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ChatGPT Improves Employee Productivity: The Moderating Role of Digital Literacy among Public Sector Employees in Lampung

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ABSTRACT

The development of artificial intelligence (AI) technology has driven significant changes in organizational work practices, including in the public sector. One of the technologies that is increasingly being used is ChatGPT which is able to support various knowledge-based activities. This study aims to analyze the influence of the use of ChatGPT on the work productivity of public sector employees in Lampung Province and test the role of digital literacy in this relationship. The study used a quantitative approach with a survey method of 150 public sector employees selected using purposive sampling techniques. Data were collected through questionnaires and analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS). The results of the study show that the use of ChatGPT has a positive and significant effect on digital literacy and employee work productivity. In addition, digital literacy also has a positive and significant effect on work productivity. The results of the indirect effects analysis show that digital literacy plays a significant role in strengthening the relationship between ChatGPT use and work productivity. These findings indicate that the benefits of using ChatGPT on productivity will be more optimal if supported by an adequate level of digital literacy. This research makes an empirical contribution to the literature on the adoption of artificial intelligence in the public sector and emphasizes the importance of developing digital competencies in supporting organizational digital transformation.

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ChatGPT; artificial intelligence; digital literacy; work productivity; public sector; digital transformation.

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Introduction

Digital transformation has become a global phenomenon that fundamentally changes the way organizations operate, communicate, and deliver services to society. The development of digital technology, artificial intelligence (AI), big data, and automation has encouraged public and private sector organizations to adapt to a more modern, fast, and efficient work model (Venetia et al., 2025). In the context of public administration, digitalization is no longer seen as an option, but rather as a strategic need to improve the quality of public services, bureaucratic effectiveness, and employee productivity (Tutoq et al., 2025). The

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Industrial Revolution 4.0 and the concept of Society 5.0 further strengthen the urgency of using smart technology to support decision-making and completion of administrative work more effectively (Sakrawandi & Kurniawan, 2025).

One of the technological developments that is currently receiving widespread attention is the emergence of generative artificial intelligence, especially ChatGPT developed by OpenAI. ChatGPT is a large language model-based technology (LLM) that is able to generate text automatically through natural language-based interactions (Bengesi et al., 2024). Unlike conventional automation systems that only function to carry out repetitive tasks, ChatGPT is able to support cognitive tasks such as compiling reports, creating official letters, summarizing documents, translating languages, drafting policy concepts, and helping to analyze information quickly and efficiently. This ability makes ChatGPT one of the AI innovations that has the potential to transform the work systems of modern organizations, including in the public sector (Usman et al., 2025).

In an organizational environment, employee productivity is an important indicator that determines the effectiveness of achieving organizational goals. Productivity is not only related to the amount of work completed, but also includes the quality of the work, the efficiency of time use, the ability to complete tasks appropriately, and the employee's contribution to the overall performance of the organization (Ikpebe et al., 2025; Ardianto et al., 2025)). In the public sector, employee productivity is a strategic issue because it is directly related to the quality of service to the community. The low productivity of government apparatus can have an impact on slow administrative services, high bureaucracy, and declining public trust in government institutions (Tao et al., 2024). Therefore, governments in various countries are starting to integrate digital technology and AI to improve bureaucratic efficiency and speed up public administration processes.

The use of ChatGPT in the work environment shows great potential in increasing employee productivity. Empirically, several studies show that the use of generative AI can help workers complete tasks faster and result in better quality of work. Santana & Pinheiro, (2024), found that the use of generative AI increases the productivity of knowledge workers, especially in writing and communication-based tasks. Fohim et al. (2025) also shows that AI is able to improve employee performance through accelerating task completion and reducing administrative workload. In the context of public organizations, ChatGPT can help employees draft administrative documents, draft reports, manage correspondence, and access information more efficiently. Thus, the use of ChatGPT has the potential to increase the work effectiveness of public sector employees through reducing administrative working time and improving the quality of work output.

In the public sector, the use of AI is beginning to be implemented to support more modern and responsive governance. Countries are starting to adopt AI technology to accelerate public services, increase transparency, and support data-driven decision-making (Hunitie & Akhorshaideh, 2025). Generative AI such as ChatGPT is considered to be able to help government organizations manage large amounts of information, speed up the preparation of policy documents, and improve the quality of bureaucratic communication. Xanthopoulou et al. (2024), states that generative AI has great potential to transform public administration through increased operational efficiency and support for knowledge-based work systems. However, the implementation of AI technology in government organizations still faces various challenges, including human resource readiness, employee digital literacy, and the organization's ability to effectively manage technology transformation.

