

Improving Human Resource Performance at the Tanjung Emas Customs Middle Type KPPBC Digital Competence Based

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Abstract. *Digital competence is a new concept that describes technology-related skills. Over the past few years, several terms have been used to describe skills and competencies using digital technologies, such as ICT skills, technology skills, information technology skills, 21st century skills, information literacy, digital literacy, and digital skills. The type of research used in this study is explanatory research, which is associative in nature, aiming to determine the relationship between two or more variables. This study aims to explain and test hypotheses with the aim of confirming or strengthening the hypotheses, which in turn can strengthen the theory used as a basis. In this case, the study examines the influence of digital competence, ICT utilization, and HR performance. The data sources in this study include primary and secondary data. Primary data is data obtained directly from the subjects. The results of this study confirm that improving HR performance depends not only on mastering digital competencies, but also on how organizations strategically utilize ICT. Integrating ICT into work systems and knowledge management is key to optimizing digital competency to drive more effective, efficient, and adaptive HR performance to the demands of a digital work environment.*

Keywords: Competence; Digital; Environment; Explanatory.

1. Introduction

The highly dynamic development of technology influences the lifestyle of every individual. Technology has become a means of solving various work problems and has also become a lifestyle for all levels of society. The internet is a fundamental technology in the development of information technology. (Yokoyama et al., 2023) The Internet has become a primary need for knowledge-based societies, serving as a means of information management, information retrieval, communication, and research and learning. (Rodríguez-Abitia & Bribiesca-Correa, 2021). A borderless world is possible with the Internet. The use of internet technology makes it easier for people to obtain the latest information quickly and effectively.

Internet usage has grown to become an integral part of everyday life in both academic and non-academic fields. (Anderson & R. Krathwohl, 2015) Excessive internet use can potentially

lead to problems in internet use known as Problematic Internet Use (PIU), excessive internet use, compulsive internet use, and internet dependence. (Rodríguez-Abitia & Bribiesca-Correa, 2021) Problematic Internet Use (PIU), excessive internet use, compulsive internet use, and internet dependence are terms often used to describe the various negative effects that arise from an individual's inability to control their internet usage activities. (Berber Çelik & Odaci, 2022; Nasir, 2021). Excessive internet use can lead to a reduction in face-to-face social interactions. (Berber Çelik & Odaci, 2022), reducing intellectual abilities (Nasir, 2021), reducing motivation to work and study (Ravizza, et.al 2014) and reducing the level of achievement motivation (Young & De Abreu, 2017). Problematic Internet Use (PIU) causes someone to experience a decrease in learning motivation because they are less responsible for their obligations so that they do not maximize the various aspects of intelligence they have. (Zheng et al., 2020). The negative effects of excessive internet use can change an individual's interpersonal behavior, including causing a decline in academic performance, psychological well-being and social engagement. (Ravizza et al., 2017).

Digital competence is a new concept that describes technology-related skills. (Rahayuningsih & Muhtar, 2022). Over the past few years, several terms have been used to describe skills and competencies using digital technologies, such as ICT skills, technology skills, information technology skills, 21st century skills, information literacy, digital literacy, and digital skills (Abdillah et al., 2022).

Digital competence encompasses an individual's ability to effectively use information and communication technology (ICT) to complete work tasks, manage information, and adapt to constantly evolving technological changes. Furthermore, successful task accomplishment is also a key indicator in assessing HR performance, as it reflects an individual's ability to achieve organizational targets and goals in a timely and accurate manner.

As an agency that plays a crucial role in customs supervision and services in the Semarang region, the Tanjung Emas Customs Office (KPPBC Madya Pabean Tanjung Emas) faces various challenges in navigating the dynamics of globalization and digitalization. The increasing volume of international trade and the complexity of customs regulations require human resources at the Tanjung Emas Customs Office to possess high digital competencies and the ability to complete tasks effectively. This is crucial to ensure that administrative and supervisory processes run smoothly, transparently, and accountably, thereby enhancing public satisfaction and supporting national economic growth.

Digital literacy certainly cannot be achieved instantly, but rather through several stages. These stages are referred to as levels of digital literacy. According to Mayes and Fowler, there are three levels of digital literacy: digital competence (level 1), digital use (level 2), and digital transformation (level 3). Digital competence, the initial level of digital transformation, is the ability to differentiate when dealing with various information in the digital world.

