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Digital literacy moderates WFH and productivity: A case study at UIN Sunan Ampel Surabaya

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Kata Kunci

Literasi Digital, Work From Home (WFH), Produktifitas Pegawai, SEM-PLS, UIN Sunan Ampel Surabaya

Abstrak

Penelitian ini bertujuan untuk mengeksplorasi hubungan antara literasi digital dan produktivitas karyawan selama skenario work-from-home (WFH) akibat COVID-19 di UIN Sunan Ampel Surabaya. Pembatasan sosial yang dilakukan pemerintah mendorong penerapan strategi WFH di perguruan tinggi. Dengan menggunakan Structural Equation Modeling-Partial Least Squares (SEM-PLS), ditemukan korelasi positif antara praktik WFH dan produktivitas karyawan (path coefficient: 0,424). Namun dampak literasi digital terhadap korelasi ini terbukti tidak signifikan (path coefficient: -0,013, T Statistik: 0,258, Nilai P: 0,0796). Hasil ini menekankan peran penting dalam mengembangkan literasi digital untuk meningkatkan produktivitas karyawan di lingkungan WFH, sehingga memberikan wawasan berharga bagi organisasi dalam menghadapi tantangan kerja jarak jauh.

Keywords

Digital Literacy, Work From Home (WFH), Employee Productivity, SEM-PLS Method, UIN Sunan Ampel Surabaya

Abstract

This study aims to explore the relationship between digital literacy and employee productivity during the COVID-19-induced work-from-home (WFH) scenario at UIN Sunan Ampel Surabaya. The government's social restrictions prompted the adoption of WFH strategies in higher education institutions. Utilizing Structural Equation Modeling-Partial Least Squares (SEM-PLS), a positive correlation was identified between WFH practices and employee productivity (path coefficient: 0.424). However, the impact of digital literacy on this correlation proved non-significant (path coefficient: -0.013, T Statistics: 0.258, P Values: 0.0796). These results emphasize the critical role of fostering digital literacy to elevate employee productivity in the WFH environment, offering valuable insights for organizations navigating remote work challenges.

1. Introduction

The COVID-19 pandemic has led to a major shift in work regulations, leading plenty of companies globally to establish a Work From Home (WFH) policy [1]. The objective of these procedures is to ensure continuous operations of the organization while emphasizing the well-being and health of employees [2]. Following this unusual framework, employees are obligated to execute all their duties remotely, depending considerably on digital technology and online platforms for communication [3-4].

Understanding the importance of digital literacy as a moderator in the relationship across working from home and productivity is important for organizations attempting to enhance remote work results [5]. Organizations can enhance employees digital literacy abilities by developing focused interventions and training programs that focus on the particular parts of digital literacy that impact productivity [6].

A study conducted by Farooq and Sultana revealed that WFH has a greater impact on the productivity of female employees compared to male employees [7]. The findings suggest that WFH is beneficial for women as it facilitates the completion of household chores and fulfills family demands more easily than for men. However, the survey results also indicate that WFH has a negative impact on employee productivity overall.

In a subsequent study conducted by Santoso et al sheds light on the role of digital literacy in shaping the impact of innovative work behavior on

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employee performance[8]. The findings suggest that employees who possess higher levels of digital literacy are better equipped to leverage innovative work behavior for improved performance outcomes. The study's unique approach and focus on digital literacy contribute to a deeper understanding of the complex dynamics between innovation, digital skills, and employee performance.

Study conducted by Widodo et al also demonstrated that higher levels of work stress and COVID-19 concerns result in decreased employee productivity[9]. It suggests that as the levels of work stress and COVID-19 concerns increase, employee performance declines. The study provides valuable insights into the unique challenges faced by employees during periods of high stress and uncertainty. By examining the role of moderating variables, the research offers a nuanced understanding of the complex relationship between work stress, COVID-19, and employee productivity.

The findings of Hutajulu's study indicate that remote work, specifically working from home, in Indonesia has the potential to enhance job performance[10]. The research demonstrates a positive relationship between WFH and work motivation, leading to positive implications for job performance. It is worth noting that this study differs from the current research in that it does not specifically examine the role of digital literacy within the WFH system.

