







# “The effect of digitalization, work-family conflict, and organizational factors on employee performance during the COVID-19 pandemic”

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# THE EFFECT OF DIGITALIZATION, WORK-FAMILY CONFLICT, AND ORGANIZATIONAL FACTORS ON EMPLOYEE PERFORMANCE DURING THE COVID-19 PANDEMIC

## Abstract

The COVID-19 pandemic and technological development lead to a shift in economic, educational, and social behavior, subsequently influencing human life patterns and new realities through digital literacy. Education sector development and quality depend on how the employees are adapted to the current condition. Therefore, this study is directed to investigate whether and how organizational factors, including IT training, digital infrastructure, management support, and work-family conflict, affect employees who work in Indonesia's universities. It also examines how the mediators influence employee performance. 596 employees were recruited for a survey study. Structural equation modeling (SEM) was used to test the research hypotheses. The results show that IT training, digital infrastructure, and work-family conflict positively and significantly affect employees' digital literacy. Meanwhile, management support plays a more minor role in influencing employees' digital literacy. Furthermore, as a mediator variable, digital literacy strongly moderates the relationship between organizational and individual factors influencing employee performance. This study's findings provide stakeholders with information about the relationship between individual and organizational factors and employee performance. The organization's sustainability should not only attract the required market segmentation but also enhance, strengthen, and engage the employees' sense of belonging and commitment.

## Keywords

technology, digitalization, management support, employees, university, SEM

## JEL Classification

H11, J28

## INTRODUCTION

On January 30, 2020, WHO declared the COVID-19 outbreak a public health emergency of global significance. The term "pandemics" is defined as disease outbreaks that happen simultaneously everywhere and cover a wide geographic area (all continents/nations). In other words, everyone must now consider this illness a global problem and acknowledge its effect on employee performance (Daraba et al., 2021; Junaidi et al., 2022). It has emerged rapidly in all countries of the world, including Indonesia. This issue leads to a shift in social behavior patterns in which humans face new realities and obstacles, especially in the virtual world. The use of technology in the workplace and work-from-home (WFH) contexts has resulted in new adaptations that are widely used in numerous sectors where services are provided online. The COVID-19 pandemic's social and economic shocks have altered organizational and individual perspectives of work and occupations in macro and micro ways. The COVID-19 pandemic has caused worldwide social distancing to prevent the virus from spreading. Due to government-mandated closures and stay-at-home direc-

tions, several industries cease operations at their usual workplaces. Work-from-home (WFH) is caused by exponential victim growth and is predicted to be an effective method of flattening the COVID-19 victim curve. Employee productivity, business continuity, and the national economy all suffer as a result of the straight adoption of WFH for all office workers (Muller & Pelser, 2022; Vyas & Butakhieo, 2021).

The present argument is about digital literacy, which is frequently characterized by technological abilities, especially among employees who work in an education context (Chakraborty & Kar, 2021). New digital media are no longer only a question of information and technology. Skills and understanding of media and digital devices are required in all work sectors to promote the efficiency and productivity of work activities, particularly while working in WFH mode. Individual worker productivity might vary greatly depending on whether work is done at home or in the regular office (Limpo & Junaidi, 2023; Otsuka & Ben-Mazwi, 2022). With the rising convergence of media, the line between information and media is becoming increasingly blurred. However, the role of technology has yet to be fully grasped. Many people believe that digital media is merely an issue of machinery and software. It does not address an essential support requirement in boosting productivity that is not restricted to mechanical abilities or specific types of functional competence. WFH productivity is also a significant problem from both a macroeconomic and a microeconomic standpoint. Compared to regular employment arrangements, WFH has several advantages (e.g., shorter breaks, fewer breaks, fewer sick days, and reduced carbon emissions).

Individuals experience contradictory responsibilities as a result of the introduction of competing demands. Role conflict manifests itself in the form of work-family conflict. According to Pascucci et al. (2022), conflict arises when work engagement restricts family participation, resulting in more difficulties. In this illness, it is hypothesized that this type of role conflict is one of the diseases that allows persons to be unproductive. Furthermore, working in places not built for work can result in poor indoor environmental quality (IEQ), negatively impacting physical and mental well-being and reducing the overall performance (Xiao et al., 2021).

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## 1. LITERATURE REVIEW AND HYPOTHESES

Prior to COVID-19, WFH was meant to be a win-win situation for employees and companies. Some benefits of providing WFH include recruiting and keeping highly competent employees, enhancing employee commitment/engagement, and improving time management and workflow changes (Afrianty et al., 2022). Atoko (2021) found that WFH in Indonesia is a phenomenon that arose due to the influence of pandemic outbreaks adopted from worldwide trends as a solution to numerous issues produced by the interaction and transmission of COVID-19. Some organizations and communities are still debating the WFH model and culture. This is because, in Indonesia, the WFH model is not a prevalent work culture in enterprises and organizations, particularly government entities bound by service, and requires direct supervision, discipline, and restricted preparedness of supporting facilities and infrastruc-

ture (Chakraborty & Kar, 2021). WFH, however, cannot be ignored and must be completed. This is not because the office is insufficient but rather because it is necessary to prevent the spread of COVID-19, which is now evolving. Employees, in reality, do not wholly comprehend WFH, and they face several dilemmas, such as the belief that the house is haunted (Farooq & Sultana, 2021). Even though WFH allows for time and location flexibility, this dilemma state might lead to family conflict (Darouei & Pluut, 2021). However, WFH has flaws, such as a lack of team performance and a supervisory structure that could be utilized to its full potential by the management (Schieman et al., 2021). In addition to demonstrating flaws, the study's findings show that WFH gives freedom and flexibility for employees to complete their work without being closely overseen by superiors or supervisors (Van Der Lippe & Zoltán, 2020). WFH as a work alternative has been recognized since the early 1990s. It is often referred to as teleworking, telecommuting, virtual office, or remote working

and is described as a regular or temporary remote work arrangement that allows employees to work flexibly from any location rather than a traditional office (Yucel & Chung, 2021). WFH also aims to improve social inclusion by allowing people with disabilities to contribute to the workforce.

