HOW SMART TECHNOLOGY AFFECTING EMPLOYEE WELL-BEING: THE ROLE OF WORKLOAD AND PERCEPTION TOWARDS TECHNOLOGY COMPLEXITY

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ABSTRACT

Organization's decision to integrate smart technology in their business is mainly caused by the demands to increase operational effectiveness and work productivity. The integration of this technology is proven to affect the employees as well. As it is aimed to support employees to promote their performance, it is expected to lessen their workload as well. Hence, they may have more time to balance their life, develop their skills, and, most importantly, enhance their well-being. However, the reality speaks otherwise. When some parts of their job are supported by smart technology, the employees are assigned to do other tasks instead. Their workload stays constant, or even increasing, due to the job enlargement. This study focused on the investigation of how the increasing workload due to smart technology use might affect the employee well-being and how the perception of the smart technology might lessen the impact. Using quantitative research design, data was collected by distributing work overload scale (α: 0.804), well-being scale (α: 0.847), and perception of smart technology complexity scale (α: 0.770) to 109 employees in Jakarta, Indonesia. The results showed the following: 1) workload contributed a significant effect towards employee well-being; 2) perception of smart technology complexity moderated the two variables significantly. This finding is believed to deliver a fruitful suggestion to organizations integrating smart technology in the workplace without putting employee well-being aside.

Keywords: well-being, workload, technology complexity, employee, smart technology

1. PREFACE

The VUCA (volatility, uncertainty, complexity, and ambiguity) era encourages companies to put extra effort to successfully achieve their goals. One indicator of this success is the company's performance, so they are required to exhibit superior performance in order to survive in this competitive business world. Superior company performance can only be obtained if the company has employees who also perform superiorly. Therefore, HR management practices should focus on how to measure employee attitudes and behavior so that their performance is always excellent, thus having a positive impact on company performance. Scholars stated that happy employees have higher work productivity (Zelenski et al., 2008).

Employees show expected work performance when they are in a positive psychological condition which is characterized by the degree of their psychological well-being. Well-being refers to a self-assessment of an individual's well-being in different life domains (Diener et al., 2015). Earlier studies demonstrated that work performance is an impact of employee well-being (Lee et al., 2021; Lestari et al., 2021). Furthermore, it was also proven that well-being is determined by work environment, including the use of technology (Passey, 2021). Technology integration has become a strategy implemented by organizations to increase effectiveness and reduce its operational costs (Lee et al., 2021). In the 21st century, smart technology like artificial intelligence (AI) has been widely known and integrated in the workplace for its ability to detect patterns, generate judgments, and make work more efficient (Webb, 2019). For instance, chatbot is used to support customers with the help that they require (Henkel et al., 2020). In the tourism industry, AI is integrated in gadgets to perform travel arrangement and room service (Loureiro et

al., 2023). Shortly, the integration of smart technology helps employees to complete their job effectively, especially when their task is routine and repetitive. A survey conducted by Mekari predicted that 62% of companies in Indonesia will adopt artificial intelligence to support their business (Pratama, 2023).

On the contrary, the use of smart technology also creates a negative impact. Automation changes the way employees work and affects personal impact on their job. It leads to the decreasing of job challenge, meaning, satisfaction, and enhances the possibilities of work stress occurrence (Kinowska & Sienkiewicz, 2020). A 2014 HSE report suggested that the first cause of work stress is perceived workload. Workload refers to the number of tasks assigned to or expected from an employee (Pace et al., 2021). In a smart technology-integrated workplace, the employees need to adapt to the new technology by learning how to operate and work with smart technology itself. Previous research found that workload is associated with decreased employee well-being (Pace et al., 2021; Wang, 2024). This is due to the increasing number of job demands that lead to increased stress, which is closely related to increased negative impacts and decreased well-being. Perceived job demands are not only related to the number of tasks, but also related to the demands of learning new competencies needed to operate smart technology and efforts to adopt new facilities that are unfamiliar to employees (Xu et al., 2023). Organizations implementing smart technology require their employees to pursue upgraded skills and knowledge accordingly (Xu et al., 2023). This situation may lead to negative impacts, such as stress and burnout.

The negative impact of increased workload due to the use of smart technology on employee well-being can be reduced if they have a positive perception towards the smart technology integration in their workplace. With the help of smart technology, it is expected that tasks can be completed more optimally (Xu et al., 2023). For example, a study concluded that the use of robots by frontliners is reported to also affect job resources as well as job demands. It was explained that both aspects of work are proven to improve employee well-being because robots are considered to be able to help them, such as completing tasks that require physical labour and repetitive tasks (Jiang et al., 2022). On the other hand, integration of smart technology leads to the other way, that is when it is perceived negatively. When technology brings negative consequences, technology complexity is perceived as a form of job demand that can cause strain and reduce employees' psychological well-being. Technology complexity is defined as the extent to which the use of technology in the workplace requires more effort from employees (Ayyagari et al., 2011).