The existing research has focused on the impact of WFH on productivity, but there is a need to investigate how digital literacy, which refers to the skills and competencies related to utilizing digital technologies, can influence this relationship. Understanding how digital literacy moderates the relationship between WFH and productivity can provide valuable insights into the mechanisms through which digital skills contribute to enhanced performance in remote work settings.

Furthermore, the research gap lies in the specific context of UIN Sunan Ampel Surabaya. While the general effects of WFH and the importance of digital literacy have been studied in various contexts, conducting research in a specific organization like UIN Sunan Ampel Surabaya allows for a deeper understanding of the unique factors at play in that particular setting. The study can shed light on how digital literacy influences the WFH-productivity relationship within the specific context of higher education and provide insights that are relevant to similar organizations.

By addressing these research gaps, the study can contribute to the existing body of knowledge on the effects of WFH on employee productivity and the role of digital literacy as a moderator in this relationship. This research aims to address two key problem statements related to the implementation of the WFH system and its impact on employee productivity at UIN Sunan Ampel Surabaya.

Through a comprehensive examination of the interplay between WFH, digital literacy, and employee productivity, this study seeks to contribute to the growing body of knowledge on remote work practices. The findings can serve as a basis for developing targeted training programs, policies, and initiatives that foster digital literacy competencies among employees. Ultimately, the aim is to empower individuals and organizations to navigate the challenges and capitalize on the opportunities presented by the evolving landscape of remote work

The following section discusses the hypothetical development of the research, including the formulation of research questions and the establishment of hypotheses. The first problem statement focuses on examining the potential influence of the WFH system on employee productivity. The second problem statement explores the moderating role of digital literacy in the relationship between WFH and employee productivity.

In the process of formulating hypotheses, it is important to carefully analyze the relationship between WFH, digital literacy, and employee productivity. Given the widespread adoption of WFH policies and the growing significance of digital literacy in today's dynamic work environment, the following hypotheses are proposed:

H1: WFH significantly influences employee productivity.

H2: Digital literacy moderates the relationship between WFH and employee productivity.

These hypotheses serve as the foundation for further exploration and empirical investigation to better understand the impact of WFH and the role of digital literacy in shaping employee productivity. By developing these hypotheses, the theoretical framework is depicted in Figure 1 This framework provides a visual representation of the interrelationships between the variables under investigation.

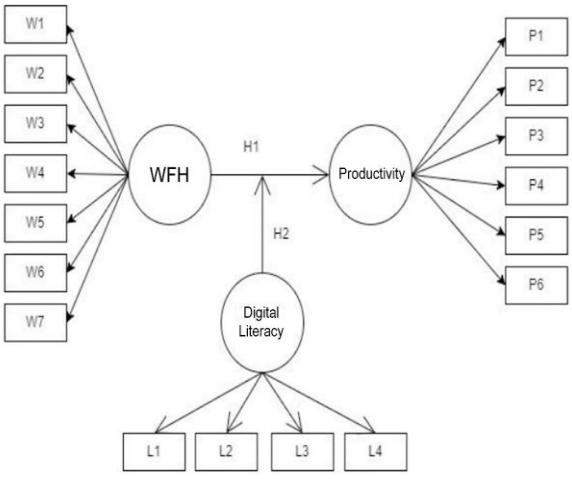

Figure 1. Conceptual Framework

Table 1. Academic Staff Departments

No	Departments
1	Faculty of Science and Technology
2	Faculty of Adab and Humanities
3	Faculty of Da'wah and Communication
4	Faculty of Sharia and Law
5	Faculty of Tarbiyah and Teacher Training
6	Faculty of Ushuluddin and Philosophy
7	Faculty of Social and Political Science
8	Faculty of Islamic Economics and Business
9	Faculty of Psychology and Health
10	Library Integrated Service Unit
11	General Affairs
12	Academic Affairs
13	Printing Integrated Service Unit
14	Private Higher Education Coordinator
15	Postgraduate department
16	Finance and Accounting Affairs
17	Organization and Personnel Affairs
18	Mahad Al-Jamiah Center
19	Center for Information Technology Systems and Databases
20	Student and Alumni Affairs
21	Cooperation, Institutional and Public Relations
22	International Service Center
23	Center for Language Development
24	Planning Affairs
25	Business Development Center
26	Clinic
27	Bureau of Academic Administration, Student Affairs and Cooperation
28	Bureau of General Administration, Planning and Finance
29	Internal Examination Unit
30	Institute for Research and Community Service
31	Quality Assurance Agency

2. Methodologies

In this section, we present the chronological details of the research, encompassing the theory, design, research procedures (in the form of an algorithm, flowchart, pseudo code, or others), the data acquisition process, and the testing procedures applied to the collected data.

