

## Driving Performance Excellence: Insights from Retail Sector on Transformational Leadership and Knowledge Sharing Behavior

---

**Rinawati Rinawati<sup>1</sup>, Iwan Sidharta<sup>2</sup>**

Universitas Adhirajasa Reswara Sanjaya, Bandung<sup>1</sup>, Sekolah Tinggi Ilmu Ekonomi Pasudnan Bandung, Indonesia<sup>2</sup>

Email: [rinawati@ars.ac.id](mailto:rinawati@ars.ac.id)<sup>1</sup>, [i\\_sidh@stiepas.ac.id](mailto:i_sidh@stiepas.ac.id)<sup>2</sup>

### **ABSTRACT**

*This research delves into the pivotal role of Knowledge-sharing behavior and Transformational Leadership in enhancing employee performance within the retail sector. By investigating the relationships between these key factors, the study aims to provide valuable insights for optimizing workforce effectiveness and driving organizational success. The research methodology involves a quantitative approach, with data collected through surveys from 96 retail sector employees in Bandung. Instruments validated by reputable researchers were utilized to measure transformative leadership, Knowledge-sharing behavior, and employee performance. Data quality was assessed using outer loading, AVE, Composite Reliability, and Cronbach's Alpha, followed by analysis through Partial Least Squares. The findings are expected to shed light on how fostering a culture of knowledge exchange and implementing transformative leadership practices can positively impact employee performance in the retail industry. Ultimately, this research seeks to offer practical recommendations for retail organizations looking to enhance operational efficiency, employee engagement, and overall performance in a competitive market environment.*

*Keywords: Transformational Leadership, Knowledge-sharing behavior, Employee Performance, Retail Sector.*

## INTRODUCTION

In today's dynamic and competitive retail landscape, the success of organizations hinges greatly on the performance and engagement of their employees. (Ying et al. 2021; Davis-Sramek et al. 2020; Battisti, Agarwal & Brem, 2022) Understanding the key factors that drive employee performance is essential for retail businesses seeking to thrive in this fast-paced environment. (Aversa, Hernandez & Doherty, 2021; Grewal et al. 2021) This research delves into the impactful realms of knowledge-sharing behavior and transformational leadership within the retail sector, aiming to shed light on how these elements can enhance employee performance and drive organizational success. By exploring the interplay between knowledge-sharing practices, transformative leadership styles, and employee performance outcomes, this study seeks to provide valuable insights and practical implications for retail businesses looking to optimize their operations and cultivate a high-performance work culture. Through a comprehensive analysis of these critical factors, this research aims to offer strategic recommendations and actionable strategies that can empower retail organizations to achieve sustained growth and competitive advantage in today's ever-evolving retail landscape.

The urgency of this research lies in its potential to address pressing challenges faced by the retail sector in enhancing employee performance and driving organizational success. (Noble et al. 2022; Nudurupati, Garengo & Bititci, 2021; Grewal et al. 2020) In today's rapidly evolving retail landscape, where competition is fierce and customer expectations are constantly changing, the need to optimize employee performance is paramount. (Gauri et al. 2021; Gupta & Ramachandran, 2021; Shankar et al. 2021) By exploring the impact of knowledge-sharing behavior and transformational leadership on employee performance, this research aims to provide timely insights and practical recommendations that can help retail businesses navigate challenges, improve operational efficiency, and foster a culture of innovation and excellence. (Har et al. 2022; Jocevski, 2020; Akram, 2021) The urgency of this research is underscored by the critical role that engaged and high-performing employees play in the success of retail organizations, making it essential for businesses to leverage key factors such as knowledge-sharing and transformational leadership to stay competitive and thrive in the dynamic retail environment.

Żywiołek et al. (2022) underscore the significant role of knowledge sharing in facilitating

the effectiveness of transformational leadership and promoting employee adaptiveness within organizations. The study highlights the interconnected nature of knowledge exchange, leadership practices, and employee resilience in navigating challenges and driving performance outcomes. The research conducted by Kim & Park (2020) highlights the direct impact of transformational leadership on organizational climate, knowledge-sharing, and organizational learning within an organizational setting. The study reveals that knowledge-sharing behavior not only influences organizational learning but also serves as a mediator in connecting transformational leadership with organizational learning outcomes. Various studies such as those conducted by Son, Phong & Loan (2020), Anselmann & Mulder (2020), Rafique et al. (2022), and Dwivedi, Chaturvedi & Vashist (2020) consistently demonstrate the significant impact of transformational leadership and knowledge sharing on organizational performance. These studies collectively emphasize the close relationship between transformational leadership practices, knowledge exchange initiatives, and organizational effectiveness.

