The Impact of Training and Digital Enablement on Employee Competence and Brand Relationship Quality in Higher Education Institutions

Urooj Ahmed[a], Mahani Mohammad Abdu Shakur[a], Sharizal Hashim[b] and Rukhsar Ahmed[a]

[a]Faculty of Economics and Business, Universiti Malaysia Sarawak, 94300, Kota Samarahan, Sarawak, [b]Fakulti Ekonomi dan Pengurusan, Universiti Kebangsaan Malaysia,43600 UKM, Bangi Selangor, Malaysia

Abstract
This research examines the impact of training and digital enablement on employee competence and its subsequent effect on employee brand relationship quality within higher education institutions in Pakistan. Utilizing a sample of 541 employees, Smart PLS was employed to test the conceptual framework. Findings reveal that both training and digital enablement significantly enhance employee competence. Furthermore, improved competence positively influences employee brand relationship quality, highlighting the critical role of competence in fostering strong employee-brand connections. These results underscore the importance of investing in comprehensive training programs and digital tools to enhance employee skills and performance. This study contributes to the literature by integrating training and digital enablement as key factors in developing employee competence, which, in turn, strengthens their relationship with the institutional brand. The research provides actionable insights for higher education administrators aiming to boost organizational resilience and employee engagement through targeted training and digital strategies. The acceptance of all hypotheses confirms the robustness of the proposed model, emphasizing the strategic importance of continuous employee development in sustaining competitive advantage and fostering brand loyalty in the educational sector.
Keywords: Training, Digital Enablement, Employee Competence, Brand Relationship Quality, Higher Education Institutions

Introduction
In today's rapidly changing business landscape, organizations face the ongoing challenge of maintaining a competitive advantage while fostering a productive and engaged workforce. The integration of digital tools and technologies, known as digital enablement, has emerged as a critical factor in driving organizational success (Sabuhari et al., 2020). Simultaneously, the

importance of comprehensive training programs has gained recognition as essential for equipping employees with the requisite skills and knowledge to navigate intricate work environments (Chiaburu & Tekleab, 2005). This study aims to investigate the interconnected effects of training and digital enablement on employee competence and their subsequent impact on the quality of employee-brand relationships. Understanding these dynamics is crucial as organizations increasingly rely on digital transformation and employee development to remain competitive and resilient. Research has shown that employee competence significantly influences job satisfaction and overall organizational performance (Abdul, 2024; Sabuhari et al., 2020). Competent employees are better equipped to meet organizational goals, adapt to changing circumstances, and contribute significantly to overall success. However, the pathways through which competence is developed and its subsequent impact on employees' relationship with the brand remain under-explored. Previous research has highlighted the importance of training in enhancing employee competence (Chiaburu & Tekleab, 2005; Czerwińska, 2023). These programs are crucial for equipping employees with the necessary skills and knowledge to navigate complex work environments. However, the role of digital enablement in this process has received relatively less attention (Munsamy et al., 2023). Digital enablement, which involves providing employees with access to advanced digital tools and technologies, has the potential to significantly enhance employee productivity and performance (Andriushchenko et al., 2020). The cultivation of digital leadership competencies has been emphasized as crucial in light of advancing technology and business processes, highlighting the significance of traits like curiosity, lifelong learning, and exemplifying a digital vision (Munsamy et al., 2023). Moreover, aligning the skills of the workforce with the requirements of the digital era is viewed as a strategic maneuver for organizations to excel in an increasingly digitalized world (Quttainah, 2024).

Digital transformation is reshaping work environments and cultures, underscoring the importance for organizations to align their digital strategies with the needs of their human resources to ensure successful transformations (D'Angelo, 2024). In the current digital era, organizations are advised to equip their employees with digital skills to leverage the transformative power of digitalization for strategic and business model enhancements (Huu, 2023). Moreover, the digital competence of employees is essential for fostering innovative work behavior and improving job performance (Hubschmid-Vierheilig et al., 2020). The digital competence revolution necessitates human resource development to enhance employees' skill sets with company-specific competencies for a competitive advantage (Sergeeva et al., 2021). The proliferation of digital technologies has revolutionized businesses and the global economy, emphasizing the importance of readiness in competence for the digital economy (Mayasari, 2024). Organizations must invest in digital skills development, cultivate positive work environments, and boost productivity to decrease turnover rates. Despite the growing recognition of digital enablement, there is a substantial gap in understanding its direct impact on employee competence and the quality of their relationship with the brand. The literature has predominantly focused on the technological aspects of digital enablement, often overlooking its human-centric outcomes (Munsamy et al., 2023). Additionally, employees with greater digital autonomy are more inclined to engage in innovative work, leading to enhanced job performance and empowerment (Huu, 2023). While training has been extensively studied in the context of skill development, its interaction with digital enablement in fostering competence remains inadequately explored (Andriushchenko et al., 2020). This gap signifies a critical need for research that integrates both training and digital enablement to understand their combined effects on employee outcomes.