Based on the explanation above, it is concluded that research on the impact of smart technology use on employee psychological well-being needs to be carried out by involving workload and perceptions of technological complexity as determinants. The finding of the research is expected to be beneficial for both organizations and employees as it will help to promote employee performance, and in turn, organizational performance as well.

Hypothesis

The Job Demands-Resources (JD-R) theory posits that both job resources and demands affect employees' well-being. It distinguishes between two processes through which these factors operate: the health impairment process and the motivational process. In the health impairment process, job demands necessitate increased effort, deplete job resources, and lead to strain, psychological fatigue, and health issues. Conversely, in the motivational process, job resources help fulfill employees' fundamental needs and enhance work engagement. Additionally, it is noted that job demands and resources play distinct roles in employee well-being. Specifically,

job resources can alleviate or buffer the effects of job demands on strain, while job demands can amplify the positive influence of job resources on work engagement (Bakker et al., 2023).

One of the job demands which is influential to employee well-being in workload. The situation gets even worse when they experience work overload. Work overload is defined as an individual's perception that assigned work exceeds their capability (Ayyagari et al., 2011). Further explanation states that it causes an intolerable level of stress. Studies found that workload creates general stress on both social and working life and employees cannot carry out their duties properly (Pace et al., 2021). Smart technology can be the source of employee's negative affect because their tasks generated as the consequences of technology integration require immediate completion (Umair et al., 2023). The employees are also expected to match their work pace and work volume to the output of smart technology as their co-worker (Nurski & Hoffmann, 2022). Therefore, the hypothesis that we proposed is:

H1: workload influence employee well-being

When an organization adopts smart technology, it is supposedly to help their employee to complete their job efficiently. At the same time, employees expect that the integration of smart technology can minimize daily workload and work pressure (Willems et al., 2023). On the other hand, in a smart technology-integrated workplace, employees may experience work overload due to the new task assignment or new skills to be possessed. The extra time that they need to enhance their smart technology-related competencies might be one of the factors that adds up employee workload and affects their well-being (Umair et al., 2023). The more complex the technology gets, the more extra time and effort that employees need to spare. As mentioned earlier, technology complexity is considered as a job demand that leads to strain and decreased well-being. Accordingly, we proposed a second hypothesis as follows:

H2: technology complexity moderates the correlation between workload and employee well-being
The model of the current research is described below:

Figure 1
Research Model
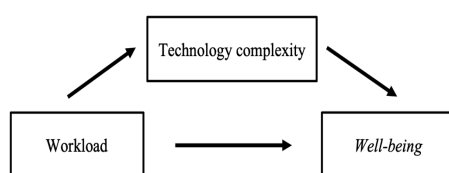
2. RESEARCH METHOD
Samples
This study adopted a random sampling technique and recruited 109 employees in Jakarta, Bogor, Depok, Tangerang, and Bekasi (Jabodetabek area) in Indonesia. The participants were ensured that they work with smart technology as an aid to do their daily tasks and filled in an informed consent before they started filling in the questionnaires. According to gender and age, female participants (65.138%) and 20-22 years of age category (94.495%) dominated the composition.

Measurement

The questionnaires to measure the research variables were translated into Indonesian language so that the participants would have a better comprehension and be able to deliver responses representing their actual perception towards each of the statements as expected. Well-being as a dependent variable was measured by using the well-being scale developed by Anderson et al. (2015). The independent variable, that is workload, was measured by using work overload scale, while the moderating variable, namely perception of smart technology perception, was measured by using technology complexity scale. Both work overload and technology complexity scale are previously used by Ayyagari et al. (2011).

To ensure the reliability of the scales, reliability analysis was conducted and resulted that the three scales being highly reliable to measure each variable. The description of each scale is exhibited in Table 1.

Table 1

Instruments

Scale	Cronbach's Alpha	Sample of item
Well-being scale	0.847	● My job made me feel bored
		● My job made me feel fatigued
Work overload scale	0.804	● Smart technology creates many more requests, problems or complaints in my job than I would otherwise experience
		● I feel pressured due to smart technology
Smart technology complexity scale	0.770	● Smart technology is easy to use
		● Learning to use smart technology is easy for me

Data collection and analysis

This study adopted a quantitative method. Data collection was conducted in the second and third week of April 2024 by distributing an online survey to employees who met the qualification of research participants. After the cleansing process, the data was analysed by performing descriptive analysis, assumption tests, regression analysis, and Sobel test to test the hypothesis. The data analysis was completed with the support of IBM SPSS Statistics version 26.