While the research landscape highlights the importance of transformational leadership and knowledge sharing in organizational performance, there remains a limited number of studies that specifically examine these dynamics within the retail sector. The unique context of the

retail industry, with its dynamic customer interactions, operational challenges, and competitive landscape, calls for a focused investigation into how transformational leadership and knowledge sharing impact organizational outcomes in this sector. By delving deeper into the retail environment, researchers can uncover industry-specific nuances and opportunities for leveraging leadership practices and knowledge exchange to drive performance improvements.

The overarching aim of this study is to explore and understand the dynamics between Knowledge-sharing behavior, Transformational Leadership, and employee performance in the retail sector. By addressing these research questions, the study seeks to provide insights that can inform strategic decision-making, enhance operational effectiveness, and drive performance improvements in retail organizations. Ultimately, the aim is to contribute valuable knowledge that can help retail businesses optimize their workforce, boost productivity, and achieve sustainable growth in a competitive market environment.

## **METHOD**

To address the research questions at hand, the author employed a quantitative approach to test the research hypotheses effectively. The data utilized in this study consisted of survey responses from employees working in the retail

sector in the city of Bandung. The author engaged with several retail sector employees who willingly participated in the research endeavor. Through the data collection process using a simple random sampling approach, a total of 96 employees were selected to provide comprehensive responses to the structured research instruments through a Google Form.

This methodological approach allowed for a systematic and structured gathering of data, ensuring a representative sample of employees from the retail sector in Bandung. By utilizing a quantitative method and survey instrument, the research aimed to capture valuable insights into the relationships between Knowledge-sharing behavior, Transformational Leadership, and employee performance in the specific context of the retail industry. The use of Google Form facilitated the collection of responses in an organized manner, enabling efficient data compilation and analysis to derive meaningful conclusions and actionable recommendations for retail organizations in Bandung and beyond.

The operational variables and instruments utilized in this research encompass transformative leadership, Knowledge-sharing behavior, and employee performance. The instrument for transformative leadership aligns with the tool developed by Bas & Avolio (1993), which has been validated by Bajcar & Babiak (2022). On the other hand, the variable of Knowledge-sharing behavior refers to the

instrument devised by Van Den Hooff & De Ridder (2004), validated by Sidharta (2023). Finally, the instrument for assessing employee performance statements draws upon the individual work performance tool developed by Koopmans et al. (2011), validated by Sidharta (2023).

By leveraging established instruments that have undergone validation by reputable researchers, this study ensures the robustness and reliability of data collection pertaining to transformative leadership, Knowledge-sharing behavior, and employee performance in the context of the retail sector. These instruments provide a structured framework for measuring and analyzing the interplay between key variables, offering valuable insights into how these factors influence employee performance and organizational success in the dynamic landscape of the retail industry.

After consolidating the respondent data, the author proceeded to assess the data quality by referencing the results of outer loading, Average Variance Extracted (AVE), Composite Reliability, and Cronbach's Alpha. These quality testing metrics help ensure the reliability and validity of the data collected, providing insights into the consistency and accuracy of the measurement instruments used in the study.

Subsequently, the author conducted data analysis using a non-parametric approach, specifically employing Partial Least Squares (PLS) as the analytical method. PLS is a robust

statistical technique commonly utilized in social science research to analyze complex relationships and structural models, making it well-suited for examining the interrelationships between transformative leadership, Knowledge-sharing behavior, and employee performance in the retail sector.

### RESULTS and DISCUSSION

Upon analyzing the data recapitulation, it is evident that 61.6% of the respondents were female, with a predominant age group of employees under 30 years old, accounting for 67.8% of the participants. Additionally, 17.3% of the respondents fell within the age range of 31 to 39 years. In terms of tenure, the majority of respondents (47.6%) had less than 3 years of work experience, followed by 27.2% of respondents who had been with the organization for 4 to 6 years. These demographic characteristics shed light on the profile of the respondents involved in the study, providing valuable insights into the representation of gender, age distribution, and tenure within the sample group. Understanding these respondent characteristics is essential for interpreting the research findings and identifying any potential patterns or trends that may influence the outcomes related to transformative leadership, knowledge-sharing behavior, and employee performance within the context of the retail sector.

