicated employees are always enthusiastic and energetic about their work, and they can devote themselves to their work (Fan Mengyao, Yu Hongyuan, Miao Yumeng,2018). As an employee engagement that affects the development and utilization level of human capital, its quality plays a decisive role in the level of explicit and tacit knowledge of the organization, and will also have an impact on the actual market competitive advantage of the enterprise. (Li Qian.(2018)

In the context of information globalization, the living environment of enterprises is becoming more and more complex and changeable. In order to stand out in the fierce competition, the organization is inseparable from the efforts and active investment of employees. Therefore, maintaining a high degree of dedication of employees is an important support for the continuous progress of the enterprise. (Kirkland J, Edwards B D, Flaherty K E.(2021).More enterprise managers have realized that effectively improving the employee engagement of the enterprise, so as to maximize the utility of its professional skills and enthusiasm, plays a very important role in realizing the enterprise's goal strategy and the sustainable development of the enterprise. (Yanling Yan, Junwei Zhang, Hong Zhang.,2019) Due to the increasingly complex internal and external environment faced by the enterprise, the leaders of the enterprise need to adjust their own leadership style and encourage employees to strive to realize the symbiosis between the enterprise and the environment.(Walters K N, Diab D L.,2016). Many examples have proved that humble leadership can not only stimulate employees' potential, employees' innovation ability and work efficiency, promote employees' performance, but also improve the market competitiveness of enterprises, so as to lay a good foundation for the sustainable development of enterprises.(Park S, Chaudhuri S, Hewapathirana G I, et al.(2016). Previous studies have found that different leadership behaviors can affect employees' engagement, and effective leadership behaviors can stimulate employees' engagement in the organization and work.(Voegtlin C, Frisch C, Walther A, et al.(2021) Nowadays, in the face of the rapidly developing society, the competition among enterprises is becoming more and more fierce. In order to obtain an advantageous position and achieve success in the competition, it is inseparable from the employees' dedication to the organization and work.(Nothwehr F, Rohlman



D.(2019). In order to effectively improve employees' professional behavior, this paper studies the relationship between humble leadership and employees' engagement in construction industry in Liaoning Province, and then seeks methods to help construction enterprises in Liaoning Province improve employees' professional behavior.

In the process of the development of the construction industry in the direction of high speed, intelligence, safety and sustainability, technological innovation is the core of releasing future competitiveness, and "people" is the key to realize technological innovation and concept innovation.(Dong Tiantian, Yu Xuan.(2019), According to Maslow's demand theory, employees of Chinese enterprises have long bid farewell to the era of working for basic return. (Luo Yunna, Yang Gaosheng.(2019). For employees, they no longer simply pursue material needs, but start to pursue higher-level needs such as social networking, respect and self-worth realization. (Yu Jiaying.,2018). Employees pursue the continuous improvement of their own ability to ensure that they can complete the mission of the enterprise, and constantly challenge and grow themselves. (Walters K N, Diab D L.(2016). These factors can better drive employees into roles and continuous investment and dedication than salary and promotion. (Langford P H, Dougall C B, Parkes L P.(2017).

Research Objective

Based on the social cognitive theory, this paper introduces the perception of psychological empowerment as a potential intermediary and regulatory variable to build a theoretical model, and takes the Chinese organizational culture situation as the background to explore the action mechanism of humble leaders in the construction industry in Liaoning Province on employee engagement and job satisfaction, It provides theoretical and practical support for a more comprehensive explanation of the impact of humble leadership on employees' work consequence variables. Dedicated employees will be full of vitality and work hard to enhance the competitive advantage and environmental adaptability of the enterprise. Therefore, in today's competitive wave, if enterprises want to be invincible, improving and managing employees' professionalism is the key to victory.

Related work

In order to survive in the highly competitive market economy, enterprises must need excellent leaders. Literature (Zhu Xiaomin.(2019) found that the humility behavior of leaders at work is an active lowering of their own level and status. This way can encourage subordinates to continue to learn and enable employees to take the initiative to work and give full play to their potential. Literature (Liu Xin, Yang Dongtao, LIU, et al.(2017)believes that humble behavior can clarify their own working environment, produce a sense of security, and enable subordinates to identify with the organization, so that employees are willing to take the initiative to carry out dedication



behavior. Literature (Niu Fang, Zhang Ming, Yang Yonglin.(2016)points out that humble leaders will respect the career development of employees and formulate reasonable promotion paths, so that employees have free development space, are willing to pay high attention to their own work and improve the work investment of subordinates. Literature. (Gan Yanli.(2018)found that the more leaders show humility behavior, the more employees feel that their work is recognized, so they are more willing to take initiatives, such as professional behavior, loyalty behavior, etc. Literature (Mao Renjie, You Xiaoyue.(2016) research shows that if the leaders in the enterprise are self-confident, arrogant and arrogant, it will only make people stay away, which will not only affect the economic benefits of the enterprise, but also bring negative social impact. Literature (Yi Shizhi, Zhang Yanjing.(2016) integrates and defines the characteristics of leaders' humility, and holds that humility leadership is a way of leadership from the bottom to the top. As an emerging leadership style, humble leadership has been proved to have a positive impact on team creativity, employee innovation performance, work engagement and advice behavior. (Ye Yindan, Liu Wen.(2020). However, the existing research is mainly based on the perspective of social cognitive theory and social exchange theory to explore the direct impact of humble leadership on employee engagement, as well as the single intermediary variable. The deep-seated multivariable transmission mechanism between the two needs to be further explored.

