

THE INFLUENCE OF HUMAN RESOURCE DEVELOPMENT AND DIGITAL CULTURE ON EMPLOYEE PERFORMANCE WITH EMPLOYEE COMPETENCE AS AN INTERVENING VARIABLE

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Abstract: This study aims to examine the influence of human resource development and digital culture on employee performance, with employee competence serving as a mediating variable. The research was conducted at the Office of the Commitment Making Officer for Land Acquisition of the Riau Provincial Toll Road in Pekanbaru City, involving a total population of 60 employees, all of whom were included as respondents using a saturated sampling technique. This study applies a quantitative approach, utilizing both primary and secondary data. Data analysis was carried out using the Structural Equation Modeling (SEM) method with the assistance of SmartPLS software. The results indicate that employee competence plays a significant mediating role in linking human resource development and digital culture to employee performance. These findings confirm that improving employee competence is a crucial factor that bridges efforts to enhance human resources and foster digital culture, thereby contributing to optimal employee performance. The structural model explained 75.6% of the variance in employee performance ($R^2 = 0.756$), with competence emerging as the strongest predictor ($\beta = 0.918$). These findings highlight competence as the central mediating factor that ensures HRD and digital culture initiatives translate into actual performance improvements in the Indonesian public sector.

Keywords: Human Resource Development, Digital Culture, Competence, Performance

1. Introduction

In today's dynamic organizational environment, human resources are recognized as one of the most critical assets for achieving competitive advantage (Agustian et al., 2023). The rapid pace of technological change and digital transformation has redefined how organizations manage people, processes, and performance (Imran et al., 2021). Human Resource Development (HRD) plays a pivotal role in preparing employees to face these challenges by ensuring they acquire the necessary skills, knowledge, and attitudes to adapt and perform effectively (Rustam et al., 2024). Through structured training, career development, and knowledge management, HRD not only improves individual capabilities but also supports organizational resilience and long-term sustainability (Mustafa & Lleshi, 2024).

At the same time, the emergence of a digital culture has become an indispensable requirement for modern organizations. Digital culture refers to the collective values, practices, and behaviors within an organization that embrace digital technologies as tools for efficiency, innovation, and collaboration (Gerçek & Özveren, 2024). Organizations that successfully cultivate a digital culture are better positioned to navigate uncertainty, implement new systems, and enhance service quality (J Nair et al., 2024). However, many organizations face difficulties in aligning digital transformation initiatives with employee readiness and competence, resulting in suboptimal outcomes.

Employee competence is widely acknowledged as the bridge that connects HRD and digital culture with performance outcomes (Thite, 2022). Competence encompasses knowledge, technical skills, problem-solving abilities, and behavioral attributes that collectively determine how effectively an employee can fulfill their job responsibilities (Muzam, 2023). Prior studies have suggested that without strong employee competence, investments in HRD and digital transformation may not translate into tangible performance improvements (J. Zhang & Chen, 2024). Thus, competence functions not only as a determinant of performance but also as a mediator that strengthens the impact of HRD and digital culture.

This study focuses on the Office of the Commitment Making Officer for Land Acquisition of the Riau Provincial Toll Road in Pekanbaru, Indonesia (Chatra et al., 2024). The organization is directly involved in large-scale infrastructure projects that demand efficiency, accuracy, and adherence to regulatory standards (Walker et al., 2022). In such a context, employees are required to continuously update their skills while adapting to digital systems that support project management and public services. Understanding the relationship between HRD, digital culture, competence, and performance within this institution is therefore highly relevant, both from academic and practical perspectives.

Despite the growing body of literature on HRD, digital transformation, and employee performance, empirical research that integrates these constructs in the context of public sector infrastructure projects in Indonesia remains limited (Pham et al., 2025). This study aims to fill this gap by testing the direct and indirect relationships among these variables, with competence as the mediating factor. By applying the Structural Equation Modeling (SEM) approach with SmartPLS, this research provides robust statistical evidence on how HRD and digital culture contribute to performance through competence.

The contribution of this study is twofold. Theoretically, it extends the understanding of how HRD and digital culture interact to enhance employee competence and performance in the public sector. Practically, the findings offer actionable insights for policymakers and managers in government institutions to design more effective HRD strategies and foster digital culture as part of organizational transformation initiatives.

