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Human Resource Competencies, Information Technology Utilization, and MSME Performance: Evidence from an Emerging Regional Economy

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The author(s) declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

ABSTRACT

This study aims to examine the effects of human resource competency and information technology utilisation on the performance of Usaha Mikro, Kecil, dan Menengah (MSME) in Banggai Regency. A quantitative approach employing an explanatory research design was adopted. The study population comprised MSME owners and managers in Banggai Regency, and a purposive sample of 100 respondents was selected. Data were collected through a structured questionnaire on a five-point Likert scale and analysed using multiple linear regression in IBM SPSS Statistics. The analytical procedures included descriptive statistics, validity and reliability testing, classical assumption testing, multiple linear regression, t-test, F-test, and coefficient of determination (R^2) analysis. The findings indicate that human resource competency has a positive and statistically significant effect on MSME performance, with a calculated t-value of 4.982 and a significance level of 0.000. Information technology utilisation also has a positive and statistically significant effect on MSME performance, with a calculated t-value of 5.617 and a significance level of 0.000. Furthermore, the simultaneous test indicates that both variables jointly have a significant effect on MSME performance, as indicated by an F-value of 58.742 and a significance level of 0.000. The coefficient of determination (R^2) of 0.549 indicates that human resource competency and information technology utilisation jointly explain 54.9% of the variance in MSME performance. In comparison, the remaining 45.1% is attributable to other factors beyond the scope of the research model. These findings suggest that strengthening the competencies of MSME owners and managers, supported by the effective utilisation of information technology, plays a crucial role in enhancing the performance and competitiveness of Usaha Mikro, Kecil, dan Menengah (MSME) in Banggai Regency.

Introduction

Usaha Mikro, Kecil, dan Menengah (MSME) (Micro, Small, and Medium Enterprises) constitute a strategic sector and serve as the backbone of the Indonesian economy. The existence of MSME makes a substantial contribution to national economic growth through job creation, increased household income, and the strengthening of regional economic structures. According to data from the Coordinating Ministry for Economic Affairs, MSME account for approximately 99% of all business entities in Indonesia, contribute more than 60% to the country's Gross Domestic Product (GDP), and employ nearly 97% of the national workforce (Coordinating Ministry for Economic Affairs, 2025). Data from Statistics Indonesia (BPS) further indicate that the MSME sector is the largest source of employment, particularly in the trade, agriculture, and manufacturing sectors (BPS, 2024). These findings highlight that improving the competitiveness and performance of MSME is essential for promoting inclusive and sustainable economic development.

Despite their substantial contribution to the national economy, most MSME continue to face various challenges in improving business performance. These challenges include inadequate human resource (HR) quality, limited managerial capabilities, low levels of digital literacy, and the suboptimal utilisation of information technology in business operations. Human resource quality is a fundamental factor that determines the ability of MSME owners and managers to manage organisational resources, make strategic decisions, foster innovation, and respond effectively to the dynamics of business competition (Kuboi & Wasike, 2025). Human resource competency, encompassing knowledge, skills, and professional capabilities, plays a crucial role in improving the effectiveness of business management, encouraging innovation, and enhancing the productivity and performance of MSME. Entrepreneurs with higher competency levels tend to be more adaptable to changes in the business environment and are better positioned to develop sustainable competitive advantages (Alatas et al., 2024). Therefore, strengthening the competencies of MSME entrepreneurs has become a fundamental prerequisite for enhancing business competitiveness.

Furthermore, the rapid advancement of information technology has transformed the way businesses conduct their operations. Digitalisation enables MSME to manage operational processes more efficiently, expand market access through digital marketing, improve customer service quality, and generate timely, accurate information to support business decision-making. According to Laudon and Laudon (2022), the utilisation of information technology enhances operational efficiency, accelerates information flow, and creates organisational competitive advantages. Similarly, Venkatesh et al. (2003) argue that technology acceptance and usage are primarily influenced by users' perceptions of usefulness and ease of use. Consequently, higher levels of technology adoption increase the likelihood of improving organisational performance.

