Digital Skills To Improve Work Performance

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Abstract. Workers in the manufacturing sector face the need to acquire digital skills to improve work efficiency and productivity. However, the rapid and intense spread of technology has also caused technostress and the phenomenon where the stress associated with the use of technology can disrupt the work performance This study uses questionnaires in data collection. The number of samples is 102. The variables used in this study are Digital Skill and Technostress as independent variables and Employee Performance variables as dependent variables. Data processing techniques using Smart PLS. Digital skills and technostress have a significant positive effect on employee performance. This research underscores the importance of digital skills and the potential impact of technostress on employee performance. Organizations should prioritize digital skill development initiatives and consider strategies to mitigate technostress among employees.

Keywords: Digital Skill, Technostress, Manufacturing

INTRODUCTION

In today's digital age, workers in the manufacturing sector face the need to acquire digital skills to improve work efficiency and productivity. However, the rapid and intense spread of technology has also caused technostress and the phenomenon where the stress associated with the use of technology can disrupt the work performance of employees. Therefore, it is important to understand how digital skills and technostress affect and influence employee performance.

Digital skills are becoming an important asset for industrial workers. However, technological development also brings new challenges in the form of technostress, which can affect employee performance. Although many companies have adopted digital technology, little research has been conducted on the simultaneous effects of digital skills and technostress on the performance of workers in the manufacturing sector. The balance between digital skills and technostress management is critical to ensure optimal employee performance, which in turn affects business productivity.

This study was conducted to investigate how digital skills and technostress affect and affect employee performance. This research is important in helping manufacturing companies develop training and employee welfare strategies. This study aims to reveal the relationship

between digital skills, technostress and employee performance, as well as effective strategies to address these challenges.

Understanding these dynamics is important to help companies design more effective training programs and reduce the negative effects of technostress. This study identifies factors that influence how digital skills can reduce the negative impact of technostress. This study adds to the literature by providing new insights into the interaction between digital skills and technostress in a manufacturing context, which has previously been understudied.

This study uses a quantitative approach to interview employees in manufacturing companies. Currently, research on digital skills and technostress is mainly focused on the service sector, so this research fills a gap in the context of the manufacturing industry. This study presents a model of the interaction between digital skills, technostress, and employee performance that has not been extensively explored before. This study should provide practical recommendations for manufacturing companies to develop digital skills and manage technostress to improve employee performance.

LITERATURE REVIEW
Digital Skill

Digital skills refer to individuals' abilities to effectively use digital tools, technologies and platforms. These skills are important in various sectors, including manufacturing, because they can improve efficiency, productivity and overall performance. The underlying theory of digital skills covers several aspects such as learning, the impact of digital technology on society and the role of education in equipping individuals with these skills.

Some key aspects of the digital skills theory are: 1) learning process: Digital skills can be acquired through different methods such as self-learning, formal education and on-the-job learning. The learning process includes understanding the underlying concepts, mastering technical skills and developing problem-solving skills (Ahmad et al., 2019), 2) Impact of digital technologies: digital technologies have changed the way people live and work, making digital skills an important part of modern society. These technologies have democratized access to information, enabled collaboration, and streamlined processes, making it critical for individuals to adapt and develop digital skills (Nadeau, 2018). Current research indicates that digital skills can affect performance in a variety of contexts. One study shows that digitization can change competitive structures, business behavior and efficiency in various industries. (Callan G, 2023) In addition, other studies show that factors such as skills and knowledge have a strong relationship with performance.

Research has identified digital skills as key drivers of the digital economy (Junior, 2014). In particular, visualization and responsiveness have been highlighted as key digital skills to improve digital business (Junior, 2018). It is also supported by recognition, responsiveness, process scanning and ecosystem connectivity as digital capabilities that improve operations, revenue growth and customer and stakeholder relationships (Junior, 2020). In the field of performing arts, the need for digital skills has been emphasized and a framework for assessing these skills has been proposed (Webb, 2023). Together, these findings highlight the importance of digital skills in improving performance across sectors.

