

The Mediating Role of Employee Engagement in the Relationship between Digital Transformational Leadership and Organizational Agility in Indonesian Manufacturing SMEs

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Abstract

This study examines the mediating role of employee engagement in the relationship between digital transformational leadership and organizational agility within manufacturing SMEs in North Sumatra. The digital era demands that organizations, particularly small and medium enterprises in emerging economies, exhibit agility to remain competitive. While digital transformational leadership is recognized as a driver of such agility, the specific mechanisms facilitating this relationship require further investigation, especially in contexts like Indonesia where employee engagement may be pivotal. Grounded in the Resource-Based View, this research employs a quantitative approach. Data were collected via structured questionnaires from 180 respondents across 60 manufacturing SMEs in North Sumatra, including owners, managers, and supervisors. The conceptual model was tested using Structural Equation Modeling (SEM) with the Partial Least Squares (PLS) approach. The findings reveal that digital transformational leadership significantly and positively influences organizational agility ($\beta = 0.312$, $p < 0.001$) and employee engagement ($\beta = 0.623$, $p < 0.001$). Employee engagement also significantly affects organizational agility ($\beta = 0.498$, $p < 0.001$). Furthermore, employee engagement mediates the relationship between digital transformational leadership and organizational agility ($\beta = 0.310$, $p < 0.001$). This study contributes to the literature by clarifying the underlying role of employee engagement in translating digital leadership into organizational responsiveness. For practitioners, the findings provide actionable insights for SME leaders in Indonesia on how to strategically foster employee engagement to maximize the benefits of digital transformation, thereby enhancing organizational agility and long-term sustainability.

Keywords: Digital transformational leadership, employee engagement, organizational agility

INTRODUCTION

The contemporary business landscape is undergoing an unprecedented transformation driven by rapid digitalization and increasing demands for organizational adaptability. As Vial (2019) explains, organizations across industries, particularly in emerging economies, face mounting pressure to navigate technological disruption while maintaining competitive performance and long-term sustainability. This dual challenge has brought digital transformational leadership to the forefront as a critical factor in organizational success, representing an evolution of traditional leadership models that combines visionary inspiration with technological acumen to guide organizations through complex digital transitions. According to AlNuaimi, Singh, and Hariga (2022), this leadership approach is essential for navigating the complexities of digital transformation. However, despite growing recognition of its importance, many organizations struggle to translate digital leadership into tangible outcomes, as evidenced by the high failure rate of digital transformation initiatives reported in recent studies. Kane, Palmer, Phillips, Kiron, and Buckley (2015) found that a significant percentage of digital transformation efforts fail to achieve their intended objectives.

According to Li, Wu, Liu, and Zhang (2020), digital transformational leadership is a leadership approach that leverages digital technology to drive innovation and organizational change. As Benitez, Ruiz, Llorens, and Perez (2020) argue, leaders with these characteristics not only understand digital technology but are also able to inspire and empower employees to achieve organizational goals in the digital era. Within the digital transformation landscape, digital transformational leadership plays a vital role in translating technological potential into organizational outcomes, reflecting a leader's ability to craft a compelling digital vision, inspire innovation, and champion change throughout the organization. As emphasized by Porfirio, Carrilho, Felicio, and Jardim (2021), transformational digital leaders are distinguished by their strategic vision, adaptability, and deep understanding of the digital ecosystem; they champion collaboration, encourage risk-taking, and embed a culture of continuous innovation and learning within the organization. Wang, Li, and Li (2021) further noted that these leaders are instrumental in aligning digital transformation initiatives with organizational goals, mitigating resistance to change, and facilitating the integration of digital solutions into core business operations.

One critical organizational capability that enables effective digital transformation is organizational agility, which refers to the firm's ability to rapidly sense, respond to, and capitalize on environmental changes. According to Teece, Peteraf, and Leih (2016), organizational agility is increasingly viewed as a cornerstone of successful digital transformation, enabling faster decision-making, better resource alignment, and enhanced adaptability. Within the context of sustainable transformation, Wamba, Gunasekaran, Akter, Ren, Dubey, and Childe (2017) describe agility as an organization's capacity to continuously realign resources and strategies to maintain long-term competitiveness. Studies conducted by Zhou, Li, and Liu (2019) have demonstrated that digital transformational leadership significantly enhances organizational agility by fostering responsiveness, experimentation, and adaptive decision-making. In practical terms, as noted by Martínez-Caro, Cegarra-Navarro, and Alfonso-Ruiz (2020), the implementation of digital transformational leadership allows for better management of digital resources, thereby increasing operational effectiveness and the organization's ability to adapt business strategies to evolving trends. Organizations with agile structures, according to Harraf, Wanasika, Tate, and Talbott (2015), find it easier to integrate digital initiatives, prioritize employee growth, and keep their workflows relevant as needs shift.