Work-from-home (WFH) has long been connected with organizational strategies that promote work-life balance (WLB). According to Afrianty et al. (2022), to assist WLB and WFH as an alternative, employees need to develop teleworking, telecommuting, and a virtual office that allows them to work flexibly from any location rather than working traditionally from an office. In addition, WFH is utilized to improve social inclusion by allowing people with disabilities to contribute to the workforce. Concerning the COVID-19 pandemic, WFH is viewed as one of the options for protecting the public from catching the disease in public situations (Schifano et al., 2021). Measuring effective performance in WFH behavior is critical for assessing the benefits and costs of virus control policies and developing ideal corporate work system reopening strategies (A. Kramer & K. Z. Kramer, 2020). Working from home might alter the perception of what it means to work from home. It requires a more excellent knowledge of the job and personal qualities related to the efficacy of working from home, as well as the designation of work groups and people who would be better working (or not working) from home (Junaidi, 2021).

Many organizations are now implementing WFH as a strategy. It assists many firms by reducing costs such as office facility leases, employee messes, and other work support facilities that must be prepared by the employer (Ahamad et al., 2022). WFH, on the other hand, also possesses challenges. What frequently develops is mutual distrust between the employer and the job recipient. As a result, the trust aspect of the idea of WFH becomes a highly significant factor that all parties must agree on, indicating that confidence in others is founded on the assumption that others will perform activities that are regarded as important (Lal et al., 2021). Several elements or attitudes influence how trust develops (or fails to develop) in a relationship. According to reports, the installation of WFH in Indonesia is done not because many firms have a culture or practice of working from

home but to limit the COVID-19 distribution so that managers must use WFH to preserve employee productivity for some individuals (Johari et al., 2018). Informants who access distant residences and offices find WFH perfect for preserving productivity since there is a considerable decrease in cost and transportation time because the travel from home to the office takes an average of three hours. As a result, employees at WFH feel incredibly privileged.

Work-from-home is becoming more common due to the development of information technology. WFH is made possible by tools like private virtual networks, cloud computing, and online meeting software. It has some benefits for both employers and employees (Lyu & Fan, 2022). For instance, allowing employees to work from home increases their sense of trust. Moreover, it improves their ability to combine work and family obligations, which may increase employee retention and make them happier and more productive (Afrianty et al., 2022).

WFH also enhances productivity, retains people, and improves commitment and performance. Other advantages include lower emissions (because of less travel), cheaper office expenditures, better work-life balance, higher efficiency, lower tiredness risk, and beneficial impacts on the pace and quality of new product development (Sawhill & Guyot, 2020). WFH staff is also concerned about deteriorating coworker connections and limited opportunities for advancement or career development (Atoko, 2021). This contradicts the widely held idea that professional development (typically in the form of promotions and pay raises) depends on the recommendations of strong coworkers or managers. It is clear to WFH employees how they can demonstrate their dedication, competence, and performance (Mukanzi & Senaji, 2017).

Digital literacy is an umbrella framework for various interconnected and complicated sub-disciplines or “literacy” in a digital network context, including skills, knowledge, ethics, and creativity (Calvani et al., 2008). Along with innovation and the numerous study findings that characterize it, digital literacy has experienced a shift and extension. For example, people were more familiar with the term “computer literacy” in the 1960s, which

carries overtones of programming competence without the modern definition involving such proficiency (Martin & Gruszieki, 2006).

According to usage requirements, functionality, and pedagogical objectives, digital literacy is split into two primary categories: “instrumental-technological” and “normative media-educational” (Gapski, 2007). Three types of competence are used to operationalize the concept: (a) message interpretation; (b) message choice; and (c) message articulation. These skills, in turn, influence the objectives and metrics for functional, cognitive, and ethical proficiency. Additionally, Calvani et al. (2009) define digital literacy as combining tangible talents and intangible skills. Digital literacy is the capacity to adapt to and explore novel technological situations, analyze, choose, and critically evaluate data and information, and use technology to represent and solve problems. It involves the development of shared and collaborative knowledge, promoting individual accountability, and reciprocal respect for rights and obligations. Figure 1 shows the shared model of digital literacy areas.

According to UNESCO terminology from 2011, digital literacy relates to and is inextricably linked to literacy activities. As a form of digital competence, digital literacy is a life skill that comprises not only the capacity to utilize technology devices, information, and communication but also the ability to socialize, learn, and have attitudes that include critical thinking, creativity, and inspiration. Martin and Grudziecki (2006) suggest an inter-level individual development model for digital literacy. Three levels of digital literacy have three critical dimensions (Figure 2): digital competence, which refers to knowledge, ideas, methods, and behaviors; digital use, which is the application of digital competencies in a particular context; and digital transformation, which calls for originality and creativity in the digital world (Cetindamar Kozanoglu & Abedin, 2021).

