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OPTIMIZING SME PERFORMANCE THROUGH ICT DIVERSIFICATION AND COMPETENCE DEVELOPMENT STRATEGIES

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ABSTRACT

Objective: This study examines the moderating role of employee competence in the relationship between ICT diversification and employee performance in SMEs within the e-commerce shoe sector in East Java, Indonesia. **Research Design & Methods:** An explanatory approach was used, employing Moderated Regression Analysis (MRA) to test the hypothesis. Data were collected from 90 employees using standardized questionnaires and analyzed with IBM SPSS Statistics version 25. **Findings:** The results show that both ICT diversification and employee competency positively and significantly influence employee performance. The interaction between ICT diversification and employee competency further enhances the relationship between these factors and employee performance. Initially, the model demonstrated a strong relationship between ICT diversification and employee performance, which became even stronger when employee competency was included as a moderating variable. This indicates that employee competency plays a significant role in amplifying the positive effects of ICT diversification on performance. **Implications and Recommendations:** The findings offer practical insights for SMEs to improve performance through targeted ICT training and competency development. However, the study is limited to the e-commerce shoe sector in East Java, which may limit the generalizability of the results. Future research should expand to diverse industries and wider geographical locations to validate these findings. **Contribution & Value Added:** This research addresses the gap in understanding the moderating effect of employee competence on the relationship between ICT and performance in SMEs, offering new insights into strategic human resource management.

Keywords: employee competency; employee performance; ICT diversification; SMEs.
JEL codes: O32, M21, L21
Article type: research paper

INTRODUCTION

The significant role of Small and Medium Enterprises (SMEs) in the national economy is undeniable. SMEs are key drivers of economic growth, job creation, community empowerment, and the reduction of economic inequality. However, the rapid evolution of the digital economy presents both new challenges and opportunities, making it essential for SMEs to enhance their e-commerce capabilities. Performance improvement is a critical priority for any organization, as it directly influences operational effectiveness.

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Human Resources (HR) management plays a pivotal role in optimizing performance. Beyond addressing skills and expertise issues, HR management is responsible for creating a supportive work environment that enables employees to perform at their best. van Beurden et al. (2024) emphasize, HR involvement is integral to formulating organizational strategy. Effective HR administration ensures the quality of human resources, contributing to the overall functionality of the organization, as suggested by Chung & Sparrow (2024).

In the context of SMEs, enhancing employee performance is vital for overcoming various challenges. The goal is to develop individuals who are competitive in the global market and possess high potential. SMEs typically focus on improving employee performance through motivation, engagement in competent behaviors, and the acquisition of information and communication technology (ICT) skills. Leveraging individual competencies to boost overall performance is also a key objective. Competencies, which include individual talents relevant to specific jobs, are believed to enhance performance, as noted by Pacheco & Coello-Montecel (2023), Lee (2023), and Ongena (2023).

Assessing competency is vital for ensuring employee proficiency and effective performance, serving as the foundation for key HR management processes like recruitment, strategic planning, and performance evaluation. Educators play a critical role in preparing employees with the professional skills necessary to cultivate a high-quality workforce within SMEs. Although extensive research has explored the link between ICT and employee performance, the role of competence as a moderating factor in this relationship remains less examined. Most studies have concentrated on direct relationships, often overlooking how proficiency might shape the dynamics between competency and performance. SMEs are fundamental to Indonesia's economic landscape, driving growth, creating jobs, and promoting community development. However, as the digital economy expands, Indonesian SMEs especially in sectors like e-commerce face both new challenges and opportunities, requiring stronger technological capabilities and enhanced human resource strategies to stay competitive and efficient. This study centers on e-commerce SMEs in East Java's shoe industry, where ICT diversification and employee competency are pivotal to achieving improved performance. For instance, recent initiatives in East Java highlight how e-commerce SMEs are using ICT to streamline inventory management, improve customer service, and enhance data analysis key activities that support competitive advantage. The Indonesian government’s Digital Economy Framework also underscores ICT's role in strengthening SME resilience through digital transformation programs that include skill-building workshops and ICT adoption incentives. Human Resource (HR) management is essential in facilitating this transformation, creating an environment that promotes employee engagement and productivity. As noted by van Beurden et al. (2024), HR is instrumental in aligning organizational strategies with employee competencies, thereby boosting operational efficiency. Furthermore, Chung & Sparrow (2024) emphasize that effective HR practices are crucial for optimizing ICT usage, ensuring that SMEs have the knowledge and skills necessary to succeed in a digital environment.

This study aims to address a gap in existing research by exploring the role of employee competency as a moderating factor in the relationship between ICT diversification and employee performance within SMEs. Previous studies have primarily focused on the direct effects of ICT diversification on performance or the individual contributions of employee competency (Otoo et al., 2021; Viola & Fitrianto, 2022). However, there is limited research examining how employee competency interacts with ICT diversification to influence employee performance in the context of SMEs. This study contributes new insights into this underexplored area by evaluating both the direct effects of ICT diversification on performance and the moderating role of employee competency.

