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Analysis of the Task Technology Fit Suitability of the SiNonA Application and its Impact on Improving the Performance of Non-ASN Employees

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Abstract

The implementation of the Electronic-Based Government System (SPBE) encourages government institutions to utilize information technology to improve employee effectiveness and administrative efficiency. One implementation in Ogan Ilir Regency is the SiNonA application, which is used as a digital attendance system for Non-ASN employees. However, several problems are still encountered in its implementation, such as limited application features, difficulties in system usage, and the mismatch between system capabilities and employee work requirements. Previous studies on digital attendance systems mostly focused on usability, system quality, and technology acceptance, while studies examining the suitability between technology characteristics and employee task requirements using the Task Technology Fit (TTF) approach are still limited, especially in the government sector for Non-ASN employees. Therefore, this study aims to analyze the influence of Task Characteristics and Technology Characteristics on Task Technology Fit and its impact on employee performance improvement in using the SiNonA application. This study used a quantitative approach with a survey method involving 353 respondents selected using the Slovin formula. Data were collected through Likert-scale questionnaires and analyzed using the PLS-SEM method with SmartPLS software. The results showed that Task Characteristics and Technology Characteristics had a positive and significant effect on Task Technology Fit, while Task Technology Fit also had a positive and significant effect on employee performance improvement. These findings indicate that the suitability between technology and work tasks plays an important role in improving the effectiveness, efficiency, and productivity of Non-ASN employees in using the SiNonA application.

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1. Introduction

The development of information technology has encouraged government institutions to implement digital-based systems to improve effectiveness, efficiency, and transparency in public services. In Indonesia, this transformation is supported by Presidential Regulation Number 95 of 2018 concerning the Electronic-Based Government System (SPBE), which emphasizes the use of information technology in government administration. One implementation of SPBE in Ogan Ilir Regency is the SiNonA application, which is used as a digital attendance system for Non-ASN employees to support employee discipline, attendance monitoring, and administrative efficiency. The implementation of digital attendance systems is expected to improve employee productivity and create more effective governance processes[1].

Although the SiNonA application has been implemented to improve employee performance and attendance management, several obstacles are still encountered in practice. Some employees experience difficulties in understanding system features, while several application functions are considered not fully aligned with employee work requirements. In addition, technical limitations and system accessibility issues

can affect the effectiveness of application usage. These conditions indicate that the success of system implementation is not only determined by technology quality but also by the suitability of technology to user tasks. If the technology used does not support employee work needs appropriately, the expected performance improvement may not be achieved optimally.

Several previous studies have discussed the implementation of digital attendance systems, information system quality, and the impact of technology utilization on employee performance in both government and organizational contexts. Analyzed the implementation success of an online attendance system in a government institution and found that system usability and user satisfaction significantly influenced system acceptance. However, the study mainly focused on user satisfaction aspects and did not analyze the suitability between system characteristics and employee work tasks [2]. Evaluated the quality of employee attendance websites and concluded that system quality affected the effectiveness of attendance management, but the study did not examine the relationship between technology suitability and employee performance improvement [3]. Similarly, analyzed payroll and attendance procedures in private companies and emphasized administrative efficiency improvements, although the study was limited to procedural analysis without evaluating technology-task compatibility [4].

Research conducted by developed a QR-code-based e-attendance system and demonstrated that digital attendance systems can improve monitoring and attendance efficiency [5]. Also found that system quality and user experience significantly influenced customer satisfaction in digital applications using the DeLone and McLean model[6]. In addition, examined employee performance improvement using the Technology Acceptance Model (TAM) and concluded that technology acceptance positively affects employee productivity [7]. Similarly used TAM to analyze information system acceptance in village financial systems and found that perceived usefulness and ease of use influenced technology adoption[8]. Although these studies provide important insights into technology acceptance and system quality, most of them focus primarily on usability, user satisfaction, and technology acceptance perspectives.