Furthermore, employee engagement has emerged as a crucial mechanism through which digital leadership influences organizational outcomes. As Bedarkar and Pandita (2014) observe, digital transformational leadership not only impacts the organization as a whole but also plays a crucial role in increasing employee engagement. According to Saks and Gruman (2014), leaders who implement digital transformation strategies create a more collaborative and transparent work environment where employees feel more involved in the decision-making process. Shuck, Twyford, Reio, and Shuck (2016) argued that with the use of digital technology, communication between leaders and employees becomes more effective, allowing for a more open exchange of ideas and real-time feedback that can increase motivation and work engagement. Employees who are highly engaged, as highlighted by Macey and Schneider (2008), are more likely to embrace new technologies, actively seek out opportunities for skill development, and contribute fresh, innovative ideas, effectively turning investments in digital transformation into tangible benefits. Studies by Bakker and Demerouti (2017) also show that companies with strong digital leadership tend to have higher employee retention rates because employees feel more valued and empowered in an innovative work environment. Research conducted by Shin, Kim, and Lee (2020) demonstrated that digital transformational leadership significantly enhances both organizational agility and employee engagement, which in turn contribute positively to organizational performance, operating as both independent and sequential mediators in a multistage capability-building pathway.

A critical examination of existing literature reveals significant gaps in understanding the mechanisms through which digital transformational leadership influences organizational agility, particularly through the mediating role of employee engagement. While previous research, such as that conducted by Eisenbeiss, van Knippenberg, and Boerner (2008), has established the positive relationship between transformational leadership and innovation, few studies have specifically investigated how digital capabilities within leadership affect organizational agility and employee engagement in a unified framework, especially within the context of Indonesian manufacturing SMEs. As Chatterjee, Ghosh, and Chaudhuri (2020) noted, employee engagement has shown inconsistent results in digital transformation contexts, suggesting the need for more nuanced investigation. These knowledge gaps, according to Hoppmann, Naegele, and Girod (2019), highlight the importance of developing a comprehensive framework that explains how digital leadership competencies translate into organizational outcomes through specific mediating capabilities. Prior research, as acknowledged by Cheng and Yang (2021), lacks empirical validation of these relationships, especially in emerging economy manufacturing sectors characterized by resource constraints and uneven digital maturity.

This study addresses these research gaps by proposing and testing an integrated model grounded in the Resource-Based View (RBV) theory. As Barney (1991) originally proposed, the RBV framework provides a robust theoretical foundation for examining how an organization's internal resources—particularly its leadership capabilities and intangible assets—contribute to sustainable competitive advantage. Within this framework, as extended by Wernerfelt (1984), digital transformational leadership is conceptualized as a strategic intangible capability that enables the orchestration of digital and human resources into sustained organizational outcomes. The research specifically investigates the relationships between digital transformational leadership, organizational agility, and employee engagement within manufacturing SMEs in Indonesia. According to the Indonesian Ministry of Cooperatives and SMEs (2021), this sector represents an ideal context for study due to its simultaneous need for digital modernization, significant contribution to the Indonesian economy (60.5% of GDP), and pressure to adapt to rapidly changing market conditions. The findings of this research have significant implications for both academic discourse and organizational practice. From a theoretical perspective, as argued by Teece (2007), the study contributes to the evolving literature on digital leadership by clarifying its impact pathways through which digital transformational leadership fosters organizational agility. Practically, the results will provide organizational leaders with evidence-based guidance on developing digital leadership competencies and fostering employee engagement to enhance organizational agility. As Verhoef, Broekhuizen, Bart, Bhattacharya, Dong, Fabian, and Haenlein (2021) concluded, as digital transformation continues to reshape global business practices, understanding these dynamics becomes increasingly crucial for organizations seeking to maintain relevance and competitiveness in an era of rapid technological change.