3. RESULT AND DISCUSSION

Results

The result of data analysis to investigate the hypothesis are described below:

Hypothesis 1: workload contributes a significant impact towards well-being

Table 2

Regression Analysis Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	252.15	1	252.15	14.92	.000
Residual	1808.09	107	16.89		
Total	2060.24	108			

The result in Table 2 showed that workload affected well-being significantly (p= .000). The contribution of the impact is exhibited in Table 3 below.

Table 3
Contribution of Workload Towards Well-Being

R	R²	Adjusted R²	Std. Error of the Estimate
.35	.12	.11	4.11

Workload was proven to significantly influence well-being. According to job demands-resources theory, when an individual is faced with a demand at their job, they will experience a negative feeling towards it through the health impairment process (Bakker et al., 2023). Further explanation was presented by Stamate et al. (2021) that before adopting a new technology, employees will evaluate whether it is useful in their daily work. In this case, when the employees perceived that their workload increased due to the integration of smart technology at their workplace, they would find it as a job demand since it added pressure on them. Therefore, their well-being decreased as the demand intensified and promoted negative affect towards work.

Previous research found that workload associates with the decreasing of employee well-being (Pace et al., 2021; Wang, 2024). This is potentially caused by the increasing number of demands creating an escalation of stress which is closely related to increased negative affect and decreased well-being. The perceived job demands are not only related to the increasing number of the jobs that they need to perform, but also related to the requirement of acquiring new competencies needed to operate the smart technology and effort to adapt with the new facilities that the employees are not familiar with. This situation may lead to negative effects, such as stress and exhaustion.

Hypothesis 2: perception of smart technology complexity moderates the correlation between workload and well-being

Table 4
Moderation Analysis of Perception of Smart Technology Complexity on the Correlation Between Workload and Well-Being

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	272.30	2	136.15	8.07	.001
Residual	1787.94	106	16.87		
Total	2060.24	108			

Table 4 also showed that perception of smart technology complexity played a significant role as a moderator that affected the correlation of workload and well-being (p= .001). The contribution of the variable is shown in Table 5.

Table 5
Contribution of smart technology as moderator

R	R²	Adjusted R²	Std. Error of the Estimate
.36	.13	.12	4.11

This study also concluded that the employee's perception towards smart technology moderated the correlation between workload and well-being. In other words, the effect of workload on employee well-being would increase when the employee saw the smart technology as a friendly tool to use as a work aid. To comprehend the situation in the frame of job demands-resources model, we concluded that the perception of smart technology was considered as a job demand that led them to a greater negative effect. In terms of smart technology usage, organizations often

associate technology integration with efficiency. With the assistance of smart technology, it is expected that task finishing is optimized (Xu et al., 2023). Hence, when the task is done, the employees will be assigned with different and/or additional tasks which increases their workload.

It is an interesting finding that integrating smart technology in the workplace is perceived as a job demand by the employee rather than a job resource. In this case, smart technology was not considered a buffer to lessen the impact of workload towards well-being. On the contrary, it was perceived as a source of stress. It is indicated that the job stress is caused by the expectation that employees are supposed to match their working speed and volume with the capacity of robots as their co-worker (Nurski & Hoffmann, 2022). Another assumption is that as the task's completed, they were required to do more tasks rather than spare the extra time for activities that might promote their well-being. As a result, instead of feeling supported by the existence of the technology, the employees experienced more demands that would result in increased negative affect and lead to the decreasing of well-being.

4.   CONCLUSIONS AND RECOMMENDATIONS
Conclusion
The result of this study revealed that smart technology is perceived as an addition to their workload and led to higher negative affect. Employee's evaluation on technology complexity was also proven to moderate the correlation between workload and negative affect. It indicated that the integration of smart technology in the workplace was not perceived well as an aid to support human tasks. Instead, it was a form of a job demand and a threat to employee well-being. Although it's user friendly and it helped employees finish their tasks, the employees felt concerned that it would create more work for them.

Suggestions
The research results suggested that smart technology usage caused negative influence on employee well-being as it increased negative affect. Employees thought that the integration of smart technology caused more workload. The perception that smart technology is easy to learn and use contributed a significant impact that enhanced the impact of workload on employee well-being. Further studies should be conducted to investigate how personal and organizational factors, such as work motivation and organizational trust, may have an impact on the relation of the three variables. As an addition, it is necessary to put other job resources, such as role clarity and task identity, in perspective.

One of the practical implications of current study is that organizations should pay more attention to managing the employee's workload to prevent further impacts of smart technology usage on well-being. Unexpected impact of higher negative affect caused by work overload should be decreased by reviewing their work responsibilities through workload analysis. Secondly, organizations should also put more attention on employee well-being by creating a balance between their work and personal life. Therefore, they can use the extra time that they spare from their work for personal activities, such as spending more time with family and doing their hobbies.

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