Several recent studies from 2024–2025 also discussed digital systems and employee performance using quantitative approaches and SEM-PLS analysis. Evaluated the validity and reliability of questionnaire instruments using SmartPLS and confirmed the effectiveness of SEM-PLS in analyzing latent variables in information system studies[9]. Discussed reliability testing in survey instrument development[10], while examined Likert-scale data processing in evaluating digital programs[11]. However, these studies mainly focused on methodological and measurement aspects rather than analyzing the relationship between technology characteristics, task characteristics, and employee performance. Furthermore, studies specifically applying the Task Technology Fit (TTF) model in digital attendance systems for Non-ASN employees in government institutions are still very limited.

Based on the review of previous studies, it can be identified that most prior research concentrated on technology acceptance, usability, system quality, and user satisfaction, while limited studies analyzed the suitability between technology characteristics and employee task requirements using the Task Technology Fit (TTF) approach. Previous studies also rarely examined the direct impact of Task Technology Fit on improving employee performance in government-based digital attendance systems, particularly among Non-ASN employees. Therefore, this study positions itself as an effort to fill the existing research gap by analyzing the influence of Task Characteristics and Technology Characteristics on Task Technology Fit and examining its impact on improving the performance of Non-ASN employees using the SiNonA application in Ogan Ilir Regency. This study also provides novelty by applying the Task Technology Fit model in the context of digital attendance systems within regional government institutions, which has received limited attention in previous research.

2. Research Methodology

2.1 Research Design

This study employed a quantitative research approach using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) method[12]. The quantitative approach was selected because this study aims to analyze the causal relationships and influences between variables objectively through statistical and numerical data analysis[13]. The research model examines the relationships between Task Characteristics, Technology Characteristics, Task Technology Fit, and Performance Impact in the implementation of the SiNonA application among Non-ASN employees[14].

The SEM-PLS method was chosen because it is suitable for predictive research models involving latent variables and multiple indicators. In addition, SEM-PLS is capable of simultaneously evaluating the measurement model (outer model) and the structural model (inner model). This method is also considered effective for analyzing complex variable relationships and handling data distributions that are not

necessarily normally distributed[15]. The use of SEM-PLS in this study aims to determine the suitability between technology capabilities and employee work tasks and to analyze its impact on improving employee performance in the implementation of digital attendance systems.

2.2 Research Object and Location

The object of this research is the SiNonA application, a digital attendance system implemented by the Ogan Ilir Regency Government for Non-ASN employees. The application is used to record attendance, monitor employee discipline, and support administrative processes digitally as part of the implementation of the Electronic-Based Government System (SPBE).

This research was conducted in Ogan Ilir Regency, South Sumatra, Indonesia. The location was selected because the SiNonA application has been actively implemented in various regional government institutions and directly used by Non-ASN employees in their daily work activities. However, several problems are still encountered in practice, including limitations in system features, technical accessibility constraints, and mismatches between system capabilities and employee work requirements. Therefore, Ogan Ilir Regency was considered relevant for evaluating the suitability of the SiNonA application using the Task Technology Fit approach.

2.3 Research Procedure

This research was conducted through several systematic stages to ensure that the research objectives could be achieved appropriately. The first stage was problem identification and literature study. At this stage, the researchers identified problems related to the implementation of the SiNonA application among Non-ASN employees in Ogan Ilir Regency, such as limitations in application features, difficulties in system usage, and the mismatch between technology capabilities and employee work requirements. Furthermore, a literature review was conducted by examining previous studies related to digital attendance systems, employee performance, information systems, Technology Acceptance Model (TAM), and Task Technology Fit (TTF) theory to strengthen the theoretical foundation of the research. The stages of the research procedure conducted in this study are presented in Figure 1.

