CAUSAL EFFECT OF TRANSFORMATIONAL LEADERSHIP ON EMPLOYEE PERFORMANCE IN AN H COMPANY IN HAIDIAN DISTRICT, BEIJING, CHINA: THE MEDIATING ROLE OF ORGANIZATIONAL COMMITMENT

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ABSTRACT

This research aims to investigate the influence of transformational leadership on employee performance in Company H through organizational commitment. The sample consisted of 340 employees in Company H. A questionnaire was administered to collect data, adopting a stratified random sampling method. Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed for data analysis. The results indicated that transformational leadership has a direct and statistically significant influence on organizational commitment and employee performance at a significance level of 0.055. Simultaneously, transformational leadership indirectly affects employee performance through organizational commitment, also exhibiting statistical significance at a level of 0.055, with a predictive power of 49.4%.

Keywords: Transformational Leadership, Employee Performance, Organizational Commitment

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INTRODUCTION

The arrival of the era of technological and big data transformations has led modern organizations to no longer operate solely in traditional manufacturing industries. Instead, they are organizations that innovate and create cutting-edge technology (Wu, 2023). This allows organizations of this nature to grow rapidly in line with market changes and demands. The complexity and unpredictability of these changes have resulted in today's organizations needing adaptability. They must be able to operate efficiently and adjust to the situations that organizations face (Schwertner, 2017).

The important concept in leading an organization towards success amidst change is transformational leadership, which plays a crucial role in guiding and managing change with vision and creativity, motivating followers to perform beyond expectations (Philip, 2021). Scholars and researchers believe that transformational leadership is the most effective leadership style in the current era (Lai et al., 2020; Mandagi et al., 2023; Malik et al., 2017). Furthermore, transformational leadership also recognizes the importance of human resource development, fostering an organizational culture that supports work and innovation, stimulating the creation of new problem-solving processes (Jaiswal & Dhar, 2015). Additionally, it promotes learning and adaptation within the organization to effectively face the uncertainties that may arise (Le & Lei, 2019).

Employee performance is of utmost importance for managing human resources in business organizations, and various organizations try to use tools to measure and assess employees' job performance in various ways (Paillé, Chen, Boiral, & Jin, 2014). One of the important concepts for evaluating employee job performance in organizations is Key Performance Indicator or KPI, which is a concept of creating traditional tools that have played a significant role in the operation of various business organizations for a long time. KPIs have been effectively used to improve employee performance and business operations (Parmenter, 2015).

KPI (Key Performance Indicator) is a performance evaluation criterion that focuses on quantitatively assessing predefined score levels (del Mar Roldán-García et al., 2021). However, some aspects of performance measurement and evaluation cannot be assessed solely through numbers. Therefore, various scholars and researchers use tools to measure employee performance through self-assessment, evaluating how effective they are in different aspects (Anitha, 2014; Inuwa, 2016; Pradhan & Jena, 2017). Moreover, emphasizing performance evaluation with numeric metrics can lead employees to concentrate solely on improving those metrics, sometimes overlooking the importance of contributing value to the organization. This can include fostering innovation at work, participating in collaborative efforts, sharing knowledge, and more. Organizations that overly focus on numeric performance metrics may not experience sustainable growth and development in the future, even if their numeric scores remain stable or increase (Staron et al., 2016).

It can be said that assessing employee performance with KPIs poses a challenge for organizational adaptability in rapidly changing markets, especially for companies in the technology industry. If an organization is too focused on evaluating performance using KPIs, it can hinder the organization's ability to innovate its products (Stackowiak, Licht, Mantha, & Nagode, 2015).

Therefore, the approach to managing employee job performance must rely on leaders who can inspire employees to think creatively, generate new ideas, and continuously experiment. This concept presents a challenge for new entrepreneurs aiming for significant growth. They need to introduce innovative products and services (Li, Sajjad, Wang, Muhammad Ali, Khaqan, & Amina, 2019).