It is the ability to comprehend and use information in various formats and from a wide range of sources that may be accessed through computer devices (Calvani et al., 2009; Martin & Grudzieki, 2006). Its capacity to be used will substantially as-

Source: Calvani et al. (2009), Gapski (2007), Martin and Gruszieki (2006).

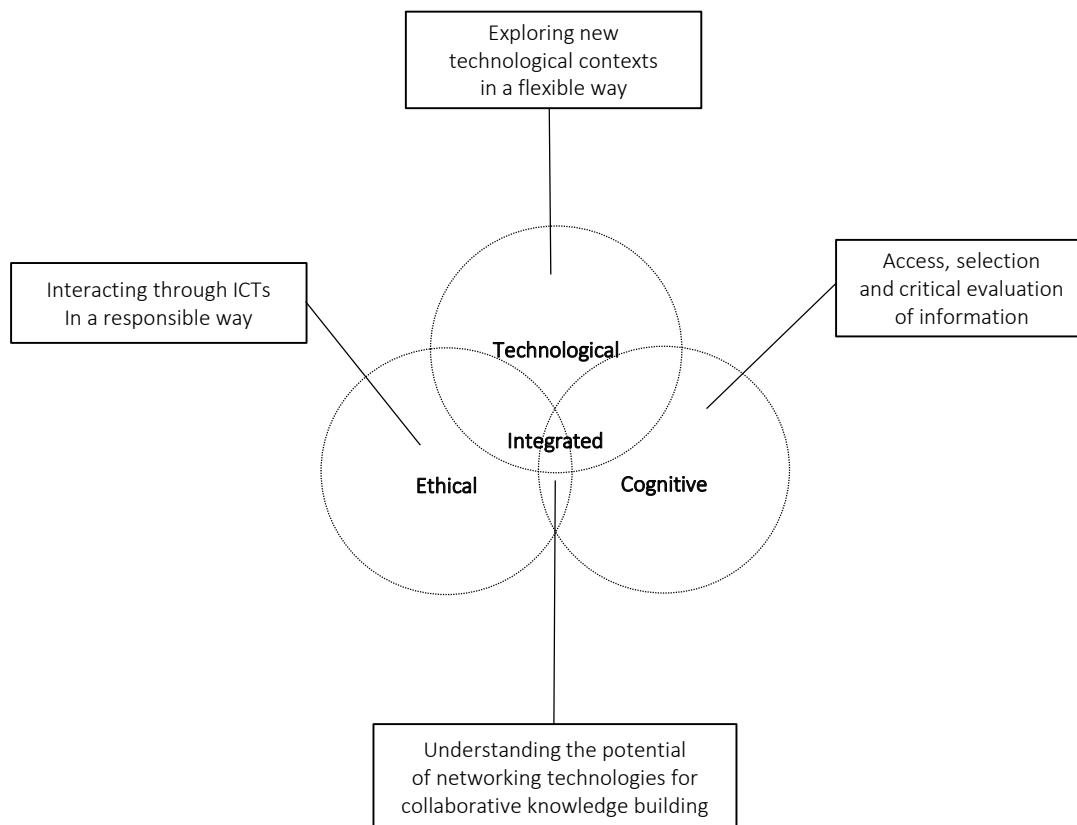
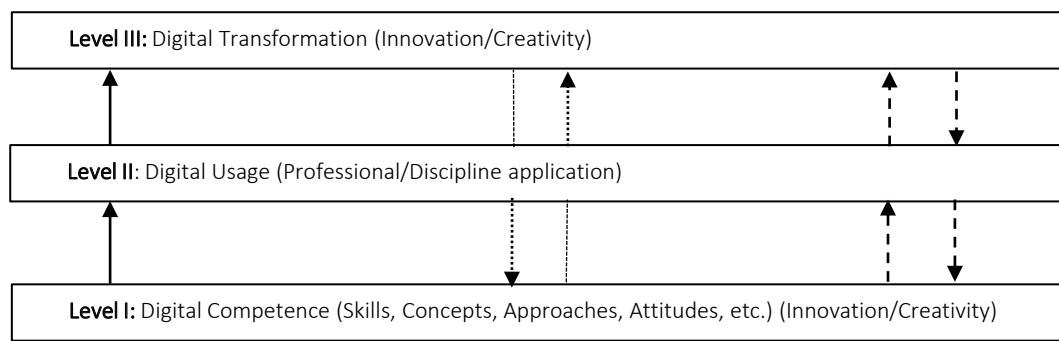


Figure 1. Intersecting areas of digital literacy

Source: Martin and Grudziecki (2006).



**Figure 2.** Three levels of digital literacy development

sist and increase input efficiency and productivity for employees practicing WFH.