Further details on the validation and reliability testing of the data are elaborated in Table 1 below.

**Table 1. Validity and Reliability Result**

|      | KSB       | TL        | EP        | CR        | CA        | AVE       |
|------|-----------|-----------|-----------|-----------|-----------|-----------|
| KSB1 | 0,76<br>7 |           |           |           |           |           |
| KSB2 | 0,77<br>8 |           |           |           |           |           |
| KSB3 | 0,74<br>1 |           |           |           |           |           |
| KSB4 | 0,74<br>7 |           |           |           |           |           |
| KSB5 | 0,71<br>4 |           |           |           |           |           |
| KSB6 | 0,70<br>2 |           |           | 0,95<br>1 | 0,94<br>4 | 0,59<br>7 |
| KSB7 | 0,81<br>4 |           |           |           |           |           |
| KSB8 | 0,79<br>1 |           |           |           |           |           |
| KSB9 | 0,80<br>0 |           |           |           |           |           |
| KSB1 | 0,81<br>0 |           |           |           |           |           |
| KSB1 | 0,84<br>1 |           |           |           |           |           |
| KSB1 | 0,76<br>2 |           |           |           |           |           |
| KSB1 | 0,76<br>3 |           |           |           |           |           |
| TL1  |           | 0,74<br>1 |           |           |           |           |
| TL2  |           | 0,80<br>6 |           |           |           |           |
| TL3  |           | 0,83<br>8 |           | 0,90<br>4 | 0,87<br>3 | 0,61<br>1 |
| TL4  |           | 0,77<br>4 |           |           |           |           |
| TL5  |           | 0,76<br>6 |           |           |           |           |
| TL6  |           | 0,76<br>3 |           |           |           |           |
| EPer |           |           | 0,87<br>4 |           |           |           |
| EPer |           |           | 0,91<br>2 |           |           |           |

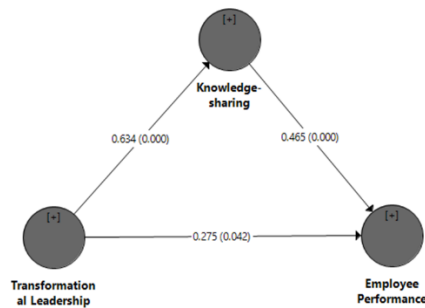
|        |      |      |      |      |
|--------|------|------|------|------|
| EPer 3 | 0,85 | 0,94 | 0,93 | 0,74 |
| EPer 4 | 0,80 | 8    | 1    | 5    |
| EPer 5 | 0,87 | 3    |      |      |
| EPer 6 | 0,85 | 1    |      |      |

The analysis of validity and reliability in Table 1 reveals that a total of 13 research instruments were deemed valid for measuring Knowledge-sharing behavior, 6 for Transformational Leadership, and 6 for Task Employee Performance. These instruments demonstrated strong validity with outer loadings above 0.7 and AVE values exceeding 0.5. Additionally, the Composite Reliability and Cronbach's Alpha values were both above 0.7, indicating good internal consistency. With these robust measurements in place, the author proceeded to conduct data analysis to test the research hypotheses effectively.

**Tabel 2. Data Analysis Results of Path Coefficient and Hypothesis Testing**

|   | Path Coefficients | T Statistics | P Values | Hypotheses |
|---|-------------------|--------------|----------|------------|
| Knowledge-sharing -> Employee Performance           | 0,465             | 4,053        | 0.000    | Accept     |
| Transformational Leadership -> Employee Performance | 0,275             | 2,040        | 0,042    | Accept     |

|  |          |       |                   |        |
|--|----------|-------|-------------------|--------|
| <b>Performance Transformational Leadership -&gt; Knowledge-sharing</b> | 0,634    | 8,625 | 0.000             | Accept |
| <b>Employee Performance Knowledge-sharing</b>                          | 0,465    |       |                   |        |
| <b>Transformational Leadership Employee Performance</b>                | 0,275    |       |                   |        |
|  | R Square |       | R Square Adjusted |        |
| <b>Employee Performance Knowledge-sharing</b>                          | 0,455    |       | 0,439             |        |
| <b>Transformational Leadership Employee Performance</b>                | 0,402    |       | 0,394             |        |



**Figure 1. The Results of The Knowledge-Sharing Behavior and Implementing Transformational Leadership Practices to Elevate Employee Performance**