This study will focus on the impact of humble leadership on employee engagement. Considering the possible cultural differences in the influence effect of leadership style, this study takes employees as the research object and social exchange theory as the starting point to explore the relationship between humble leadership style and employee engagement at the individual level, as well as the process and mechanism of forming this relationship.

Research hypothesis

1 The core concept of humble leadership

In Chinese traditional culture, humility has always been regarded as the moral appeal of ideal personality and is highly respected. (Bailey C, Madden A, Alfes K, et al.(2017). Modern viewpoints point out that humility is a kind of moral character, and people with humility can honestly evaluate themselves and objectively appreciate valuable people or things around them. When humility appears in organizational behavior, it is mostly related to positive behavior and successful events. It is a kind of behavior that can be obtained through learning and a long-term self-control process. On the personal level, the post-stable humility shows that employees are willing to accept personality and have an open attitude towards new things; on the interpersonal level, it shows the belief of paying more attention to others and advocating equality.

When formulating strategic objectives, enterprises should fully consider four aspects: external evaluation, internal core competitiveness, financial performance,



learning and growth. The internal relationship between these four aspects is shown in Figure 1.

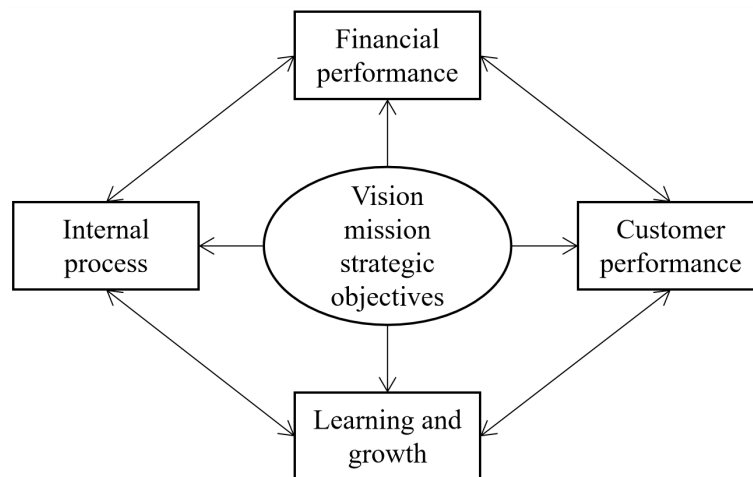


Figure 1 Internal relations of strategic objectives

For a long time, humility has been regarded as a very important quality, and few people associate it with leaders. Generally speaking, the characteristics of humble leadership mainly include the following three points Johansen M S, Sowa J E.(2019):

1) Be brave in admitting their own shortcomings, make efforts to correct them, and be good at summing up and learning;

2) Respect and appreciate employees, encourage employees from time to time, and appreciate their advantages and contributions;

3) Have a strong sense of responsibility and mission, keep a low profile, pursue progress, and provide employees with examples of learning and progress. From the perspective of behavior, humility is not a leader's personality trait, but a kind of behavior and style, and a leader can shape it in a certain way in his work. From the perspective of behavior, the humble leadership in this study is the employees' perception of a series of bottom-up leadership styles, such as leaders being able to admit their own shortcomings and mistakes, appreciate their subordinates' abilities and contributions, and accept new things modestly.

The relationship between humble leadership and employee engagement

In an organization, leadership is one of the environmental factors that employees must face in their daily work, and it is also one of the key external incentives that affect employees. Among them, the leader's leadership style will have a direct effect on employees' work behavior and attitude. Humility-oriented leaders can encourage subordinates to learn continuously, affirm their contributions and appreciate the abilities of employees, and are willing to admit their own shortcomings and constantly motivate their subordinates to exert their potential, so that employees can better devote themselves to their work. Humble leadership includes three aspects: accurate self-cognition, appreciation of others and teachability. Compared with other similar



leadership styles, humble leaders are more frank, willing to share information and resources with subordinates, more respectful of subordinates, and pay attention to equal communication and feedback. According to the theory of situational power, humble leaders encourage subordinates to give advice and are willing to share it with subordinates. Subordinates are willing to work hard in the direction expected by the organization to improve their performance and reward the organization. Figure 2 reflects the main structure of performance appraisal.