2.1 Data Collection

This study follows a quantitative approach and utilizes a 5-point Likert scale questionnaire to collect data [11]. The sample consists of 131 academic staff employees selected from the population obtained from https://pegawai.uinsa.ac.id/. The sampling technique employed is probability sampling, specifically simple random sampling. The sample size is determined using Slovin's formula, considering a margin of error of 7%

The Distribution of the questionnaire was conducted among academic staff employees were categorized into different departments as shown in Table 1. The survey was administered using a Google Form.

The questionnaire questions are structured based on the indicators of each variable under study, namely WFH (*Work From Home*), productivity, and digital literacy. The process of formulating the questionnaire questions is elaborated in Table 2.

3. Result and Discussion

In this chapter, we present our research findings in a comprehensive and engage in a detailed discussion of their implications and significance in relation to the research questions we have posed.

UIN Sunan Ampel Surabaya boasts a dedicated workforce, consisting of a total of 364 educational staff members, spread across various specialized fields. In the following sections, the data collected from the responses obtained through the distribution of questionnaires.

Table 1. Questionnaire Questions

Indicator	Variable	Code
WFH	Flexible working environment	W1.1
		W1.2
	Stress disorder	W2.1
		W2.2
	Proximity to family	W3.1
		W3.2
	Travel time	W4.1
		W4.2
	Health and work balance	W5.1
		W5.2
	High creativity and productivity	W6.1
		W6.2
	Separation of home and office work and self-pressure	W7.1
		W7.2
Productivity	Ability	P1.1
		P1.2
	Increasing the results achieved	P2.1
		P2.2
	Passionate about work	P3.1
		P3.2
	Self-development	P4.1
		P4.2
	Quality and quality	P5.1
		P5.2
	Efficiency	P6.1
		P6.2
Digital literacy	Search on the internet	L1.1
		L1.2
	Evaluation of Information content	L2.1
		L2.2
	Guide the direction of hypertext	L3.1
		L3.2
	Compilation of knowledge	L4.1
		L4.2

Table 3. Result of WFH Variable

Indicator	Code	Respondent Answer					
		1	2	3	4	5	Mean
WFH	W1.1	0	5	22	63	41	4.06
	W2.2	0	8	19	68	36	4.00
	W3.2	0	11	18	57	45	4.03
	W4.2	0	5	33	51	42	3.99
	W5.2	1	6	27	55	42	4.00
	W6.2	0	11	28	61	31	3.85
	W7.2	0	12	22	50	47	4.00
				Mean			**3.99**
Productivity	P1.1	0	13	38	51	29	3.73
	P1.2	0	6	27	66	32	3.94
	P2.1	0	10	31	57	33	3.86
	P2.2	0	6	23	72	30	3.96
	P3.2	0	5	33	53	40	3.97
	P4.1	0	7	21	59	44	4.06
	P4.2	0	11	22	59	39	3.96
	P5.1	0	7	24	63	37	3.99
	P5.2	1	2	11	63	54	4.27
	P6.2	1	4	19	61	46	4.12
				Mean			**3.99**
Digital literacy	L1.1	0	4	27	49	51	4.12
	L1.2	0	4	23	55	49	4.13
	L2.1	0	3	18	56	54	4..22
	L2.2	0	3	19	59	50	4.19
	L3.1	0	6	22	62	41	4.05
	L3.2	0	8	23	55	45	4.04
	L4.1	0	5	34	49	43	3.99
	L4.2	1	2	17	59	52	4.21
				Mean			**4.12**

3.1 Result of WFH

Table 3 contains the responses of all respondents for each variable and statement item. It can be seen from the table that the overall average of the WFH variable shows that it is included in the high category with a value of 3.99. So it can be concluded that educational staff are able to implement WFH well during the COVID-19 pandemic.