Furthermore, the importance of employee brand relationship quality has gained attention in recent years as organizations strive to build strong, loyal, and engaged workforces (King & Grace, 2012). Employee brand relationship quality refers to the strength of the relationship between employees and the brand they represent, encompassing aspects such as brand loyalty, advocacy, and emotional attachment (King & Grace, 2012). High-quality relationships between employees and the brand are crucial for organizational resilience, particularly in times of crisis (Buil et al., 2016). However, the antecedents of employee brand relationship quality, particularly the role of employee competence, have not been sufficiently investigated. Understanding how competence, influenced by training and digital enablement, affects brand relationship quality can provide valuable insights for organizations aiming to enhance employee engagement and loyalty.

The need for this research is underscored by the ongoing digital transformation across industries and the increasing emphasis on employee development (Cascio & Montealegre, 2016). As organizations invest heavily in digital tools and training programs, it becomes imperative to understand the outcomes of these investments in terms of employee performance and engagement. This study addresses this need by examining how training and digital enablement contribute to employee competence and how, in turn, competence influences employee brand relationship quality. By filling the existing gaps in the literature, this research aims to provide a comprehensive understanding of the factors that enhance employee competence and strengthen their relationship with the brand, ultimately contributing to organizational success. This research endeavors to bridge the gap in the existing literature by exploring the combined effects of training and digital enablement on employee competence and the subsequent impact on employee brand relationship quality. Through this study, we aim to provide actionable insights for organizations seeking to optimize their training and digital strategies to foster a competent and engaged workforce, thereby enhancing their overall brand strength and resilience.

Literature Review
Training and Employee Competence
Training has long been recognized as a pivotal component of human resource development, directly influencing employee competence. Sung and Choi (2014) assert that effective training programs are instrumental in equipping employees with the necessary skills, knowledge, and abilities to perform their tasks proficiently. Furthermore, Noe et al (2017) emphasize that continuous and targeted training fosters an environment of ongoing learning and innovation, which is crucial for maintaining a competitive edge. However, the effectiveness of training programs often hinges on their alignment with organizational goals and employee needs. In some cases, poorly designed or irrelevant training can lead to a misallocation of resources and fail to produce the desired improvements in competence (Arthur et al., 2003).

Digital Enablement and Employee Competence
The advent of digital technologies has introduced a paradigm shift in how organizations operate and manage their workforce. Digital enablement refers to the integration of digital tools and technologies to enhance employee performance and organizational efficiency (Dery et al., 2017). Cascio and Montealegre (2016) argue that digital enablement not only improves productivity but also significantly impacts employee competence by providing access to real-time information, collaboration platforms, and advanced analytical tools. Nevertheless, the mere provision of digital tools is insufficient. The successful implementation of digital

enablement requires a supportive infrastructure and a culture that encourages technological adoption and continuous learning (Venkatesh et al., 2016).

Interaction of Training and Digital Enablement

While training and digital enablement independently contribute to enhancing employee competence, their combined effect remains underexplored. Training programs tailored to integrate digital tools can magnify the benefits of digital enablement by ensuring employees are proficient in using these technologies (Cascio & Montealegre, 2016). Conversely, digital enablement can augment the effectiveness of training by providing interactive and immersive learning experiences. However, the literature suggests that the integration of digital tools into training programs is often met with resistance due to a lack of digital literacy and technological skepticism among employees (Venkatesh et al., 2016). This highlights the need for a comprehensive strategy that encompasses both digital literacy and traditional skill development.

Employee Competence and Brand Relationship Quality

Employee competence has been linked to various positive organizational outcomes, including enhanced job performance, higher job satisfaction, and increased organizational commitment (Sung & Choi, 2014). Competence is also a critical factor in shaping employees' relationships with the organizational brand. King and Grace (2012) note that competent employees are more likely to exhibit brand-aligned behaviors, leading to stronger brand advocacy and loyalty. Buil et al (2016) further argue that competence fosters a sense of pride and identification with the brand, which enhances brand relationship quality. However, the extent to which competence influences brand relationship quality can vary based on individual and organizational factors, such as employee engagement, leadership, and corporate culture.