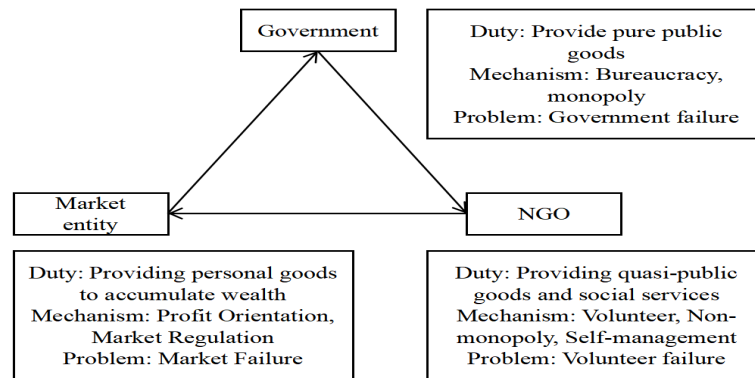


Figure 2 Main structure of performance appraisal

Based on the theory of social exchange, humble leaders will be aware of and admit their own shortcomings and deficiencies, and will give timely recognition and respect to their subordinates' contributions, and constantly use learning or teaching methods to stimulate their subordinates' work potential, thus making employees show more efforts to give back to their superiors' training, including enhancing their sense of dedication and work input. (Prottas D J, Nummelin M R.(2018). Previous studies have shown that leaders have an important impact on subordinates' work behaviors and attitudes. Among them, positive influences such as improving organizational citizenship behavior, voice behavior, job satisfaction and engagement, and negative influences such as leading to subordinates' turnover intention and counter-productive behavior, etc. As a kind of leadership behavior, combined with its connotation and characteristics, this paper holds that humble leadership can effectively promote employees' work behavior and attitude. Therefore, humble leaders can often stimulate subordinates' psychological identity and work motivation, and make employees feel valued, so as to obtain higher job satisfaction, show more positive work attitude and behavior, and enhance their engagement. According to the above analysis, this study proposes:

Hypothesis 1: Humble leadership has a significant positive impact on employee engagement.

The mediating role of psychological empowerment perception

The study found that the response of leaders to employees' behavior will have a



great impact on employees' perception of organizational risk, and the perceived leadership style and behavior style of employees will directly determine employees' perception of psychological empowerment in the organization.(Skubinn R, Herzog L.(2016). Psychological empowerment theory presupposes that individual behavior has risks in the organization, so when individuals engage in a certain activity or behavior, they will evaluate the risks, which is an invisible calculation process in the hearts of employees. It can be seen that employees' psychological empowerment has a crucial impact on employees' work behavior and attitude. Leaders with humility style will hold an open attitude, objectively evaluate subordinates' behaviors and mistakes, and establish an equal way of dialogue with subordinates, which will give employees a safety signal, employees can perceive the tolerance and support of leaders, and further strengthen employees' perception of psychological empowerment in the organization. Therefore, the more inclusive and supportive a humble leader shows, the higher the psychological empowerment of employees at work. Situational power theory holds that the leadership style shown by humble leaders shapes an open, inclusive and trusted organizational situation, gives employees a greater degree of autonomy, and implies the hope that employees will have a higher degree of work engagement and improve work quality.

According to the uncertainty management theory, employees will face many uncertainties and interpersonal risks in their work. Once these risks are perceived by employees, they will lose their trust in the organization, think that there are risks and uncertainties in their working environment, and are unwilling to take actions or express their opinions.(Cumberland D M, Shuck B,(2018). When employees work in a safe atmosphere, they will take the initiative to seek help from others, and will not worry about threats caused by inappropriate words. Therefore, employees' safety awareness at work can help them to try new working methods, boldly put forward ideas, and actively study and work. Humility-oriented leaders emphasize appreciation of employees, consider the interests of employees, create a relaxed organizational atmosphere, break the strict class relationship between them, make the relationship between them closer, and help improve employees' perception of psychological empowerment. Liu Hui, Sun Yaoyao.(2016). Humility-oriented leaders will pay attention to their own shortcomings and limitations, recognize their subordinates' work advantages, train and shape their employees, and make them feel safe about their working environment, which can effectively reduce their anxiety when they make mistakes at work, thus enhancing their psychological authorization and further enhancing their psychological freedom. Such a sense of security will have a positive impact on their behavior, thus improving their professional behavior. Humility-oriented leaders have established effective communication channels with their subordinates by respecting them, which will not easily attack employees' ideas. Employees can eliminate some uneasy factors, enhance their perception of psychological empowerment, and stimulate employees' motivation and dedication. Therefore, this



study puts forward the following assumptions:

Hypothesis 2: Humble leadership is positively related to employees' psychological empowerment.

Hypothesis 3: Psychological empowerment is positively correlated with employee engagement.

The relationship among employee engagement, humble leadership and psychological empowerment and the dimension of ce'liang are shown in Figure 1.