The significance of this research is threefold. First, it fills the gap in understanding how employee competency moderates the relationship between ICT diversification and employee performance, thereby expanding academic knowledge on SME performance enhancement (Avelar et al., 2024). Second, it offers practical implications for SME managers, providing guidance on how improving employee competency can help optimize performance in the face of growing digital demands. Lastly, the study underscores the importance of continuous ICT training and competency development, highlighting their role in maintaining SME competitiveness within the digital economy (Ipinnaiye et al., 2017; Salvadorinho et al., 2024; Yuhelmis et al., 2024). By exploring these elements, this research offers a

comprehensive view of how SMEs can strategically improve employee performance by investing in both ICT tools and employee competencies.

LITERATURE REVIEW

Employee Competency

Competency is generally defined as proficiency, skill and ability. According to Wu et al. (2023), the term 'competent' means capable or skilled. Another definition explains that competence is the talent needed to improve basic abilities and elevate performance to a higher level (Lee, 2023). This view suggests that a person's competence is the basis for effective and superior performance in a job. Several studies, including those conducted by Iskamto (2022), Herwina (2022), and Pramono & Prahiawan (2022), show that competence has a positive and significant effect on employee performance. However, research by Hajiali et al. (2022), Sutaguna et al. (2023), and Mawarni et al. (2023) shows that competency does not have a significant effect on employee performance. Competency has been repeatedly linked to enhanced performance outcomes, as seen in the work of Iskamto (2022), Herwina (2022), and Pramono & Prahiawan (2022). Competency enables employees to perform tasks more effectively, particularly when technology is involved. For Indonesian SMEs in the e-commerce sector, competency in ICT skills allows employees to maximize the benefits of technological tools, as well as adapt to rapid technological changes. Using grounded theory, this study hypothesizes that competency moderates the relationship between ICT diversification and employee performance. Grounded theory allows the hypothesis to be formulated based on observed patterns in employee behavior, skill adaptation, and performance trends in SMEs. It provides a framework for understanding how competency fosters better ICT integration, ultimately enhancing performance.

ICT Diversification

The use of information technology must be supported by the ability of employees to use it effectively. Communication via computer media depends on individual skills in using computer communication tools, both as senders and recipients of messages (Žilka et al., 2024). Lack of computer and internet skills can hinder the use of internet technology at an individual level and ultimately hinder employee performance. Research by Purnama & Subroto (2016), Purnama (2021), Primawanti & Ali (2022), and Rahmah et al. (2022) shows that ICT has a positive and significant effect on performance. The principle of employee competency is a crucial aspect for SMEs and is often considered a characteristic of successful SMEs. SMEs that have a strong foundation of competency principles can set standards for assessing the competency of individuals in their environment, including their employees. The relationship between employee competency and performance can be influenced by mastery of ICT. The findings of Iskamto (2022), Herwina (2022), and Sengkey & Dwiyanti (2020) show that technological capabilities influence employee performance.

Existing studies highlight ICT diversification as a powerful tool for enhancing SME performance. Frency et al. (2022) and Moelrine & Syarif (2023) underscore that ICT use in SMEs extends beyond basic operations, allowing for innovative practices in customer engagement, data analysis, and supply chain management. By diversifying ICT usage integrating a range of digital tools such as customer relationship management (CRM) systems, inventory management software, and digital marketing platforms SMEs can achieve greater operational efficiency and agility. This study draws on grounded theory to conceptualize ICT diversification not just as a technical change but as a transformational shift in how SMEs conduct business. Grounded theory further enables the exploration of underlying factors that facilitate or hinder ICT adoption within SMEs, revealing nuances in employee attitudes and organizational readiness that shape the efficacy of digital tools

Development Hypothesis

The relationship between competency and employee performance is well-established in the literature. Grounded theory offers a valuable framework for understanding the practical influence of ICT diversification on SMEs' performance. It allows for hypotheses to emerge based on the observed successes and challenges faced by SMEs in real-world contexts. One hypothesis that can be derived

from this theory is that SMEs that diversify their ICT resources will experience improved performance outcomes. This is because employees will become proficient with a variety of digital tools, enhancing operational efficiency and decision-making processes. Previous studies, such as those by Iskamto (2022), Herwina (2022), and Pramono & Prahiawan (2022), confirm that competence plays a significant role in affecting performance. This leads to the first hypothesis (H1): employee competency positively impacts performance.

Moreover, grounded theory supports the hypothesis that employee competency moderates the relationship between ICT diversification and performance. It provides insights into how differences in competency levels among employees influence the effectiveness of ICT tools in SMEs. By focusing on the real-world experiences and competencies of employees, grounded theory helps examine how ICT diversification can either be enhanced or constrained by individual competencies. This approach highlights competency as a dynamic factor that affects the use and success of digital tools in the workplace. Previous research, such as studies by Frency et al. (2022) and Moelrine & Syarif (2023), has shown that ICT diversification can enhance individual performance. In line with this, research by Cho & Lee (2020) suggests that competence moderates the relationship between ICT diversification and performance. This leads to the second hypothesis (H2): competence moderates the relationship between ICT diversification and employee performance.

By grounding these hypotheses in practical observations and previous research, this study provides a comprehensive understanding of how employee competency and ICT diversification interact to influence employee performance in SMEs.

The conceptual framework, illustrating these relationships, can be seen in Figure 1.