Technostress

Technostress is a term used to describe the negative psychological and physiological effects of technology use. It can result from factors such as information overload, continuous contact with digital devices, and the need to adapt to new technologies. Technostress can lead to symptoms at the cardiocirculatory, mental, and neurological levels, and its repercussions can affect both the business and relational spheres. The concept has been recognized as an occupational disease, and there is a need to include it in the document of work-related risk assessment. Employers are advised to implement measures such as increased training on the harmful effects of technostress and specific strategies for managing symptoms to prevent its negative impact on employees. Technostress can also be influenced by organizational culture, and there is ongoing research on its effects in various industries (Chiappetta, 2017), (Farrish & Edwards, 2020)

The relationship between technostress and performance can be complex and multifaceted, with both positive and negative effects. The following are the results of several previous studies on the relationship between technostress and performance, technostress can negatively impact employee creativity. A study found that technostress in the organization can hinder employee creativity, which is important for both organizational and individual success (Mishra, 2022). Technostress can also affect job satisfaction. The same study mentioned above found that technostress creators decrease job satisfaction, leading to decreased organizational and continuance commitment, while technostress inhibitors increase job satisfaction and organizational and continuance commitment (Yener et al., 2021).Other result, technostress can have indirect effects on work performance. Research has shown that technostress can harm work performance, and the use of technology at work may cause negative consequences (Yener et al., 2021). However, the study also found that empowering mechanisms such as developing technology self-efficacy and information systems (IS) literacy enhancement and involvement in IS initiatives can help counter the decrease in overall performance due to technostress creators (Yener et al., 2021). Technostress can vary depending on the industry. A critical review of the literature on technostress in the software industry found that the relationship between technostress and organizational culture can differ depending on the specific industry and its workers (López Galicia & Gómez Ortiz, 2023).

Work Performance

Work performance refers to the execution of tasks and responsibilities by an individual in a work setting. It is a crucial dependent variable in organizational psychology and behavior, driving the entire economy (Campbell & Wiernik, 2015). Work performance can be influenced by various factors, including human resource practices, training, performance appraisal, career planning, and employee participation and technology (Irshad et al., 2021). Technology can be used to improve work performance in various ways, which were found in several previous studies. Technology transfer and human resource development skills can enhance the work performance of extension agents towards sustainable beekeeping production among beekeepers.(Isah et al., 2019). Telework tasks and workplace suitability can have a positive relationship with collaboration and work performance, especially when communication technology is emphasized (Müller et al., 2022). The integration of recent smart technologies with the human factor can contribute to employees' involvement at the shop floor level and thus improve quality control (Silva, 2021). The use of financial information technology, organizational commitment, and work ability can improve financial reporting performance in regional organizations (Wahida et al., 2021).

The relationship between technostress and performance is complex and multi-faceted. Here are some key findings from previous research. Technostress can influence employee creativity and, consequently, job performance. A study found that technostress can impact employee creativity and job performance, with implications for both organizations and employees (Mishra, 2022).

Technostress can have indirect effects on work performance through burnout. A study on the moderating roles of technological self-efficacy and time management in the relationship between technostress and employee performance through burnout found that technostress creators decrease job satisfaction, leading to decreased organizational and continuance commitment, while technostress inhibitors increase job satisfaction and organizational and continuance commitment (Yener et al., 2021). Technostress can negatively affect performance and require mitigations. A study on the effects of technostress within the context of employee use of ICT found that more empowering mechanisms such as developing technology self-efficacy and information systems (IS) literacy enhancement and involvement in IS initiatives are required to counter the decrease in overall performance because of technostress creators (Yener et al., 2021).

METHOD

This study uses a quantitative approach by distributing questionnaires in data collection. The sampling technique used is census sampling, where the entire population is sampled in this study. The number of samples is 102. The variables used in this study are Digital Skill and Technostress as independent variables and Employee Performance variables as dependent variables. Digital Skill is represented by 10 indicators and technostress with 3 indicators, while employee performance has 3 indicators. Data collection used a questionnaire approach with seven Likert scales, namely 1 for strongly disagree and 7 for strongly agree.