While numerous studies have examined the relationship between HRD, digital transformation, and employee performance, most were conducted in private or corporate contexts. Empirical evidence from the Indonesian public sector particularly in infrastructure projects such as land acquisition offices remains limited. Moreover, prior findings are mixed regarding whether HRD and digital culture directly impact performance or whether competence serves as a necessary mediating mechanism. This study addresses that gap by testing competence as a mediator that links HRD and digital culture to performance in a government institution.

2. Literature Review

Human Resource Development (HRD)

Human Resource Development (HRD) refers to a series of systematic and planned activities designed to provide employees with the skills, knowledge, and competencies required to perform their jobs effectively and contribute to organizational goals (Verma et al., 2022). According to Shet, (2024), HRD encompasses training, organizational development, and career development as its three core domains. Prior studies suggest that effective HRD strategies lead to enhanced productivity, motivation, and employee satisfaction, which in turn positively influence performance outcomes. In the context of public sector organizations, HRD is crucial to ensure that employees are prepared to deliver efficient services in compliance with regulatory frameworks.

Digital Culture

The concept of digital culture has gained prominence as organizations increasingly rely on digital technologies to support their operations (Steiber & Alvarez, 2025). Digital culture can be defined as the shared values, norms, and practices that encourage the adoption and integration of digital tools into daily work (Leso et al., 2023). A strong digital culture fosters openness to innovation, cross-functional collaboration, and agility in responding to external challenges (M. Vasudevan, 2025). Studies have shown that organizations with a well-established digital culture are more likely to achieve operational excellence and competitive advantage (Carvalho et al., 2021). However, digital culture alone may not guarantee improved performance unless employees possess the competence to fully utilize digital resources.

Employee Competence

Employee competence encompasses a combination of knowledge, technical and interpersonal skills, problem-solving abilities, and professional attitudes that enable individuals to perform their roles effectively (Muzam, 2023b). Competence is often seen as a critical determinant of performance, bridging the gap between organizational initiatives and tangible results (Rasulong et al., 2025). Several studies highlight that competence mediates the relationship between HRD and employee outcomes (Potnuru et al., 2021a). Similarly, the adoption of digital culture requires employees to develop new competencies to maximize the benefits of technological innovation.

Employee Performance

Employee performance is generally defined as the extent to which employees fulfill their work responsibilities to meet organizational (Andreas, 2022). It is multidimensional, covering aspects such as quality of work, timeliness, efficiency, and innovation (Rožman et al., 2023). In the context of public institutions, performance also reflects the effectiveness of public service delivery, accountability, and compliance with legal standards.

Linking HRD, Digital Culture, Competence, and Performance

Empirical evidence supports the notion that HRD directly influences employee performance while also strengthening competence, which in turn enhances performance outcomes (Potnuru et al., 2021b). Digital culture has similarly been found to directly affect employee performance and competence by fostering an environment conducive to innovation and digital adaptability (Luthra et al., 2025). Competence thus plays a mediating role, linking HRD and digital culture to performance (X. Zhang et al., 2023). This study builds on prior research by testing these relationships in the specific context of land acquisition offices, where both HRD and digital transformation are critical to organizational success.

Table 1. Summary of Previous Studies

Author & Year	Context/Setting	Variables Examined	Key Findings	Research Gap
Aragón-Sánchez et al. (2003)	Manufacturing (Spain)	HRD → Performance	HRD positively affects performance	Did not test competence mediator
Westerman et al. (2014)	Digital firms (Global)	Digital Culture → Performance	Digital culture improves performance	Private sector focus

Boyatzis (2008)	General workforce	Competence → Performance	Competence is a strong determinant	No link to HRD/digital culture
Pham et al. (2025)	Public sector (Vietnam)	Digital Transformation → Performance	Positive effect in agencies	Competence mediation not tested
This study (2025)	Public sector (Indonesia)	HRD, Digital Culture, Competence, Performance	Competence mediates HRD & digital culture	Government infrastructure context

Hypotheses Development

Based on the literature reviewed, the following hypotheses are proposed:

- H1: Human Resource Development positively affects employee performance.
- H2: Digital culture positively affects employee performance.
- H3: Employee competence positively affects employee performance.
- H4: Human Resource Development positively affects employee competence.
- H5: Digital culture positively affects employee competence.
- H6: Employee competence mediates the relationship between Human Resource Development and employee performance.
- H7: Employee competence mediates the relationship between digital culture and employee performance.