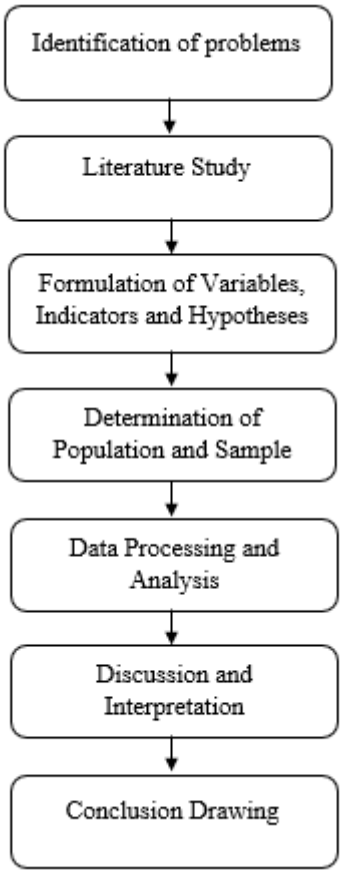

Figure 1. Research Procedure

The second stage was the formulation of research variables, indicators, and hypotheses. The variables used in this study consisted of Task Characteristics and Technology Characteristics as independent variables, Task Technology Fit as the mediating variable, and Performance Impact as the dependent variable. The indicators for each variable were adapted from previous relevant studies and adjusted to the context of the SiNonA application. Based on the relationship between variables in the Task Technology Fit theory, the research hypotheses were then formulated to analyze the influence between variables in the proposed research model.

The third stage involved designing the research instrument in the form of a questionnaire[16]. The questionnaire items were developed based on the indicators of each variable and measured using a five-point Likert scale ranging from strongly disagree to strongly agree. Before data collection, the questionnaire structure was reviewed to ensure the clarity and relevance of each statement item. The questionnaires were then distributed to Non-ASN employees who actively use the SiNonA application in their daily work activities.

The final stage was data processing and analysis using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) method with SmartPLS software. The analysis process included outer model testing to evaluate convergent validity, discriminant validity, and construct reliability, followed by inner model testing to analyze the relationship between variables through R-square and hypothesis testing using bootstrapping techniques. The analysis results were then interpreted to determine the suitability of the SiNonA application based on the Task Technology Fit approach and its impact on improving employee performance.

2.4 Population and Sample

The population in this study consisted of 2,998 Non-ASN employees in Ogan Ilir Regency who actively use the SiNonA application in their daily work activities. The selection of Non-ASN employees as research respondents was based on their direct involvement in the implementation of the digital attendance system, making them relevant subjects for evaluating the suitability of the application with employee work tasks and its impact on employee performance.

The variables used in this study consisted of Task Characteristics (X1), Technology Characteristics (X2), Task Technology Fit (Y1), and Performance Impact (Y2). The Task Characteristics variable was measured using several indicators related to task suitability, task complexity, task effectiveness, and employee work needs in using the SiNonA application. Indicators in this variable were coded as X1.4, and X1.5. Meanwhile, the Technology Characteristics variable measured system functionality, ease of use, accessibility, reliability, and information accuracy provided by the application, which were coded as X2.2, and X2.3. Furthermore, the Task Technology Fit variable measured the level of compatibility between application capabilities and employee work requirements, including indicators related to work support, effectiveness, and suitability of system features, coded as Y1.1, Y1.2, Y1.3, Y1.4, Y1.5, Y1.6, Y1.7, Y1.8, Y1.9, and Y1.10. The Performance Impact variable measured the influence of the SiNonA application on employee productivity, effectiveness, efficiency, and performance improvement, which were coded as Y2.1, and Y2.2. The coding system was used to facilitate the data analysis process using the SEM-PLS method. The sample size in this study was determined using the Slovin formula with a margin of error of 5%[17]. The Slovin formula used in this study is shown in Equation (1).

$$n = \frac{N}{1 + Ne^2} \quad (1)$$

where :
n = sample size
N = population size
e = margin of error

Based on the Slovin formula calculation with a population of 2,998 employees and an error tolerance of 5%, the required sample size in this study was 353 respondents. The purposive sampling technique was used because respondents were selected based on specific criteria, namely Non-ASN employees who actively use the SiNonA application in their work activities[18].