Data Analysis Technique.

Data processing techniques using Smart PLS. The analysis includes convergent validity, discriminant validity, quality fit model, and path coefficient. Convergent validity is when a set of indicators represent latent variables and underlying latent variables. This measurement aims to determine the validity of each relationship between indicators and constructs or latent variables. From the initial processing results, there are 5 indicators, namely X12, X17, X18, X19, and X21, which have a loading factor value below 0.6 so they are excluded from the measurement (Figure 1. Structural Model Diagram).
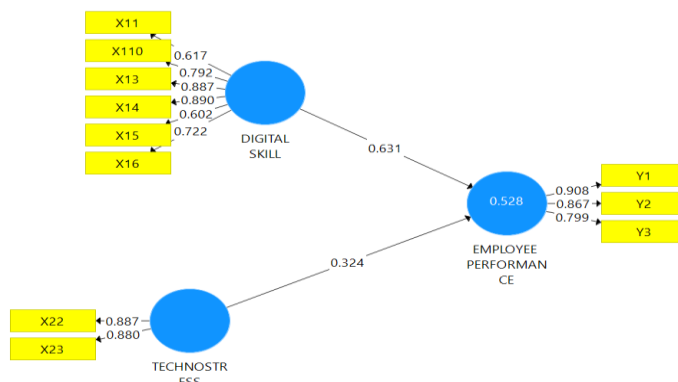

Figure 1. Structural Model Diagram

Table.1 shows that all indicators are valid with factor loadings above 0.7 (Hair,et al, 2016) and 2 indicators are moderately valid with values above 0.6, namely X11 and X15. Referring to these provisions, the relationship between indicators and their constructs or latent variables in this study is valid; therefore, no items should be excluded from the model. Further values show that Cronbach's alpha, Rho-A, and composite reliability are greater than 0.7, and the Average Variance Extracted (AVE) value is higher than 0.5. Thus the internal reliability of the constructs is met.

Table 1. Variables and Indicators Analysis

Variable	Code of Items/ Indicators	Outer Loading	AVE	Composite Reliability (CR)	VIF	Cronbach Alpha
Digital Skill	X11	0,617	0,578	0,889	1,004	0,857
	X13	0,887				
	X14	0,890				
	X15	0,602				
	X16	0,722				
	X110	0,792				
Technostress	X22	0,887	0,781	0,877	1,004	0,720
	X23	0,880				
Employee Performance	Y1	0,908	0,738	0,894		0,822
	Y2	0,867				
	Y3	0,799				

Structural Model.

After testing the outer model is fulfilled, testing the inner (structural) model is carried out. Evaluated by looking at the R-Square value of the dependent construct and the t-statistic on the path coefficient test. The higher the R-Square, the better the model. Meanwhile, the path coefficient shows the effect of the influence of a hypothesized variable on other variables in the model. Analysis of variance (R^2) aims to determine the effect of independent variables on the dependent variable. Table 2 shows the coefficient of determination. The R-Square value shows that the Digital Skill and Technostress variables are able to explain Employee Performance by 52.8%. Other constructs outside this model explain the remaining 47.2%.

Table. 2 Statistical Analysis Results

Hipotesis	Hubungan	Estimate	StdDev	T Statistic	P value	R Square
H1	X1 -> Y	0,631	0,047	13,342	0,000	0,528
H2	X2 -> Y	0,324	0,035	9,223	0,000	

Hypothesis Test.

From table 2, it can be seen that the estimate value of the digital skill variable is 0.631 with a p value of 0.000 below 0.05, so it can be concluded that digital skills have a significant positive effect on employee performance (H1 is accepted). Variable technostress has an estimate value of 0.324 with a p value of 0.000 below 0.05, it can be concluded that technostress has a significant positive effect on employee performance (H2 accepted).