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In Indonesia, the digital transformation of the public sector is an important part of the national bureaucratic reform agenda. The government has developed various digitalization policies, including the implementation of the Electronic-Based Government System (SPBE), to improve the effectiveness of public services and bureaucratic efficiency. Digitization of government administration is expected to be able to create more adaptive, transparent, and productive governance (Neumann et al., 2024). However, the implementation of digital transformation within the state civil apparatus still shows various obstacles, especially related to technological readiness and digital competence of employees. Not all state civil servants have adequate capabilities to utilize digital technology optimally, so the use of digital systems often does not have a maximum impact on increasing work productivity.

This condition is also seen in various Regional Apparatus Organizations in Lampung Province. As one of the provinces that continues to encourage the digital transformation of local government, Lampung has begun to implement various digital-based administrative systems in the bureaucratic work process. However, the level of technological adaptation among employees is still relatively diverse. Some employees have been able to utilize digital technology to support administrative work, while others still face limitations in the use of digital applications and AI-based technology. On the other hand, the demand for improving the quality of public services and bureaucratic work efficiency continues to increase, so technological innovations are needed that can help employees work faster, more precisely, and more productively (Tahir et al., 2025). In this context, ChatGPT is one of the potential technologies that can support the productivity of public sector employees within the Lampung Provincial Regional Apparatus Organization.

Although the use of ChatGPT offers a variety of benefits, the effectiveness of the technology is greatly influenced by the individual's ability to use digital technology (Chen & Gasco-Hernandez, 2025). Therefore, digital literacy is an important factor in determining the success of AI implementation in the work environment (Roberts, 2025). Digital literacy refers to the ability of individuals to access, understand, evaluate, and utilize digital technology effectively to support work activities and problem-solving (Lim & Moon, 2025). Employees who have a high level of digital literacy tend to be more adaptable to new technologies, able to understand how AI works, and more effective in utilizing ChatGPT features to complete job tasks.

In the use of ChatGPT, digital literacy has a very important role because this technology requires the ability of users to compile the right prompts, evaluate the results of AI-generated information, and integrate AI outputs into administrative work accurately (Almendras et al., 2025). Employees with high digital literacy will be able to make optimal use of ChatGPT than employees with low digital skills (Oprasto, 2024). Thus, digital literacy not only functions as a supporting competency, but also has the potential to strengthen the influence of the use of ChatGPT on employee productivity (Rachmawati et al., 2024). This means that the higher the level of digital literacy of employees, the greater the positive impact of the use of ChatGPT on increasing work productivity.

Various previous studies have discussed the relationship between AI technology and organizational performance. Faustine & Zamralita (2024), found that the use of AI systems has a positive effect on organizational efficiency and employee performance. Juvonen-Posti & Vuorento (2025), explained that generative AI has transformative potential in increasing work productivity in various sectors of the organization. Other research by Mustafa & Lleshi (2024), emphasizing the importance of digital competencies in supporting the successful

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implementation of AI in the work environment. However, empirical studies on the use of ChatGPT in public sector organizations are still relatively limited.

Most previous research has focused more on the education sector, private companies, or conceptual studies of generative AI. Research that specifically tests the effect of the use of ChatGPT on the productivity of public sector employees, especially the State Civil Apparatus in Indonesia, is still very minimal. In addition, previous research generally only tested the direct influence of the use of technology on performance without considering the digital competency factor as a moderation variable. In fact, the successful implementation of AI technology is greatly influenced by the digital ability of users to utilize the technology effectively. Thus, there is a research gap related to the lack of optimal research that integrates the use of ChatGPT, employee productivity, and digital literacy in the context of public sector organizations in Indonesia.