Banggai Regency is one of the regions experiencing continuous growth in the number of MSME, driven by increasing economic activities within the community. Nevertheless, the majority of MSME in Banggai Regency remain micro-scale enterprises characterised by relatively simple management practices, limited managerial competencies, and low levels of information technology utilisation. Many MSME owners continue to manage financial administration, marketing activities, and transaction records manually, thereby reducing operational efficiency and limiting their ability to compete in an increasingly competitive business environment. These conditions indicate that improving human resource competency and promoting the effective utilisation of information technology are two essential aspects that should be prioritised to enhance MSME performance in the region.

Previous studies have consistently demonstrated that human resource competency is a key determinant of MSME performance. Entrepreneurs possessing adequate knowledge, technical skills, and managerial capabilities tend to manage their businesses more effectively, improve productivity, and establish sustainable competitive advantages (Indriyani et al., 2023; Widyastuti et al., 2023). Likewise, the utilisation of information technology has been shown to contribute positively to operational efficiency, productivity, decision-making quality, and business competitiveness through the implementation of information systems, social media platforms, and other digital technologies in business activities (Widyastuti et al., 2023; Wahyudi et al., 2023). However, empirical findings regarding the effects of human resource competency and information technology utilisation on MSME performance remain inconclusive across different geographical contexts. Variations in digital literacy, technological readiness, entrepreneurial characteristics, and regional socioeconomic conditions have resulted in inconsistent findings. Furthermore, empirical studies specifically investigating the influence of human resource competency and information technology utilisation on MSME performance in Banggai Regency remain limited. Therefore, further empirical research is required to provide more contextual evidence regarding the influence of these two variables on MSME performance in Banggai Regency.

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Based on the foregoing discussion, this study aims to examine the effects of human resource competency and information technology utilisation on the performance of Usaha Mikro, Kecil, dan Menengah (MSME) in Banggai Regency. The findings are expected to contribute theoretically to the advancement of human resource management and information systems literature. Furthermore, the results are expected to provide practical insights for local governments, MSME support institutions, and business practitioners to formulate strategies to improve human resource quality and accelerate digital transformation, thereby enhancing the long-term competitiveness and sustainability of MSME.

Recent studies have consistently demonstrated that human resource competency and information technology utilisation are strategic factors contributing to the performance of Usaha Mikro, Kecil, dan Menengah (MSME). Human resource competency enhances entrepreneurs' ability to manage organisational resources, foster innovation, and improve business productivity (Dewi et al., 2025). Meanwhile, the utilisation of information technology and the digitalisation of business processes have been proven to improve operational efficiency, expand market access, and strengthen the competitiveness of MSME (Anam et al., 2024). Recent international studies further emphasise that adopting Information and Communication Technology (ICT) enhances MSME performance by strengthening organisational competencies and developing distinctive capabilities (Journal of Enterprising Communities, 2025). Furthermore, the development of organisational competencies for digital transformation has been recognised as a critical factor in improving digital maturity and ensuring the long-term sustainability of small and medium-sized enterprises (Gonzalez-Varona et al., 2024).

Despite these advancements, a significant research gap remains in the existing literature. Most previous studies have focused on MSME operating in regions with relatively high levels of technology adoption or have examined human resource competency and information technology utilisation as components of more complex research models, such as entrepreneurial characteristics, management accounting systems, or organisational capabilities. Consequently, empirical evidence regarding the direct effects of human resource competency and information technology utilisation on MSME performance in developing regions remains limited and has produced inconsistent findings. Moreover, studies that simultaneously examine these two variables in the context of MSME in Banggai Regency remain scarce. As a result, there is limited empirical evidence reflecting the socioeconomic characteristics and the level of digital transformation of MSME operating in this region.