The path coefficients in Tabel 2 and figure 1 reveal significant findings, Knowledge-sharing has a strong positive impact on Employee Performance (0.465), supported by a high T statistic (4.053) and a low P value (0.000), leading to the acceptance of the hypothesis. Similarly, transformational leadership shows a positive effect on employee performance (0.275), meeting the acceptance criteria with a T statistic of 2.040 and a P value of 0.042. Moreover, the path coefficients demonstrate a substantial

relationship between transformational leadership and knowledge-sharing (0.634), with a high T statistic (8.625) and a P value of 0.000, confirming the hypothesis. The R Square values indicate that employee performance (0.455) and knowledge-sharing (0.402) are satisfactorily explained by the model. These results emphasize the importance of knowledge-sharing behavior and transformational leadership in enhancing employee performance within organizational settings.

The findings underscore the significance of fostering Knowledge-sharing behavior and implementing transformational leadership practices to elevate employee performance in organizational environments. By prioritizing a culture of sharing knowledge and embracing transformative leadership styles, organizations can cultivate a conducive atmosphere for improved employee performance. Knowledge-sharing encourages collaboration, innovation, and continuous learning among employees, leading to enhanced productivity and problem-solving capabilities. On the other hand, transformational leadership inspires and motivates employees to reach their full potential, fostering a sense of empowerment, creativity, and engagement in their work. When combined, these factors create a synergistic effect that not only boosts individual performance but also contributes to overall organizational success. Therefore, organizations that prioritize

Knowledge-sharing behavior and transformational leadership are likely to experience higher levels of employee satisfaction, productivity, and ultimately, performance excellence. The findings of this research align with previous studies by Wu & Lee (2020), Zhao et al. (2023), Phong & Son (2020), and Yin et al. (2020), indicating that transformational leadership has the potential to enhance knowledge sharing practices and subsequently lead to improved employee performance. These studies collectively emphasize the positive impact of transformational leadership on fostering a culture of knowledge exchange within organizations, which in turn contributes to heightened employee performance levels. By building upon the insights provided by these research endeavors, the current study underscores the significance of transformational leadership in driving organizational effectiveness through the facilitation of knowledge sharing processes. The consistent findings across these studies highlight the robust relationship between transformational leadership, knowledge sharing dynamics, and employee performance outcomes, offering valuable implications for organizations seeking to optimize their leadership strategies and knowledge management practices to achieve enhanced performance results.

This research offers valuable insights for the retail sector by highlighting the crucial role of Knowledge-sharing behavior and

transformational leadership in enhancing employee performance. In the retail industry, where customer service, operational efficiency, and employee motivation are paramount, the findings suggest that fostering a culture of sharing knowledge and implementing transformative leadership practices can lead to significant benefits. By encouraging knowledge-sharing among retail employees, organizations can improve product knowledge, customer service skills, and problem-solving abilities, ultimately enhancing the overall customer experience. Additionally, transformational leadership can inspire retail teams to excel, drive innovation, and adapt to changing market dynamics effectively.

The combination of these factors can result in improved employee satisfaction, reduced turnover rates, increased sales performance, and ultimately, a competitive edge in the retail sector. Therefore, this research provides practical implications for retail businesses looking to optimize their operations, enhance employee engagement, and achieve sustainable growth in a highly dynamic and competitive market environment.

## **CONCLUSION**

The research underscores the vital importance of Knowledge-sharing behavior and Transformational Leadership in enhancing Employee Performance within organizational

settings, particularly in the retail sector. By fostering a culture of knowledge exchange and embracing transformative leadership styles, retail businesses can drive employee engagement, productivity, and overall performance, ultimately leading to a competitive advantage in the market. Based on the findings, it is recommended that retail organizations prioritize initiatives that promote Knowledge-sharing among employees and invest in developing Transformational Leadership capabilities at all levels of management. This can be achieved through training programs, communication strategies, and leadership development initiatives tailored to the unique needs of the retail sector.

Furthermore, it is suggested that retail businesses regularly assess and monitor the impact of Knowledge-sharing and Transformational Leadership practices on employee performance to ensure continuous improvement and alignment with organizational goals. Implementing feedback mechanisms and performance metrics can help track progress and identify areas for further enhancement. However, it is important to acknowledge the limitations of the study, such as the focus on specific variables and the generalizability of findings across different retail subsectors. Future research could explore additional factors influencing employee performance in the retail industry and conduct longitudinal studies to provide deeper insights into the long-term impact of Knowledge-sharing



behavior and Transformational Leadership on organizational success.