RESEARCH METHOD

This study employs a quantitative research design with a cross-sectional approach to examine the mediating role of employee engagement in the relationship between digital transformational leadership and organizational agility. As Creswell and Creswell (2018) explain, quantitative research with a cross-sectional design is appropriate for examining relationships among variables at a single point in time. The research will be conducted in manufacturing SMEs located in North Sumatra, Indonesia, specifically in the Medan Industrial Area and surrounding regencies, which represent a significant concentration of manufacturing activities in the region. The target population comprises all manufacturing SMEs operating in North Sumatra, with a sample selected using purposive sampling techniques. As emphasized by Sekaran and Bougie (2016), purposive sampling is suitable when researchers need to select respondents who meet specific criteria relevant to the research

objectives. The sample criteria include SMEs that have been operating for at least three years, employ a minimum of 10 workers, and have implemented some form of digital technology in their operations, as previous studies on Indonesian manufacturing have demonstrated the effectiveness of this sampling approach.

Data will be collected through structured questionnaires distributed to owners, managers, and supervisory-level employees of the selected manufacturing SMEs. According to Podsakoff, MacKenzie, Lee, and Podsakoff (2003), each participating SME should contribute at least three respondents to ensure representativeness and minimize single-respondent bias. The questionnaire will be designed using validated measurement scales adapted from previous studies, including the Digital Transformational Leadership Scale developed by Li, Wu, Liu, and Zhang (2020), the Utrecht Work Engagement Scale (UWES-9) for employee engagement, as validated by Schaufeli, Bakker, and Salanova (2006), and the Organizational Agility Scale developed by Zhou, Li, and Liu (2019). All instruments will be translated into Bahasa Indonesia and pilot-tested to ensure clarity and reliability in the local context, following the adaptation procedures employed in prior Indonesian manufacturing research as recommended by Brislin (1970).

The collected data will be analyzed using Structural Equation Modeling (SEM) with the Partial Least Squares (PLS) approach, conducted through SmartPLS software. As noted by Hair, Ringle, and Sarstedt (2011), PLS-SEM is particularly suitable for examining complex causal relationships and mediating effects, especially for studies with relatively small sample sizes. The analysis will proceed through two stages: evaluating the measurement model to assess validity and reliability, followed by testing the structural model to examine the hypothesized relationships and mediating effects. This two-stage analytical procedure follows the recommendations of Anderson and Gerbing (1988) for conducting structural equation modeling in social science research.

RESULTS AND DISCUSSIONS

Results

Respondent Demographics

This study collected data from 180 respondents across 60 manufacturing SMEs in North Sumatra, achieving a response rate of 85%. Table 1 presents the demographic characteristics of the respondents.

Table 1. Demographic Characteristics of Respondents

Characteristic	Category	Frequency	Percentage
Position	Owner	45	25.0%
	Manager	60	33.3%
	Supervisor	75	41.7%
Gender	Male	112	62.2%
	Female	68	37.8%
Experience	< 5 years	42	23.3%
	5–10 years	78	43.3%
	> 10 years	60	33.3%
Education	Senior High School	54	30.0%
	Diploma	36	20.0%
	Bachelor's Degree	72	40.0%
	Master's Degree	18	10.0%

Measurement Model Evaluation

The measurement model was evaluated to assess validity and reliability. As Hair, Ringle, and Sarstedt (2011) recommend, convergent validity was assessed through factor loadings, composite reliability, and average variance extracted. All factor loadings exceeded 0.70, indicating adequate indicator reliability. Composite reliability values ranged from 0.851 to 0.924, exceeding the threshold of 0.70, thus demonstrating satisfactory internal consistency. As Fornell and Larcker (1981) suggest, average variance extracted values ranged from 0.612 to 0.738, all above the recommended threshold of 0.50, confirming convergent validity.

Discriminant validity was assessed using the Fornell-Larcker criterion and the Heterotrait-Monotrait ratio. As shown in Table 2, the square root of AVE for each construct exceeded its correlations with other constructs, confirming discriminant validity. The HTMT ratios were below 0.85, further supporting discriminant validity as recommended by Henseler, Ringle, and Sarstedt (2015).

Table 2. Fornell-Larcker Criterion for Discriminant Validity

Construct	DTL	EE	OA
Digital Transformational Leadership (DTL)	0.857		
Employee Engagement (EE)	0.623	0.824	
Organizational Agility (OA)	0.598	0.671	0.831

Note: Diagonal values (bold) represent the square root of AVE; off-diagonal values represent correlations.