3.2 Result of Productivity

Table 3 shows that the indicators on the productivity variable have a high impact on the Education Personnel employees of UIN Sunan Ampel Surabaya with an average value of 3.99.

3.3 Result of Digital Literacy

Table 3 shows the responses of all respondents for each variable and statement item. It can be seen from Table 5 that the overall average of the Digital Literacy variable shows that it is included in the high category with a value of 4.12. So it can be concluded that the indicators and statement items in the Digital Literacy variable have an effect on the productivity of Education Personnel employees.

3.4 Result Analysis of SEM-PLS

To ensure the outer model evaluation results, the SmartPLS calculation function uses the Path Algorithm. After re-estimating by removing the loading factor values on indicators whose values are below 0.70, namely indicators W1.2, W2.1, W3.1, W4.1, W5.1, W6.1, W7.1, P3.1, and P6.1.

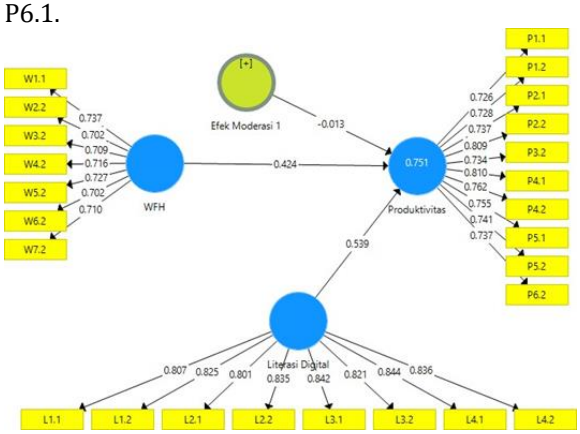

Figure 2. Path Algorithm Results after Re-Estimation

The results of the research at the loading factor testing stage showed that there was a significant correlation between the indicators and the latent variables. If the loading factor is more than 0.70, which is the output of this research, it can be concluded that all indicators are reliable and able to measure the variables they represent.

3.4 Hypothetical results

Hypotheses are tested with Path Coefficients, T-Statistics, and P-Values through variable significance testing. Path Coefficient > 0 indicates a positive effect, < 0 indicates a negative effect. T-Statistics > 1.96 and P-Values < 0.05 indicate significance. Hypothesis:

1. H1: WFH has a positive effect on employee productivity at UIN Sunan Ampel Surabaya.
2. H2: Digital Literacy moderates the relationship between WFH and employee productivity at UIN Sunan Ampel Surabaya. Test results using SmartPLS with bootstrapping. procedures.

As seen on Table 4, the results of the path coefficients test show that digital literacy, with a value of -0.013, has no significant effect on

employee productivity, with a T-Statistic of 0.258 and a P-Value of 0.796, which shows statistical insignificance. Therefore, it can be concluded that digital literacy operations do not moderate the relationship between Work From Home (WFH) and productivity. Meanwhile, WFH has a significant impact on employee productivity, with a path coefficient value of 0.424. T-Statistics of 5.978 and P-Values of 0.000 confirm that this relationship is statistically significant, indicating that the implementation of WFH has a strong and positive correlation with increasing employee productivity.

Table 4. Hypothetical results

Hipothesis	*Path Cofficients*	T-Statistics	P values
Productivity Moderation	-0.013	0.258	0.796
Productivity WFH	0.424	5.978	0.000

3.5 Moderation results

The bootstrap process in the moderation test utilizes path coefficients, t statistics, and P values to evaluate the significance of the relationship between exogenous and endogenous factors. Path coefficient > 0 indicates a positive influence, < 0 indicates a negative influence. The significance test uses T-Statistics > 1.96 and P-Values < 0.05.

Based on Table 5. Digital literacy with Path Coefficients -0.013, T-Statistics 0.258, and P-Values 0.0796 shows statistical insignificance. Therefore, digital literacy does not moderate the relationship between WFH and productivity, suggesting that digital literacy does not significantly influence the relationship between WFH and productivity.