The results of previous research related to the role of competence in performance still leave controversy, including the results that...shows that professional competence does not have a significant relationship with students' academic performance (Prasetio et al., 2019). Lawal et al (2018) competencies significantly predict business performance. This study underscores the importance of entrepreneurial competencies in improving firm survival and performance. The research results (Pramukti, 2019; Yudi Supiyanto, 2019) which states that competence has no significant effect on performance. This differs from the results of the study (Sarumaha, 2022; Satato et al., 2022) which states that performance is the result of competence, which means that the higher the competence of human resources, the higher the work performance of human resources. The results show that there is a positive but insignificant relationship between competency and financial performance in Bahraini companies. (Alhashimi et al., 2019). Other research results show that leader competency is very important for promoting knowledge sharing and improving employee job performance (Swanson et.al 2020).

So in this study, the ICT Utilization variable is proposed as a mediator. A study that models the role of ICT use as a mediator between knowledge variables and expected outcomes, albeit in the context of student learning motivation, where ICT use strengthens the relationship between perceived knowledge and outcomes based on the application of the technology. (Emilia & Soemaryani, 2025) The analysis shows that ICT can be an important mechanism for translating competencies into concrete performance behaviors, both by improving access to information resources and by supporting more efficient work processes.

2. Research Methods

The type of research used in this study is explanatory research, which is associative in nature, aiming to determine the relationship between two or more variables (Sugiyono, 2012). This study aims to explain and test hypotheses with the aim of confirming or strengthening the hypotheses, which in turn can strengthen the theory used as a basis. In this case, the study examines the influence of digital competence, ICT utilization, and HR performance. The data sources in this study include primary and secondary data. Primary data is data obtained directly from the subjects (Widodo, 2017). Primary data includes digital competence, ICT utilization, and human resource performance. Secondary data is data obtained from other parties. This data includes human resource statistics, data, and references related to this study.

3. Results and Discussion

3.1. Respondent Description

This section presents a description of the respondents' characteristics as an important part of understanding the empirical context of the research. The descriptive analysis of respondents aims to provide a general overview of the profile of HR employees at the Tanjung Emas Customs Middle Office (KPPBC), the subjects of this research. Respondent characteristics,

including gender, age, highest level of education, and length of service, are presented as follows:

1) Gender

The characteristics of the respondents in this study can be explained based on gender as follows:

Table Respondent Description Based on Gender

Gender	Frequency	Percentage
Man	121	86.4
Woman	19	13.6
Total	140	100.0

Based on research data from 140 employees, the characteristics of respondents by gender indicate that the majority of respondents were male (121 people) (86.4%), while 19 respondents were female (13.6%). The dominance of male employees reflects the general characteristics of customs agencies, which have demanding fieldwork, operational assertiveness, and a high administrative and technical workload. This condition has implications for performance patterns that tend to emphasize aspects of accuracy, speed, and procedural compliance. However, the presence of female employees still has a strategic role, especially in supporting administrative accuracy, coordination, and internal HR services, which have the potential to improve the quality of overall organizational performance.

2) Age

The characteristics of the respondents in this study can be explained based on age as follows:

Table Respondent Description Based on Age

Age	Frequency	Percentage
18 - 30 years old	38	27.1
31 - 40 years old	45	32.1
41 - 50 years old	28	20.0
>50 years	29	20.7
Total	140	100.0

Source: Data processing results, 2026.

In terms of age, the largest number of respondents were in the 31–40 age group, namely 45 people (32.1%), followed by the 18–30 age group with 38 people (27.1%), the >50 age group with 29 people (20.7%), and the 41–50 age group with 28 people (20.0%). This age composition indicates that the majority of employees are in their productive and professionally mature age. The 31–40 age group is generally at the peak of productivity, possessing a balance between work experience and the ability to adapt to technology. This condition is an important capital for improving employee performance, especially in supporting the optimal utilization of ICT and the application of digital competencies.

3) Last education

The characteristics of the employees who were respondents in this study can be explained based on their last education as follows:

Table Respondent Description Based on Last Education

Last education	Frequency	Percentage
High School/Vocational School	10	7.1
Diploma	46	32.9
Bachelor	76	54.3
Postgraduate	8	5.7
Total	140	100.0

Source: Data processing results, 2026.