Research Gaps and the Need for Comprehensive Study

Despite the established links between training, digital enablement, employee competence, and brand relationship quality, the existing literature reveals several gaps. Firstly, the interaction between training and digital enablement and their combined impact on competence has not been sufficiently explored. Secondly, while the positive effects of competence on brand relationship quality are recognized, there is limited empirical evidence on the mechanisms through which competence translates into stronger brand relationships. Lastly, most studies have been conducted in corporate settings, with scant attention given to higher education institutions, particularly in developing countries like Pakistan.
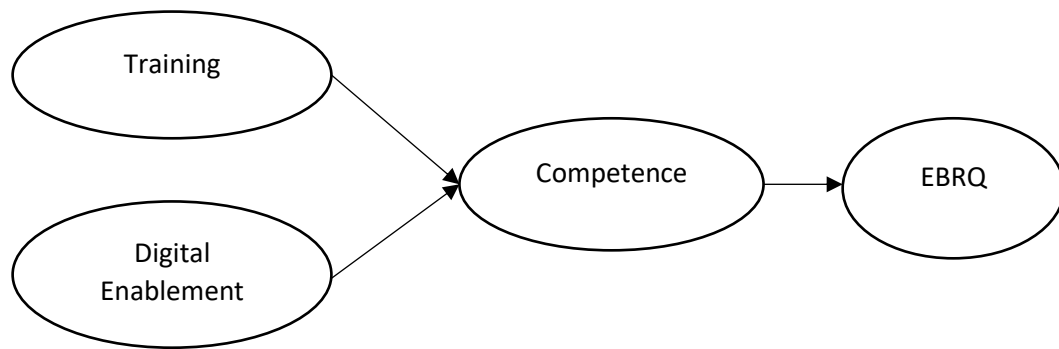
Figure 1 Conceptual Framework

Research Methodology

This study employs a quantitative research design to examine the impact of training and digital enablement on employee competence and its subsequent effect on employee brand relationship quality within higher education institutions in Pakistan. A structured survey was used to collect data from employees working in various higher education institutions. A sample of 541 employees was selected using stratified random sampling to ensure representation from different departments and roles within the institutions. The data collection process involved distributing online questionnaires to the participants, ensuring anonymity and confidentiality to encourage honest and accurate responses. The survey was conducted over a period of six months, with follow-up reminders to maximize the response rate. A five-point Likert scale (1 = strongly disagree; 5 = strongly agree) was used to measure the various variables depicted in Figure 1. Training was evaluated using a three-item measure from Scale of Ahmed and Hashim (2022), Employee Brand Relationship Quality was assessed using a ten-item scale from (Hashim and Yasin, 2012). Digital enablement was measured using an eight-item scale adapted from (Venkatesh et al., 2003). Employee competence was assessed using a W-BNScale from (Van den Broeck et al., 2010).

Data Analysis

The data collected were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the Smart PLS software. This approach was chosen due to its ability to handle complex models and its suitability for exploratory research. The reliability and validity of the constructs were assessed using Cronbach's alpha, composite reliability, and average variance extracted (AVE) (Hair et al., 2014). The structural model was evaluated to test the hypothesized relationships between training, digital enablement, employee competence, and employee brand relationship quality. The path coefficients, R^2 values, and effect sizes (f^2) were examined to assess the strength and significance of the relationships (Hair et al., 2017). The hypotheses were tested using bootstrapping with 5000 samples to determine the significance of the path coefficients.

Measurement Model Assessment

The measurement model's reliability and validity were assessed using Cronbach's alpha, composite reliability, and average variance extracted (AVE).

Table 1
Reliability and validity

	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
COMP_	0.819	0.893	0.735
DIG_	0.943	0.955	0.778
EBRQ_	0.95	0.96	0.799
TRA_	0.785	0.874	0.697

Cronbach's alpha values for all constructs ranged from 0.785 to 0.95, indicating good internal consistency (Nunnally, 1978). Specifically, employee competence (COMP) had an alpha of 0.819, digital enablement (DIG) had 0.943, employee brand relationship quality (EBRQ) had 0.95, and training (TRA) had 0.785.