2.5 Data Collection Method

Data collection in this study was carried out using a questionnaire distributed directly to respondents[19]. The questionnaire was designed based on indicators from the variables studied, including Task Characteristics, Technology Characteristics, Task Technology Fit, and Performance Impact. Responses were measured using a five-point Likert scale ranging from strongly disagree to strongly agree. The use of the Likert scale aims to measure respondent perceptions and attitudes toward the implementation of the SiNonA application objectively and systematically.

Table 1. Likert scale

Score	Information	acronym
5	Strongly Agree	SS
4	Agree	S
3	Quite Agree	CS
2	Don't Agree	TS
1	Strongly Disagree	STS

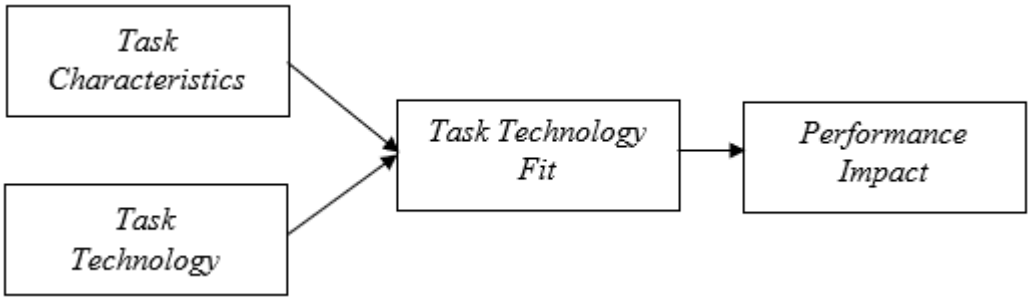

Figure 2. Research Model

The questionnaire in this study used a five-point Likert scale to measure respondent perceptions regarding the variables studied. The Likert scale was used to assess the level of agreement of respondents toward each statement item related to Task Characteristics, Technology Characteristics, Task Technology Fit, and Performance Impact. The measurement scale used in this study is presented in Table 1. Based on Table 1, the Likert scale in this study ranged from strongly disagree to strongly agree, which was used to facilitate the measurement of respondent perceptions systematically and quantitatively.

2.6 Research Model

The research model in this study was developed based on the Task Technology Fit (TTF) theory. The model explains the relationship between Task Characteristics and Technology Characteristics as independent variables affecting Task Technology Fit as the mediating variable. Furthermore, Task Technology Fit influences Performance Impact as the dependent variable. This model was designed to analyze how the suitability between technology capabilities and employee work tasks affects employee performance improvement in using the SiNonA application.

Task characteristics and technology characteristics act as independent variables influencing Task-Technology Fit. Furthermore, Task-Technology Fit influences employee performance improvement. This model is used to empirically test the relationship between variables using SEM-PLS[20].

2.7 Data Analysis Method

The data analysis process in this study was conducted using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) approach with SmartPLS software. The SEM-PLS method was selected because it is capable of analyzing complex relationships between latent variables and evaluating both measurement models and structural models simultaneously. In addition, this method is considered suitable for predictive research models and quantitative studies involving multiple indicators and variables[21]. The analysis process consisted of several stages. The first stage was outer model evaluation, which aimed to assess the validity and reliability of the research instrument [22]. Convergent validity was evaluated using outer loading values and Average Variance Extracted (AVE)[23], while discriminant validity was assessed to ensure that each construct was empirically distinct from other constructs. Construct reliability was evaluated using Cronbach's Alpha and Composite Reliability values to determine the consistency of the measurement indicators used in the study[24].

The second stage was inner model evaluation, which aimed to analyze the structural relationships between variables in the proposed research model. This stage involved evaluating the coefficient of determination (R-square) to measure the predictive capability of the model and assessing the relationship strength between variables. The analysis was conducted to determine how Task Characteristics and Technology Characteristics influence Task Technology Fit and its impact on employee performance.