The description of respondents based on their most recent education shows that the majority of respondents had a bachelor's degree, 76 people, or 54.3% of the total 140 respondents. This indicates that most employees have sufficient higher education qualifications to support the implementation of their job duties and responsibilities. Respondents with high school/vocational high school education were in second place, with 10 people, or 7.1%. Respondents with diploma education numbered 46 people, or 32.9%, and postgraduate education numbered 8 people, or 5.7%, which is the group with the smallest number. In general, this composition indicates that the educational level of employees is dominated by bachelor's degrees, so the organization has sufficient human resource capital in terms of academic competency to support organizational performance and development.

4) Years of service

The characteristics of the employees who were respondents in this study can be explained based on their length of service as follows:

Table Respondent Description Based on Length of Service

Years of service	Frequency	Percentage
0 - 3 years	24	17.1
>3 - 6 years	37	26.4
>6 - 9 years	47	33.6
> 9 years	32	22.9
Total	140	100.0

Source: Primary Data Processing Results, 2026.

Respondent characteristics based on length of service indicate that the largest group, with 47 employees (33.6%), was those with >6–9 years of service, followed by 37 employees (26.4%), those with >9 years of service, 32 employees (22.9%), and those with 0–3 years of service, 24 employees (17.1%). This distribution indicates that the majority of employees have substantial work experience within the organization. A relatively long tenure reflects a strong mastery of procedures, work culture, and organizational systems, thus contributing positively to the stability and consistency of performance. Furthermore, employees with shorter

tenures have the potential to bring new perspectives and adaptive capabilities to technology, which can be a catalyst for sustainable improvement in HR performance.

Descriptive analysis aims to obtain an overview of respondents' assessments of the variables studied. Through descriptive analysis, information will be obtained regarding respondents' tendencies in responding to the indicator items used to measure the research variables.

The data is explained by providing a weighted assessment for each statement in the questionnaire. Respondent response criteria follow the following assessment scale: Strongly Agree (SS) score 5, Agree (S) score 4, Quite Agree (CS) score 3, Disagree (TS) score 2, Strongly Disagree (STS) score 1. Furthermore, the variable description is grouped into 3 categories, namely: low category, score = 1.00 – 2.33, medium category, score = 2.34 – 3.66 and high/good category, with a score of 3.67 – 5.00. The results of the analysis of the description of respondents' answers to each variable are presented below:

5) Digital competence (X1)

The digital competence variable is measured using three indicators. The following table displays a description of respondent responses and statistical data for the digital competence variable:

Table Descriptive Statistics of Digital Competence Variable

Indicator	N	Min	Max	Mean
X1-1 Digital knowledge,	140	2.00	5.00	3.86
X1-2 Digital skills	140	2.00	5.00	3.74
X1-3 Digital capabilities	140	1.00	5.00	3.88
Mean variable				3.83

Source: Primary Data 2026.

Table shows that the Digital Competence variable has an overall mean value of 3.83, which is in the high/good category (3.67–5.00). This finding indicates that employees generally possess good digital competency to support the implementation of information technology-based personnel tasks and functions.

Judging from each indicator, Digital Competence (X1-3) is the indicator with the highest mean value, namely 3.88, included in the high/good category. This indicates that employees are relatively capable of adapting digital technology, solving system-based problems, and using digital applications effectively to support their work. This condition reflects the readiness of human resources in facing the demands of bureaucratic digitization. Another finding, the indicator with the lowest mean value is Digital Skills (X1-2) at 3.74, which although still in the high/good category, indicates that the aspect of digital technical skills is still relatively low compared to other indicators. This finding suggests the need for increased technical training and strengthening technology use practices so that employee digital competence is more evenly distributed and optimal.

The final analysis in PLS is the structural model analysis, or inner model. In structural model analysis, hypotheses can be tested using t-statistics. The test results can be seen from the structural model output, which examines the significance of the loading factor, which explains the influence of the Digital Competence construct on ICT Utilization through the mediation of HR Performance as an intervening variable.