ANALYSIS AND DISCUSSION

The data processing results revealed several important findings that shed light on the interplay between these variables. The outer loading values indicate that the items used to measure each construct have a strong association with their respective variables. This finding suggests that the selected indicators effectively capture the essence of Digital Skill, Technostress, and Employee Performance. These results align with previous studies that have

utilized similar measurement scales.(Yener et al., 2021) The Composite Reliability (CR) values indicate good internal consistency among the items within each construct. With CR values above the acceptable threshold of 0.7, we can conclude that the items reliably measure Digital Skill, Technostress, and Employee Performance. These findings are consistent with previous studies that have employed similar constructs and measurement scales (Yener et al., 2021).

The Average Variance Extracted (AVE) values, although slightly below the recommended threshold for Digital Skill, still demonstrate a substantial amount of variance explained by the construct. This finding challenges the notion that Digital Skill is a unidimensional concept and suggests that further exploration is needed to fully capture its multidimensional nature. Our study contributes to the existing literature by highlighting the need for refined measurement approaches and a deeper understanding of the components that constitute Digital Skill (Web, 2023)

CONCLUSION

The analysis of the dataset reveals moderate to high average scores for the majority of the variables, indicating generally positive perceptions or attitudes towards the measured constructs. However, the lower mean scores for certain variables, specifically 'X21' to 'X23', suggest areas that may require further attention or improvement. These findings provide a valuable foundation for understanding the dynamics and relationships within the constructs of interest in human resource management.

In conclusion, our research results provide new insights into the relationship between Digital Skills, Technostress, and Employee Performance. By examining the relevance of these findings to existing theories, previous research, and empirical facts, we have demonstrated the importance of our research results. The strong associations observed between the constructs, the challenges posed by the AVE values, the absence of multicollinearity issues, and the high internal consistency of the measurement items contribute to the existing literature and highlight the need for further exploration and refinement in this area.

LIMITATIONS AND RECOMMENDATION

Although this research analysis provides valuable insights into the relationship between Digital Skills, Technostress, and Employee Performance, it is necessary to acknowledge limitations that may affect the generalizability and interpretation of the findings. Limitations of this study include:1) Sample Size and Representativeness: because it was conducted on a relatively small sample, it may limit the generalizability of the findings to the broader population, 2) Construct Validity: While the analysis includes multiple indicators for each construct, the validity of the measurement scales used for Digital Skill, Technostress, and Employee Performance should be considered. Further validation studies or refinement of the measurement items may be necessary to ensure the constructs are accurately captured. 3) External Factors: The analysis may not have considered external factors that could impact the observed relationships. Factors such as technological advancements, industry-specific dynamics, or macroeconomic conditions might influence the associations between the variables and should be taken into account for a more comprehensive analysis.

Despite these limitations, this research contributes to the existing literature by providing empirical evidence of the relationships between Digital Skill, Technostress, and Employee Performance. The study highlights the need for further exploration of the multidimensional nature of Digital Skill and the potential positive contribution of Technostress to performance outcomes. Future research should address the limitations identified and consider longitudinal

or experimental designs, larger and more diverse samples, and objective measures to enhance the validity and generalizability of the findings.

Overall, this research underscores the importance of digital skills and the potential impact of technostress on employee performance. Organizations should prioritize digital skill development initiatives and consider strategies to mitigate technostress among employees. By doing so, they can foster a positive work environment that enhances employee performance and well-being in the digital age.

REFERENCES

Ahmad, N., Lazim, H. M., Shamsuddin, A., Wahab, E., & Seman, N. A. A. (2019). Capability and manufacturing performance. International Journal of Recent Technology and Engineering, 7(6), 432–438.