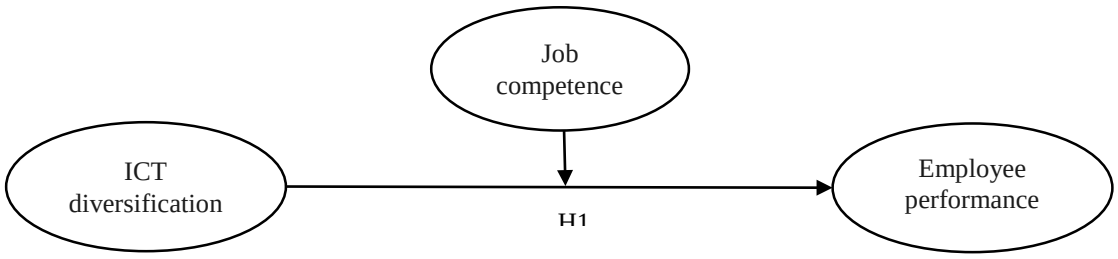

Figure 1. Conceptual framework

METHODS

Research design

This research adopts an explanatory approach to explore the relationship between ICT diversification, competence, and performance. By testing hypotheses, the study aims to uncover the causal connections between these variables and identify key factors that influence employee performance through empirical evidence. The objective is to gain a deeper understanding of how ICT diversification and competencies contribute to performance and to explain the causal interactions between these variables. This approach is designed to produce stronger and more relevant conclusions regarding the factors that impact employee performance in SMEs, ultimately providing valuable insights for improving organizational effectiveness.

Population and Sample

The population for this research includes all employees of SMEs in the e-commerce shoe sector in East Java. A sample of 90 employees was selected using a cluster sampling technique. The instrument used for data collection was a questionnaire that had been validated and tested for reliability to ensure the accuracy and consistency of the measurements. The sample size of 90 employees was deemed adequate based on guidelines from Cohan et al. (2020) which suggest that a minimum sample size of 30

respondents is required for statistical analysis. With this sample size, the research is considered to have sufficient data to perform the necessary statistical analyses effectively.

Variable Measurement and Instruments

In this study, three main variables are investigated ICT Diversification (X1), Employee Competency (X2), and Employee Performance (Y). Each of these variables is measured using validated scales that have been previously utilized in SME performance research to ensure both accuracy and reliability. ICT Diversification (X1) refers to the extent to which SMEs incorporate a variety of information and communication technologies to enhance their business operations. This variable is assessed through items that evaluate the use of tools such as CRM systems, digital marketing platforms, data analytics, and inventory management software. Respondents rate statements on a five-point Likert scale, from 1 (Strongly Disagree) to 5 (Strongly Agree), indicating the frequency and effectiveness with which these ICT tools are employed adapted from Frency et al. (2022). Employee Competency (X2) employee competency refers to the skills and abilities relevant to ICT adoption and usage within SMEs. This variable is measured through items assessing digital literacy, problem-solving skills, adaptability, and technical know-how. Competency-related questions are also rated on a five-point Likert scale, with items adapted from Iskamto (2022), Herwina (2022), and Pramono & Prahiawan (2022) to reflect core competencies crucial for ICT related tasks in SMEs. Employee Performance (Y) employee performance is the dependent variable, reflecting the efficiency, productivity, and quality of output in SMEs. Performance is assessed through items on work quality, task efficiency, innovation, and customer service. These items are similarly rated on a five-point Likert scale, and adapted from studies on employee performance in digital environments (Falloon, 2020).

Questionnaire Development Process

The questionnaire for this study was carefully developed to ensure it was clear, relevant, and reliable. The process began with item selection and adaptation, where variables were chosen from validated scales frequently used in performance research and customized to fit the context of Indonesian e-commerce SMEs, particularly employees in East Java's shoe sector. To ensure accuracy and appropriateness, the draft questionnaire underwent expert review by HR and ICT professionals familiar with SME operations. Following this, a pilot test was conducted with 30 employees from similar SME backgrounds to assess clarity, reliability, and validity. Feedback from the pilot test led to minor revisions in phrasing to enhance comprehension. Reliability was confirmed through Cronbach's alpha, with all variables scoring above 0.70, indicating strong internal consistency. Validity tests further confirmed that the questionnaire effectively measured the constructs of ICT diversification, competency, and performance.

Data Dissemination and Collection Process

Data dissemination, the final questionnaire was disseminated to employees in SMEs within East Java's e-commerce shoe sector. To facilitate broad participation, both online and paper-based formats were used. For online distribution, the questionnaire was shared through secure links sent via email, allowing employees to complete it at their convenience. Paper-based surveys were distributed to SMEs without regular internet access, ensuring inclusivity. Sampling and data collection, a cluster sampling technique was employed, focusing on employees within East Java's e-commerce shoe sector. This approach ensured a representative sample of 90 employees across various SMEs. Participation was voluntary, and respondents were assured of confidentiality to encourage honest and accurate responses. Response collection and data handling, responses from the online and paper-based questionnaires were compiled and entered into a secure database. Quality checks were conducted to verify the completeness and accuracy of data entries. Completed responses were then analyzed using IBM SPSS Statistics version 25, enabling the application of Moderated Regression Analysis (MRA) to test the hypotheses and assess the relationships between ICT diversification, competency, and employee performance (Herwina, 2022).