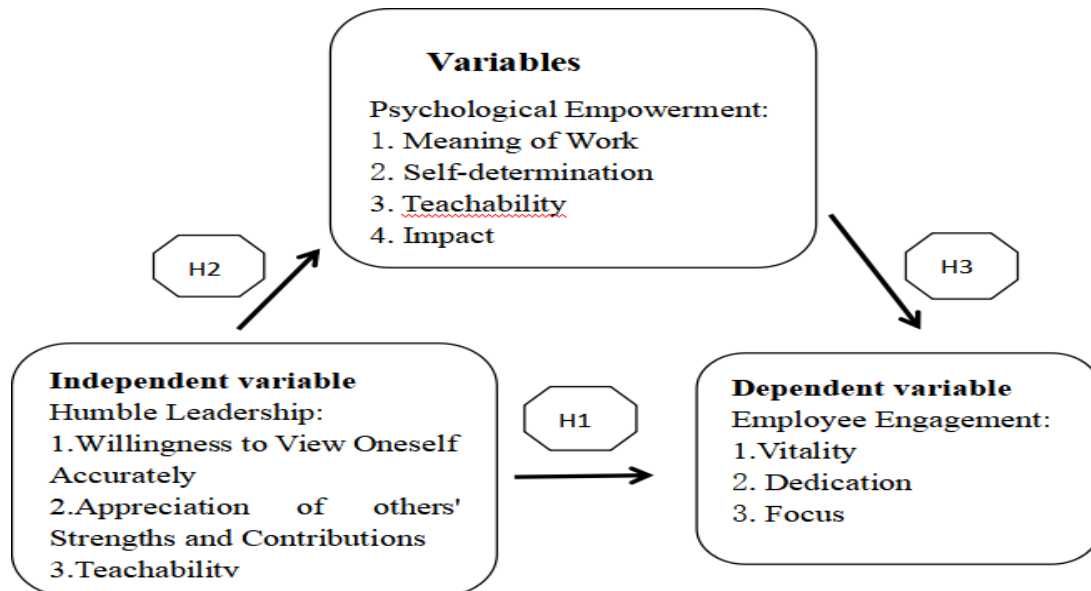


Figure 1 The relationship and measurement dimensions among employee engagement, humble leadership and psychological empowerment

Research methodology

Research samples and data collection

Taking the managers and their subordinate employees of many enterprises in Liaoning Province as the research objects, 495 questionnaires were distributed and 415 valid questionnaires were recovered. The basic characteristic data of employees in the surveyed enterprises are shown in Table 1.

Table 1 Basic characteristics of questionnaire sample data

Valid	Classification	Attributes	
		Frequency	Percent (%)
Gender	Male	241	58.1%
	Female	174	41.9%
Age	21-30	116	28.0%
	31-40	150	36.1%
	41-50	121	29.2%
	51 and above	28	6.7%
	Married	243	58.6%
Marital	Unmarried	92	22.2%
	Divorce	80	19.3%



Education	High school	25	6.0%
	College for professional training	185	44.6%
	Undergraduate college	178	42.9%
	Master degree or above	27	6.5%
Working	3 years and below	55	13.3%
	4-6 years	145	34.9%
	7-9years	131	31.6%
	10 years and above	84	20.2%
Total		415	100%

According to the above table, the number of male respondents in this survey is more than that of female respondents, the percentages are: 58.1% and 41.9% respectively; The age is mainly concentrated in 31-40 years old, the percentages are 36.1% respectively; marital status is mainly married, accounting for 58.6%; Education level is mainly College for professional training and Undergraduate college, accounting for 44.6% and 42.9%; Working years are mainly 4-6 years and 7-9 years, the proportion is 34.9% and 31.6% respectively.

Measuring tools

On the basis of effectively collected data, using SPSS25.0, statistical analysis software, using factor analysis, related Analysis, hierarchical regression analysis, path analysis and other methods, this paper explores the influence of humble leadership on employees' engagement, and the influence of employees' psychological empowerment.

Modest leadership adopts the scale of humble leadership compiled by Owen et al. (2013), which is measured from three aspects: willingness to view one's self accurately, appreciation of others' strengths and contributions, and teachability.

Table 2 Humble Leadership Scale from Owens, Johnson, Mitchell (2013) Design.

Variable	Serial Number	Measurement Item	Source
Willingness to View Oneself Accurately	Q1.1	My leader actively seeks feedback, even if it is negative feedback.	Owens, Johnson, Mitchell (2013)
	Q1.2	My leader admits that others have more knowledge and abilities than his own.	
	Q1.3	My leader admits that he sometimes doesn't know how to do things.	
Appreciation of others' Strengths and Contributions	Q1.4	My leader is aware of the advantages and strengths of others.	
	Q1.5	My leader often appreciates the strengths of others.	
	Q1.6	My leader appreciates the contributions of others.	
Teachability	Q1.7	My leader is willing to learn from others.	
	Q1.8	My leader is willing to listen to others' ideas and suggestions.	
	Q1.9	When dealing with problems, my leader is willing to listen to the opinions of others.	