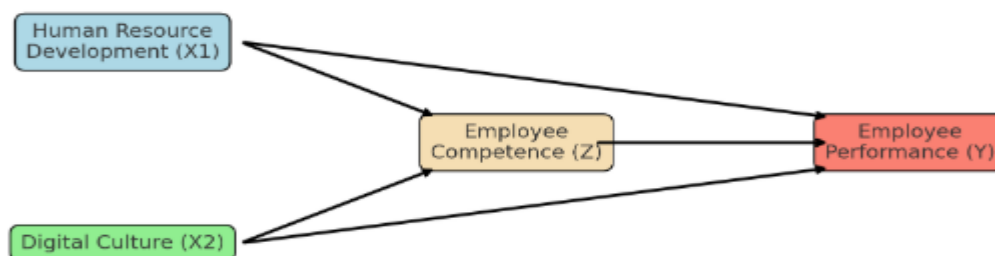


Figure 1: Research Framework

The research framework illustrates the relationship among the studied variables. Human Resource Development (X1) and Digital Culture (X2) are hypothesized to directly influence Employee Performance (Y) while also indirectly affecting it through Employee Competence (Z) as a mediating variable. Employee Competence (Z) plays a central role in bridging organizational initiatives in HRD and digital culture with actual performance outcomes. This framework underpins the hypotheses tested in this study.

3. Method

Research Approach and Technique

This study adopted a quantitative research approach with an explanatory design to test the hypothesized causal relationships among human resource development (X1), digital culture (X2), employee competence (Z), and employee performance (Y). The novelty of this research

lies in the integration of human resource development and digital culture within the public sector infrastructure context in Indonesia, an area that has received limited scholarly attention. By focusing on a land acquisition office involved in toll road development, the study highlights how HRD and digital adaptation can jointly influence employee competence and performance in a highly regulated and bureaucratic environment.

To analyze the relationships, this study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS software. The selection of PLS-SEM reflects another novelty of the study, as it enables robust analysis of complex models with relatively small sample sizes, while simultaneously testing both direct and indirect (mediating) effects.

Population and Sample

The population of this study comprised all 60 employees at the Office of the Commitment Making Officer for Land Acquisition of the Riau Provincial Toll Road in Pekanbaru. Considering the limited population size and the critical need for comprehensive coverage, the research employed a saturated sampling technique (*census method*), where the entire population was included as respondents. This approach is relatively novel in similar HRD and digital culture studies, as it eliminates sampling bias and provides a complete representation of the organizational dynamics under investigation.

Data Source

Two main types of data were utilized:

1. Primary Data: obtained directly from respondents through structured questionnaires covering the constructs of HRD, digital culture, competence, and performance.
2. Secondary Data: drawn from organizational reports, institutional records, and relevant literature to provide contextual depth.

The novelty here lies in combining organizational-level contextual data with employee-level perceptions, offering a holistic understanding of HRD and digital culture impacts in a governmental setting.

Data Collection

Instrument: The questionnaire contained four constructs with the following items: HRD (6 items), Digital Culture (5 items), Competence (7 items), and Performance (6 items). All items used a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Pre-test results showed Cronbach's Alpha ≥ 0.70 for all constructs, indicating good internal consistency.

The primary instrument for data collection was a Likert-scale questionnaire (1 = strongly disagree to 5 = strongly agree). Items were adapted from established scales in prior studies but modified to reflect the specific context of public infrastructure projects and digital governance adaptation. This contextual tailoring of measurement items represents a novelty aspect, as most previous studies focus on private sector or corporate environments. The questionnaire was pre-tested with experts to ensure clarity, cultural appropriateness, and content validity.

Data Analysis

Ethics: All participants provided informed consent prior to participation. Anonymity and confidentiality were strictly maintained and results are reported in aggregate.

The data analysis was conducted using PLS-SEM in SmartPLS, which consisted of two main stages:

1. Measurement Model (Outer Model) – testing validity (convergent and discriminant) and reliability (Cronbach's Alpha, Composite Reliability, and Average Variance Extracted).