Based on the identified research gaps, this study offers several noteworthy contributions. First, it empirically examines the effect of ChatGPT usage on the productivity of public sector employees within Regional Government Organizations (Organisasi Perangkat Daerah/OPDs) in Lampung Province, Indonesia. Second, this study positions digital literacy as a moderating variable that strengthens the relationship between ChatGPT usage and employee productivity. Third, it contributes to the growing body of literature on generative artificial intelligence (AI) by providing empirical evidence from the context of Indonesian public administration, particularly at the local government level, which remains relatively underexplored. Fourth, this study employs a quantitative approach using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with SmartPLS to comprehensively examine the relationships among the proposed variables.

Theoretically, this research is expected to enrich the literature on digital transformation, the use of generative AI, and the productivity of public sector employees. This research also provides a new understanding of the importance of digital literacy as a factor that strengthens the effectiveness of the use of AI technology in the bureaucratic work environment. Practically, the results of this research are expected to be the basis for local governments in designing policies for developing digital competencies for the State Civil Apparatus as well as AI implementation strategies to improve the effectiveness of bureaucratic work and the quality of public services. Based on this description, this study aims to analyze the influence of the use of ChatGPT on the productivity of public sector employees in Regional Apparatus Organizations in Lampung Province and test the role of digital literacy moderation in this relationship. The hypotheses proposed in this study are as follows.

H1: The use of ChatGPT has a positive effect on the productivity of public sector employees in Lampung Province.

H2: Digital literacy positively moderates the relationship between ChatGPT use and employee productivity, so that the influence of ChatGPT use on employee productivity will be stronger at a high level of digital literacy.

Method

This study uses a quantitative approach with a survey research design to test the influence of ChatGPT use on the work productivity of public sector employees and the role of digital literacy moderation in this relationship. The research population consists of public sector

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employees who work in various government agencies in Lampung Province. The sampling technique uses purposive sampling with the criterion that respondents are employees who have used digital technology in the implementation of daily tasks. A total of 150 respondents successfully participated in this study and filled out the questionnaire completely.

Data collection was carried out through the distribution of online questionnaires using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). ChatGPT usage variables were measured based on respondents' perceptions of ease of use, work efficiency, and task completion support. Work productivity is measured through indicators of effectiveness, efficiency, quality of work results, and the ability to complete tasks on time. Meanwhile, digital literacy is measured based on respondents' ability to access, understand, evaluate, and utilize digital technology to support work.

Data analysis was carried out using Structural Equation Modeling-Partial Least Squares (SEM-PLS) with the help of SmartPLS software. The analysis stage includes testing the measurement model (outer model) through the test of convergent validity, discriminant validity, and construct reliability, as well as testing the structural model (inner model) to test the relationship between variables (Creswell, J. W., & Creswell, 2006). The effect of digital literacy moderation was analyzed through an interaction effect approach to find out whether digital literacy strengthens or weakens the influence of the use of ChatGPT on the work productivity of public sector employees in Lampung. The level of significance of the study was set at $\alpha = 0.05$.

Findings

Respondent Characteristics

This study involved public sector employees in several Regional Apparatus Organizations in Lampung Province as research respondents. The number of respondents who were successfully collected and met the research criteria was 150 respondents. The characteristics of the respondents were analyzed based on gender, age, education level, working period, and the intensity of using ChatGPT to support daily work activities. Based on gender, the majority of respondents were dominated by women as many as 81 people or 54%, while male respondents were 69 people or 46%. These results show that the participation of female employees in the use of digital technology in the public sector in Lampung Province is relatively high.

Based on the age group, the majority of respondents were in the age range of 31-40 years as many as 63 respondents or 42%, followed by the age group of 21-30 years as many as 50 respondents or 33%. This shows that most of the respondents are of productive age and have a fairly good level of technological adaptation in the use of ChatGPT to support administrative work. Judging from the level of education, most of the respondents had the last education of Bachelor (S1) as many as 102 respondents or 68%, then Master (S2) as many as 26 respondents or 18%. The high level of education of respondents shows that public sector employees in Lampung have a good enough capacity to understand and implement Artificial Intelligence (AI)-based technology in their work.

Based on the working period, the majority of respondents had work experience between 5-10 years as many as 5-10 years as many as 5 respondents or 39%, while respondents with less than 5 years of service were 42 respondents or 28%. This condition shows that respondents have enough work experience to evaluate the influence of using ChatGPT on

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their work productivity. Furthermore, based on the intensity of ChatGPT use, the majority of respondents use ChatGPT several times a week as many as 71 respondents or 47%, while as many as 47 respondents or 31% use ChatGPT every day. These findings show that the use of generative AI technology is starting to become an important part of the work activities of public sector employees in Lampung Province, especially in assisting in document preparation, information search, report creation, and other administrative work completion.