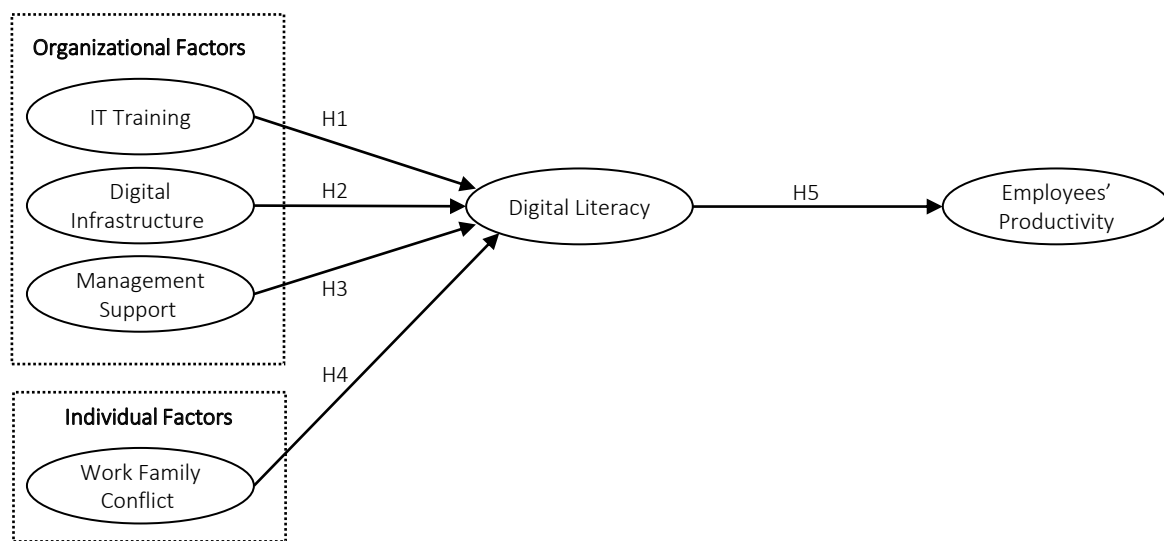
Employee performance is characterized as a person's efficacy and efficiency in carrying out tasks and meeting commitments at work (Staples et al., 1998). Effectiveness is the degree to which employees can complete their duties by a specified deadline and carry out their responsibilities without wasting resources. Workers' productivity during WFH is significantly influenced by individual and organizational factors (Afrianty et al., 2022).

Productivity concerns the relationship between a system's output and the inputs required to produce the output (Schifano et al., 2021). Many studies emphasize the total factor productivity and input productivity of certain individuals and business regions. The term "operational productivity" refers to a wide range of manufacturing inputs (e.g., facilities, labor, supplies, and equipment) (Van Der Lippe & Zoltán, 2020). The operational manager is in charge of all inputs and processes in order to optimize output (Manroop & Petrovski, 2022). This paper's notion of WFH productivity discusses how office workers enjoy more productive work during WFH as compared to working from home daily (Vyas & Butakhieo, 2021). WFH productivity is expressed in quantitative and qualitative outcomes. Quantitative findings assess whether office workers can do more work, work quicker, or work cheaper when using WFH versus working from an office (Saunila et al., 2019).

Employee efficiency over time is closely related to an individual's or a group's productivity. The fact that employee performance is the key to every organization's success is a recurring theme in the

different definitions and explanations documented and published in this context (Xiao et al., 2021). It has been found that the workplace atmosphere, flexibility, training, and motivation are all crucial factors that boost employee performance (Schifano et al., 2021). Successful firms are concerned about employee performance and, as a result, put in place methods to analyze it on a regular basis and take appropriate action. The frequent methods for evaluating employee performance include periodic staff satisfaction surveys, assessment questionnaires, casual meetings, and communication with a direct supervisor (Attygalle & Abhayawardana, 2021).

Individual and organizational variables (Figure 3) influence WFH staff's productivity (Afrianty et al., 2022). The interaction between an employee's working life and the employee's expectations of satisfaction outside of work activities is the confirmed problem of the individual element. Many employees experience work-family conflict as an interface between work and family obligations (Chung et al., 2018). Two sides in the role of work and family can be beneficial to individuals. However, it can also be detrimental if employees cannot balance obligations connected to two jobs and intrinsic roles (Vyas & Butakhieo, 2021). As a result, there will be an increase in the possibility of role conflict (Darouei & Pluut, 2021). The emergence of tensions between work duties and other life roles is one of the non-work interface aspects. The conflict between such positions was noted as a significant cause of stress for about a third of males worldwide (Pascucci et al., 2022). The term "work-family conflict" refers to any conflict between work and family, "a type of role conflict" in which there will be antagonism from the pressures of the work and family domains (Schieman et al.,



**Figure 3.** Conceptual framework of research

2021). They claim that the dispute will arise in such a way that it will be a detrimental diversion from one's employment duties to the role of the family.

Organizational elements that affect employee performance, in addition to individual and organizational factors, include management support, digital infrastructure, and access to and availability of information technology (IT) training (Brunetti et al., 2020). In human resource management, training is one of the most crucial procedures for companies to promote employee loyalty to the company, improve employees' skills and competencies, and boost organizational competitiveness (Saunila et al., 2019). The most popular method for adjusting to modifications in IT systems and applications is IT training (Ellström et al., 2022). Businesses have always viewed IT skills as a source of sustained competitive advantage.

The combination of hardware and software technologies that support business operations and employee performance is referred to as "digital infrastructure" (Minehane, 2019). Digital infrastructure is the availability of technology-based systems possessed by businesses that can enable the online application of the organization's core business. For example, the education sector needs an adequate digital infrastructure to transition to online teaching and learning systems. This requires hardware support (internet and computer access) supported by suitable software systems to deliver worker materials and discussion sessions to deal with the current digitalization developments associated with the 4.0

industrial revolution, such as cloud data storage, machine learning, big data, and robotics.