H Company is a leading startup internet media company with a large user base, located in the Haidian district of Beijing, China. The company's operations involve the development and production of computer software and hardware, the development of network communication

products, and the provision of portal internet technology and media technology services. They are also involved in electronic printing technology development and the sale of their own products. The company faces challenges in creating employee performance because it is committed to producing innovative and groundbreaking results, which can lead to high-pressure and stressful work environments for employees. Therefore, the company seeks ways to enhance productivity among its employees. However, the selected employees are highly skilled, which results in high labor costs. The work experience of these employees is highly valuable, and the organization cannot afford to lose them. Therefore, the company is trying to motivate these employees to have higher organizational commitment so that they continue to stay with the organization.

Due to the reasons mentioned above, the researchers recognize the importance of studying the causal effect of transformational leadership on employee performance in H Company. This will be achieved by examining the mediator variable of organizational commitment to understand the significant phenomena related to the impact of transformational leadership on the creation of mechanisms affecting employee job performance through organizational commitment. This will lead to guidelines for developing organizational leaders to cultivate transformational leadership potential that can lead the organization to success amidst intense competition and sustain organizational efficiency.

This research aims to investigate the influence of transformational leadership on employee performance in Company H through organizational commitment.

LITERATURE REVIEWS

Concepts and theories of Transformational Leadership

Halim et al. (2019) explain that a leader is 'someone with followers,' so being a leader is more than just dictating policies from managers to employees. It is something more complex, and we all know if a leader is good or not when we experience it firsthand. Steinmann et al. (2018) explain that leadership refers to an individual who has the ability to motivate others, build confidence, be accepted and respected, and support the people within an organization. Additionally, they have influence in encouraging individuals to collaborate and work to their fullest potential, achieving the goals and objectives set by the organization. Burns (1978) introduced the concept of transformational leadership, suggesting that it can be exhibited by anyone within an organization, regardless of their position, whether they are leaders or followers. Bass and Avolio's (1994) theory of transformational leadership discusses leadership as a process where leaders influence their colleagues and followers. This is achieved by increasing the efforts of colleagues and followers beyond what is expected, developing their abilities to higher levels and greater potentials, raising awareness of the group's mission and vision, and motivating colleagues and followers to see beyond their self-interests towards the benefits of the organization and society. The process of leadership that influences colleagues or followers consists of four specific behaviors, often referred to as the '4 I's' (Idealized Inspirational Motivation. Intellectual Stimulation. and Individualized Influence. Consideration).

Concepts and theories of Organizational Commitment

Mercurio (2015) explains that organizational commitment is a psychological belief of employees towards their organization, including a sense of attachment to the job, loyalty, and belief in the organization's values. Yousef (2017) states that organizational commitment is a personal attitude and behavior that individuals exhibit towards the organization they are a part of. It involves accepting the organization's goals, feeling like a part of it, being willing and dedicated to exerting maximum effort for the organization's success, investing physical and mental energy in performing job tasks, having loyalty to the organization they work for, and desiring to continue with the organization. Cesário and Chambel (2017) state that

organizational commitment is a crucial attitude for any organization, regardless of its type. Organizational commitment serves as a connection between human thoughts and feelings and the organization's objectives. This connection can be expressed through behavior and emotions, enabling employees to feel ownership of the organization and actively contribute to its strength. It also helps reduce external control or interference. In summary, organizational commitment is a social condition that leads to an organization's success. Allen (2017) discusses the components of Organizational commitment based on the concept of Mever and Allen, which consist of three dimensions: Continuance commitment, Affective commitment, and Normative commitment. The three components have factors that generate commitment in each area, as follows. 1) Continuance Commitment is the feeling that arises from the calculation made by employees based on the investments they have given to the organization and the rewards they receive in return. It manifests in the form of continued work behavior, indicating whether employees will stay with the organization or consider relocating or changing their work location. 2) Affective Commitment is the internal feeling within an individual that aligns with the organization. It's a sense of being part of the organization and a willingness to wholeheartedly contribute to it. 3) Normative Commitment is the feeling influenced by values or social norms. It is the desire to reciprocate the organization for what it has provided, demonstrating a sense of loyalty and goodwill towards the organization.