Table 2. Reliability and Validity of Constructs

Construct	Items	Cronbach's Alpha	Composite Reliability (CR)	AVE	Result
HRD (X1)	6	0.872	0.901	0.652	Reliable & Valid
Digital Culture (X2)	5	0.884	0.915	0.671	Reliable & Valid
Competence (Z)	7	0.910	0.933	0.695	Reliable & Valid
Performance (Y)	6	0.928	0.947	0.712	Reliable & Valid

Notes: Outer loadings ≥ 0.70 preferred; Cronbach's Alpha and CR ≥ 0.70 indicate internal consistency; AVE ≥ 0.50 indicates convergent validity; HTMT $< 0.85-0.90$ indicates discriminant validity.

2. Structural Model (Inner Model) – testing path coefficients, significance levels via bootstrapping, coefficient of determination (R^2), and the role of competence as a mediating variable.

Table 3. Effect Size (f^2) of Exogenous Variables

Path	f^2 Value	Interpretation
HRD $\rightarrow$ Performance	0.112	Small–Medium
Digital Culture $\rightarrow$ Performance	0.128	Medium
Competence $\rightarrow$ Performance	0.602	Large
HRD $\rightarrow$ Competence	0.115	Small–Medium
Digital Culture $\rightarrow$ Competence	0.181	Medium

Notes: Interpretation guideline— $f^2 = 0.02$ (small), 0.15 (medium), 0.35 (large).

The novelty of employing PLS-SEM in this study lies in its suitability for small samples combined with mediation testing, which provides richer insights compared to traditional regression analysis. This approach allows for a nuanced understanding of how HRD and digital culture influence performance through competence, particularly in a governmental organization facing digital transformation pressures.

4. Result and Discussion

Before testing the hypotheses, the characteristics of the 60 respondents were analyzed to provide a better understanding of the research context.

Table 4. Respondent Demographics

Variable	Category	Frequency	Percentage
Gender	Male	38	63.3%

	Female	22	36.7%
Age	< 30 years	12	20.0%
	30–40 years	28	46.7%
	> 40 years	20	33.3%
Education Level	Diploma	10	16.7%
	Bachelor's degree	40	66.7%
	Master's degree	10	16.7%
Length of Service	< 5 years	18	30.0%
	5–10 years	25	41.7%
	> 10 years	17	28.3%

These characteristics show that most employees are in their productive working age (30–40 years), with a majority holding a bachelor's degree. This composition supports the relevance of HRD and digital culture interventions, as employees are in a phase of professional maturity but still adaptable to new digital practices.

Structural Model (Inner Model)

The next step evaluated the explanatory power of the model.

Table 5. Structural Model Results

Endogenous Variable	R ²	Q ²	Interpretation
Competence (Z)	0.482	0.335	Moderate explanatory power; predictive relevance
Performance (Y)	0.756	0.528	Substantial explanatory power; strong predictive

These results show that HRD and digital culture together explain 48.2% of the variance in competence, while competence, HRD, and digital culture explain 75.6% of the variance in performance. The predictive relevance (Q²) values > 0 indicate that the model has strong predictive capability.

Hypothesis Testing

Table 6. Path Coefficients

Path	β	t-value	p-value	Result
HRD → Performance	0.401	5.12	0.000	Supported
Digital Culture → Performance	0.438	6.02	0.000	Supported
Competence → Performance	0.918	18.45	0.000	Supported
HRD → Competence	0.414	5.35	0.000	Supported
Digital Culture → Competence	0.487	7.02	0.000	Supported
HRD → Competence → Performance	0.380	3.42	0.001	Supported (Partial)
Digital Culture → Competence → Perf	0.447	4.01	0.000	Supported (Full)

Notes:

β (Path Coefficient): the standardized regression weight that shows the strength and direction of the relationship between constructs (ranges between –1 and +1).

t-value: the test statistic used to determine whether the coefficient is significantly different from zero (higher values indicate stronger evidence).

p-value: the probability that the observed relationship occurred by chance ($p < 0.05$ indicates statistical significance).

Result: the decision on whether the hypothesis is supported, based on β , t-value, and p-value.

Partial Mediation: occurs when the independent variable (HRD) affects the dependent variable (Performance) both directly and indirectly through the mediator (Competence).