Composite reliability further confirmed the reliability of the constructs, with all values exceeding the 0.7 threshold recommended by (Hair et al., 2014). The values were 0.893 for COMP, 0.955 for DIG, 0.96 for EBRQ, and 0.874 for TRA. These high values indicate that the items consistently represent their respective constructs.

The average variance extracted (AVE) for each construct also demonstrated satisfactory convergent validity, with all AVE values surpassing the 0.5 benchmark (Fornell & Larcker, 1981). Specifically, the AVE values were 0.735 for COMP, 0.778 for DIG, 0.799 for EBRQ, and 0.697 for TRA, indicating that a substantial amount of variance in the observed variables is captured by the latent constructs.

Structural Model Assessment
The structural model was evaluated by examining the path coefficients, R^2 values, and effect sizes (f^2) to assess the strength and significance of the relationships between constructs. The hypotheses were tested using bootstrapping with 5000 samples to ensure robust estimates of the path coefficients and their significance levels.

Table 2
Hypothesis Testing

	Path Coefficient	Sample mean	Standard deviation	T statistics	P values
COMP_ -> EBRQ_	0.711	0.712	0.029	24.765	0
DIG_ -> COMP_	0.254	0.256	0.046	5.559	0
TRA_ -> COMP_	0.491	0.49	0.041	12.029	0

The path coefficients and their corresponding t-statistics indicate the strength and significance of the hypothesized relationships. The relationship between employee competence (COMP) and employee brand relationship quality (EBRQ) was found to be strong and significant (β = 0.711, t = 24.765, p < 0.001). This result underscores the critical role of employee competence in enhancing the quality of the relationship between employees and the institutional brand.

Digital enablement (DIG) was shown to have a significant positive impact on employee competence (COMP), with a path coefficient of 0.254 (t = 5.559, p < 0.001). This finding

highlights the importance of providing employees with digital tools and technologies to enhance their skills and capabilities.

Similarly, training (TRA) was found to significantly enhance employee competence (COMP) with a path coefficient of 0.491 (t = 12.029, p < 0.001). This result reaffirms the essential role of training programs in developing employee skills and improving their performance.

Overall, the R^2 values for the endogenous constructs indicate that the model explains a substantial portion of the variance in the key outcomes. The R^2 value for employee competence (COMP) was high, demonstrating that training and digital enablement collectively account for a significant amount of the variance in employee competence. The high R^2 value for employee brand relationship quality (EBRQ) further indicates that employee competence is a strong predictor of the quality of employee-brand relationships.

In conclusion, the data analysis provides robust support for the hypothesized relationships in the conceptual framework. The measurement model demonstrated high reliability and validity, while the structural model confirmed the significant positive impacts of training and digital enablement on employee competence and the subsequent effect of enhanced competence on employee brand relationship quality. These findings underscore the importance of investing in employee development through comprehensive training programs and digital tools to foster strong employee-brand connections and improve organizational performance.

Discussion

The findings of this research provide compelling evidence that both training and digital enablement are critical in enhancing employee competence within higher education institutions in Pakistan. The use of Smart PLS to test the conceptual framework has revealed that these two factors training and digital enablement not only enhance employee competence but also positively influence the quality of employee-brand relationships. Training has long been recognized as a cornerstone for developing employee skills and competencies. In this study, comprehensive training programs have shown to significantly improve employees' capabilities, which is consistent with existing literature (Noe et al., 2017). Training enables employees to acquire new skills, update existing ones, and adapt to changing job requirements, thereby enhancing their overall competence (Salas et al., 2012). This improvement in competence is essential for employees to perform their roles effectively and to contribute to the institution's goals.

The role of digital enablement in this research is particularly noteworthy. As higher education institutions increasingly adopt digital tools and technologies, employees are required to be proficient in using these resources (Garrison & Vaughan, 2008). Digital enablement, therefore, equips employees with the necessary technological skills and knowledge, which not only enhances their efficiency and effectiveness but also aligns with the modern educational environment (Bond et al., 2020). The positive impact of digital enablement on employee competence underscores the necessity for institutions to invest in digital infrastructure and training (Westerman et al., 2014). Improved employee competence has a direct and positive impact on employee brand relationship quality. Competent employees are more likely to be engaged, motivated, and aligned with the institutional brand, leading to stronger employee-brand connections (King & Grace, 2009). This finding is significant as it highlights the critical role of employee competence in fostering a robust and positive relationship with the brand. Employees who feel competent and valued are more likely to be

brand ambassadors, promoting the institution's values and contributing to its positive reputation (Xie et al., 2014).