Table 1. Demographic Characteristics of Respondents

Characteristics	Category	Frequency (n)	Percentage (%)
Gender	Male	69	46%
	Female	81	54%
Age	21–30 years	50	33%
	31–40 years	63	42%
	41–50 years	28	19%
	> 50 years	9	6%
Final Education	High School or Equivalent	8	5%
	Diploma	14	9%
	Bachelor's Degree (S1)	102	68%
	Master's Degree (S2)	26	18%
Tenure	< 5 years	42	28%
	5–10 years	59	39%
	11–20 years	36	24%
	> 20 years	13	9%
Intensity of Use of ChatGPT	Every day	47	31%
	Several times a week	71	47%
	Several times a month	24	16%
	Rarely use	8	6%
Total Respond		**150**	**100%**

Outer Model Results *(Measurement Model)*

External model testing was carried out to evaluate the validity and reliability of the indicators used in measuring the ChatGPT Usage, Digital Literacy, and Employee Productivity constructs. The evaluation of the measurement model was carried out by looking at the value of the loading factor of each indicator against the latent construct it represents. The recommended factor loading value is above 0.70, which indicates that the indicator has a good ability to explain latent variables.

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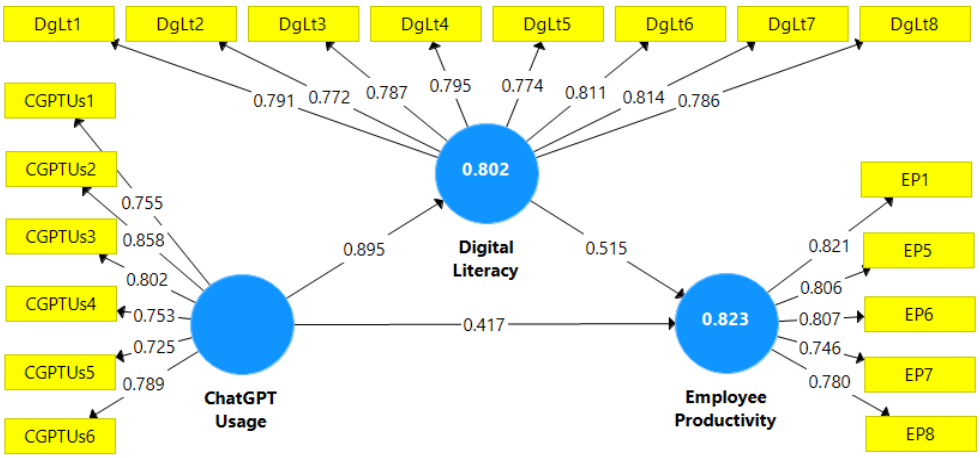

Figure 1. Outer Model (Measurement Model)

Based on Figure 1, all indicators in the ChatGPT Usage variable have loading factor values ranging from 0.725 to 0.858. The indicator with the highest loading value is CGPTUs2 (0.858), while the lowest indicator is CGPTUs5 (0.725). Although there are several indicators with loading values below 0.80, all values are still above the required minimum, so all indicators are declared valid in measuring the use of ChatGPT by public sector employees. In the Digital Literacy variable, all indicators show a high factor loading value, which ranges from 0.772 to 0.814. The DgLt6 indicator has the highest loading value of 0.814, while DgLt2 has the lowest loading value of 0.772. These results show that all indicators are able to represent the digital literacy construct well and meet the criteria of convergent validity.

Meanwhile, in the Employee Productivity variable, the value of factor loading ranges from 0.746 to 0.821. The EP1 indicator has the largest contribution to the work productivity construct with a loading value of 0.821, while the EP7 indicator has the lowest loading value of 0.746. All indicators in this variable also meet the recommended minimum limit, so they can be maintained in the research model. In addition to the validity of the indicators, the results of the outer model also show the value of the determination coefficient (R^2) in the endogenous construct. The Digital Literacy variable has an R^2 value of 0.802, which means that 80.2% of digital literacy variations can be explained by the use of ChatGPT.