The final stage was hypothesis testing using the bootstrapping technique in SmartPLS[25]. This process was conducted to determine the significance of the relationships between variables based on T-statistics and P-values. The hypothesis was considered accepted if the T-statistic value exceeded the required threshold and the P-value was below the significance level of 0.05. The results of the analysis were then interpreted to explain the suitability of the SiNonA application with employee work tasks and its influence on improving the performance of Non-ASN employees.

3. Results and Discussions

3.1. Respondent Characteristics

This study involved 353 non-civil servant employees in Ogan Ilir Regency who used the SiNonA application. Respondents came from various work units and varied in terms of length of service, gender, and education. The majority of respondents were female and had a high school or bachelor's degree.

3.2. Descriptive Analysis

The descriptive analysis results show that the majority of respondents responded in the agree and somewhat agree categories. This indicates that the SiNonA application has adequately supported the implementation of non-ASN employee duties. The questionnaire data collected from 353 respondents were processed using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) approach with SmartPLS software. The data processing stage included coding respondent answers based on the Likert scale, tabulating questionnaire results, and evaluating the validity and reliability of each research indicator. The questionnaire analysis results obtained from the outer model evaluation are presented in Table 2.

Based on Table 2, all research indicators showed outer loading values above the recommended threshold, indicating that the indicators used in this study were valid in measuring the research constructs. In addition, the reliability test results showed that the variables met the required criteria based on Cronbach's Alpha and Composite Reliability values. Therefore, all indicators were considered reliable and suitable for further analysis in the structural model evaluation stage.

3.3. Measurement Model Evaluation (Outer Model)

The measurement model was evaluated to ensure construct validity and reliability. The convergent validity test results showed that most indicators had outer loadings >0.70. Several indicators that did not meet the criteria were eliminated from the model. Furthermore, the AVE values for all variables were >0.50, indicating good construct validity.

The discriminant validity test showed that each indicator had the highest loading value on its respective construct. The reliability test also showed Cronbach's Alpha values >0.70, indicating that all variables were deemed reliable.

Table 2. Questionnaire Analysis Results

Variable Table	Indicator	STS	TS	CS	S	SS	Total
Task Characteristics	X1.4	0	38	116	152	47	353
	X1.5	0	28	116	158	51	353
Technology Characteristics	X2.2	0	28	118	155	52	353
	X2.3	0	27	126	156	44	353
Task Technology Fit	Y1.1	0	30	116	150	57	353
	Y1.2	0	30	125	143	55	353
	Y1.3	0	36	121	148	48	353
	Y1.4	0	34	115	156	48	353
	Y1.5	49	146	123	35	0	353
	Y1.6	0	23	113	160	57	353
	Y1.7	0	34	117	156	46	353
	Y1.8	0	33	107	170	43	353
	Y1.10	0	31	123	154	45	353
	Y1.12	0	30	115	153	55	353
	Y1.13	0	41	106	150	56	353
	Y1.14	0	35	112	151	55	353
	Y1.15	0	26	123	155	49	353
Performance Impact	Y2. 1	0	31	123	157	42	353
	Y2.2	0	36	110	155	52	353
	Total	49	717	2225	2814	902	