Through these methods, the study seeks to provide a comprehensive and reliable analysis of the impact of ICT diversification and employee competency on performance, offering insights that can aid SMEs

in optimizing their human resources and technological assets.

FINDINGS

Respondent Characteristics

The respondents in this study show diverse characteristics (in Table 1). In terms of gender, 42% are men and 58% are women, with a predominance of women, which can offer varied perspectives and reflect differences in views on the impact of work competency and ICT diversification on employee performance. Age-wise, 58% of respondents are in the 17-34 year range, 34.5% are between 35-52 years old, and 7.5% are over 53 years old, indicating a younger workforce. This age distribution provides valuable insights into how younger employees face workplace challenges and opportunities, particularly regarding job competencies and ICT diversification. Regarding education, 86% of respondents have high school diplomas or earlier education, while 14% hold a bachelor's degree. The predominance of high school graduates suggests that the study's findings are particularly relevant for e-commerce SMEs, which often employ individuals with this level of education. This demographic breakdown helps in understanding how different factors influence employee performance and the application of competencies and ICT skills across various groups.

Table 1. Respondent Characteristics

Description	N	%
Gender		
Man	38	42
Woman	52	58
Amount	90	100
Age		
17-34	52	58
35-52	31	34.5
53>	7	7.5
Amount	90	100
Education		
High school graduate or earlier	77	86
Bachelor	13	14
Amount	90	100

Source: Data processed

Descriptive Frequencies

Figure 2 presents a histogram illustrating the distribution of the ICT Diversification variable across 90 observations. The mean score of 8.69 indicates that respondents generally exhibit a moderately high level of ICT diversification. The standard deviation of 2.855 reflects a moderate level of variability in the scores, showing differences in ICT diversification across the sample. The distribution shape is approximately normal, though slightly skewed to the right, with most values concentrated between 5 and 12 and the highest frequencies occurring in the 7.5 to 10 range. The range of scores spans from approximately 2.5 to 15, revealing a wide variety in responses, including a few participants with exceptionally high or low levels of ICT diversification.

Overall, the histogram suggests that the majority of individuals possess moderate to high levels of ICT diversification, with a small number of outliers at the extremes of the scale.

The histogram in Figure 3 illustrates the distribution of the job competence variable among 90 participants. The mean score of 8.59 indicates that, on average, participants perceive their job competence at a moderately high level, suggesting a generally positive self-assessment. With a standard deviation of 3.123, the data shows moderate variability, reflecting differences in perceived competence among individuals. The distribution approximates a normal shape, with the highest frequencies in the 7.5 to 10 range, though a slight right skew is present, indicating some participants rate their competence significantly higher than average. The scores range from approximately 2.5 to 15, highlighting a diverse set of responses, including a few outliers at both extremes. Overall, the data suggests that while most

participants have moderate to high levels of job competence, there is variability that underscores differing levels of experience, skill, or role-specific expertise within the group. This information can help guide targeted interventions to support those with lower scores while building on the strengths of those with higher ratings.