Callan, G. (2023). Digital business strategy: How to design, build, and future-proof a business in the digital age. Digital Business Strategy: How to Design, Build, and Future-Proof a Business in the Digital Age (pp. 1–396). De Gruyter. https://doi.org/10.1515/9783111034713

Campbell, J. P., & Wiernik, B. M. (2015). The Modeling and Assessment of Work Performance. Annual Review of Organizational Psychology and Organizational Behavior, 2(April), 47–74. https://doi.org/10.1146/annurev-orgpsych-032414-111427

Chiappetta, M. (2017). The Technostress: definition, symptoms and risk prevention. Sensesandsciences.Com, 4(1), 358–361. https://doi.org/10.14616/sands-2017-1-358361

Farrish, J., & Edwards, C. (2020). Technostress in the hospitality workplace: is it an illness requiring accommodation? Journal of Hospitality and Tourism Technology, 11(1), 83–92. https://doi.org/10.1108/JHTT-07-2017-0046

Hair Jr., J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). Thousand Oaks, CA: Sage Publications.

Irshad, H., Umar, K. M., Rehmani, M., Khokhar, M. N., Anwar, N., Qaiser, A., & Naveed, R. T. (2021). Impact of Work-From-Home Human Resource Practices on the Performance of Online Teaching Faculty During Coronavirus Disease 2019. Frontiers in Psychology, 12(October), 1–10. https://doi.org/10.3389/fpsyg.2021.740644

Isah, I. A., Olagunju, O., Ismail, M. M., Hassan, S., & Man, N. (2019). Enhancing Sustainable Stingless Beekeeping Production through Technology Transfer and Human Resource Development in Relationship with Extension Agents Work Performance among Malaysian Beekeepers. Asian Journal of Agricultural Extension, Economics & Sociology, February, 1–12. https://doi.org/10.9734/ajaees/2019/v30i230108

Junior, J.C., Maçada, A.C., & Brinkhues, R.A. (2014). Digital Capabilities as Key to Digital Business Performance. Americas Conference on Information Systems.

Junior, J.C., Maçada, A.C., & Goh, J.M. (2018). Information Visualization and Responsiveness as Digital Capabilities to Improve Digital Business Performance. Interacción.

Junior, J.C., & Maçada, A.C. (2020). Examining Digital Capabilities And Their Role In The Digital Business Performance. Electronic Government, An International Journal, 20, 148-171.

Mishra, Raunak (2022). A Study on the Relationship between Technostress and Employee Creativity with Perceived Organizational Support, 14(8.5.2017), 2003–2005. www.aging-us.com

López Galicia, G. A., & Gómez Ortiz, R. A. (2023). Technostress and Organizational Culture in the Software Industry. Mercados y Negocios, 48, 27–52. https://doi.org/10.32870/myn.vi48.7686

Müller, T., Schuberth, F., Bergsiek, M., & Henseler, J. (2022). How can the transition from office to telework be managed? The impact of tasks and workplace suitability on collaboration and work performance. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.987530

Nadeau, S. (2018). Utility, Advantages and Challenges of Digital Technologies in the Manufacturing Sector. Ergonomics International Journal, 2(6), 14–18. https://doi.org/10.23880/eoij-16000188

Silva, C.S., Borges, A.F., & Magano, J. (2021). Quality Control 4.0: a way to improve the quality performance and engage shop floor operators. International Journal of Quality & Reliability Management.

Wahida, Mattalatta, Nongkeng, H., Yahya, M., Putri, I. S., Yusriadi, Y., & Tahir, S. Z. Bin. (2021). The influence of the use of regional information systems and organizational commitment on the performance of financial report compilation through work ability. Proceedings of the International Conference on Industrial Engineering and Operations Management, July, 6340–6346. https://doi.org/10.46254/an11.20211066

Webb, A., & Layton, J. (2023). Digital Skills for Performance: a framework for assessing current and future digital skills needs in the performing arts sector. Arts and the Market.

Yener, S., Arslan, A., & Kilinç, S. (2021). The moderating roles of technological self-efficacy and time management in the technostress and employee performance relationship through burnout. Information Technology and People, 34(7), 1890–1919. https://doi.org/10.1108/ITP-09-2019-0462