Furthermore, the Employee Productivity variable has an R^2 value of 0.823, which indicates that 82.3% of the variation in employee work productivity can be explained by the variables contained in the research model. These values indicate the model's strong predictive capabilities. Overall, the results of the outer model test showed that all indicators had a loading factor value above 0.70 so that they met the requirements for convergent validity. Thus, the research instrument was declared valid and feasible to continue the analysis on the structural model (inner model) to test the relationship between variables in this study.

Convergent Validity

To evaluate the quality of the research instrument, convergent validity and construct reliability tests were carried out. Convergent validity was assessed based on outer loading values and Average Variance Extracted (AVE), while construct reliability was evaluated using Cronbach's Alpha and Composite Reliability (CR). A construct is declared to meet the convergence validity if it has an outer loading value of > 0.70 and AVE > 0.50. Meanwhile,

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construct reliability is considered adequate if Cronbach's Alpha and Composite Reliability values exceed 0.70.

Table 2. Convergent Validity and Reliability Test Results

Variable	Indicator	Nilai Outer Loading	AVE	Cronbach's Alpha	Composite Reliability
ChatGPT Usage	CGPTUs1	0.755	0.610	0.876	0.904
	CGPTUs2	0.858			
	CGPTUs3	0.802			
	CGPTUs4	0.753			
	CGPTUs5	0.725			
	CGPTUs6	0.789			
Digital Literacy	DgLt1	0.791	0.626	0.916	0.931
	DgLt2	0.772			
	DgLt3	0.787			
	DgLt4	0.795			
	DgLt5	0.774			
	DgLt6	0.811			
	DgLt7	0.814			
	DgLt8	0.786			
Employee Productivity	EP1	0.821	0.628	0.853	0.894
	EP5	0.806			
	EP6	0.807			
	EP7	0.746			
	EP8	0.780			

Based on Table 2, all indicators have an outer loading value above 0.70, which ranges from 0.725–0.858 for ChatGPT Usage, 0.772–0.814 for Digital Literacy, and 0.746–0.821 for Employee Productivity. These results show that all indicators are able to reflect well-measured constructs. The AVE values for ChatGPT Usage, Digital Literacy, and Employee Productivity are 0.610, 0.626, and 0.628, respectively, all of which exceed the 0.50 threshold. In addition, Cronbach's Alpha value is in the range of 0.853–0.916, while Composite Reliability is in the range of 0.894–0.931. Thus, all constructs meet the criteria of convergent validity and reliability, so that the research instrument is declared valid and reliable to be used in future analysis.

Inner Model Results *(Structural Model)*

R-Square *(R^2)*

R-Square (R^2) testing was performed to evaluate the predictive ability of the model in explaining endogenous variables. The R^2 value for Digital Literacy is 0.802, which indicates that 80.2% of digital literacy variations can be explained by the use of ChatGPT. Meanwhile, Employee Productivity has an R^2 value of 0.823, which means that 82.3% of the variation in employee work productivity can be explained by the use of ChatGPT and digital literacy. Based on the criteria of Hair et al. (2022), These results indicate that the model has strong explanatory power.

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Table 3. R-Square (R^2)

Variable	R Square	R Square Adjusted
Digital Literacy	0.802	0.800
Employee Productivity	0.823	0.821

Path Coefficient *(Uji Hipotesis)*

Hypothesis testing was carried out by evaluating the path coefficient, t-statistics, and p-values. The results of the analysis showed that ChatGPT Usage had a positive and significant effect on Digital Literacy (β = 0.895; t = 36.703; p < 0.001). In addition, ChatGPT Usage also had a positive and significant effect on Employee Productivity (β = 0.878; t = 27.111; p < 0.001). Furthermore, Digital Literacy had a positive and significant effect on Employee Productivity (β = 0.515; t = 7.004; p < 0.001). Thus, all direct hypotheses in this study are supported by empirical data.

Table 4. Path Coefficient Results

Variable	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
ChatGPT Usage -> Digital Literacy	0.895	0.894	0.024	36.703	0.000
ChatGPT Usage -> Employee Productivity	0.878	0.873	0.032	27.111	0.000
Digital Literacy -> Employee Productivity	0.515	0.520	0.073	7.004	0.000

Moderating Effect

Testing the moderation effect was conducted to find out whether digital literacy strengthens the relationship between ChatGPT use and employee work productivity. The results of the analysis showed that the effect of ChatGPT Usage and Digital Literacy interaction on Employee Productivity was significant with a coefficient of 0.461 (t = 6.922; p < 0.001). These findings indicate that digital literacy plays a role as a moderation variable that strengthens the influence of ChatGPT use on the productivity of public sector employees in Lampung.