Management support is regularly cited as crucial in achieving the adjustments required to implement an invention in many innovation works of literature. It is also seen as playing a key role in WFH deployment. WFH adoption necessitates management commitment to support changes in work culture, including WFH implementation. Qualitative results, on the other hand, demonstrate whether office workers are more focused.

Hence, the aim of this study is to investigate the role of organizational and individual factors on employee performance. Following the literature review and preliminary studies aforementioned, the recent study proposed the following hypotheses:

*H1: IT training has a positive effect on employees' digital literacy.*

*H2: Digital infrastructure has a positive effect on employees' digital literacy.*

*H3: Management support has a positive effect on employees' digital literacy.*

*H4: Work-family conflict has a positive effect on employees' digital literacy.*

*H5: Digital literacy has a positive effect on employee performance.*

## 2. METHODOLOGY

This study applied multi-item scales for all of the constructs from prior studies for the concepts of IT training, digital infrastructure, management support, work-family conflict, digital literacy, and employee performance (Appendix A, Table A1). This study also applied to the pre-test and pilot test, which refers to Hair Jr et al. (2019). The Indonesians who work in university offices in Sulawesi Selatan district, Indonesia, were invited to fill out an online survey from September 1 until November 30, 2021. The participants were invited through random convenience sampling, involving 655 participants. However, 596 samples were valid, and this indication was experienced at a rate of 90.99%. Table 1 shows the respondents' demographics.

**Table 1.** Respondent demographics

| Demographic items      | Frequency | Percentage (%) |
|------------------------|-----------|----------------|
| <b>Gender</b>          |           |                |
| Male                   | 245       | 41.10          |
| Female                 | 351       | 58.90          |
| <b>Age</b>             |           |                |
| Under 26 years old     | 165       | 27.68          |
| 26~40 years old        | 246       | 41.28          |
| Over 40 years old      | 185       | 31.04          |
| <b>Education</b>       |           |                |
| Master                 | 350       | 58.72          |
| Ph.D.                  | 246       | 41.28          |
| <b>Work experience</b> |           |                |
| Below 5 years          | 75        | 12.58          |
| 6~10 years             | 155       | 26.00          |
| 11~15 years            | 211       | 35.40          |
| Over 15 years          | 155       | 26.01          |

This study adopted the measurement item from previous empirical studies. Using existing measurement items is generally considered better practice than new development, given the complexity of scale development (DeVellis, 2017). Organizational

factor constructs and individual factors such as work-family conflict, digital literacy, and employee performance were also considered. Furthermore, hypotheses were examined using the structural equation model (SEM) approach. The study also used descriptive statistics and Pearson correlation. Lastly, this study examined the mediator variable's role referring to Hayes (2018).

## 3. RESULTS

Table 2 shows that the values of means and standard deviation are a one-half good fit for the observed data (Byrne, 2016; Hair Jr et al., 2019).

Table 3 shows the CFA result and Cronbach's  $\alpha$ , which prove a good fit and good convergent validity and reliability for all measurement items and constructs (Byrne, 2016; Hair Jr et al., 2019).

Next, Table 4 and Figure 4 show that hypotheses H1 and H2 are supported by showing that IT training and digital infrastructure have a significant and favorable impact on employees' digital literacy ( $\gamma_{11} = 0.214, p < 0.010$ ) and ( $\gamma_{21} = 0.563, p < 0.001$ ). It means training and information technology infrastructure strongly correlate with Indonesian workers who use them in universities to enhance their literacy, especially with information and communication. It may also help develop their sense of teaching and knowledge consciousness. Meanwhile, management support has a negative effect on digital literacy ( $\gamma_{31} = 0.031, p > 0.010$ ); hence, H3 is rejected. The university leader is not essential to employees without providing a natural education pattern and digital applications and networks. Interestingly, work-family conflict is essential in enhancing employees' digital literacy, supporting H4 ( $\gamma_{41} = 0.225, p < 0.001$ ). Besides

**Table 2.** Correlation matrix for measurement scales

| Constructs | Mean | SD   | IT      | DI      | MS      | WF      | DL      | EP    |
|------------|------|------|---------|---------|---------|---------|---------|-------|
| IT         | 5.81 | 0.67 | 0.852   |         |         |         |         |       |
| DI         | 6.07 | 0.70 | 0.352** | 0.818   |         |         |         |       |
| MS         | 5.61 | 0.66 | 0.770** | 0.386** | 0.824   |         |         |       |
| WF         | 5.74 | 0.58 | 0.551** | 0.438** | 0.507** | 0.793   |         |       |
| DL         | 5.33 | 0.83 | 0.398** | 0.489** | 0.391** | 0.438** | 0.785   |       |
| EP         | 5.75 | 0.66 | 0.444** | 0.516** | 0.454** | 0.634** | 0.489** | 0.822 |

Note: IT: IT Training, DI: Digital Infrastructure, MS: Management Support, WF: Work-Family Conflict, DL: Digital Literacy, EP: Employee Performance. SD: Standard Deviation. Diagonal elements are the square roots of the AVE for each construct. Pearson correlations are shown below the diagonal. Significant at \*:  $p < 0.05$ , \*\*:  $p < 0.01$ , \*\*\*:  $p < 0.001$ .