The psychological empowerment scale adopts the psychological empowerment scale compiled by Spreitzer (1995) revised by Chinese scholar Li Chaoping (2006). The



scale is usually divided into four dimensions: Meaning of Work, Self-determination, Competence, and Impact.

Table 3 Psychological Empowerment Scale from Li (2006) Design.

Variable	Serial Number	Measurement Item	Source
Meaning of Work	Q2.1	The work I have done is very meaningful to me.	Li (2006)
	Q2.2	What I do at work is very meaningful to me.	
	Q2.3	My job is very important to me.	
Self-determination	Q2.4	I can decide how to carry out my own work.	
	Q2.5	I have a lot of independence and autonomy in how to complete my work.	
	Q2.6	I have a lot of autonomy in deciding how to complete my work.	
Competence	Q2.7	I have mastered all the skills needed to complete the work.	
	Q2.8	I believe that I have the ability to do all things well at work.	
	Q2.9	I am very confident in my ability to complete the work.	
Impact	Q2.10	I have a great influence and effect on what happens in this department.	
	Q2.11	I have a great control over what happens in this department.	
	Q2.12	I have a major influence on what happens in this department.	

The employee engagement scale is derived from UWES-17 (three dimensions, 17 items) developed by Schaufeli and Bakker (2004). The scale is divided into 3 dimensions, Vitality, Dedication and Focus. The UWES scale has been verified in many countries and regions, and the results of confirmatory factor analysis mostly verify the conclusions of Schaufeli et al. At the same time, the internal consistency reliability and cross-cultural stability of UWES have also been verified.

Table 4 Employee Engagement Scale from Schaufeli and Bakker (2004) Design.

Variable	Serial Number	Measurement Item	Source
Vitality	Q3.1	At my work, I feel being full of energy.	Schaufeli and Bakker (2004)
	Q3.2	At my job, I feel strong and vigorous.	
	Q3.3	When I get up in the morning, I feel like going to work.	
	Q3.4	I can continue working for very long periods at a time.	
	Q3.5	At my job, I am very resilient, mentally.	
	Q3.6	At my work I always persevere, even when things do not go well.	
Dedication	Q3.7	I am enthusiastic about my job.	
	Q3.8	I am proud on the work that I do.	
	Q3.9	My job inspires me.	
	Q3.10	I find the work that I do full of meaning and purpose.	
	Q3.11	To me, my job is challenging.	
Focus	Q3.12	Time flies when I'm working.	
	Q3.13	When I am working, I forget everything else around me.	
	Q3.14	I feel happy when I am working intensely.	
	Q3.15	I am immersed in my work.	
	Q3.16	I get carried away when I'm working.	
	Q3.17	It is difficult to detach myself from my job.	

Data statistics



Analysis on the correlation between humble leadership and employee engagement In this paper, the correlation between humble leadership and its dimensions and employee engagement and its dimensions is studied. The analysis results are shown in Table 5.

Table 5 Correlation coefficient matrix between humble leadership and employee engagement

variable	Mean	Std. Deviation	Willingness to View Oneself Accurately	Appreciation of others' Strengths and Contributions	Teachability	Vitality	Dedication	Focus
Willingness to View Oneself Accurately	3.7133	1.00347	1					
Appreciation of others' Strengths and Contributions	3.5197	1.03330	0.280**	1				
Teachability	3.4594	0.91119	0.334**	0.360**	1			
Vitality	3.5386	0.93924	0.475**	0.478**	0.507**	1		
Dedication	3.6689	0.96937	0.483**	0.515**	0.504**	0.595**	1	
Focus	3.7414	0.74024	0.502**	0.569**	0.503**	0.561**	0.556**	1

According to Table 5, the correlation coefficients between the three dimensions of humble leadership and the three dimensions of employee engagement are all positive, and the significance of correlation is less than 0.01, it shows that there is an obvious positive correlation. Therefore, the research hypothesis of humble leadership and employee engagement involved in the theoretical model established by this research has been preliminarily confirmed, there is a positive correlation between variables in the model, which needs to be verified through further analysis.

Relevance analysis of humble leadership and psychological empowerment.

In this paper, the correlation between humble leadership and its dimensions and psychological empowerment is studied, and the analysis results are shown in Table 6.

Table 6 Correlation analysis between humble leadership and psychological empowerment

variable	Mean	Std. Deviation	Willingness to View Oneself	Appreciation of others'	Teachability	Meaning of Work	Self-determination	Competence	Impact
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			f Accura tely	Strengt hs and Contrib utions					
Willingness to View Oneself Accurately	3.7133	1.00347	1						
Appreciation of others' Strengths and Contributions	3.5197	1.03330	0.280**	1					
Teachability	3.4594	0.91119	0.334**	0.360**	1				
Meaning of Work	3.6450	0.99748	0.370**	0.364**	0.335**	1			
Self-determination	3.5622	0.97297	0.347**	0.378**	0.329**	0.325**	1		
Competence	3.6032	1.00107	0.403**	0.357**	0.394**	0.315**	0.249**	1	
Impact	3.7325	0.95354	0.341**	0.393**	0.406**	0.322**	0.246**	0.331**	1

According to Table 6, the correlation coefficients between the three dimensions of humble leadership and the four dimensions of psychological empowerment are all positive, and the significance of correlation is less than 0.01, it shows that there is an obvious positive correlation. Therefore, the research hypothesis of humble leadership and psychological empowerment involved in the theoretical model established by this research has been preliminarily confirmed, there is a positive correlation between variables in the model, which needs to be verified through further analysis.