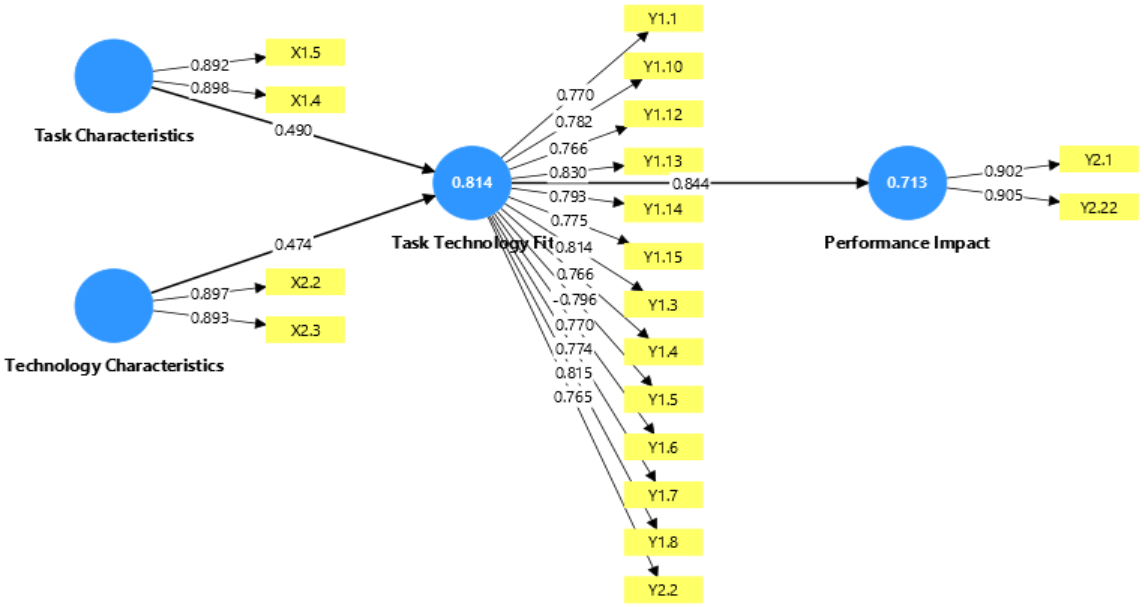

Figure 3. External Model Test

Table 3. Average Variance Extracted

	Average Variance Extracted	information
Task Characteristics	0.801	Valid
Technology Characteristics	0.801	Valid
Task Technology Fit	0.618	Valid
Performance Impact	0.816	Valid

Table 4. Cronchbach Alpha's

	Croncbach Alpha's	Keterangan
Task Characteristics	0.752	Layak
Technology Characteristics	0.751	Layak
Task Technology Fit	0.898	Layak
Performance Impact	0.774	Layak

Figure 3 shows the results of the outer model test. Based on the findings of the outer model analysis in the PLS-SEM model, it shows that all constructs meet the convergent validity criteria with factor loading values exceeding 0.70. Table 3 shows that all constructs in this study have an AVE value >0.50, with most even showing values exceeding 0.7. This indicates that the instrument used is able to explain the study variables well and has met the requirements of convergent validity. The relatively high AVE value confirms that the measurements used are in accordance with the concepts in the Task Technology Fit theory and can be well understood by respondents, thus being able to accurately present the research variables. Based on Table 4, each construct has more than 0.70, meaning that all the variability is reliable and suitable for use.

Table 5. Hypotesis Testing

	T-statistic	P-value	Information
Task Characteristics -> Task technology Fit (H1)	12.793	0.000	significant
Technology Characteristics -> Task Technology Fit (H2)	12.358	0.000	significant
Task Technology Fit -> Performance Impact (H3)	57.464	0.000	significant

3.4. Structural Model Evaluation (Inner Model)

A structural model evaluation was conducted to examine the relationships between the variables in the study. The R-square value indicates that Task Technology Fit is in the moderate category (0.713), while Performance Impact is in the strong category (0.814). This indicates that the model has good ability to explain the dependent variable. Furthermore, the F-square value indicates that all variables have a significant influence on the research model. The F-square test results show that Task Characteristics has a significant influence on Task Technology Suitability with a value of 0.559. Meanwhile, Technology Characteristics also shows a significant influence on Task Technology Suitability with a value of 0.524. In addition, with a value of 2.481, Task Technology Suitability also has a very significant influence on Performance Impact. These results indicate that all exogenous variables make a significant contribution.