3.6 Effect of WFH Relationship on Employee Productivity (H1)

The study confirms a significant positive impact of Work From Home (WFH) on employee productivity at UIN Sunan Ampel Surabaya. With a path coefficient of 0.424 (> 0), a t-statistic of 5.978 (> 1.96), and a P-Value of 0.000 (< 0.05), the hypothesis is validated. Descriptive analysis shows a high average rating of 3.99 for the WFH variable, indicating effective implementation.

This aligns with previous research, supporting the notion that WFH positively influences productivity [14]. The results highlight the benefits of WFH, including flexibility, reduced stress, enhanced work-life balance, and increased creativity. This study[15] findings that working comfortably from home positively impacts productivity compared to a traditional office setting.

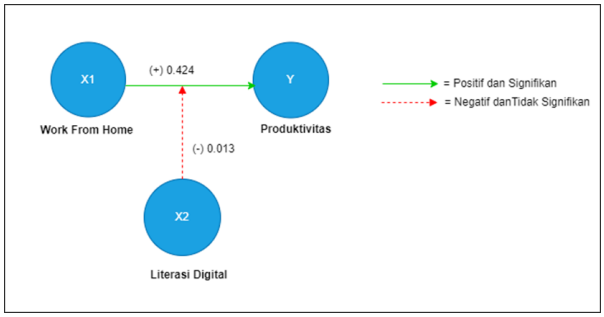

Figure 3. Overall Representation Result

3.6 Moderation of Digital Literacy on the Relationship between WFH and Employee Productivity (H2)

The examination of digital literacy as a moderating variable in the relationship between Work From Home (WFH) and employee productivity yields non-significant results in this study. The Path Coefficient is -0.013 (< 0), T-Statistics is 0.258 (< 1.96), and P-Values is 0.0796 (> 0.05). Therefore, it can be concluded that the relationship between WFH and productivity is not moderated by digital literacy, suggesting no significant impact of digital literacy on this association.

This finding differs [8], which asserted that digital literacy moderates the relationship between innovative work behavior and employee performance. However, disparities in the independent variable (innovative work behavior in the previous study, WFH in the current study) may account for this inconsistency. The non-significant H2 in this study, where digital literacy moderates the relationship between WFH and productivity, contrasts research[16], which found a positive and significant influence of information technology on the performance of WFH employees.

Observations during this study suggest that the non-significant t-test results stem from the sample data, indicating UIN Sunan Ampel Surabaya employees' relatively limited experience with WFH during the COVID-19 pandemic. This aligns view that telecommuting suits jobs requiring high mobility and lacks a mandatory office presence[17]. Considering UIN Sunan Ampel Surabaya's nature as a government institution, the telecommuting system may not be fully applicable, contributing to the non-significance of H2.

Table 5. Moderation Result

Hypothesis	*Path Cofficients*	T-Statistics	P values	Result
Productivity Moderation	-0.013	0.258	0.796	Negative and not significant

Adequate training is crucial for effective WFH implementation, especially considering potential factors such as limited digital literacy due to age or lack of technology-related training.

Despite the study's indication of non-significant impact of Digital Literacy on the relationship between WFH and employee productivity, it is recommended that employees devise strategies to overcome these barriers. Further technology training is essential for a comprehensive understanding of digital literacy. Additionally, the already proficient digital literacy among Education Personnel employees may contribute to the non-significant moderating effect, given their familiarity with technology in their work. Therefore, training programs should address the specific needs of employees working remotely to enhance their digital literacy and ensure a smooth transition to WFH conditions.

4. Conclusion

Based on the problem formulation, only one of the two variables in the research model is significant for employee productivity at UIN Sunan Ampel Surabaya. These findings were obtained from the results of analysis and hypothesis testing in the previous chapters. Thus, the research conclusions are as follows:

1. Work From Home (WFH) has a significant influence on employee productivity at UIN Sunan Ampel Surabaya, shown by the path coefficient value of 0.424.
2. Digital Literacy does not significantly moderate the relationship between WFH and employee productivity, as can be seen from the path coefficient value of -0.013, T Statistics of 0.258, and P Values of 0.0796.

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