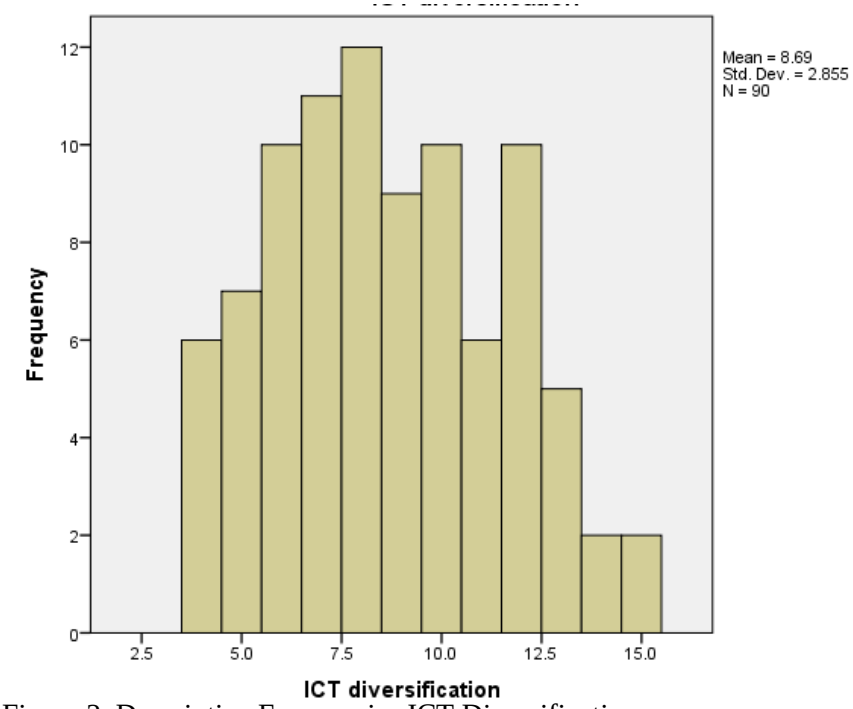

Figure 2. Descriptive Frequencies ICT Diversification
Source: Data processed

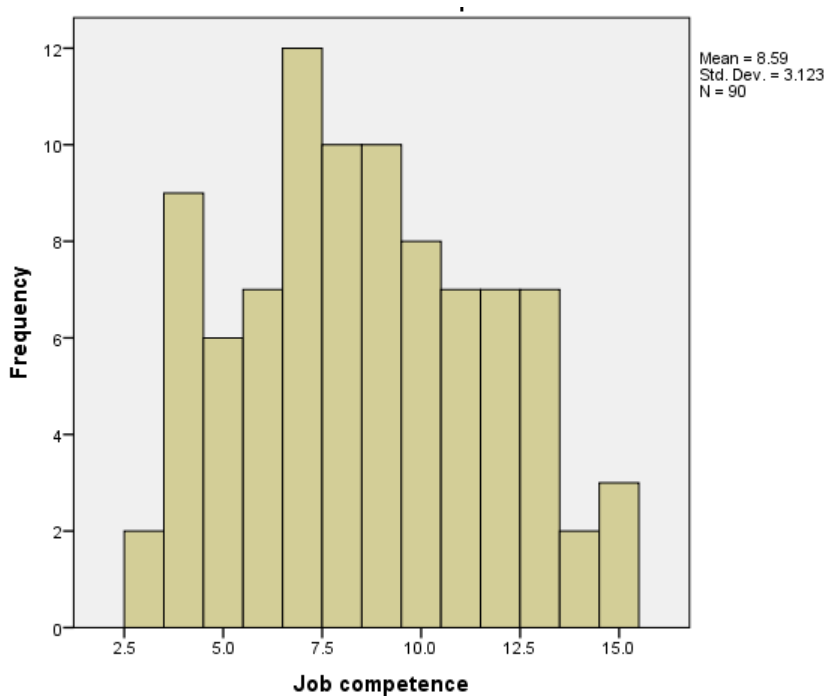

Figure 3. Descriptive Frequencies Job Competence
Source: Data processed

Base on Figure 4, this histogram illustrates the distribution of the "Employee Performance" variable for a sample of 90 individuals. Here is an interpretation of the main points. Mean, the average employee performance score is 11.76, indicating a moderate to high level of performance among the participants. Standard deviation, the standard deviation is 3.237, showing a moderate spread in performance scores,

suggesting variability in performance levels across the sample. Shape of distribution, the histogram is approximately normal, with a peak frequency between scores of 10 and 12. The distribution appears slightly skewed to the right, with fewer participants scoring below 8 or above 16. Range, employee performance scores range from about 6 to 20, showing a wide variation among respondents.

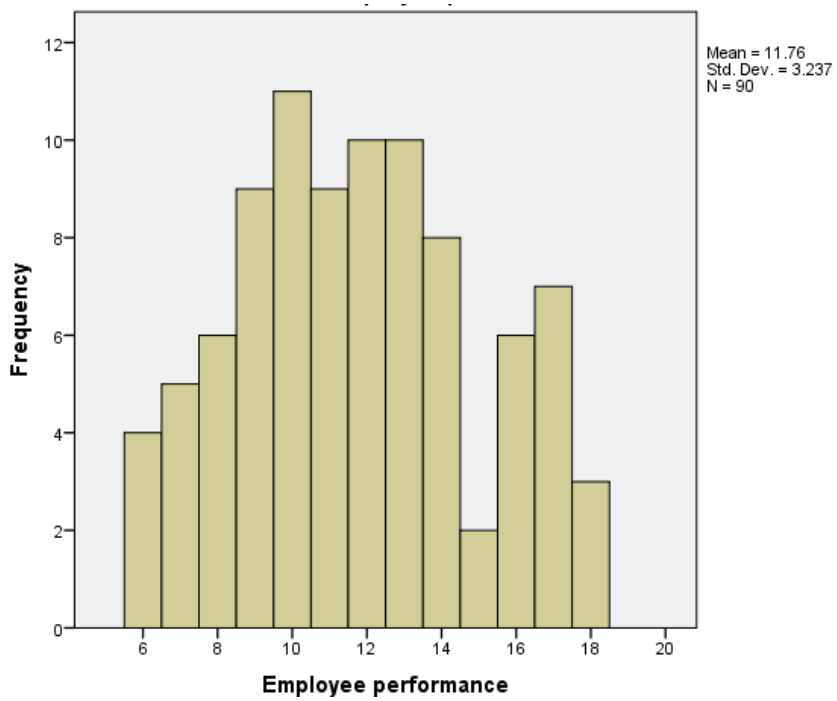

Figure 4. Descriptive Frequencies Employee Performance
Source: Data processed

In summary, most participants exhibit moderate to high performance levels, with a few lower and higher outliers. The distribution shows that, overall, employee performance is above the midpoint, indicating a generally high-performing group with some variability across individuals.

Validity and Reliability Test Results

Base on Table 2, validity and reliability tests confirm that the measurement instruments used in this research are of high quality. The validity test results show that all statements related to ICT diversification (X1), work competency (X2), and employee performance (Y) are valid, with Pearson correlation values exceeding 0.361 and significance values below 0.05, indicating a strong and significant relationship with the measured concepts. The reliability test reveals that the Cronbach's alpha values for all variables are above 0.70, demonstrating a high level of internal consistency among the items. This means that the statements are reliable and accurately measure the intended concepts. Overall, these results validate the use of these instruments for collecting data in the research.