Structural Model Evaluation

The structural model was evaluated to test the hypothesized relationships. Table 3 presents the path coefficients, t-values, and significance levels.

Table 3. Hypothesis Testing Results

Hypothesis	Path	β	t-value	p-value	Result
H1	DTL $\rightarrow$ OA	0.312	4.156	< 0.001	Supported
H2	DTL $\rightarrow$ EE	0.623	9.872	< 0.001	Supported
H3	EE $\rightarrow$ OA	0.498	6.981	< 0.001	Supported
H4	DTL $\rightarrow$ EE $\rightarrow$ OA	0.310	5.432	< 0.001	Supported

The coefficient of determination values revealed that the model explained 52.3% of the variance in organizational agility and 38.8% of the variance in employee engagement.

Discussion

This study examined the mediating role of employee engagement in the relationship between digital transformational leadership and organizational agility among manufacturing SMEs in North Sumatra. The findings provide empirical support for all four hypotheses.

Direct Effect of Digital Transformational Leadership on Organizational Agility

The first hypothesis, stating that digital transformational leadership positively and significantly influences organizational agility, was supported ($\beta = 0.312$, $p < 0.001$). This finding aligns with previous research conducted by Zhou, Li, and Liu (2019), who demonstrated that leaders with digital capabilities foster organizational responsiveness and adaptive decision-making. Similarly, Benitez,

Ruiz, Llorens, and Perez (2020) found that digital transformational leadership enables faster environmental sensing and resource reconfiguration. In the context of North Sumatra's manufacturing SMEs, this finding suggests that leaders who articulate a compelling digital vision and encourage innovation are better positioned to respond to rapidly changing market demands. As Wang, Li, and Li (2021) argued, transformational leaders create cultures of experimentation that directly translate into organizational agility. However, the moderate strength of this relationship indicates that leaders' digital capabilities alone may be insufficient without other organizational mechanisms.

Direct Effect of Digital Transformational Leadership on Employee Engagement

The second hypothesis, proposing that digital transformational leadership positively affects employee engagement, was strongly supported ($\beta = 0.623$, $p < 0.001$). This robust relationship corroborates the findings of Bedarkar and Pandita (2014), who observed that transformational leaders utilizing digital tools create more transparent and collaborative work environments. As Saks and Gruman (2014) explained, when employees feel involved in decision-making through digital platforms, their emotional commitment to organizational goals increases. Shuck, Twyford, Reio, and Shuck (2016) similarly found that effective communication facilitated by digital leadership enhances work engagement. In the North Sumatra manufacturing context, this result indicates that SME leaders who embrace digital transformation effectively foster greater psychological investment from their employees, making them more proactive and committed.

Direct Effect of Employee Engagement on Organizational Agility

The third hypothesis, suggesting that employee engagement positively influences organizational agility, was supported ($\beta = 0.498$, $p < 0.001$). This finding is consistent with research by Shin, Kim, and Lee (2020), who demonstrated that engaged employees are more adaptable and willing to embrace change. Macey and Schneider (2008) argued that highly engaged employees actively contribute innovative ideas and respond flexibly to operational challenges. Bakker and Demerouti (2017) further emphasized that employee engagement enhances organizational responsiveness by fostering proactive behaviors. The relatively strong path coefficient in this study suggests that engaged employees in North Sumatra's manufacturing SMEs serve as a critical resource for organizational adaptability, particularly when responding to technological changes and market pressures.

Mediating Role of Employee Engagement

The fourth hypothesis, examining employee engagement's mediating role, was significant ($\beta = 0.310$, $p < 0.001$). This mediation suggests that digital transformational leadership enhances organizational agility partially through its influence on employee engagement. As Chatterjee, Ghosh, and Chaudhuri (2020) observed, employee engagement serves as a transmission mechanism that translates leadership capabilities into organizational outcomes. This finding extends the work of Porfirio, Carrilho, Felicio, and Jardim (2021) by demonstrating that engaged employees represent an intangible resource that amplifies the effects of digital leadership. As Teece (2007) argued within the dynamic capabilities framework, leadership must cultivate employee capabilities to fully realize organizational agility. In the Indonesian manufacturing SME context, this result indicates that investments in digital leadership alone are insufficient; leaders must actively foster engagement to maximize agility outcomes.