Analysis of psychological empowerment and employee engagement

In this paper, the correlation between psychological empowerment and employee engagement and its dimensions is studied, and the analysis results are shown in Table 7.

Table 7 Correlation between psychological empowerment and employee engagement

variable	Mean	Std. Deviation	Meaning of Work	Self- determi nation	Compet ence	Impact	Vitality	Dedicat ion	Focus
Meaning of Work	3.6450	0.99748	1						
Self-determination	3.5622	0.97297	0.325**	1					
Competence	3.6032	1.00107	0.315**	0.249**	1				
Impact	3.7325	0.95354	0.322**	0.246**	0.331**	1			
Vitality	3.5386	0.93924	0.453**	0.445**	0.525**	0.460**	1		
Dedication	3.6689	0.96937	0.474**	0.463**	0.466**	0.528**	0.595**	1	
Focus	3.7414	0.74024	0.491**	0.456**	0.502**	0.487**	0.561**	0.556**	1

According to Table 7, the correlation coefficients between the three dimensions of humble leadership and the three dimensions of employee engagement are all positive, and the significance of correlation is less than 0.01, it shows that there is an obvious positive correlation. Therefore, the research hypothesis of humble leadership and employee engagement involved in the theoretical model established by this research has been preliminarily confirmed, there is a positive correlation between variables in the model, which needs to be verified through further analysis.

Result analysis



Regression analysis

Correlation analysis only tests whether there is a correlation between variables, but does not clarify whether there is a causal relationship between variables. In order to further explore the causal relationship among humble leadership, psychological empowerment and employee engagement, this paper will use multiple regression analysis to conduct in-depth research.

Regression analysis of humble leadership and employee engagement

In order to further understand the predictive effect of humble leadership on employee engagement, the stepwise regression method was used to conduct regression analysis with employee engagement as a dependent variable and various dimensions of humble leadership as independent variables. The analysis results are shown in Table 8.

Table 8 Humble leadership and employee engagement regression matrix

Variable	Vitality		Dedication		Focus	
	B	T	B	T	B	T
Gender	0.018	0.252	0.12*	1.712	0.126**	2.47
Age	0.124**	2.589	0.078	1.621	0.054	1.561
Marital	0.009	0.175	0.094*	1.93	-0.023	-0.656
Education	0.152***	2.75	0.184***	3.337	0.179***	4.485
Working	0.057	1.421	0.085**	2.123	0.036	1.226
Willingness to View Oneself Accurately	0.268***	7.196	0.27***	7.254	0.219***	8.133
Appreciation of others' Strengths and Contributions	0.261***	7.175	0.316***	8.689	0.283***	10.733
Teachability	0.32***	7.573	0.31***	7.342	0.208***	6.807
R	0.673		0.698		0.734	
R Square	0.453		0.487		0.538	
F	41.993**		48.180**		59.156**	

First, regarding the influence of humble leadership on the vitality dimension of employee engagement, the results show that: R of regression model is 0.673, R^2 is 0.453, the fitting degree is good, and most of the variables explained can be well explained by the model. The observed value of F test statistics is 41.993, and the corresponding probability p value is 0.000. The significance test of regression equation can be carried out. Since the p value is less than 0.05, a linear model can be established. The results show that the VIF value is less than 5, indicating that there is no multicollinearity between independent variables. Willingness to View Oneself Accurately, Appreciation of others' Strengths and Contributions and Teachability have significant at the 0.05 level. The coefficients are 0.268, 0.261 and 0.320, indicating that humble leadership have significant positive effects on Vitality.

Secondly, regarding the influence of humble leadership on the dedication dimension of employee engagement, the results show: R of model is 0.698, R^2 is 0.487, the fitting degree is good, and most of the variables explained can be well explained by the model. The observed value of F test statistics is 48.180, and the corresponding



probability p value is 0.000. The significance test of regression equation can be carried out. Since the p value is less than 0.05, a linear model can be established. The coefficient results show that the VIF value is less than 5, indicating that there is no multicollinearity between independent variables. Willingness to View Oneself Accurately, Appreciation of others' Strengths and Contributions and Teachability have significant at the 0.05 level. The coefficients are 0.270, 0.316 and 0.310, indicating that humble leadership have significant positive effects on Dedication.