Concepts and theories of Employee Performance

Shields (2015) explains that work performance is the ability to perform tasks, fulfill responsibilities successfully, efficiently, and on time, utilizing knowledge, skills, and available resources to achieve maximum benefits. Posthuma, Campion, Masimova, and Campion (2013) suggest that factors influencing organizational performance consist of three factors: Organizational structure, personal factors, and technological factors. These factors impact the organization's success by defining its mission, developing strengths, analyzing internal and external opportunities, and fostering teamwork. Kuswati (2020) discusses work performance as the utilization of resources in any operation, with the aim of achieving success, and that success is achieved by using minimal resources and carrying out operations efficiently. This includes time, materials, labor, and other resources required to complete the work accurately and promptly to meet the objectives and needs of the organization. The components of work performance consist of: 1) Quality: Refers to employees in the organization performing their work with correctness, accuracy, without errors, ensuring that the organization benefits, is costeffective, and meets satisfaction. 2) Quantity: Signifies that employees in the organization must perform work according to the set goals or expectations. 3. Timeliness: Refers to the time that organizational personnel must complete their work, whether it be according to the scheduled time or the expectations of the respective unit.

From the literature review, the conceptual framework can be drawn as shown in Figure 1.

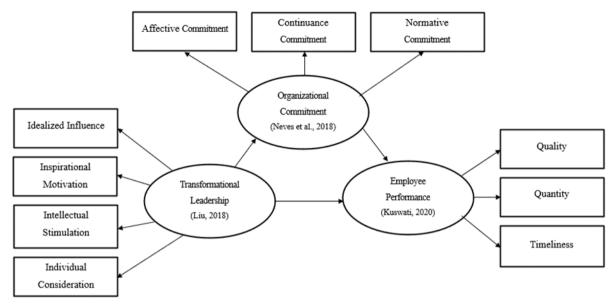


Figure 1 Conceptual Framework

RESEARCH METHODOLOGY

The research population consisted of 453 employees of Company H. The researchers had accurate information regarding the population size. As this study employs statistical hypothesis testing with a structural equation modeling approach, Hair et al. (2010) suggest that the sample size for building a structural equation model should be at least 20 times per observed variable. In this study, there are 10 observed variables, which implies a recommended sample size of 200 samples. The researcher aims to have a sample size sufficient for estimating the entire population with 80% confidence. Consequently, the total dataset comprises 360 individuals. Subsequent to data collection, it was revealed that only 340 sets of questionnaires were usable, accounting for 75.05%. This determination was made using a stratified random sampling method.

The research questionnaire was developed based on a comprehensive literature review and related research to ensure that the questions aligned with the research objectives. It was divided into 5 parts as follows: Part 1 general information questionnaire; Part 2 transformational leadership questionnaire; Part 3 organizational commitment questionnaire; Part 4 employee performance questionnaire; and Part 5 provided space for comments and additional suggestions. The study utilized a validated questionnaire for experimentation with a group similar to the sample group of 30 individuals. Cronbach's alpha was used to test the reliability, with a minimum acceptable score of 0.70, to determine the questionnaire's credibility. The analysis of the questionnaire's reliability with a sample group of 30 individuals was conducted using computer software.

Data analysis encompassed descriptive statistics, including frequency tables, percentages, means, and standard deviations, to provide a preliminary understanding of the data. Inferential statistical analyses were conducted to test research hypotheses, using a significance level of 0.05. These analyses were performed using Partial Least Squares Structural Equation Modeling (PLS-SEM).

RESEARCH RESULTS

The majority of survey respondents are female, constituting 51.5% of the sample (175 individuals). Additionally, the age range of 31 to 40 years accounts for 51.5% of the respondents (175 individuals). Furthermore, 50.9% of the participants (173 individuals) are

married. In terms of educational attainment, 52.1% of the respondents (177 individuals) have education levels below a bachelor's degree. Moreover, 36.8% of the surveyed individuals (125 individuals) reported an average monthly income ranging from 6,001 to 8,000 yuan. Lastly, 34.7% of the participants (118 individuals) possess work experience spanning 1 to 5 years.

Table 1 shows the mean and standard deviation of transformational leadership.