Table 2. Validity and Reliability Test Results

Indicators	Pearson Correlation	Sig. (2-tailed)	Cronbach's Alpha
X1_hardware	0.900	0.000	0.814
X1_software	0.864	0.000	0.822
X1_infrastructure	0.894	0.000	0.792
X2_knowledge	0.805	0.000	0.820
X2_Skills	0.870	0.000	0.799
X2_personality	0.735	0.000	0.808
Y_quality of work	0.809	0.000	0.837
Y_ initiative	0.773	0.000	0.797
Y_cooperate	0.436	0.000	0.795
Y_discipline	0.860	0.000	0.845

Source: Data processed

The classical assumption testing results, including normality, multicollinearity, and heteroscedasticity

tests, indicate that the regression model meets the necessary assumptions. Normality test, the Sig value of 0.055, as shown in Table 3, is greater than 0.050, indicating that the regression model residuals are normally distributed. According to Ghozali (2018), a Sig value greater than 0.05 confirms normal distribution of the model residuals. Multicollinearity test, for the multicollinearity test, the ICT diversification variable (X1) has a tolerance value of 0.421 and a VIF value of 2.373, while the work competency variable (X2) also shows a tolerance value of 0.421 and a VIF of 2.373, as detailed in Table 4. These values indicate that there are no symptoms of multicollinearity, meeting Ghozali (2018) criteria of a tolerance value greater than 0.100 and a VIF value less than 10.00. Heteroscedasticity test, the heteroscedasticity test results show that the ICT diversification variable (X1) has a Sig value of 0.833 and work competency (X2) has a Sig value of 0.620, as presented in Table 5. According to Ghozali (2018), heteroscedasticity is not a concern if the Sig value is greater than 0.05. In conclusion, the results from classical assumption testing confirm that all model requirements have been met, validating the reliability of the regression analysis.

Table 3. The Results of the Normality Test Using the One-Sample Kolmogorov-Smirnov Test

		Nonstandardized Residues
N		90
Normal Parameters, b	Means	0.0000000
	Std. Deviation	2.22590291
The Most Extreme Difference	Absolute	0.055
	Positive	0.045
	negative	-0.055
Statistical Tests		0.055
Asymp. signature. (2-tail)		0.200c,d

A. Normal test distribution.
B. Calculated from data.
C. Lilliefors Significance Correction.
D. This is the lower limit of the true meaning.
Source: Data processed

Table 4. Multicollinearity Test Results

Model		Unstandardized Coefficients		Standardized Coefficient	Q	signature.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	4.062	0.728		5.580	0.000		
	ICT diversification	0.493	0.120	0.435	4.107	0.000	0.421	2.373
	Information and communication technology	0.397	0.110	0.383	3.614	0.001	0.421	2.373

A. Dependent Variable: Employee Performance
Source: Data processed

Table 5. Heteroscedasticity Test Results

Model		Unstandardized Coefficients		Standardized Coefficient	Q	signature.
		B	Std. Error	Beta		
1	(Constant)	1.272	0.423		3.004	0.003
	ICT diversification	0.015	0.070	0.035	0.212	0.833
	Job competence	0.032	0.064	0.082	0.498	0.620

A. Dependent Variable: ABS_TEST
Source: Data processed

The hypothesis test results reveal the following.

Relationship between ICT diversification and employee performance, ICT diversification (X1) significantly positively influences employee performance (Y), with a β coefficient of 0.832 and a significance value (Sig) of 0.000, as shown in Table 6. Since the Sig value is less than 0.05, hypothesis H1 is supported, indicating that ICT diversification has a strong positive effect on employee performance.

Moderating effect of work competency, the interaction between ICT diversification and work competency (X1.X2) also significantly positively influences employee performance (Y), with a β coefficient of 0.025 and a Sig value of 0.000, as seen in Table 8. The Sig value being less than 0.05 supports hypothesis H2, demonstrating that work competency effectively moderates the relationship between ICT diversification and employee performance.

These results confirm that both ICT diversification and work competency play crucial roles in enhancing employee performance.

Table 6. Test Results on the Influence of Employee Competency on Employee Performance

Model		Unstandardized Coefficients		Standardized Coefficient	Q	signature.
		B	Std. Error	Beta		
1	(Constant)	4.602	0.760		6.057	0.000
	Employee competency	0.823	0.083	0.726	9.905	0.000

A. Dependent Variable: Employee performance
Source: Data processed

Table 7. Test Results of the Coefficient of Determination of the Influence of Employee Competence on Employee Performance

Model	R	R square	Adjusted R Square	Std. Estimation Error
1	0.726a	0.527	0.522	2.239

A. Predictor: (Constant), Employee competence
Source: Data processed

In regression equation 1, as detailed in Table 6, the relationship between ICT diversification (X1) and employee performance (Y) is represented as: Y = 4.602 + 0.826 X1. Here, the coefficient of 0.826 suggests that for every one-unit increase in ICT diversification, employee performance increases by 0.826 units. This positive coefficient signifies a positive relationship between ICT diversification and employee performance. Consequently, higher ICT diversification is associated with higher employee performance, highlighting the beneficial impact of ICT diversification on employee performance.