## REFERENCES

- Akram, U., Fülöp, M. T., Tiron-Tudor, A., Topor, D. I., & Căpușneanu, S. (2021). Impact of digitalization on customers' well-being in the pandemic period: Challenges and opportunities for the retail industry. *International Journal of Environmental Research and Public Health*, 18(14), 7533. <https://doi.org/10.3390/ijerph18147533>
- Anselmann, V., & Mulder, R. H. (2020). Transformational leadership, knowledge sharing and reflection, and work teams' performance: A structural equation modelling analysis. *Journal of Nursing Management*, 28(7), 1627-1634. <https://doi.org/10.1111/jonm.13118>
- Aversa, J., Hernandez, T., & Doherty, S. (2021). Incorporating big data within retail organizations: A case study approach. *Journal of retailing and consumer services*, 60, 102447. <https://doi.org/10.1016/j.jretconser.2021.102447>
- Bajcar, B., & Babiak, J. (2022). Transformational and transactional leadership in the Polish organizational context: Validation of the full and short forms of the multifactor leadership questionnaire. *Frontiers in psychology*, 13, 908594.
- Bass, B. M., & Avolio, B. J. (1993). Transformational leadership and organizational culture. *Public administration quarterly*, 112-121.
- Battisti, S., Agarwal, N., & Brem, A. (2022). Creating new tech entrepreneurs with digital platforms: Meta-organizations for shared value in data-driven retail ecosystems. *Technological Forecasting and Social Change*, 175, 121392. <https://doi.org/10.1016/j.techfore.2021.121392>
- Davis-Sramek, B., Ishfaq, R., Gibson, B. J., & Defee, C. (2020). Examining retail business model transformation: a longitudinal study of the transition to omnichannel order fulfillment. *International Journal of Physical Distribution & Logistics Management*, 50(5), 557-576. <https://doi.org/10.1108/IJPDLM-02-2019-0055>
- Dwivedi, P., Chaturvedi, V., & Vashist, J. K. (2020). Transformational leadership and employee efficiency: knowledge sharing as mediator. *Benchmarking: An International Journal*, 27(4), 1571-1590. <https://doi.org/10.1108/BIJ-08-2019-0356>
- Gauri, D. K., Jindal, R. P., Ratchford, B., Fox, E., Bhatnagar, A., Pandey, A., ... & Howerton, E. (2021). Evolution of retail formats: Past, present, and future. *Journal of Retailing*, 97(1), 42-61.

- <https://doi.org/10.1016/j.jretai.2020.11.002>  
Grewal, D., Kroschke, M., Mende, M., Roggeveen, A. L., & Scott, M. L. (2020). Frontline cyborgs at your service: How human enhancement technologies affect customer experiences in retail, sales, and service settings. *Journal of Interactive Marketing*, 51(1), 9-25. <https://doi.org/10.1016/j.intmar.2020.03.001>
- Grewal, D., Gauri, D. K., Roggeveen, A. L., & Sethuraman, R. (2021). Strategizing retailing in the new technology era. *Journal of Retailing*, 97(1), 6-12. <https://doi.org/10.1016/j.jretai.2021.02.004>
- Gupta, S., & Ramachandran, D. (2021). Emerging market retail: transitioning from a product-centric to a customer-centric approach. *Journal of Retailing*, 97(4), 597-620. <https://doi.org/10.1016/j.jretai.2021.01.008>
- Har, L. L., Rashid, U. K., Te Chuan, L., Sen, S. C., & Xia, L. Y. (2022). Revolution of retail industry: from perspective of retail 1.0 to 4.0. *Procedia Computer Science*, 200, 1615-1625. <https://doi.org/10.1016/j.procs.2022.01.362>
- Jocevski, M. (2020). Blurring the lines between physical and digital spaces: business model innovation in retailing. *California Management Review*, 63(1), 99-117. <https://doi.org/10.1177/0008125620953639>
- Kim, E. J., & Park, S. (2020). Transformational leadership, knowledge sharing, organizational climate and learning: an empirical study. *Leadership & organization development journal*, 41(6), 761-775. <https://doi.org/10.1108/LODJ-12-2018-0455>
- Koopmans, L., Bernaards, C. M., Hildebrandt, V. H., Schaufeli, W. B., de Vet Henrica, C. W., & Van Der Beek, A. J. (2011). Conceptual frameworks of individual work performance: A systematic review. *Journal of occupational and environmental medicine*, 53(8), 856-866.
- Noble, S. M., Mende, M., Grewal, D., & Parasuraman, A. (2022). The Fifth Industrial Revolution: How harmonious human-machine collaboration is triggering a retail and service [r] evolution. *Journal of Retailing*, 98(2), 199-208. <https://doi.org/10.1016/j.jretai.2022.04.003>
- Nudurupati, S. S., Garengo, P., & Bititci, U. S. (2021). Impact of the changing business environment on performance measurement and management practices. *International Journal of Production Economics*, 232, 107942. <https://doi.org/10.1016/j.ijpe.2020.107942>
- Phong, L. B., & Son, T. T. (2020). The link between transformational leadership and knowledge sharing: mediating role of distributive, procedural and interactional justice. *Journal of Information & Knowledge*