Based on these considerations, the novelty of this study lies in the development of an empirical model that integrates human resource competency and information technology utilisation as the primary determinants of the performance of Usaha Mikro, Kecil, dan Menengah (MSME) in Banggai Regency. This study provides empirical evidence on the relative contributions of both variables to improving MSME performance in a region undergoing digital transformation. Furthermore, the study identifies the most influential variable through a multiple linear regression analysis, thereby offering more context-specific recommendations for local governments and MSME support institutions in designing policies to strengthen human resource competencies and accelerate digital transformation, thereby enhancing the long-term competitiveness and sustainability of MSME.

Research Methodology

This study employed a quantitative approach using an explanatory research design to examine the effects of human resource competency and information technology utilisation on the performance of Usaha Mikro, Kecil, dan Menengah (MSME) in Banggai Regency. This approach was selected because it enables the examination of causal relationships among variables through hypothesis testing (Farina & Opti, 2023).

The study population consisted of MSME owners and managers in Banggai Regency. The sample was selected using a purposive sampling technique based on the following criteria: (1) respondents were owners or managers of MSME, (2) the business had been operating for at least one year, and (3) the business had implemented information technology in its operational activities. The research data comprised primary data collected through a structured questionnaire using a five-point Likert scale and secondary data obtained from Statistics Indonesia (BPS), the Banggai Regency Office of Cooperatives and MSME, and relevant scientific publications (Ananda & Kurniawati, 2024).

The research instrument was developed based on three variables: human resource competency, information technology utilisation, and MSME performance. Before data collection, the instrument was evaluated for validity using the Pearson Product-Moment correlation and for reliability using Cronbach's alpha. A minimum Cronbach's Alpha value of 0.70 was adopted as the reliability threshold, indicating that the instrument was suitable for use in this study (Malikhah et al., 2023).

Data were analysed using IBM SPSS Statistics. The analytical procedures included descriptive statistics, instrument quality assessment (validity and reliability tests), classical assumption tests (normality, multicollinearity, and heteroscedasticity), and multiple linear regression. Hypothesis testing was conducted using the t-test, F-test, and the coefficient of determination (R^2) at a 5% significance level to examine both the partial and simultaneous effects of the independent variables on MSME performance (Farina & Opti, 2023).

The research instruments and supporting tools included a computer or laptop, IBM SPSS Statistics, Microsoft Excel, and Google Forms for distributing the questionnaire. The research materials consisted of respondents' completed questionnaires and supporting documents related to the condition and development of Usaha Mikro, Kecil, dan Menengah (MSME) in Banggai Regency (Ananda & Kurniawati, 2024).

Findings and Discussion

Descriptive Statistical Analysis

Descriptive statistical analysis was conducted to provide an overview of the characteristics of the research data, including the minimum, maximum, mean, and standard deviation for each research variable. The results indicate that the variables of human resource competency, information technology utilisation, and the performance of Usaha Mikro, Kecil, dan Menengah (MSME) exhibit relatively high mean scores. These findings suggest that the majority of respondents perceived their level of human resource competency, the extent of information technology utilisation, and the overall performance of their businesses as favourable. Furthermore, the standard deviation values were lower than the corresponding mean values, indicating that the data were relatively homogeneous and that respondents' responses exhibited only limited variation.

Validity Test

Table 1. Validity Test Results

Variable	Number of Items	Calculated *r*	Critical *r*	Interpretation
Human Resource Competency	10	0.521-0.842	0.196	Valid
Information Technology Utilization	10	0.487-0.811	0.196	Valid
MSME Performance	10	0.502-0.856	0.196	Valid

Source: IBM SPSS Output (2025), processed by the authors.

The validity test results indicate that all questionnaire items measuring the variables of human resource competency, information technology utilisation, and the performance of **Usaha Mikro, Kecil, dan Menengah (MSME)** have calculated *r* values greater than the critical *r* value (0.196). The calculated *r* values for all indicators range from 0.487 to 0.856, indicating that each questionnaire item satisfies the validity criterion. Therefore, all measurement items are considered valid and are appropriate for measuring the intended constructs in this study.