Table 8. Moderation Test Results Information and Communication Technology Relationship between Employee Competency and Employee Performance

Model		Unstandardized Coefficients		Standardized Coefficient	Q	signature.
		B	Std. Error	Beta		
1	(Constant)	3.543	0.667		5.310	0.000
	Employee competency	0.457	0.109	0.403	4.203	0.000
	Information and communication technology	0.234	0.105	0.226	2.221	0.029
	Employee competency and Information and communication technology	0.025	0.005	0.336	4.548	0.000

A. Dependent Variable: Employee performance
Source: Data processed

Table 9. Moderation Determination Coefficient Test Results Information and Communication Technology Relationship between Employee Competency and Employee Performance

Model	R	R square	Adjusted R Square	Std. Estimation Error
1	0.818a	0.669	0.657	1.896

A. Predictor: (Constant), Competency and technology, employee competency, information and communication technology
Source: Data processed

The results of the regression analysis for the second equation, as presented in Table 8, can be expressed with the following model:

$Y=3.543+0.457X_1+0.234X_2+0.025(X_1\times X_2)$

The analysis highlights the impact of ICT diversification (X_1), employee competency (X_2), and their

interaction ($X_1 \times X_2$) on employee performance (Y). A coefficient of 0.457 for ICT diversification suggests that a one-unit increase in this variable results in a 0.457-unit improvement in employee performance, provided that employee competency and the interaction term remain constant. Similarly, employee competency (X_2) has a coefficient of 0.234, indicating that a one-unit rise in competency leads to a 0.234 unit increase in performance, holding other factors steady. The interaction term ($X_1 \times X_2$) has a coefficient of 0.025, showing that employee competency slightly enhances the positive effect of ICT diversification on performance, emphasizing its moderating role.

The correlation coefficients (R) further illustrate these relationships. The first regression equation, focusing on ICT diversification alone, has an R value of 0.726, showing a strong relationship with employee performance. When employee competency and the interaction term are included in the second model, the R value rises to 0.818, indicating an even stronger relationship. This suggests that employee competency significantly enhances the impact of ICT diversification on performance.

The findings reveal that both ICT diversification and employee competency positively influence employee performance in SMEs. Furthermore, employee competency plays a crucial role in moderating this relationship, amplifying the benefits of ICT diversification. These results underline the importance of developing employee competencies to maximize organizational performance in technology-driven environments. A significant β coefficient of 0.826 ($p < 0.05$) for ICT diversification underscores its positive effect on employee performance, while employee competency, with a β coefficient of 0.823 ($p < 0.05$), also significantly boosts performance. Overall, the study demonstrates that broadening the use of diverse ICT tools, combined with enhanced employee competency, is key to improving employee performance

ICT diversification and employee performance, these findings align with those of Frency et al. (2022); Moelrine & Syarif (2023), who noted that ICT integration enhances efficiency and innovation within SMEs. This study, however, contributes additional insights by focusing on the Indonesian SME e-commerce sector, where ICT is instrumental in areas like inventory management, customer service, and data analytics in East Java. Competency's direct impact on performance, consistent with studies by Iskamto (2022), this research reaffirms the positive impact of employee competency on performance. However, it further demonstrates how digital competencies not only improve individual performance but also amplify an organization's overall ICT strategy, especially in e-commerce, a technology-intensive sector. Competency's moderating role, building on the findings of Herwina (2022), which identified competency as a moderator of ICT effectiveness, this study provides evidence from Indonesian SMEs that skill enhancement is essential for maximizing the benefits of ICT on performance. This suggests that SME competency development should target areas directly contributing to ICT effectiveness.

In summary, the findings underscore the critical roles of ICT diversification and employee competency in boosting SME performance. Enhanced competencies amplify ICT's benefits, making skill development a strategic priority for SMEs seeking to optimize performance through technology. Visual representations of the results emphasize the positive relationships and moderating effects observed, indicating opportunities for further research and practical implications for SMEs in a digital economy. This study supports a systematic approach to building employee competencies, ensuring that SMEs can leverage their technological resources effectively for sustained growth and innovation in Indonesia's dynamic e-commerce environment.

DISCUSSION

The Effect of ICT Diversification on Employee Performance

Regression analysis indicates that ICT diversification (X1) significantly positively influences employee performance (Y). This finding aligns with previous research by Frency et al. (2022), which highlight that ICT contributes positively and significantly to employee performance.

Empirically, proficiency in ICT provides notable advantages for e-commerce SMEs. Enhanced ICT skills enable employees to use available tools and systems more effectively, leading to improved

operational efficiency in areas such as inventory management and customer service. Furthermore, effective ICT diversification fosters innovation in products and services, expands market reach, and enhances data analysis capabilities. These elements are crucial for informed strategic decision-making.

To leverage these benefits, e-commerce SMEs should consider implementing structured and targeted ICT training programs for their employees. Ensuring the adoption of appropriate technological systems and tools tailored to business needs, collaborating with technology experts, and cultivating an organizational culture that supports innovation and experimentation with new technologies are essential strategies for maximizing the positive impact of ICT diversification on employee performance.