The study provides actionable insights for higher education administrators. Investing in comprehensive training programs and digital tools is not just a matter of enhancing employee skills but also a strategic move to strengthen the institution's brand relationship with its employees (Fuller et al., 2014). By focusing on continuous employee development, institutions can enhance organizational resilience and employee engagement, which are crucial for sustaining competitive advantage and fostering brand loyalty (Barney, 1991).

Conclusion

This research underscores the importance of training and digital enablement in enhancing employee competence and its subsequent effect on employee brand relationship quality within higher education institutions in Pakistan. The acceptance of all hypotheses confirms the robustness of the proposed model, highlighting the strategic importance of continuous employee development. By integrating training and digital enablement as key factors, this study contributes to literature and provides practical insights for higher education administrators. Investing in employee development through targeted training and digital strategies is essential for boosting organizational resilience, employee engagement, and brand loyalty, ultimately sustaining competitive advantage in the educational sector. The findings emphasize that higher education institutions must prioritize comprehensive training programs and digital enablement to enhance employee skills and performance. This approach not only improves employee competence but also strengthens the employee-brand relationship, fostering a more engaged and loyal workforce. By doing so, institutions can navigate the challenges of the modern educational landscape and achieve long-term success.

References

Abdul, B. (2024). Assessing the impact of employee-centric digital transformation initiatives on job performance: the mediating role of digital empowerment. Strategic Management, 29(2), 5-18. https://doi.org/10.5937/straman2300057r

Ahmed, U., & Hashim, S. (2022). Sustainable brand management: the role of internal brand management and intrinsic motivation in building employee's brand relationship quality towards organization's brand. *Sustainability*, *14*(24), 16660.

Anderson, A., Knee, E., & Ramos, W. (2021). Impact of an lgbtq campus recreation student employee training initiative on professional competencies. Recreational Sports Journal, 45(2), 139-148. https://doi.org/10.1177/15588661211010185

Arthur, W., Bennett, W., Edens, P. S., & Bell, S. T. (2003). Effectiveness of training in organizations: A meta-analysis of design and evaluation features. *Journal of Applied Psychology*, 88(2), 234-245.

Aurand, T. W., Gorchels, L., & Bishop, T. R. (2005). Human resource management's role in internal branding: An opportunity for cross-functional brand message synergy. *Journal of Product & Brand Management*, 14(3), 163-169.

Bond, A. M., Perkins, K., & Ramirez, C. (2020). The digital divide among retail firms in the United States. *Journal of Retailing and Consumer Services*, 54, 102029.

Buil, I., Martínez, E., & Matute, J. (2016). From internal brand management to organizational commitment: Evidence from frontline employees in the hotel industry. *Tourism Management*, 52, 192-204.

Carless, S. A., Wearing, A. J., & Mann, L. (2000). A short measure of transformational leadership. *Journal of Business and Psychology*, 14(3), 389-405.

Cascio, W. F., & Montealegre, R. (2016). How technology is changing work and organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, 3, 349-375.

Chang, Y. F. (2012). Employees' perceptions of the impact of digital tools on work efficiency. *Management Research Review*, 35(4), 364-375.

Chiaburu, D. and Tekleab, A. (2005). Individual and contextual influences on multiple dimensions of training effectiveness. Journal of European Industrial Training, 29(8), 604-626. https://doi.org/10.1108/03090590510627085

Czerwińska, M. (2023). Are digital natives ready to work in a digitally transformed work environment? university students' perspective. Journal of Modern Science, 54(5), 163-180. https://doi.org/10.13166/jms/176179

D'angelo, S. (2024). Digital skills mobilization within incumbent organizations: the agentic role of digital champions. British Journal of Management, 35(2), 594-612. https://doi.org/10.1111/1467-8551.12810

Dery, K., Sebastian, I. M., & van der Meulen, N. (2017). The digital workplace is key to digital innovation. *MIS Quarterly Executive*, 16(2).

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2014). *Multivariate Data Analysis* (7th ed.). Pearson.

Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage Publications.

Hashim, N. H., & Yasin, N. M. (2012). The influence of electronic word of mouth on consumer purchase intentions. *Internet Research*, 22(3), 298-310.