Reliability Test

Table 2. Reliability Test Results

Variable	Cronbach's Alpha	Interpretation
Human Resource Competency	0.891	Reliable
Information Technology Utilization	0.873	Reliable
MSME Performance	0.902	Reliable

Source: IBM SPSS Output (2025), processed by the authors.

The reliability test results indicate that the Cronbach's Alpha coefficients were 0.891 for the human resource competency variable, 0.873 for information technology utilisation, and 0.902 for MSME performance. All coefficients exceeded the minimum acceptable threshold of 0.70, indicating that the research instrument possesses excellent internal consistency. Therefore, the instrument is considered reliable and capable of producing consistent measurement results when administered under similar conditions.

Normality Test

Table 3. One-Sample Kolmogorov-Smirnov Normality Test Results

Method	Significance	Interpretation
Kolmogorov-Smirnov	0.200	Normally Distributed

Source: IBM SPSS Output (2025), processed by the authors.

The normality test, conducted using the One-Sample Kolmogorov-Smirnov test, yielded a p-value of 0.200. Since this value exceeds the 0.05 significance level, the data are considered normally distributed. Accordingly, the normality assumption was satisfied, indicating that the regression model met one of the essential prerequisites for subsequent statistical analyses.

Multicollinearity Test

Table 4. Multicollinearity Test Results

Variable	Tolerance	VIF	Interpretation
Human Resource Competency	0.713	1.403	No Multicollinearity
Information Technology Utilization	0.713	1.403	No Multicollinearity

Source: IBM SPSS Output (2025), processed by the authors.

The multicollinearity test results indicate that both the human resource competency and information technology utilisation variables have a tolerance of 0.713 and a Variance Inflation Factor (VIF) of 1.403. Tolerance values exceeding 0.10 and VIF values below 10 indicate the absence of multicollinearity among the independent variables. Therefore, each independent variable provides unique information for explaining variation in the performance of **Usaha Mikro, Kecil, dan Menengah (MSME)**, confirming that the regression model is free from multicollinearity.

Heteroscedasticity Test

Table 5. Heteroscedasticity Test Results

Variable	Sig.	Interpretation
Human Resource Competency	0.318	No Heteroscedasticity
Information Technology Utilization	0.442	No Heteroscedasticity

Source: IBM SPSS Output (2025), processed by the authors.

Based on the Glejser test, the significance values were 0.318 for the human resource competency variable and 0.442 for the information technology utilisation variable. Both significance values exceed the 0.05 threshold, indicating that the regression model does not exhibit heteroscedasticity. These findings suggest that the residual variance is constant across observations, confirming that the regression model satisfies the homoscedasticity assumption.

Multiple Linear Regression Analysis

Table 6. Results of Multiple Linear Regression Analysis

Variable	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	*t*	Sig.
(Constant)	5.214	2.146	-	2.429	0.017
Human Resource Competency (X_1)	0.381	0.076	0.412	4.982	0.000
Information Technology Utilization (X_2)	0.427	0.076	0.465	5.617	0.000

Source: IBM SPSS Output (2025), processed by the authors.

Based on the results of the multiple linear regression analysis, the regression equation is expressed as follows:

$$Y = 5{,}214 + 0{,}381X_1 + 0{,}427X_2$$

The regression results can be interpreted as follows:

1. **Constant (5.214).** The constant value of 5.214 indicates that when the variables of human resource competency (X_1) and information technology utilisation (X_2) are assumed to be constant or equal to zero, the baseline performance of **Usaha Mikro, Kecil, dan Menengah (MSME)** is 5.214.
2. **Human Resource Competency (X_1).** The regression coefficient for human resource competency is positive (B = 0.381), indicating that a one-unit increase in human resource competency is associated with a 0.381-unit increase in MSME performance, holding all other variables constant. The significance value of 0.000 ($p < 0.05$) indicates that this positive effect is statistically significant.
3. **Information Technology Utilisation (X_2).** The regression coefficient for information technology utilisation is also positive (B = 0.427). This result indicates that a one-unit increase in information technology utilisation leads to a 0.427-unit increase in MSME performance, holding other variables constant. The p-value of 0.000 ($p < 0.05$) indicates that this variable has a statistically significant positive effect on MSME performance.
4. **Dominant Variable.** Based on the standardised beta coefficients, information technology utilisation (β = 0.465) exerts a stronger influence on MSME performance than human resource competency (β = 0.412). This finding suggests that, within the proposed regression model,

information technology utilisation is the most influential factor in enhancing the performance of **Usaha Mikro, Kecil, dan Menengah (MSME)**

Coefficient of Determination Test Results

Table 7. Results of the Coefficient of Determination Test

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.741	0.549	0.540	2.183

Source: IBM SPSS Output (2025), processed by the authors.

As presented in Table 7, the correlation coefficient (**R**) is 0.741, indicating a strong relationship between the independent variables, namely human resource competency (X_1) and information technology utilisation (X_2), and the dependent variable, **Usaha Mikro, Kecil, dan Menengah (MSME)** performance (Y).

1. **Coefficient of Determination (R^2).** The **R Square (R^2)** value of 0.549 indicates that 54.9% of the variation in MSME performance can be explained by the human resource competency and information technology utilisation variables included in the research model. The remaining 45.1% of the variation is explained by other factors outside the scope of this study, such as entrepreneurial capability, product innovation, market orientation, access to financial capital, marketing strategies, government support, and the business environment.
2. **Adjusted Coefficient of Determination.** The **Adjusted R Square** value of 0.540 indicates that, after accounting for the number of independent variables and sample size, the regression model still explains 54.0% of the variation in MSME performance. This finding demonstrates that the regression model has satisfactory explanatory power in describing the effects of human resource competency and information technology utilisation on the performance of **Usaha Mikro, Kecil, dan Menengah (MSME)** in Banggai Regency.
3. **Overall Model Fit.** Overall, the coefficient of determination results indicate that the proposed research model exhibits good explanatory power (**goodness of fit**). This suggests that human resource competency and information technology utilisation are important determinants of MSME performance. Nevertheless, a substantial proportion of the variation in business performance is attributable to other factors not included in the present research model.

Hypothesis Testing

T-Test (Partial Effect)

The t-test was conducted to examine the partial effect of each independent variable, namely human resource competency (X_1) and information technology utilisation (X_2), on the dependent variable, namely the performance of **Usaha Mikro, Kecil, dan Menengah (MSME)** (Y). Hypothesis testing was performed at the 5% significance level ($\alpha = 0.05$).

The decision criteria were as follows:

- If the significance value (*p*-value) is less than 0.05 or the calculated *t*-value (*t*calculated) is greater than the critical *t*-value (*t*critical), the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_1/H_2) is accepted.
- If the significance value (*p*-value) is greater than 0.05 or the calculated *t*-value (*t*calculated) is less than the critical *t*-value (*t*critical), the null hypothesis (H_0) is accepted, and the alternative hypothesis (H_1/H_2) is rejected.

Table 8. Results of the t-Test (Partial Effect)

Variable	*t*calculated	*t*critical	Sig.	Decision
Human Resource Competency (X_1)	4.982	1.984	0.000	H_1 Accepted
Information Technology Utilization (X_2)	5.617	1.984	0.000	H_2 Accepted

Source: IBM SPSS Output (2025), processed by the authors.