In this case, data processing was performed using SmartPLS v4.1.0 software. The results of this data processing are shown in the following image:

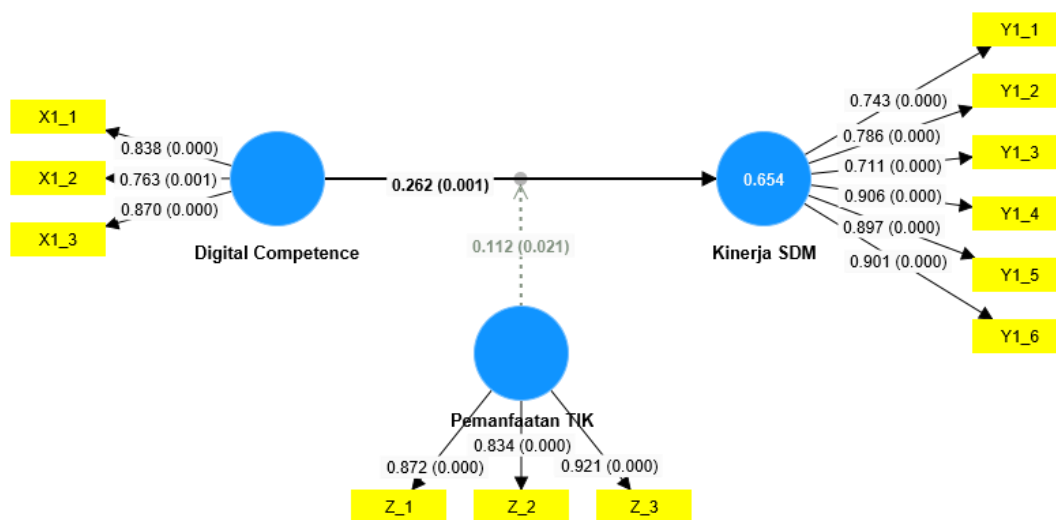


Figure Full Model SEM PLS Moderation

Source: Results of data processing with Smart PLS 4.0 (2026)

Based on the chart of research data processing results using Smart PLS 4.0 above, hypothesis testing can be performed. To determine whether the hypothesis is accepted or not, in this case, it is done by comparing the calculated t with the t-table, assuming that the calculated t is greater than the t-table. The t-table value for a 5% significance level is 1.96. The following table shows the results of the test of influence between variables using Partial Least Squares analysis.

Table Path Coefficients

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Digital Competence -> HR Performance	0.262	0.254	0.076	3,466	0.001
Utilization of ICT x Digital Competence -> HR Performance	0.112	0.102	0.049	2,305	0.021

Source: Results of data processing with Smart PLS 4.0 (2026)

By presenting the results of the data processing, testing can then be carried out for each research hypothesis, namely:

1) Hypothesis Testing 1

H1 : *The better a person's digital competence, the better their performance will be.*

The first hypothesis test was conducted by looking at the estimated coefficient value (original sample estimate) of the influence of Digital competence on HR Performance, which was 0.262. This result provides evidence that Digital competence has a positive influence on HR Performance. The results of the t-test confirmed these findings, where it was known that the magnitude of the calculated t (3.466) was greater than the t-table (1.96) with p (0.001) smaller than 0.05. The conclusion of the test is that Digital competence positively and significantly influences HR Performance. This result means that the better the Digital competence, the HR Performance will tend to increase. Based on this, the first hypothesis proposed in this study, namely "The better a person's digital competence, the better their performance will be" can be accepted.

2) Hypothesis Testing 2

H2 : *The better the utilization of ICT, the stronger the impact of digital competence on HR performance..*

The second hypothesis test was conducted by looking at the estimated coefficient value (original sample estimate) of the influence of the interaction variable (Utilization of ICT x Digital competence) on HR Performance, which was 0.112. This result provides evidence that the moderating effect of ICT Utilization can strengthen the relationship between Digital competence and HR Performance. The results of the t-test showed that the calculated t (2.305) was greater than the t-table (1.96) with p (0.021) less than 0.05. Based on this test, it can be concluded that there is a moderating effect of ICT Utilization on the relationship between Digital competence and HR Performance. This result means that high ICT Utilization can strengthen the influence of Digital competence on HR Performance. Based on this, the second hypothesis proposed in this study, namely "The better the utilization of ICT, the stronger the impact of digital competence on HR performance" can be accepted.

Discussion:

1) The influence of digital competence on HR performance

The first hypothesis test proved that digital competence has a positive and significant impact on HR performance. This result means that the better the digital competence, the higher the HR performance will tend to be. increase. Study (Pamungkas & Praditya, 2024) Research shows that digital competence has a positive and significant impact on employee performance; this ability facilitates adaptation to technological change, increases employee resilience, and ultimately improves human resource performance in the era of digital transformation.