**Table 3.** Measurement results

| Constructs                    | MLE estimates factor loading/ measurement error |       | Squared multiple correlations (SMC) | Composite reliability (CR) | Average of variance extracted (AVE) | Cronbach's $\alpha$ |
|-------------------------------|---|-------|-------------------------------------|----------------------------|-------------------------------------|---------------------|
| <b>IT training</b>            |   |       |                                     | <b>0.889</b>               | <b>0.727</b>                        | <b>0.888</b>        |
| IT1                           | 0.862   | 0.257 | 0.743                               |                            |                                     |                     |
| IT2                           | 0.856   | 0.267 | 0.733                               |                            |                                     |                     |
| IT3                           | 0.840   | 0.294 | 0.706                               |                            |                                     |                     |
| <b>Digital infrastructure</b> |   |       |                                     | <b>0.858</b>               | <b>0.669</b>                        | <b>0.854</b>        |
| DI1                           | 0.835   | 0.303 | 0.697                               |                            |                                     |                     |
| DI2                           | 0.855   | 0.269 | 0.731                               |                            |                                     |                     |
| DI3                           | 0.761   | 0.421 | 0.579                               |                            |                                     |                     |
| <b>Management support</b>     |   |       |                                     | <b>0.864</b>               | <b>0.680</b>                        | <b>0.861</b>        |
| MS1                           | 0.838   | 0.298 | 0.702                               |                            |                                     |                     |
| MS2                           | 0.861   | 0.259 | 0.741                               |                            |                                     |                     |
| MS3                           | 0.772   | 0.404 | 0.596                               |                            |                                     |                     |
| <b>Work-family conflict</b>   |   |       |                                     | <b>0.911</b>               | <b>0.630</b>                        | <b>0.889</b>        |
| WF1                           | 0.774   | 0.401 | 0.599                               |                            |                                     |                     |
| WF2                           | 0.805   | 0.352 | 0.648                               |                            |                                     |                     |
| WF3                           | 0.808   | 0.347 | 0.653                               |                            |                                     |                     |
| WF4                           | 0.760   | 0.422 | 0.578                               |                            |                                     |                     |
| WF5                           | 0.825   | 0.319 | 0.681                               |                            |                                     |                     |
| WF6                           | 0.789   | 0.377 | 0.623                               |                            |                                     |                     |
| <b>Digital literacy</b>       |   |       |                                     | <b>0.918</b>               | <b>0.617</b>                        | <b>0.917</b>        |
| DL1                           | 0.807   | 0.349 | 0.651                               |                            |                                     |                     |
| DL2                           | 0.756   | 0.428 | 0.572                               |                            |                                     |                     |
| DL3                           | 0.772   | 0.404 | 0.596                               |                            |                                     |                     |
| DL4                           | 0.796   | 0.366 | 0.634                               |                            |                                     |                     |
| DL5                           | 0.782   | 0.388 | 0.612                               |                            |                                     |                     |
| DL6                           | 0.763   | 0.418 | 0.582                               |                            |                                     |                     |
| DL7                           | 0.819   | 0.329 | 0.671                               |                            |                                     |                     |
| <b>Employee performance</b>   |   |       |                                     | <b>0.913</b>               | <b>0.677</b>                        | <b>0.910</b>        |
| EP1                           | 0.853   | 0.272 | 0.728                               |                            |                                     |                     |
| EP2                           | 0.804   | 0.354 | 0.646                               |                            |                                     |                     |
| EP3                           | 0.812   | 0.341 | 0.659                               |                            |                                     |                     |
| EP4                           | 0.781   | 0.390 | 0.610                               |                            |                                     |                     |
| EP5                           | 0.861   | 0.259 | 0.741                               |                            |                                     |                     |

Note: Fit statistics (N = 596).  $\chi^2/df = 2.511$ , Goodness-of-Fit Index (GFI) = 0.913, Non-normed fit index (NFI) = 0.931, Comparative Fit Index (CFI) = 0.957, Incremental fit index (IFI) = 0.957, and Root Mean Square Error of Approximation (RMSEA) = 0.050.

information technology and infrastructure, families may also influence the quality of education.

This study further confirms that digital literacy significantly affects employee performance

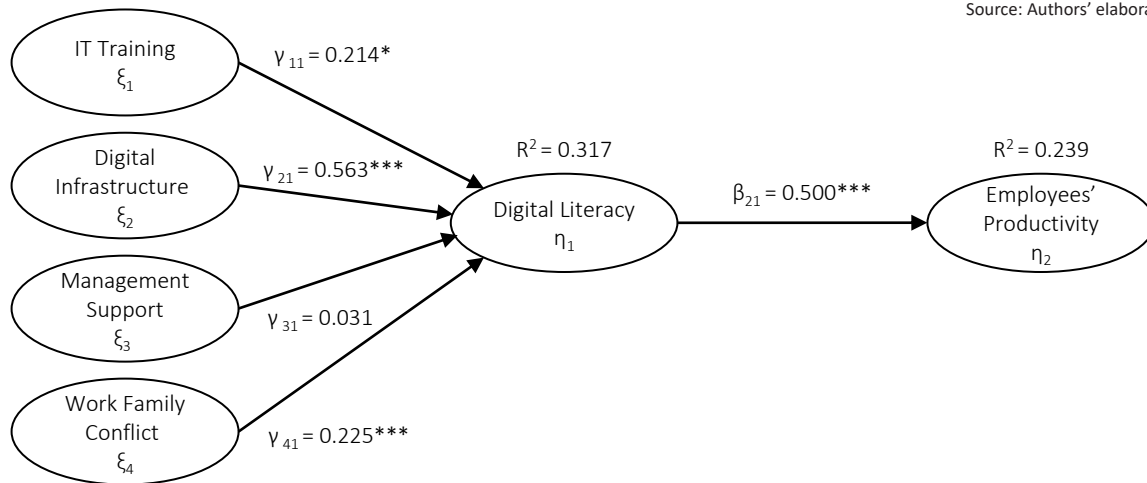
( $\beta_{21} = 0.500, p < 0.001$ ); hence, H5 is supported. It means that the employees' skill in using information and communication technology (ICT) to obtain recent information and knowledge positively affects education quality. It also offers school and