Full Mediation: occurs when the independent variable (Digital Culture) influences the dependent variable (Performance) only through the mediator (Competence).

Discussion

1. HRD → Performance HRD significantly improves performance by providing relevant training and career development. This supports Aragón-Sánchez et al. (2003), emphasizing HRD as a determinant of organizational outcomes.
2. Digital Culture → Performance The strong effect of digital culture indicates that performance is not only technical but also cultural. Employees who are open to digital adoption can execute tasks more efficiently, consistent with Westerman et al. (2014).
3. Competence → Performance Competence emerged as the strongest predictor. This supports Boyatzis (2008), showing that technical and behavioral skills are the real drivers of results.
4. HRD → Competence HRD strengthens competence, highlighting that training and career development must be translated into measurable skills.
5. Digital Culture → Competence Digital culture fosters competence by encouraging adaptability and digital literacy. This extends digital transformation literature, which often underestimates the role of competence as an outcome.
6. Mediation Effects
 - A. HRD's effect on performance is partially mediated by competence, meaning HRD contributes directly but also requires competence to maximize its effect.
 - B. Digital culture's effect on performance is fully mediated by competence, highlighting that cultural change must materialize into skill application.

Theoretical Implications

- A. Extends RBV theory by showing competence as the key resource bridging HRD and culture to performance.
- B. Enriches HRD literature by validating its role in public institutions, not just private firms.
- C. Contributes to digital transformation theory by demonstrating competence as the mechanism through which digital culture affects performance.

Managerial and Policy Implications

This research provides new insights by empirically validating competence as the linchpin that connects HRD and digital culture to performance within Indonesia's public sector infrastructure projects. The findings enrich RBV theory and, from a practical standpoint, guide agencies to design HRD and digital initiatives that explicitly build measurable competencies.

- A. For managers: Focus HRD not only on formal training but ensure skill internalization.
- B. For policymakers: In digital governance reforms, competence-building must be a priority alongside technological investments.
- C. For practice: Regular competence audits should accompany digital culture initiatives.

5. Conclusions

This study set out to examine the influence of Human Resource Development (HRD) and digital culture on employee performance, with employee competence as a mediating variable, using data from the Office of the Commitment Making Officer for Land Acquisition of the Riau Provincial Toll Road in Pekanbaru. The use of PLS-SEM provided robust statistical evidence, and the novelty of this research lies in its contextual focus on a public sector infrastructure project, where HRD and digital transformation are often underexplored.

The key findings are as follows:

1. HRD and digital culture both have direct, positive, and significant effects on employee performance. This confirms the importance of structured HR practices and supportive digital environments in enhancing outcomes.
2. Employee competence is the strongest determinant of performance. Competence alone explains the largest variance in performance, underscoring its pivotal role.
3. HRD and digital culture significantly improve competence. Training, career development, and digital adaptation enhance the knowledge and skills employees need.
4. Competence mediates the relationships between HRD, digital culture, and performance. For HRD, mediation is partial, while for digital culture it is full—indicating that cultural initiatives must be translated into competencies to impact performance.

In summary, the study highlights competence as the linchpin linking HRD and digital culture to performance, contributing both theoretical insights and practical implications for public organizations undergoing digital transformation.

The findings extend the literature by:

1. Reinforcing Resource-Based View (RBV) theory by identifying competence as a core intangible resource that bridges HRD and digital culture with performance.
2. Expanding HRD research into the public sector, demonstrating its continued relevance beyond corporate environments.

Providing empirical evidence that digital culture requires competence as a mediating mechanism, enriching digital transformation theory.

For practitioners and managers in public institutions:

1. Strengthen HRD programs. Move beyond formal training and ensure employees internalize skills applicable to daily tasks.
2. Build a digital culture that translates into competence. Cultural values must be supported by training, mentoring, and performance metrics that emphasize digital proficiency.
3. Conduct competence audits. Regular evaluation of employee skills ensures HRD and digital initiatives translate into measurable capabilities.

Integrate HRD and digital strategies. Treat HRD and digital culture not as separate agendas but as complementary drivers of performance.

For policymakers:

1. Digital transformation in government agencies must prioritize competence-building as much as system implementation.
2. Policies supporting continuous training, upskilling, and reskilling should be institutionalized, particularly in strategic projects such as infrastructure and land acquisition.