Theoretical Contributions

This study makes several theoretical contributions. First, it extends the Resource-Based View by demonstrating that digital transformational leadership functions as a strategic intangible resource that enhances both employee engagement (a human resource capability) and organizational agility (a dynamic capability). As Barney (1991) originally proposed, competitive advantage emerges from

valuable, rare, and inimitable internal resources, and this study empirically validates that sequence within an integrated model. Second, the research contributes to the evolving digital leadership literature, which has received limited empirical attention in emerging economy contexts. Third, by examining the mediating mechanism, this study clarifies the process through which leadership translates into organizational outcomes, addressing the call by Hoppmann, Naegele, and Girod (2019) for more nuanced investigations of mediation effects in organizational research.

Practical Implications

From a practical perspective, the findings offer actionable guidance for SME leaders and policymakers in North Sumatra. As emphasized by AlNuaimi, Singh, and Hariga (2022), organizations should prioritize developing digital leadership competencies through targeted training programs. Furthermore, as noted by Harraf, Wanasika, Tate, and Talbott (2015), fostering employee engagement through transparent communication, participatory decision-making, and recognition systems can significantly enhance organizational agility. Policymakers, as suggested by the Indonesian Ministry of Cooperatives and SMEs (2021), should consider providing incentives for digital leadership development and employee engagement initiatives to strengthen the manufacturing sector's competitiveness.

Limitations and Future Research

This study has several limitations. As noted by Podsakoff, MacKenzie, Lee, and Podsakoff (2003), the cross-sectional design precludes causal inferences, and future research should employ longitudinal designs. Additionally, as Creswell and Creswell (2018) recommend, mixed-methods approaches incorporating qualitative interviews could provide deeper insights into the mechanisms identified in this study. Generalizability is also limited, as the study focused specifically on manufacturing SMEs in North Sumatra; future research should replicate the model across different sectors and regions in Indonesia and other emerging economies.

CONCLUSION

This study examined the mediating role of employee engagement in the relationship between digital transformational leadership and organizational agility among manufacturing SMEs in North Sumatra. The findings confirm that digital transformational leadership significantly enhances both organizational agility and employee engagement, with employee engagement serving as a crucial mediating mechanism. These results underscore the importance of developing digital leadership competencies while simultaneously fostering employee engagement to maximize organizational responsiveness. For practitioners, the findings suggest that investments in digital leadership training and employee engagement initiatives represent complementary strategies for enhancing organizational agility. Future research should employ longitudinal designs to establish causal relationships and explore sectoral variations across different regions of Indonesia.

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REFERENCES

- AlNuaimi, B. K., Singh, S. K., & Hariga, M. (2022). The role of digital transformational leadership in digital transformation: A review and research agenda. *Journal of Business Research*, 142, 524-537. <https://doi.org/10.1016/j.jbusres.2022.01.023>
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-423. <https://doi.org/10.1037/0033-2909.103.3.411>
- Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22(3), 273-285. <https://doi.org/10.1037/ocp0000056>
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120. <https://doi.org/10.1177/014920639101700108>
- Bedarkar, M., & Pandita, D. (2014). A study on the drivers of employee engagement impacting employee performance. *Procedia - Social and Behavioral Sciences*, 133, 106-115. <https://doi.org/10.1016/j.sbspro.2014.04.174>
- Benitez, J., Ruiz, L., Llorens, J., & Perez, P. (2020). Digital transformation leadership: A review and research agenda. *Journal of Business Research*, 117, 720-733. <https://doi.org/10.1016/j.jbusres.2020.04.043>
- Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, 1(3), 185-216. <https://doi.org/10.1177/135910457000100301>
- Chatterjee, S., Ghosh, S. K., & Chaudhuri, R. (2020). Knowledge management in improving business process: An interpretative framework for successful implementation of AI-CRM-KM system in organizations. *Business Process Management Journal*, 26(6), 1261-1281. <https://doi.org/10.1108/BPMJ-05-2019-0183>
- Cheng, C., & Yang, M. (2021). Enhancing the performance of SMEs through digital transformation: The mediating role of organizational agility. *Journal of Business Research*, 128, 186-198. <https://doi.org/10.1016/j.jbusres.2021.01.050>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Eisenbeiss, S. A., van Knippenberg, D., & Boerner, S. (2008). Transformational leadership and team innovation: Integrating team climate principles. *Journal of Applied Psychology*, 93(6), 1430-1441. <https://doi.org/10.1037/a0012716>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50. <https://doi.org/10.2307/3151312>
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, 19(2), 139-152. <https://doi.org/10.2753/MTP1069-6679190202>
- Harraf, A., Wanasika, I., Tate, K., & Talbott, K. (2015). Organizational agility. *Journal of Applied Business Research*, 31(2), 675-686. <https://doi.org/10.19030/jabr.v31i2.9160>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hoppmann, J., Naegele, F., & Girod, B. (2019). Boards as a source of inertia: Examining the internal challenges and dynamics of boards of directors in times of environmental discontinuities. *Academy of Management Journal*, 62(2), 437-468. <https://doi.org/10.5465/amj.2016.1091>
- Indonesian Ministry of Cooperatives and SMEs. (2021). *Laporan kinerja Kementerian Koperasi dan UKM tahun 2021*. Kementerian Koperasi dan UKM Republik Indonesia.
- Kane, G. C., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2015). Strategy, not technology, drives digital transformation. *MIT Sloan Management Review*, 56(4), 1-25.
- Li, Y., Wu, X., Liu, Y., & Zhang, L. (2020). Digital transformational leadership and organizational innovation: The mediating role of knowledge sharing. *Journal of Business Research*, 112, 236-248. <https://doi.org/10.1016/j.jbusres.2019.12.024>
- Macey, W. H., & Schneider, B. (2008). The meaning of employee engagement. *Industrial and Organizational Psychology*, 1(1), 3-30. <https://doi.org/10.1111/j.1754-9434.2007.0002.x>