- Management, 19(03), 2050020.  
<https://doi.org/10.1142/S0219649220500203>
- Rafique, M. A., Hou, Y., Chudhery, M. A. Z., Waheed, M., Zia, T., & Chan, F. (2022). Investigating the impact of pandemic job stress and transformational leadership on innovative work behavior: The mediating and moderating role of knowledge sharing. *Journal of Innovation & Knowledge*, 7(3), 100214.  
<https://doi.org/10.1016/j.jik.2022.100214>
- Shankar, V., Kalyanam, K., Setia, P., Golmohammadi, A., Tirunillai, S., Douglass, T., ... & Waddoups, R. (2021). How technology is changing retail. *Journal of Retailing*, 97(1), 13-27.  
<https://doi.org/10.1016/j.jretai.2020.10.006>
- Sidharta, I. (2023). Improving Task and Quality Performance: The Role of Affective Commitment, Engaged Employees and Creativity. *Jurnal Ekonomi, Bisnis & Entrepreneurship (e-Journal)*, 17(2), 239-252.
- Sidharta, I. (2023). The Effect of Motivation on Teacher Performance: Mediating Role of Knowledge Sharing. *Jurnal Ekonomi, Bisnis & Entrepreneurship (e-Journal)*, 17(1), 183-194.
- Son, T. T., Phong, L. B., & Loan, B. T. T. (2020). Transformational leadership and knowledge sharing: determinants of firm's operational and financial performance. *Sage Open*, 10(2), 2158244020927426.
- Van Den Hooff, B., & De Ridder, J. A. (2004). Knowledge sharing in context: the influence of organizational commitment, communication climate and CMC use on knowledge sharing. *Journal of knowledge management*, 8(6), 117-130.
- Yin, J., Ma, Z., Yu, H., Jia, M., & Liao, G. (2020). Transformational leadership and employee knowledge sharing: Explore the mediating roles of psychological safety and team efficacy. *Journal of Knowledge Management*, 24(2), 150-171.  
<https://doi.org/10.1108/JKM-12-2018-0776>
- Ying, S., Sindakis, S., Aggarwal, S., Chen, C., & Su, J. (2021). Managing big data in the retail industry of Singapore: Examining the impact on customer satisfaction and organizational performance. *European Management Journal*, 39(3), 390-400.  
<https://doi.org/10.1016/j.emj.2020.04.001>
- Wu, W. L., & Lee, Y. C. (2020). Do work engagement and transformational leadership facilitate knowledge sharing? A perspective of conservation of resources theory. *International journal of environmental research and public health*, 17(7), 2615.  
<https://doi.org/10.3390/ijerph17072615>
- Zhao, R., Feng, N., Wei, F., & Wang, Y. (2023). Rewards and knowledge sharing in the

CoPS development context: the moderating role of transformational leadership. *Journal of Knowledge Management*, 27(5), 1228-1250. <https://doi.org/10.1108/JKM-10-2021-0780>

Żywiołek, J., Tucmeanu, E. R., Tucmeanu, A. I., Isac, N., & Yousaf, Z. (2022). Nexus of transformational leadership, employee adaptiveness, knowledge sharing, and employee creativity. *Sustainability*, 14(18), 11607. <https://doi.org/10.3390/su141811607>



© 2024 by the authors.  
Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC Attribution-NonCommercial-ShareAlike 4.0) license (<https://creativecommons.org/licenses/by-nc-sa/4.0/>).