**Table 4.** Proposed model results

| Hypotheses | Symbol        | Path                   |   | Coefficients         | Results  |           |
|------------|---------------|------------------------|---|----------------------|----------|-----------|
| H1         | $\gamma_{11}$ | IT Training            | → | Digital Literacy     | 0.214*   | Supported |
| H2         | $\gamma_{12}$ | Digital Infrastructure | → | Digital Literacy     | 0.563*** | Supported |
| H3         | $\gamma_{13}$ | Management Support     | → | Digital Literacy     | 0.031    | Rejected  |
| H4         | $\gamma_{14}$ | Work-Family Conflict   | → | Digital Literacy     | 0.225**  | Supported |
| H5         | $\beta_{21}$  | Digital Literacy       | → | Employee Performance | 0.500*** | Supported |

Note: Model fit:  $\chi^2 = 993.14, df = 314, \chi^2/df = 3.163, GFI = 0.895, NFI = 0.912, CFI = 0.938, IFI = 0.938, RMSEA = 0.060$ . Significant at \*:  $p < 0.05, ** : p < 0.01, *** : p < 0.001$ .

Source: Authors' elaboration.



Note: Model fit:  $\chi^2 = 993.14$ ,  $df = 314$ ,  $\chi^2/df = 3.163$ ,  $GFI = 0.895$ ,  $NFI = 0.912$ ,  $CFI = 0.938$ ,  $IFI = 0.938$ , and  $RMSEA = 0.060$ .

Figure 4. Structural model results

Table 5. Mediation effects

| IV | M  | DV             | IV → DV (c) | IV → M (a) | IV + M → DV |          | Bootstrapping 95% CI |                |
|----|----|----------------|-------------|------------|-------------|----------|----------------------|----------------|
|    |    |                |             |            | IV (c')     | M(b)     | Percentile method    | Bias-corrected |
| IT | DL | EP             | 0.296***    | 0.497***   | 0.443***    | 0.296*** | [0.100, 0.200]       | [0.151, 0.298] |
|    |    | Standard Error | 0.037       | 0.047      | 0.037       | 0.030    |                      |                |
| DI | DL | EP             | 0.347***    | 0.585***   | 0.492***    | 0.248*** | [0.102, 0.206]       | [0.148, 0.296] |
|    |    | Standard Error | 0.036       | 0.042      | 0.033       | 0.030    |                      |                |
| MS | DL | EP             | 0.312***    | 0.493***   | 0.457***    | 0.293*** | [0.101, 0.192]       | [0.154, 0.289] |
|    |    | Standard Error | 0.037       | 0.048      | 0.037       | 0.029    |                      |                |
| WF | DL | EP             | 0.591***    | 0.625***   | 0.722***    | 0.209*** | [0.075, 0.128]       | [0.128, 0.274] |
|    |    | Standard Error | 0.038       | 0.052      | 0.036       | 0.027    |                      |                |

Note: IT: IT Training, DI: Digital Infrastructure, MS: Management Support, WF: Work-Family Conflict, DL: Digital Literacy, EP: Employee Performance. Significant at \*:  $p < 0.05$ , \*\*:  $p < 0.01$ , \*\*\*:  $p < 0.001$ .

university stakeholders a solution to develop information and technology literacy.

The results of the mediation study showed that none of the indirect effects' 95% confidence intervals (CIs) included zero, which refers to Hayes (2018) (see Table 5). The results from the mediation analysis show that there are partial mediators. It implies digital literacy has a crucial role in bridging predictor variables (e.g., IT training, digital infrastructure, management support, and work-family conflict) and employee performance.

### 4. DISCUSSION

This study confirms that information and technology enhance employees' skills and knowledge. It is also supported by the organization and digital transformation to facilitate a correlation between

training, digital literacy, and employee performance. Furthermore, education and training processes influence employees' organizational expectations in the career system. It correlates to the university and government's vision and mission, which have yet to be examined in future studies. Although every stakeholder and university have a career procedure and human resources department program for their careers, the rapid development of information and technology shifted conventional training toward a friendly approach. However, management support, such as policies and clear rules that have a correlation to employees' attitudes and behaviors, is inevitable. This study also confirms Afrianty et al. (2022), Atoko (2021), Attygalle and Abhayawardana (2021), Chakraborty and Kar (2021), who revealed that IT training, digital infrastructure, and work-family conflict play crucial roles in employees' digital literacy.

Additionally, it plays a significant part in raising employee performance. This study also recommends that in order to improve teamwork and employee performance, university administrators and staff members need to foster collaboration. Therefore, employees' skills and ability to operate information technology may bridge the gap because they directly affect their training process, digital infrastructure availability, and employee performance.