Thirdly, regarding the influence of humble leadership on the focus dimension of employee engagement, the results show that for example: R of regression model is 0.734, R^2 is 0.538, the fitting degree is good, and most of the variables explained can be well explained by the model. The observed value of F test statistics is 59.156, and the corresponding probability p value is 0.000. According to the results of this table, the significance test of regression equation can be carried out. Since the p value is less than 0.05, a linear model can be established. The regression results show that the VIF value is less than 5, indicating that there is no multicollinearity between independent variables. Willingness to View Oneself Accurately, Appreciation of others' Strengths and Contributions and Teachability have significant significance at the 0.05 level. The coefficients are 0.219, 0.283 and 0.208, indicating that humble leadership have significant positive effects on Focus. Therefore, the assumption 1 is true.

Regression analysis of humble leadership and psychological empowerment

In order to further understand the role of humble leadership in psychological empowerment, the study used stepwise regression method to conduct regression analysis with each dimension of psychological empowerment as dependent variable and each dimension of humble leadership as independent variable. The results are shown in Table 9.

Table 9 Regression of each dimension of humble leadership and psychological empowerment

Variable	Meaning of Work		Self-determination		Competence		Impact	
	B	T	B	T	B	T	B	T
Gender	-0.016	-0.184	-0.189**	-2.237	0.116	1.371	0.47***	6.145
Age	0.01	0.164	0.192***	3.333	0.066	1.146	-0.117**	-2.251
Marital	-0.017	-0.283	0.025	0.419	0.086	1.462	-0.06	-1.135
Education	0.194***	2.842	0.161**	2.421	0.143**	2.149	0.106*	1.764
Working	0.113**	2.261	0.026	0.541	0.113**	2.333	0.215***	4.902
Willingness to View Oneself Accurately	0.237***	5.141	0.212***	4.744	0.255***	5.678	0.16***	3.943
Appreciation of others' Strengths and Contributions	0.229***	5.074	0.239***	5.449	0.199***	4.52	0.242***	6.116
Teachability	0.186***	3.555	0.188***	3.701	0.259***	5.089	0.244***	5.312
R	0.507		0.513		0.546		0.61	
R Square	0.257		0.264		0.298		0.372	
F	17.563**		18.165**		21.582**		30.052**	

First, regarding the influence of humble leadership on the dimension of work



meaning in mental authorization, the results show that R of regression model is 0.507, R^2 is 0.257, the fitting degree is good, and most of the variables explained can be well explained by the model. The observed value of F test statistics is 17.563, and the corresponding probability p value is 0.000. According to the results of this table, the significance test of regression equation can be carried out. Since the p value is less than 0.05, a linear model can be established. The results show that the VIF value is less than 5, indicating that there is no multicollinearity between independent variables. Willingness to View Oneself Accurately, Appreciation of others' Strengths and Contributions and Teachability have significant significance at the 0.05 level. The coefficients are 0.237, 0.229 and 0.186, indicating that humble leadership have significant positive effects on Meaning of Work.

Secondly, regarding the influence of humble leadership on the dimension of work autonomy in mental authorization, the results show that R of regression model is 0.513, R^2 is 0.264, the fitting degree is good, and most of the variables explained can be well explained by the model. The observed value of F test statistics is 18.165, and the corresponding probability p value is 0.000. According to the results, the significance test of regression equation can be carried out. Since the p value is less than 0.05, a linear model can be established. The coefficient results show that the VIF value is less than 5, indicating that there is no multicollinearity between independent variables. Willingness to View Oneself Accurately, Appreciation of others' Strengths and Contributions and Teachability have significant significance at the 0.05 level. The coefficients are 0.212, 0.239 and 0.188, indicating that humble leadership have significant positive effects on Self-determination.

Thirdly, regarding the influence of humble leadership on the competency dimension in mental empowerment, the results show that R of regression model is 0.546, R^2 is 0.298, the fitting degree is good, and most of the variables explained can be well explained by the model. The observed value of F test statistics is 21.582, and the corresponding probability p value is 0.000. According to the results of this table, the significance test of regression equation can be carried out. Since the p value is less than 0.05, a linear model can be established. The coefficient results show that the VIF value is less than 5, indicating that there is no multicollinearity between independent variables. Willingness to View Oneself Accurately, Appreciation of others' Strengths and Contributions and Teachability have significant at the 0.05 level. The regression coefficients are 0.255, 0.199 and 0.259, indicating that humble leadership have significant positive effects on Competence.

Fourthly, regarding the influence of humble leadership on the influence dimension of mental authorization, the results show that R of regression model is 0.610, R^2 is 0.372, the fitting degree is good, and most of the variables explained can be well explained by the model. The observed value of F test statistics is 30.052, and the corresponding probability p value is 0.000. According to the results of this table, the significance test of regression equation can be carried out. Since the p value is less than 0.05, a linear



model can be established. The coefficient results show that the VIF value is less than 5, indicating that there is no multicollinearity between independent variables. Willingness to View Oneself Accurately, Appreciation of others' Strengths and Contributions and Teachability have significant at the 0.05 level. The coefficients are 0.160, 0.242 and 0.244, indicating that humble leadership have significant positive effects on Impact. Therefore, the assumption 2 is true.