Variables *Digital competence* This is indicated by three indicators: digital knowledge, digital skills, and digital capabilities. Meanwhile, the measurement of the HR performance variable

in this study reflects six indicators. that is Quality of work, Quantity, Punctuality, Effectiveness, Independence and Work commitment.

The indicator with the highest loading value for the Digital Competence variable is digital capability, while for the HR Performance variable, the indicator with the highest loading value is effectiveness. These findings indicate that digital capability is the strongest aspect in reflecting digital competence, and effectiveness is the primary aspect in describing HR performance. These results indicate that the better an employee's digital capabilities, the higher the work effectiveness they can achieve. This means that mastery of technology, digital systems, and optimal use of work applications play a crucial role in improving the accuracy of goal achievement, the quality of work results, and the efficiency of work processes.

Furthermore, the indicator with the lowest loading value for the Digital Competence variable is digital skills, while the indicator with the lowest loading value for the Human Resources Performance variable is punctuality. Although it has the lowest contribution compared to the other indicators, this relationship still shows a directional pattern: better digital skills also tend to improve work punctuality. This means that employees' ability to operate digital devices and applications practically still needs to be strengthened to further accelerate task completion, minimize technical obstacles, and improve time discipline in carrying out work.

2) The influence of ICT utilization on the influence of digital competence on HR performance.

The second hypothesis test proves that the moderating influence of ICT Utilization can strengthen the relationship between Digital Competence and Performance.HR. These results indicate that high ICT utilization can strengthen the influence of digital competence on HR performance. Empirical study produced by(Pamma et al., 2025)reported that empowerment and use of ICT have a positive impact on HR competency and employee performance, indicating that employees who have access to digital knowledge and resources are able to carry out tasks more effectively and efficiently.

The Digital competence variable is indicated by 3 indicators, namely Digital knowledge, Digital skills and Digital Capabilities. Meanwhile, the measurement of the HR Performance variable in this study is a reflection of six indicators: Work Quality, Quantity, Timeliness, Effectiveness, Independence, and Work Commitment. Then, the ICT Utilization variable in this study is measured from the reflection of three indicators: the use of ICT for electronic storage of information, the use of ICT as a knowledge network for sharing information, the use of ICT as a tool to support organizational systems and processes.

The indicator with the highest loading value for the digital competence variable is digital capability, while for the HR performance variable, effectiveness is the highest indicator. Meanwhile, for the ICT utilization variable, the indicator with the highest loading is the use of ICT as a tool to support organizational systems and processes.

These findings indicate that the more optimal the use of ICT to support organizational systems

and processes, the stronger the impact of digital capabilities on improving work effectiveness. This means that organizations that are able to utilize ICT in an integrated manner within their workflows and operational systems will be better able to translate employee digital capabilities into effective performance, reflected in target achievement, work quality, and ease of task completion.

Conversely, the indicator with the lowest loading value on the digital competence variable (X1) is digital skills, while on the HR performance variable, the lowest indicator is punctuality. Meanwhile, on the ICT utilization variable, the indicator with the lowest loading is the use of ICT as a knowledge network for sharing information.

These results indicate that the better ICT is utilized as a medium for information sharing and knowledge networking, the stronger the impact of digital skills on work punctuality. This means that when ICT is effectively utilized for information exchange, coordination, and knowledge access, employees' digital skills will contribute more to accelerating work completion, reducing delays, and improving punctuality in task execution.

4. Conclusion

The results of this study confirm that improving HR performance depends not only on mastering digital competencies, but also on how organizations strategically utilize ICT. Integrating ICT into work systems and knowledge management is key to optimizing digital competency to drive more effective, efficient, and adaptive HR performance to the demands of a digital work environment. Based on the results of data analysis and discussion, it can be concluded that: *Digital competence* plays a crucial role in improving HR performance, both in terms of effectiveness and punctuality, with the use of ICT as a strengthening factor. Digital capability indicators have proven to be the most dominant indicator in reflecting digital competence, while effectiveness is the primary aspect in describing HR performance. This demonstrates that the quality of employees' digital capabilities is crucial to an organization's success in achieving effective work results. The use of ICT, particularly as a tool to support organizational systems and processes, can strengthen the influence of digital skills on work effectiveness. This means that the more integrated ICT is into operational systems, the greater the contribution of employees' digital skills to improved performance. Furthermore, the use of ICT as a knowledge network and information sharing tool also strengthens the influence of digital skills on work punctuality. This demonstrates that fast, open, and structured access to information encourages employees to work more responsively and on time.

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