Transformational leadership	$\overline{\mathbf{X}}$	S.D.	Level of opinion
Idealized influence	4.46	0.34	Strongly agree
Inspirational motivation	4.42	0.34	Strongly agree
Intellectual stimulation	4.46	0.33	Strongly agree
Individualized consideration	4.44	0.34	Strongly agree
Total	4.44	0.26	Strongly agree

From Table 1, the majority of respondents' views on transformational leadership are at the strongly agreement level (\overline{X} = 4.44, SD = 0.26). Considering the average level, the majority of respondents have the highest views on Intellectual stimulation (\overline{X} = 4.46, SD = 0.33), followed by Idealized influence (\overline{X} = 4.46, SD = 0.34), with a minimum value of Inspirational motivation (\overline{X} = 4.42, SD = 0.34).

Table 2 shows the mean and standard deviation of organizational commitment

Organizational commitment	$\overline{\mathbf{X}}$	S.D.	Level of opinion
Affective commitment	4.45	0.36	Strongly agree
Continuance commitment	4.45	0.33	Strongly agree
Normative commitment	4.45	0.32	Strongly agree
Total	4.45	0.27	Strongly agree

From Table 2, the majority of respondents' views on organizational commitment are at the strongly agreement level ($\overline{X} = 4.44$, SD = 0.26). Considering the average level, the majority of respondents have the highest views on Normative commitment ($\overline{X} = 4.45$, SD = 0.32), followed by Continuance commitment ($\overline{X} = 4.45$, SD = 0.33), with a minimum value of Affective commitment ($\overline{X} = 4.45$, SD = 0.36)

Table 3 shows the mean and standard deviation of employee performance.

Employee performance	$\bar{\mathbf{X}}$	S.D.	Level of opinion
Quality	4.45	0.30	Strongly agree
Quantity	4.44	0.31	Strongly agree
Timeliness	4.44	0.32	Strongly agree
Total	4.44	0.23	Strongly agree

From Table 3, the majority of respondents' views on employee performance are at the strongly agreement level ($\overline{X} = 4.44$, SD = 0.23). Considering the average level, the majority of respondents have the highest views on Quality ($\overline{X} = 4.45$, SD = 0.30), followed by Quantity ($\overline{X} = 4.44$, SD = 0.31), with a minimum value of Timeliness ($\overline{X} = 4.44$, SD = 0.32).

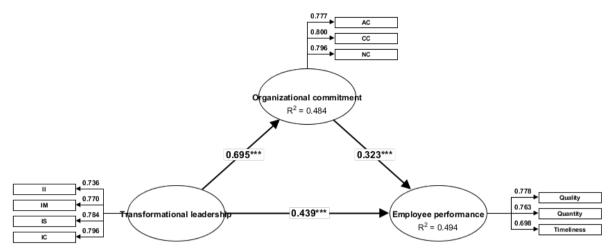


Figure 2 shows the results of hypothesis testing.

Table 4 shows the effects of transformational leadership and organizational commitment on employee performance

Effects	Beta	t-test	p-value	Cohen's F2
TL on organizational commitment	.695	13.751	.000***	0.936
TL on employee performance	.439	6.924	.000***	0.197
Organizational commitment on employee	.323	5.999	.000***	0.107
performance				

^{***} Statistical significance at the .001 level

From table 4, it can be observed that transformational leadership (β = 0.695) directly affects organizational commitment, with a statistical significance of 0.000 and a predictive power of 48.4 percent (R^2 = 0.484). Additionally, both transformational leadership (β = 0.439) and organizational commitment (β = 0.323) directly influence employee performance, with statistical significance values of 0.000, respectively. The predictive power is 49.4 percent (R^2 = 0.494).

Table 5 shows the direct, indirect, and overall impact of transformational leadership on employee performance through organizational commitment.

Variables	Effect	Organizational commitment	Employee performance
Transformational leadership	DE	0.695	0.439
	IE	-	0.225
	TE	0.695	0.664
Organizational commitment	DE	-	0.323
	IE	-	-
	TE	-	0.323

From table 5, it is evident that transformational leadership has a direct impact on organizational commitment with a coefficient of 0.695. Both transformational leadership and organizational commitment also directly influence employee performance, with coefficients of 0.439 and 0.323, respectively. Additionally, transformational leadership indirectly affects employee performance through organizational commitment, with an indirect impact of 0.225.

^{**} Statistical significance at the .01 level

^{*} Statistical significance at the .05 level

Consequently, the total effect of transformational leadership on employee performance amounts to 0.664.