Regression analysis of psychological empowerment and employee engagement

In order to further understand the effect of psychological empowerment on employee engagement, the stepwise regression method was used to conduct regression analysis on employee engagement, and the results are shown in Table 10.

Table 10 Psychological empowerment and employee engagement regression analysis

Variable	Vitality		Dedication		Focus	
	B	T	B	T	B	T
Gender	-0.075	-1.038	0.000	0.001	0.052	0.946
Age	0.079*	1.659	0.043	0.891	0.019	0.52
Marital	-0.016	-0.337	0.081*	1.692	-0.04	-1.09
Education	0.011	0.208	0.037	0.678	0.065	1.543
Working	-0.053	-1.316	-0.037	-0.902	-0.05	-1.629
Meaning of Work	0.188***	4.959	0.209***	5.464	0.178***	6.081
Self-determination	0.221***	5.789	0.254***	6.604	0.188***	6.389
Competence	0.309***	8.33	0.216***	5.762	0.208***	7.278
Impact	0.248***	5.992	0.338***	8.061	0.197***	6.173
R	0.694		0.709		0.71	
R Square	0.481		0.502		0.504	
F	41.736**		45.427**		45.689**	

First, regarding the influence of psychological authorization on the vitality dimension of employee engagement, the results show that R of regression model is 0.694, R^2 is 0.481, and the fitting degree is good, most of the variables explained can be well explained by the model. The observed value of F test statistics is 41.736, and the corresponding probability p value is 0.000. According to the results of this table, the significance test of regression equation can be carried out. Since the p value is less than 0.05, a linear model can be established. The coefficient results show that the VIF value is less than 5, indicating that there is no multicollinearity between independent variables, and Meaning of Work, Self-determination, Competence and Teachability have significant at the 0.05 level, the coefficients are 0.188, 0.221, 0.309 and 0.248 respectively, indicating that psychological empowerment have significant positive effects on Vitality.

Secondly, regarding the influence of psychological authorization on the dedication dimension of employee engagement, the results show that R of regression model is



0.709, R^2 is 0.502, and the fitting degree is good, most of the variables explained can be well explained by the model. The observed value of F test statistics is 45.427, and the corresponding probability p value is 0.000. According to the results of this table, the significance test of regression equation can be carried out. Since the p value is less than 0.05, a linear model can be established. The coefficient results show that the VIF value is less than 5, indicating that there is no multicollinearity between independent variables, and Meaning of Work, Self-determination, Competence and Teachability have significant at the 0.05 level, the coefficients are 0.209, 0.254, 0.216 and 0.338 respectively, indicating that psychological empowerment have significant positive effects on Dedication.

Thirdly, regarding the influence of psychological authorization on the focus dimension of employee engagement, the results show that R of regression model is 0.710, R^2 is 0.504, and the fitting degree is good, most of the variables explained can be well explained by the model. The observed value of F test statistics is 45.689, and the corresponding probability p value is 0.000. According to the results of this table, the significance test of regression equation can be carried out. Since the p value is less than 0.05, a linear model can be established. The coefficient of VIF value is less than 5, indicating that there is no multicollinearity between independent variables, and Meaning of Work, Self-determination, Competence and Teachability have significant at the 0.05 level, the coefficients are 0.178, 0.188, 0.208 and 0.197 respectively, indicating that psychological empowerment have significant positive effects on Focus. Therefore, the assumption 3 is true.

Conclusions

The progress of science and technology, the contraction of human resources and the upgrading of human capital demand are reshaping the way people work. Therefore, modern construction enterprises are increasingly advocating people-oriented management style to attract and retain employees, consumers and even partners, and the leadership style is also changing day by day. As a representative leadership style of flexible human resource management, humble leadership has a positive impact on the outcome variables such as employees' work attitude, organizational citizenship behavior and engagement. Therefore, this paper studies the humble leadership in the construction industry and its influencing mechanism, and discusses the role of humble leadership in employee engagement.

This study finds that: (1) Humble leadership positively affects employee engagement; (2) Humble leadership positively affects psychological empowerment; (3) Psychological empowerment positively affects employee engagement.

The scores of the four dimensions of psychological authorization are also above the average level, which shows that the authorization felt by the employees of construction enterprises in Liaoning Province is relatively general, so the psychological authorization is at a medium level and needs to be paid attention to by enterprises.



Psychological authorization is a measure of organizational authorization perceived by employees in an enterprise, but the score in this respect is not high, which indicates that employees' perception of authorization is not high, which requires leaders to pay attention and take measures to improve employees' psychological authorization level.

In theory, this study enriches the theoretical system and research scope of leadership style and employee engagement, broadens the analytical perspective of this research field, and puts forward some reasonable suggestions on how to improve employees' engagement behavior in the future. However, there are still some limitations and deficiencies in this study. In the future research, we can further solve the management problems of enterprises in China by developing a scale more suitable for China's national conditions and some scenario research methods.

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