Table 5. Moderating Effect Results

Variable	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
ChatGPT Usage -> Digital Literacy -> Employee Productivity	0.461	0.465	0.067	6.922	0.000

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Effect Size *(f^2)*

Effect size (f^2) analysis was performed to measure the contribution of each construct to endogenous variables. The results showed that the influence of ChatGPT Usage on Digital Literacy had an f^2 value of 4.042, which indicated a very large effect. The effect of ChatGPT Usage on Employee Productivity has an f^2 value of 0.195, which is in the medium category. Meanwhile, the influence of Digital Literacy on Employee Productivity has an f^2 value of 0.297, which also shows a moderate to strong effect. These results confirm that the use of ChatGPT is the main predictor in the research model.

Tabel 6. Effect Size Results (f^2)

Variable	ChatGPT Usage	Digital Literacy	Employee Productivity
ChatGPT Usage		4.042	0.195
Digital Literacy			0.297
Employee Productivity			

Predictive Relevance *(Q^2)*

The Q^2 value is used to assess the predictive ability of the model through the blindfolding procedure. The results showed that the Q^2 value for Digital Literacy was 0.490 and Employee Productivity was 0.507. Since the entire value of Q^2 is greater than zero, the model has good predictive relevance. These findings suggest that the model is able to adequately predict endogenous constructs and has strong predictive qualities.

Table 7. Predictive Relevance Results (Q^2)

Variable	SSO	SSE	Q^2 (=1-SSE/SSO)
ChatGPT Usage	900.000	900.000	
Digital Literacy	1.200.000	612.198	0.490
Employee Productivity	750.000	369.876	0.507

Model *Fit*

The evaluation of model suitability was carried out using several fit model indices, namely SRMR, d_ULS, d_G, Chi-Square, and NFI. The results showed an SRMR value of 0.060, which was below the threshold of 0.08, indicating a good model fit rate. In addition, an NFI value of 0.836 indicates that the model has an acceptable level of conformity. Overall, the results of the fit model test showed that the developed structural model met the goodness-of-fit criteria and was feasible to test the relationship between variables in this study.

Table 8. Fit Model Results

	Saturated Model	Estimated Model
SRMR	0.060	0.060
d_ULS	0.688	0.688
d_G	0.443	0.443
Chi-Square	339.985	339.985
NFI	0.836	0.836

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Discussion

ChatGPT Usage and Digital Literacy

The results of the study show that the use of ChatGPT has a positive and significant effect on the digital literacy of public sector employees in Lampung. These findings indicate that the more intensively employees use ChatGPT in work activities, the higher their ability to access, understand, evaluate, and utilize digital information. The use of artificial intelligence-based technology encourages employees to actively interact with various digital platforms, thereby indirectly improving their digital competencies (Alamaa et al., 2025).

These findings are in line with the Technology Acceptance Model (TAM) perspective which explains that the adoption of new technologies can improve users' ability to leverage technology to support work (Pandya, 2024). In the context of the public sector, the use of ChatGPT not only serves as a task completion tool, but also as a learning tool that allows employees to develop digital skills in an ongoing manner (Junejo et al., 2025). When employees become accustomed to using prompts, evaluating AI-generated responses, and integrating information into work, they simultaneously develop better digital literacy (Ismail et al., 2024).

These findings also support previous research that showed that the use of Artificial Intelligence-based technologies contributes to the improvement of individuals' digital competence. Therefore, the implementation of ChatGPT in the public sector can be seen as a strategic instrument to accelerate digital transformation while increasing the capacity of government human resources.

ChatGPT Usage and Employee Productivity

The results of the study show that the use of ChatGPT has a positive and significant effect on employee work productivity. These findings indicate that the use of ChatGPT can help employees complete work faster, more effectively, and more efficiently (Chiu, 2024). This technology allows users to obtain information instantly, generate draft documents, prepare reports, and provide support in information-based decision-making (Zhao et al., 2025).