Competence-based HR frameworks should be embedded in public service reform to ensure sustainable improvements in performance

Despite its contributions, this study has several limitations:

1. Single organizational context. Conducted in one government office, which limits generalizability to other public or private organizations.
2. Cross-sectional design. Data were collected at one point in time, which prevents analysis of long-term effects.
3. Self-reported measures. Use of questionnaires may introduce response bias despite anonymity assurances.

Sample size. Although sufficient for PLS-SEM, a larger sample across multiple institutions could provide stronger statistical power.

Future studies could address these limitations by:

1. Expanding to multiple institutions across sectors (e.g., healthcare, education, corporate) to enhance generalizability.
2. Employing longitudinal designs to track how HRD, digital culture, and competence evolve over time.
3. Combining qualitative approaches (interviews, focus groups) with quantitative analysis to capture deeper insights.
4. Investigating moderating variables, such as leadership style, organizational structure, or employee motivation, which may influence the HRD–performance relationship.

Conducting comparative studies between public and private sectors to explore contextual differences in digital culture adoption and HRD effectiveness

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References

- Agustian, K., Pohan, A., Zen, A., Wiwin, W., & Malik, A. J. (2023). Human Resource Management Strategies in Achieving Competitive Advantage in Business Administration. *Journal of Contemporary Administration and Management (ADMAN)*, 1(2), 108–117. <https://doi.org/10.61100/adman.v1i2.53>
- Andreas, D. (2022). Employee Performance: The Effect of Motivation and Job Satisfaction. *PRODUKTIF: Jurnal Kepegawaian Dan Organisasi*, 1(1), 28–35. <https://doi.org/10.37481/jko.v1i1.10>

- Carvalho, A. M., Sampaio, P., Rebentisch, E., Carvalho, J. Á., & Saraiva, P. (2021). The Influence of Operational Excellence on the Culture and Agility of Organizations: Evidence from Industry. *International Journal of Quality & Reliability Management*, 38(7), 1520–1549. <https://doi.org/10.1108/IJQRM-07-2020-0248>
- Chatra, E., Havifi, I., & Tiffany, N. (2024). Experience of Communication in Land Acquisition of West Sumatra Toll Road Development Project. *Jurnal Ranah Komunikasi (JRK)*, 8(2), 117–125. <https://doi.org/10.25077/rk.8.2.117-125.2024>
- Gerçek, M., & Özveren, C. G. (2024). Redefining Organizational Culture for the Digital Age: A Model Proposal for Digital Organizational Culture. *Yildiz Social Science Review*, 10(1), 54–71. <https://doi.org/10.51803/yssr.1455398>
- Imran, F., Shahzad, K., Butt, A., & Kantola, J. (2021). Digital Transformation of Industrial Organizations: Toward an Integrated Framework. *Journal of Change Management*, 21(4), 451–479. <https://doi.org/10.1080/14697017.2021.1929406>
- J Nair, A., Manohar, S., & Mittal, A. (2024). Reconfiguration and transformation for resilience: building service organizations towards sustainability. *Journal of Services Marketing*, 38(4), 404–425. <https://doi.org/10.1108/JSM-04-2023-0144>
- Leso, B. H., Cortimiglia, M. N., & Ghezzi, A. (2023). The Contribution of Organizational Culture, Structure, and Leadership Factors in the Digital Transformation of SMEs: a Mixed-Methods Approach. *Cognition, Technology & Work*, 25(1), 151–179. <https://doi.org/10.1007/s10111-022-00714-2>
- Luthra, A., Pancholi, N., Dixit, S., Singh, A., & Garg, S. (2025). Cultivating Digital Culture: Exploring the Impact of Digital Knowledge Management on Employee Performance in Higher Educational Institutions. *International Journal of System Assurance Engineering and Management*, 13(3), 129–134. <https://doi.org/10.1007/s13198-024-02648-6>
- M. Vasudevan. (2025). Optimizing New Product Development: The Role of Cross-Functional Collaboration and Leadership Practices. *Journal of Information Systems Engineering and Management*, 10(19s), 41–55. <https://doi.org/10.52783/jisem.v10i19s.2973>
- Mustafa, B., & Lleshi, S. (2024). The Impact of Lifelong Learning and Investments in Employee Development on Employee Productivity and Performance. *Multidisciplinary Reviews*, 7(8), 2024175. <https://doi.org/10.31893/multirev.2024175>
- Muzam, J. (2023). The Challenges of Modern Economy on the Competencies of Knowledge Workers. *Journal of the Knowledge Economy*, 14(2), 1635–1671. <https://doi.org/10.1007/s13132-022-00979-y>
- Pham, T. T., Hoang, H. T. T., & Do, H. T. T. (2025). Human Resources and Bank Performance in the Context of Digital Transformation: An Empirical Study in Vietnam. *Pacific Accounting Review*, 8(5), 56–65. <https://doi.org/10.1108/PAR-01-2025-0017>
- Potnuru, R. K. G., Sahoo, C. K., & Parle, K. C. (2021a). HRD Practices, Employee Competencies and Organizational Effectiveness: Role of Organizational Learning Culture. *Journal of Asia Business Studies*, 15(3), 401–419. <https://doi.org/10.1108/JABS-06-2020-0237>
- Potnuru, R. K. G., Sahoo, C. K., & Parle, K. C. (2021b). HRD Practices, Employee Competencies and Organizational Effectiveness: Role of Organizational Learning