DISCUSSION & CONCLUSION

Transformational leadership is widely recognized for its positive impact on organizational commitment. Leaders who exhibit transformational qualities, such as inspiring vision, intellectual stimulation, individualized consideration, and idealized influence, tend to foster a sense of commitment among their followers. Employees are more likely to align themselves with the organization's goals and values when led by transformational leaders, enhancing overall organizational commitment. According to the findings of Wang and Hsieh (2014), who examined the topic of "Transformational Leadership and Organizational Commitment": The Mediating Role of Trust, this study used a cross-sectional survey design that employed structured questionnaires to measure transformational leadership, trust, and organizational commitment. The sample included 600 participants from different industries to ensure diversity of organizational context. The research found a significant positive relationship between transformational leadership and organizational commitment. Trust was found to be an important mediator, suggesting that the impact of transformational leadership on commitment is partly explained by employees' trust in their leaders.

The direct influence of transformational leadership on employee performance is evident. Through motivational tactics and a focus on individual growth, transformational leaders can significantly enhance the skills, abilities, and motivation of their team members. This direct relationship between leadership style and employee performance is a key aspect to consider in the context of organizational success. According to the findings of Wang et al. (2015), who examined the topic of Linking Transformational Leadership and Employee Performance: The Role of Trust and Regulatory Focus, Wang and colleagues used a survey-based design that included measures of transformational leadership, trust, and regulatory focus. The study included 350 employees from different industries to ensure diversity of work environments. The research found that transformational leadership improves employee performance through the mediating effect of trust. In addition, employees' regulatory focus played a crucial role in this relationship.

Furthermore, the relationship between transformational leadership, organizational commitment, and employee performance is intricate. Organizational commitment serves as a mediating factor, channeling the positive effects of transformational leadership towards improved employee performance. Employees who are committed to the organization are more likely to invest effort and dedication in their tasks, resulting in enhanced overall performance. In addition to the direct impact, there is an indirect pathway through which transformational leadership influences employee performance—via organizational commitment. The commitment of employees to the organization acts as a bridge, transmitting the positive effects of transformational leadership to the performance domain. This indirect influence underscores the importance of fostering a strong organizational commitment to realize the full potential of transformational leadership in enhancing employee performance.

In conclusion, the intricate relationship between transformational leadership, organizational commitment, and employee performance highlights the multifaceted nature of effective leadership in organizational settings. Understanding and leveraging these connections can contribute to creating a workplace environment that not only fosters commitment but also maximizes the performance of individual employees and the organization as a whole.

REFERENCES

- Allen, N. J. (2017). Organizational commitment in the military: A discussion of theory and practice. In Organizational Commitment in the Military (pp. 237-253). London: Psychology Press.
- Anitha, J. (2014). Determinants of employee engagement and their impact on employee performance. *International journal of productivity and performance management*, 63(3), 308-323.
- Bass, B. M., & Avolio, B. J. (1994). *Improving organizational effectiveness through transformational leadership*. Washington DC: Sage Publications, Inc.
- Burns, J. M. (1978). Leadership. New York: Harper & Row.
- Cesário, F., & Chambel, M. J. (2017). Linking organizational commitment and work engagement to employee performance. *Knowledge and Process Management*, 24(2), 152-158.
- del Mar Roldán-García, M., García-Nieto, J., Maté, A., Trujillo, J., & Aldana-Montes, J. F. (2021). Ontology-driven approach for KPI meta-modelling, selection and reasoning. *International Journal of Information Management, 58*, Article 102018.
- Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010). *Multivariate Data Analysis*. 7th ed. New York: Pearson.
- Halim, N. A., Basri, R., Yusof, A., & Hassan, A. (2019). Relationship between Senior Assistant of Extra Curricular Leadership Styles and Job Satisfaction of Extra Curricular Teachers in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 9(11).
- Inuwa, M. (2016). Job satisfaction and employee performance: An empirical approach. *The Millennium University Journal*, 1(1), 90-103.
- Jaiswal, N. K., & Dhar, R. L. (2015). Transformational leadership, innovation climate, creative self-efficacy and employee creativity: A multilevel study. *International journal of hospitality management*, 51, 30-41.
- Kuswati, Y. (2020). The effect of motivation on employee performance. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, 3(2), 995-1002.
- Lai, F. Y., Tang, H. C., Lu, S. C., Lee, Y. C., & Lin, C. C. (2020). Transformational leadership and job performance: The mediating role of work engagement. *Sage Open, 10*(1), DOI: 10.1177/2158244019899085
- Le, P. B., & Lei, H. (2019). Determinants of innovation capability: the roles of transformational leadership, knowledge sharing and perceived organizational support. *Journal of knowledge management*, 23(3), 527-547.
- Li, H., Sajjad, N., Wang, Q., Muhammad Ali, A., Khaqan, Z., & Amina, S. (2019). Influence of transformational leadership on employees' innovative work behavior in sustainable organizations: Test of mediation and moderation processes. *Sustainability*, 11(6), Article 1594.
- Malik, W. U., Javed, M., & Hassan, S. T. (2017). Influence of transformational leadership components on job satisfaction and organizational commitment. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 11(1), 147-166.
- Mandagi, D. W., Rantung, D. I., Rasuh, D., & Kowaas, R. (2023). Leading through disruption: The role of transformational leadership in the digital age. *Jurnal Mantik*, 7(3), 1597-1161.
- Mercurio, Z. A. (2015). Affective commitment as a core essence of organizational commitment: An integrative literature review. *Human resource development review*, 14(4), 389-414.