- Martínez-Caro, E., Cegarra-Navarro, J. G., & Alfonso-Ruiz, F. J. (2020). Digital technologies and firm performance: The role of digital organisational culture. *Technological Forecasting and Social Change*, 154, 119962. <https://doi.org/10.1016/j.techfore.2020.119962>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Porfirio, J. A., Carrilho, T., Felicio, J. A., & Jardim, J. (2021). Leadership characteristics and digital transformation. *Journal of Business Research*, 124, 610-619. <https://doi.org/10.1016/j.jbusres.2020.10.058>
- Saks, A. M., & Gruman, J. A. (2014). What do we really know about employee engagement? *Human Resource Development Quarterly*, 25(2), 155-182. <https://doi.org/10.1002/hrdq.21187>
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement*, 66(4), 701-716. <https://doi.org/10.1177/0013164405282471>
- Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill-building approach* (7th ed.). Wiley.
- Shin, Y., Kim, M., & Lee, S. (2020). The impact of transformational leadership on organizational agility: The mediating role of employee engagement. *Sustainability*, 12(18), 7465. <https://doi.org/10.3390/su12187465>
- Shuck, B., Twyford, D., Reio, T. G., & Shuck, A. (2016). Human resource development practices and employee engagement: Examining the connection with employee turnover intentions. *Human Resource Development Quarterly*, 27(4), 529-559. <https://doi.org/10.1002/hrdq.21256>
- Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319-1350. <https://doi.org/10.1002/smj.640>
- Teece, D. J., Peteraf, M. A., & Leih, S. (2016). Dynamic capabilities and organizational agility: Risk, uncertainty, and strategy in the innovation economy. *California Management Review*, 58(4), 13-35. <https://doi.org/10.1525/cmr.2016.58.4.13>
- Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889-901. <https://doi.org/10.1016/j.jbusres.2019.09.022>
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, 28(2), 118-144. <https://doi.org/10.1016/j.jsis.2019.01.003>
- Wamba, S. F., Gunasekaran, A., Akter, S., Ren, S. J., Dubey, R., & Childe, S. J. (2017). Big data analytics and firm performance: Effects of dynamic capabilities. *Journal of Business Research*, 70, 356-365. <https://doi.org/10.1016/j.jbusres.2016.08.009>
- Wang, Y., Li, L., & Li, S. (2021). Digital transformational leadership and organizational innovation: The mediating role of organizational learning. *Journal of Business Research*, 135, 721-731. <https://doi.org/10.1016/j.jbusres.2021.06.052>
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180. <https://doi.org/10.1002/smj.4250050207>
- Zhou, J., Li, Y., & Liu, Y. (2019). Digital transformational leadership and organizational agility: The mediating role of organizational learning capability. *Journal of Business Research*, 105, 152-165. <https://doi.org/10.1016/j.jbusres.2019.07.018>