The Influence of Employee Competency on Employee Performance

The findings from the regression analysis reveal that employee competency significantly positively affects employee performance. This result aligns with previous studies by Pramono & Prahiawan (2022) and Falloon (2020), which confirm the positive contribution of competence to employee performance. Specifically, Falloon (2020) emphasizes the role of digital competence in digital accounting management.

The empirical results suggest that as employees' work competencies increase, their performance also improves, leading to enhanced productivity, service quality, and operational efficiency—key factors for the success of e-commerce SMEs. Recognizing the impact of employee competency on performance underscores the importance of investing in employee development through training, further education, and skills enhancement.

E-commerce SMEs can leverage these insights to design effective human resource management policies and strategies aimed at boosting employee competency. By focusing on competency development, SMEs can enhance their overall performance, gain a competitive edge, differentiate themselves in the market, and improve brand reputation. Furthermore, employees with higher competencies are likely to deliver better customer service, increasing customer satisfaction, building stronger relationships, and fostering greater customer loyalty.

The Role of Work Competence as a Moderating Variable of the Relationship between ICT Diversification and Employee Performance

These findings indicate that employee competency has a significant moderating role in the relationship between ICT diversification and employee performance. In line with previous research conducted by Lee (2023), the influence of employee competency as a moderator of ICT diversification on employee performance has been emphasized. By paying attention to these two variables, e-commerce SMEs can achieve better overall employee performance. This emphasizes the importance of optimizing the synergy between work competencies and ICT diversification to improve overall performance. Therefore, e-commerce SMEs can utilize a combination of superior work competencies and good ICT mastery to differentiate themselves from competitors and attract more customers. Solutions to optimize the benefits of these findings include developing employee skills, training and support in mastering ICT, adjusting employee duties and responsibilities, and building an organizational culture that supports innovation and continuous learning.

The findings highlight that employee competency plays a significant moderating role in the relationship between ICT diversification and employee performance. This supports the research by Lee (2023), which underscores the impact of employee competency as a moderator in enhancing the effects of ICT diversification on performance.

E-commerce SMEs can leverage these insights to improve overall employee performance by optimizing the synergy between work competencies and ICT diversification. By integrating strong work competencies with effective ICT use, SMEs can set themselves apart from competitors and attract more customers.

To fully leverage these advantages, e-commerce SMEs should concentrate on several key areas. First, they should invest in employee development by offering training programs that enhance both professional skills and ICT capabilities. Providing continuous support will also be crucial, ensuring that

employees are able to effectively master and utilize ICT tools and systems. Additionally, it is important to align employees' roles with their competencies and technological expertise, ensuring that tasks are suited to their skill sets for optimal performance. Finally, fostering an organizational culture that promotes innovation, ongoing learning, and adaptability to new technologies will further contribute to success.

By implementing these strategies, e-commerce SMEs can maximize the potential of both their workforce and technological resources, leading to enhanced performance and a stronger competitive position.

CONCLUSION

This research concludes that both ICT diversification and employee competency have a positive and significant impact on employee performance within SMEs in the shoe e-commerce sector. In addition, employee competency plays a crucial moderating role, enhancing the effectiveness of ICT tools in improving performance. This underscores the importance of aligning employees' technological skills with their individual competencies to optimize productivity and performance outcomes.

To leverage these findings, it is recommended that SMEs focus on strengthening their ICT training programs to develop employees' technological skills, while also investing in ongoing competency development to ensure continuous improvement. Furthermore, roles and responsibilities should be aligned with employees' competencies to maximize their effectiveness and enhance performance within the organization.

Future research should aim to broaden the scope by exploring a wider range of sectors and contexts to validate and expand these findings. Longitudinal studies could offer valuable insights into the long-term effects of ICT diversification and competency development, tracking their evolution over time to uncover lasting trends and impacts on employee performance. This approach would help identify any lag effects, showing how early investments in ICT and employee competency gradually lead to improved performance as technology advances.

Additionally, future studies could explore other moderating variables that may influence the relationship between ICT diversification and employee performance. These include organizational culture, which may affect how innovation and continuous learning impact the effectiveness of ICT tools; leadership style, particularly transformational leadership, which can facilitate or hinder the adoption of technology; and employee engagement, as engaged employees tend to be more motivated and productive. Resource availability, including financial and technological support, may also influence the extent to which SMEs can successfully implement ICT tools, making it an important factor to explore.

Cross-sector analyses could shed light on sector-specific dynamics, comparing the impact of ICT diversification and competency development across different industries, such as manufacturing, services, and agriculture. This would help tailor recommendations for specific SME contexts and improve the generalizability of the findings. Furthermore, comparative studies across different regions of Indonesia could reveal regional disparities in digital readiness, helping policymakers identify areas where targeted support is most needed to foster a more equitable digital transformation.

Finally, future research could investigate the impact of specific ICT tools, such as cloud computing, data analytics, or artificial intelligence, on employee performance. By understanding which technologies provide the highest return on investment in terms of productivity, SMEs could better prioritize their digital tool investments. By addressing these additional research avenues, future studies can build upon this study's findings and offer more in-depth insights and actionable strategies to optimize ICT and competency development, supporting the growth and competitiveness of Indonesian SMEs in the digital economy.

CONFLICT OF INTEREST STATEMENT

The author declares that there are no conflicts of interest regarding the publication of this paper.

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