- Paillé, P., Chen, Y., Boiral, O., & Jin, J. (2014). The impact of human resource management on environmental performance: An employee-level study. *Journal of Business ethics*, 121, 451-466.
- Parmenter, D. (2015). Key performance indicators: developing, implementing, and using winning KPIs. New Jersey: John Wiley & Sons.
- Philip, J. (2021). Viewing digital transformation through the lens of transformational leadership. *Journal of Organizational Computing and Electronic Commerce*, 31(2), 114-129.
- Posthuma, R. A., Campion, M. C., Masimova, M., & Campion, M. A. (2013). A high performance work practices taxonomy: Integrating the literature and directing future research. *Journal of management*, 39(5), 1184-1220.
- Pradhan, R. K., & Jena, L. K. (2017). Employee performance at workplace: Conceptual model and empirical validation. *Business Perspectives and Research*, 5(1), 69-85.
- Schwertner, K. (2017). Digital transformation of business. *Trakia Journal of Sciences*, 15(1), 388-393.
- Shields, J., Brown, M., Kaine, S., Dolle-Samuel, C., North-Samardzic, A., McLean, P., ... & Robinson, J. (2015). *Managing employee performance & reward: Concepts, practices, strategies*. Cambridge: Cambridge University Press.
- Stackowiak, R., Licht, A., Mantha, V., & Nagode, L. (2015). Big Data and the Internet of Things: enterprise information architecture for a new age. New York: Apress Media.
- Staron, M., Meding, W., Niesel, K., & Abran, A. (2016, October). *A key performance indicator quality model and its industrial evaluation*. In 2016 Joint Conference of the International Workshop on Software Measurement and the International Conference on Software Process and Product Measurement (IWSM-MENSURA) (pp. 170-179). IEEE.
- Steinmann, B., Klug, H. J. P., & Maier, G. W. (2018). The Path Is the Goal: How Transformational Leaders Enhance Followers' Job Attitudes and Proactive Behavior. *Frontiers in Psychology*, 9, Article 2338.
- Wang, D., & Hsieh, C. C. (2014). Transformational Leadership and Organizational Commitment: The Mediating Role of Trust. *International Journal of Human Resource Management*, 25(9), 1336-1350.
- Wang, D., Peng, J., & Wu, C. (2015). Linking Transformational Leadership and Employee Performance: The Role of Trust and Regulatory Focus. *International Journal of Human Resource Management*, 26(13), 1739-1757.
- Wu, T. (2023). Analysis of the Digital Transformation of Big Data Era. *Highlights in Business, Economics and Management, 16,* 288-293.
- Yousef, D. A. (2017). Organizational commitment, job satisfaction and attitudes toward organizational change: A study in the local government. *International Journal of Public Administration*, 40(1), 77-88.

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