1. **Human Resource Competency (X_1).** The results indicate that the human resource competency variable has a calculated *t*-value of 4.982, which exceeds the critical *t*-value of 1.984, with a significance value of 0.000 ($p < 0.05$). Therefore, **H_1 is accepted**, indicating that human resource competency has a positive and statistically significant effect on the performance of **Usaha Mikro, Kecil, dan Menengah (MSME)**. This finding suggests that higher levels of competency among MSME owners and managers enhance their ability to manage business operations effectively, make sound managerial decisions, and improve business productivity.
2. **Information Technology Utilisation (X_2).** The information technology utilisation variable yielded a calculated *t*-value of 5.617, which exceeds the critical *t*-value of 1.984, with a significance level of 0.000 ($p < 0.05$). Accordingly, **H_2 is accepted**, indicating that information technology utilisation has a positive and statistically significant effect on the performance of **Usaha Mikro, Kecil, dan Menengah (MSME).** Increased use of information technology in business operations, digital marketing, and information management enhances operational effectiveness and efficiency, thereby improving MSME performance.

F-Test (Simultaneous Effect)

The F-test was conducted to determine whether human resource competency and information technology utilisation simultaneously affect the performance of **Usaha Mikro, Kecil, dan Menengah (MSME)**.

The decision criteria were as follows:

- If the calculated F-value (*F* calculated) is greater than the critical F-value (*F* critical) or the significance value (*p*-value) is less than 0.05, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_3) is accepted.
- If the calculated F-value (*F*calculated) is less than the critical F-value (*F*critical) or the significance value (*p*-value) is greater than 0.05, the null hypothesis (H_0) is accepted, and the alternative hypothesis (H_3) is rejected.

Table 9. F-Test Results

F calculated	*F* critical	Sig.	Decision
58.742	3.09	0.000	H_3 Accepted

Source: IBM SPSS Output (2025), processed by the authors.

1. The F-test results indicate that the calculated F-value is 58.742, substantially higher than the critical F-value of 3.09, with a p-value of 0.000 ($p < 0.05$). Therefore, **H_3 is accepted**, indicating that human resource competency and information technology utilisation have a positive and statistically significant effect on the performance of **Usaha Mikro, Kecil, dan Menengah (MSME) simultaneously**.
2. These findings suggest that improvements in MSME performance are not driven by a single factor but rather by the synergistic interaction between high-quality human resources and the effective utilisation of information technology. MSME owners and managers who possess strong competencies and are capable of leveraging information technology effectively are

more likely to enhance business productivity, expand market share, improve service quality, and sustain competitive advantage. Therefore, initiatives aimed at strengthening human resource competencies should be accompanied by digital transformation strategies to maximise their impact on improving the performance of **Usaha Mikro, Kecil, dan Menengah (MSME)** in Banggai Regency.

Conclusion

This study concludes that human resource competencies and information technology utilization have positive and statistically significant effects on MSME performance in Banggai Regency, both individually and simultaneously. Competencies in knowledge, skills, and business management improve organizational effectiveness, while technology utilization in digital marketing, transaction recording, customer communication, and information management enhances operational efficiency and productivity. Together, these variables explain 54.9% of the variance in MSME performance, with the remaining 45.1% attributable to factors outside the research model.

Accordingly, improving MSME performance requires an integrated strategy that combines human resource development with effective technology adoption. Local governments, MSME support institutions, and business practitioners should strengthen competency-based training, business mentoring, and digital transformation initiatives to enhance MSME competitiveness and long-term sustainability.

Statement on the Use of Generative Artificial Intelligence (AI)

During the preparation of this manuscript, the authors made limited use of generative Artificial Intelligence (AI) technology as a supporting tool for the scientific writing process. Specifically, Grammarly was utilised to improve the manuscript's grammar, language quality, readability, and overall clarity. The AI tool was not used to generate research ideas, develop the research methodology, collect or analyse data, interpret the research findings, or formulate the scientific conclusions. All stages of the research, including study design, implementation, data analysis, interpretation of results, and the preparation and validation of the research findings, were carried out entirely by the authors. Accordingly, the authors assume full responsibility for the accuracy, originality, integrity, and scientific content presented in this manuscript.

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