The result of this study provides a better understanding of internal and external factors such as information and technology, digital infrastructure, family support, and management support. Although this study concluded that management support has little effect on employee performance, information technology development is inevitable in education and the workplace. The employees who have had positive training and manager support have more significant potential to enhance their skills and knowledge. This study also expands the concept of education and employees'

human resources development on individuals and groups. It provides a solid theoretical insight for future studies by providing the mediating role of the employees' digital literacy to enhance their performance. It also suggests that IT training, digital infrastructure, management support, and family relationships must be established at the initial phase of the university context.

This study suggests that academics and university leaders must develop sufficient information and technology infrastructure. However, university leader roles are inevitable. It has also become a tool to strengthen employee and organizational engagement. In addition, the organizational system may affect employees' attitudes and behaviors. It implies a leader's commitment to combining technology and employee performance toward IT training and digital infrastructure, which have an essential role in enhancing performance. Finally, it could explain why some universities are more prone to developing information technology than others.

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## CONCLUSION

This study provided insight that information technology, which has a correlation to training and family, has a more significant effect on employees' digital literacy and performance than management support. It has provided valuable insight during the COVID-19 pandemic, which also brought rapid changes to almost all vital segments (e.g., economic and social). Although WFH is challenging for many people, including employees, the education sector, where planning and implementation of regulations are an absolute necessity, is adapting to online work and study. In addition to human resources, improving employee performance also involves family, digital assistance, and IT training. Moreover, managerial support must be considered one of the organizational pillars. Proper training is necessary if the university wants to employ and advance information and technology. University or organization executives must also continuously improve the IT infrastructure and workforce training. Next, families significantly influence the success of employees. Personal and technological aspects of employees are therefore essential to improving the education sector. When it comes to supporting and managing all operations and taking remedial action when necessary, an employee's attitude and behavior are seen as crucial in the workplace. The capacity to operate in a team, comprehend technical standards, develop effective work methods, follow up on issues, and offer alternate solutions when there are ambiguities or weaknesses in the workplace round out the technical abilities that employees need.

## AUTHOR CONTRIBUTIONS

Conceptualization: Salju Salju.

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## APPENDIX A

Table A1. Scale Items

| Item  | Question  | Response                                    |  |
|---|---|---|--|
| IT training   | Training and IT training provided by organizations improves skills and competencies   | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | IT training increases lecturers' commitment to the organization   | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | IT training increases the competitiveness of organizations  | 1 = Strongly disagree<br>5 = Strongly agree |  |
| Digital infrastructure  | The availability of digital physical means supports communication and connectedness with the off-campus world   | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Internet network facilities on campus facilitate digital connectedness  | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Digital applications and software are available and easy to use   | 1 = Strongly disagree<br>5 = Strongly agree |  |
| Management support  | College policy supports remote work   | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Employees feel support and behavior of college leaders in the use of technology   | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Employees feel support attitude and commitment in WFH settings and management   | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | <b>Time</b>   |   |  |
| Work-family conflict  | Hours worked  |   |  |
|   | Work-family conflicts are positively related to the number of hours worked per week (lack of time together with family)   | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Inflexible work schedule  | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | The inflexibility of work schedules can lead to work-family conflicts   | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Shiftwork   |   |  |
|   | Work-family conflicts arise from increased frequency and amount of overtime work and irregularity of shift work schedules   | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   |   | <b>Tension</b>                              |  |
|   | Role conflict   |   |  |
|   | Work-related stressors cause symptoms of tension anxiety, fatigue, depression, apathy, and irritability   | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Role ambiguity  |   |  |
| It is difficult determining compliance with one's priority when faced with two or more work or family pressures | 1 = Strongly disagree<br>5 = Strongly agree   |   |  |
| Boundary-spanning activities  |   |   |  |
| Work activities and responsibilities outside traditional managerial areas are a burden                          | 1 = Strongly disagree<br>5 = Strongly agree   |   |  |
| Digital literacy  | Define  |   |  |
|   | Employees can use ICT tools to identify and appropriately represent information needs   | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Access  |   |  |
|   | Employees can collect and/or retrieve information in a digital environment  | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Manage  |   |  |
|   | Employees can use ICT tools to apply existing organizational schemes or classifications for information   | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Integrate   |   |  |
|   | Employees can interpret and represent information, such as by using ICT tools to synthesize, summarize, and compare information from various sources                    | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Evaluate  |   |  |
|   | Employees can assess the extent to which information meets the needs of tasks in an ICT environment, including determining authority, bias, and timeliness of materials | 1 = Strongly disagree<br>5 = Strongly agree |  |
| Create  |   |   |  |
| Employees can adapt, implement, design or create information in an ICT environment                              | 1 = Strongly disagree<br>5 = Strongly agree   |   |  |
| Communicate   |   |   |  |
| Employees can communicate information correctly in its context (audience, media) in an ICT environment          | 1 = Strongly disagree<br>5 = Strongly agree   |   |  |
| Employee performance  | Employees continue their work meeting standards by utilizing digital infrastructure   | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Employees actively carry out research obligations, such as before the COVID-19 pandemic, by utilizing digital infrastructure  | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Employees actively carry out community service, such as before the COVID -19 pandemic, by utilizing digital infrastructure  | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Employees generate external research and community service by utilizing digital infrastructure  | 1 = Strongly disagree<br>5 = Strongly agree |  |
|   | Employees actively carry out scientific forums and support tri dharma by utilizing digital infrastructure   | 1 = Strongly disagree<br>5 = Strongly agree |  |