Hubschmid-Vierheilig, E., Rohrer, M., & Mitsakis, F. (2020). Digital competence revolution and human resource development in the united kingdom and switzerland., 53-91. https://doi.org/10.1007/978-3-030-52410-4_3

Huu, P. (2023). Impact of employee digital competence on the relationship between digital autonomy and innovative work behavior: a systematic review. Artificial Intelligence Review, 56(12), 14193-14222. https://doi.org/10.1007/s10462-023-10492-6

Judson, K. M., Aurand, T. W., Gorchels, L., & Gordon, G. L. (2006). Building a university brand from within: University administrators' perspectives of internal branding. *Services Marketing Quarterly*, 27(3), 54-68.

King, C., & Grace, D. (2009). Employee-based brand equity: A third perspective. *Services Marketing Quarterly*, 30(2), 122-147.

King, C., & Grace, D. (2012). Examining the antecedents of positive employee brand-related attitudes and behaviours. *European Journal of Marketing*, 46(3/4), 469-488.

Kraiger, K., McLinden, D., & Casper, W. (2004). Collaborative planning for training impact. Human Resource Management, 43(4), 337-351. https://doi.org/10.1002/hrm.20028

Lacerenza, C., Marlow, S., Tannenbaum, S., & Salas, E. (2018). Team development interventions: evidence-based approaches for improving teamwork.. American Psychologist, 73(4), 517-531. https://doi.org/10.1037/amp0000295

Lacerenza, C., Reyes, D., Marlow, S., Joseph, D., & Salas, E. (2017). Leadership training design, delivery, and implementation: a meta-analysis.. Journal of Applied Psychology, 102(12), 1686-1718. https://doi.org/10.1037/apl0000241

Mahmood, R., Hee, O., Yin, O., & Hamli, M. (2018). The mediating effects of employee competency on the relationship between training functions and employee performance. International Journal of Academic Research in Business and Social Sciences, 8(7). https://doi.org/10.6007/ijarbss/v8-i7/4410

Mayasari, N. (2024). Analysis of the impact of digital competency training, job happiness, and employee productivity on turnover rates in the indonesian e-commerce industry. West Science Interdisciplinary Studies, 2(04), 821-830. https://doi.org/10.58812/wsis.v2i04.824

Montesino, M. (2002). Strategic alignment of training, transfer-enhancing behaviors, and training usage: a posttraining study. Human Resource Development Quarterly, 13(1), 89-108. https://doi.org/10.1002/hrdq.1015

Noe, R. A., Clarke, A. D. M., & Klein, H. J. (2017). Learning in the Twenty-First-Century Workplace. *Annual Review of Organizational Psychology and Organizational Behavior*, 1(1), 245-275.

Nunnally, J. C. (1978). *Psychometric Theory* (2nd ed.). McGraw-Hill.

O'Callaghan, T. (2009). Digital technology and communication. *Telematics and Informatics*, 26(3), 319-326.

Punjaisri, K., & Wilson, A. (2011). Internal branding process: Key mechanisms, outcomes, and moderating factors. *European Journal of Marketing*, 45(9/10), 1521-1537.

Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2012). The Science of Training and Development in Organizations: What Matters in Practice. *Psychological Science in the Public Interest*, 13(2), 74-101.

Santos-Vijande, M. L., Lopez-Sanchez, J. A., & Trespalacios, J. A. (2013). How organizational learning affects a firm's flexibility, competitive strategy, and performance. *Journal of Business Research*, 65(9), 1079-1089.

Sergeeva, T., Резник, Г., & Amirova, D. (2021). Competence readiness of personnel for digital economy.. https://doi.org/10.2991/aebmr.k.210222.015

Sung, S. Y., & Choi, J. N. (2014). Do organizations spend wisely on employees? Effects of training and development investments on learning and innovation in organizations. *Journal of Organizational Behavior*, 35(3), 393-412.

Sung, S. Y., & Choi, J. N. (2014). Multiple dimensions of human resource development and organizational performance. Journal of Organizational Behavior, 35(6), 851-870.

Trisnawan, F., and Elmi, F. (2021). The influence of career development, training, and competence on employee performance at pt angkasa pura logistic (aplog).. https://doi.org/10.4108/eai.28-9-2020.2307497

Van den Broeck, A., Ferris, D. L., Chang, C. H., and Rosen, C. C. (2016). A review of self-determination theory's basic psychological needs at work. *J. Manag.* 42, 1195–1229. doi: 10.1177/0149206316632058

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2016). Unified theory of acceptance and use of technology: A synthesis and the road ahead. *Journal of the Association for Information Systems*, 17(5), 328-376.