From a Resource-Based View (RBV) perspective, ChatGPT can be seen as a technology resource that creates operational excellence through increased work efficiency (Nikolic et al., 2025). Employees who utilize ChatGPT have the ability to reduce the time required to complete administrative tasks and knowledge-based work (Gołąb-Andrzejak, 2025). Thus, the available time and energy can be allocated to activities that have higher added value.

The public sector context makes these findings even more relevant because government organizations often face demands for fast and accurate services (Ironsi & Ironsi, 2025). The presence of ChatGPT allows employees to access information and produce work output more effectively than conventional methods (Dornburg & Davin, 2025). Therefore, the use of generative AI can be one of the important factors in improving bureaucratic performance and the quality of public services in the digital era.

Digital Literacy and Employee Productivity

The results of the study show that digital literacy has a positive and significant effect on employee work productivity. These findings confirm that employees' ability to understand and utilize digital technology is an important factor that determines the effectiveness of task

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implementation. Employees with high levels of digital literacy tend to be better able to choose relevant sources of information, operate various digital applications, and complete work more efficiently (Li & Coates, 2025).

These findings are consistent with human capital theory which states that individual competencies are an important asset that can improve organizational performance (Bonnet & Teuteberg, 2025). Digital literacy allows employees to adapt to technological changes, reduce work errors, and improve the quality of output produced (Gupta et al., 2024). In an increasingly digitized work environment, these skills are the main prerequisites to achieve optimal productivity.

In addition, the results of the study show that digital literacy is not only related to technical ability to use digital devices, but also includes the ability to think critically in evaluating the information obtained. Employees who have good digital literacy are better able to use technology effectively and avoid mistakes due to the use of inaccurate information (Picciano, 2024). Thus, increasing digital literacy needs to be a priority in human resource development programs in the public sector.

The Mediating Role of Digital Literacy in the Relationship Between ChatGPT Usage and Employee Productivity

The findings of the study show that digital literacy plays a significant role in strengthening the relationship between ChatGPT use and employee work productivity. These results indicate that the benefits of using ChatGPT on productivity are not only obtained directly, but also through improving employees' digital capabilities. In other words, the higher the digital literacy that employees have, the greater the benefits that can be obtained from using ChatGPT in supporting the implementation of work.

These findings show that technology and human competence are two complementary elements. ChatGPT provides access to artificial intelligence-based information and support, but the effectiveness of its use is highly dependent on the user's ability to understand, evaluate, and apply the information generated (Boscardin et al., 2024). Employees with high digital literacy tend to be able to design more effective prompts, verify the accuracy of information, and integrate the results provided by ChatGPT into the work context more appropriately (Annuš, 2025).

These results make a theoretical contribution by broadening the understanding of the mechanisms by which AI technology affects work productivity. ChatGPT's influence on productivity is not automatic, but rather is influenced by the user's level of digital readiness. From a practical perspective, public sector organizations are not only providing access to AI technology, but also need to develop digital literacy improvement programs on an ongoing basis. The strategy will ensure that technology investments can yield maximum benefits in increasing employee productivity and supporting the government's digital transformation.

Conclusion

The findings demonstrate that the use of ChatGPT positively and significantly enhances both employees' digital literacy and work productivity in the public sector. Furthermore, digital literacy plays a significant role in strengthening the relationship between ChatGPT use and employee productivity, indicating that the effectiveness of generative artificial intelligence depends not only on the availability of advanced technology but also on users' ability to

understand, evaluate, and apply digital tools effectively in their daily work. These findings contribute to the growing body of knowledge on AI adoption in the public sector by providing empirical evidence that digital literacy is a critical mechanism through which ChatGPT can improve employee performance and support sustainable digital transformation within government organizations.

The study offers practical implications for policymakers and public sector organizations by emphasizing the importance of integrating ChatGPT adoption with continuous digital literacy development programs to maximize employee productivity and enhance the quality of public services. Although the proposed model provides meaningful insights into the relationship between ChatGPT, digital literacy, and work productivity, the findings are limited by the research context and sample characteristics, which may affect their generalizability. Future research is recommended to examine these relationships across broader organizational settings, employ longitudinal or mixed-method approaches, and incorporate additional variables, such as organizational readiness, digital culture, management support, and AI competency, to develop a more comprehensive understanding of work productivity in the era of artificial intelligence.

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