3.5. Hypothesis Testing

The results of the hypothesis testing indicate that all hypotheses are accepted. Task Characteristics and Technology Characteristics have a positive and significant effect on Task Technology Fit. Furthermore, Task Technology Fit also has a positive and significant effect on Performance Impact. This result indicates that the fit between task and technology plays a significant role in improving the performance of employees using the SiNonA application. Based on Table 5, the results of the hypothesis testing show that the relationship between all variables involved in the research model has a T-statistic value greater than 1.96 and a p-value less than 0.05.

3.6. Discussions

The results of this study demonstrate that Task Characteristics and Technology Characteristics have a positive and significant effect on Task Technology Fit (TTF). The high T-statistic values obtained in hypothesis testing indicate that both variables strongly contribute to the suitability between the SiNonA application and employee work tasks. This finding shows that the effectiveness of a digital attendance system is influenced not only by technological quality, but also by how well the system supports employee operational activities and administrative requirements.

The influence of Task Characteristics on Task Technology Fit indicates that employee work patterns and task requirements determine the level of technology suitability. Non-ASN employees generally perform routine administrative activities requiring discipline, reporting accuracy, and attendance monitoring. Therefore, when the SiNonA application is able to support these activities effectively, employees perceive the system as relevant to their work needs. This finding confirms that technology implementation in government institutions should consider the actual characteristics of employee tasks rather than focusing only on system digitalization. Furthermore, Technology Characteristics also showed a significant influence on Task Technology Fit. This indicates that system functionality, ease of use, accessibility, and reliability play important roles in increasing employee acceptance and utilization of the application. Employees are more likely to use the system consistently when the application operates stably and provides features that are easy to understand. These findings are consistent with previous studies related to technology utilization and information system acceptance, which explain that system quality and usability influence employee productivity and work effectiveness. Another important finding in this study is the strong influence of Task Technology Fit on Performance Impact, indicated by the very high T-statistic value of 57.464. This result demonstrates that compatibility between technology and employee work tasks has a substantial contribution to improving employee performance. Employees who perceive the SiNonA application as suitable for their work activities tend to experience improvements in productivity, efficiency, work discipline, and administrative effectiveness. The high R-square value for Performance Impact (0.814) also indicates that the proposed research model has strong explanatory capability in explaining employee performance improvement.

From a practical perspective, these findings indicate that the implementation of digital attendance systems in government institutions should not only prioritize technological development, but also ensure that application features align with employee work requirements. System developers and local governments need to continuously evaluate application usability, feature relevance, and system accessibility to ensure that digital transformation initiatives within the Electronic-Based Government System (SPBE) framework can provide optimal benefits for organizational performance. However, this study still has several limitations. The research only involved Non-ASN employees in Ogan Ilir Regency, so the findings may not fully represent other government institutions with different organizational conditions and technological infrastructures. In addition, this study only focused on variables within the Task Technology Fit framework and did not examine other factors such as organizational support, digital competence, user satisfaction, and resistance to technology, which may also influence employee performance. Therefore, future studies are recommended to involve broader research objects and

additional variables to obtain more comprehensive findings regarding the implementation of digital attendance systems in government institutions.

4. Conclusion

This study concludes that Task Characteristics and Technology Characteristics have a positive and significant effect on Task Technology Fit, which in turn significantly influences Performance Impact in the use of the SiNonA application among Non-ASN employees in Ogan Ilir Regency. The findings indicate that better alignment between job requirements and system features leads to improved effectiveness, efficiency, and employee productivity. Empirical results show that all hypotheses are supported, with significant T-statistics and p-values ($p < 0.05$). The model demonstrates good explanatory power, as indicated by R-square values of 0.713 (moderate) for Task Technology Fit and 0.814 (strong) for Performance Impact. In addition, all constructs meet validity and reliability criteria, confirming that the research instrument is robust and appropriate. However, this study is limited to Non-ASN employees in one region and focuses only on specific variables within the Task Technology Fit framework. Future research is recommended to include broader populations and additional variables to enhance model generalization.

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