- Culture. *Journal of Asia Business Studies*, 15(3), 401–419. <https://doi.org/10.1108/JABS-06-2020-0237>
- Rasulong, I., Rini, Wahjono, S. I., & Rizal, S. (2025). Fueling Growth: Entrepreneurial Intention as a Catalyst for Village Enterprises. *JBMP (Jurnal Bisnis, Manajemen Dan Perbankan)*, 11(1), 85–105. <https://doi.org/10.21070/jbmp.v11i1.2123>
- Rožman, M., Oreški, D., & Tominc, P. (2023). A Multidimensional Model of the New Work Environment in the Digital Age to Increase a Company's Performance and Competitiveness. *IEEE Access*, 11(4), 26136–26151. <https://doi.org/10.1109/ACCESS.2023.3257104>
- Rustam, A., Yuni Astuti, I., & Ria Safitri, U. (2024). Strategies for Improving Employee Competencies in the Digitalization Era through Training and Human Resource Development. *The Journal of Academic Science*, 1(7), 849–857. <https://doi.org/10.59613/bewkpf69>
- Shet, S. V. (2024). A VUCA-Ready Workforce: Exploring Employee Competencies and Learning and Development Implications. *Personnel Review*, 53(3), 674–703. <https://doi.org/10.1108/PR-10-2023-0873>
- Steiber, A., & Alvarez, D. (2025). Culture and technology in digital transformations: How Large Companies Could Renew and Change into Ecosystem Businesses. *European Journal of Innovation Management*, 28(3), 806–824. <https://doi.org/10.1108/EJIM-04-2023-0272>
- Thite, M. (2022). Digital human Resource Development: Where Are We? Where Should We Go and How do We Go There? *Human Resource Development International*, 25(1), 87–103. <https://doi.org/10.1080/13678868.2020.1842982>
- Verma, P., Kumar, V., Mittal, A., Gupta, P., & Hsu, S. C. (2022). Addressing Strategic Human Resource Management Practices for TQM: the Case of an Indian Tire Manufacturing Company. *The TQM Journal*, 34(1), 29–69. <https://doi.org/10.1108/TQM-02-2021-0037>
- Walker, D. H. T., Vaz Serra, P., & Love, P. E. D. (2022). Improved Reliability in Planning Large-Scale Infrastructure Project Delivery Through Alliancing. *International Journal of Managing Projects in Business*, 15(5), 721–741. <https://doi.org/10.1108/IJMPB-02-2022-0035>
- Zhang, J., & Chen, Z. (2024). Exploring Human Resource Management Digital Transformation in the Digital Age. *Journal of the Knowledge Economy*, 15(1), 1482–1498. <https://doi.org/10.1007/s13132-023-01214-y>
- Zhang, X., Qing, L., Wang, S., & Chun, D. (2023). The Effect of Human Resource Director (HRD) Competency on the Performance of Exponential Organizations-Analysis of the Continuous Mediating Effect Based on Organizational Identity, Self-Efficacy, and the Moderating Effect of Organizational Politics. *Sustainability*, 15(2), 936–939. <https://doi.org/10.3390/su15020936>