

Gen Z Workforce Competencies and SME Competitiveness: The Moderating Role of Digital Adaptability

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Abstract. Generation Z is now beginning to take on roles as entrepreneurs and owners of Small and medium-sized businesses (SMEs) in Jember Regency, bringing unique competencies that have the potential to boost their businesses' competitiveness. This study aims to analyze the impact of Generation Z's competencies as SME owners on business competitiveness within the Jember SME ecosystem, as well as to examine the moderating role of digital adaptability in this relationship. The competitiveness of SMEs is measured using indicators of productivity, operational efficiency, and the ability to adapt to market changes. The study employed a quantitative approach using a survey method, targeting Gen Z SME owners in Jember, and was analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS). The results indicate that the competencies of Generation Z SME owners have a positive and significant impact on business competitiveness. Furthermore, digital adaptability has been shown to strengthen these relationships, suggesting that Generation Z's competencies can be leveraged more effectively within a business ecosystem supported by adequate digital infrastructure and culture in a developing regional context like Jember. These findings have practical implications for local policymakers and SME actors in Jember for the development of a digital-based SME ecosystem aimed at fostering sustainable business growth.

Keywords: Generation Z Competencies, SME Competitiveness, Digital Adaptability, SME Owners, Jember.

INTRODUCTION

SMEs play a central role in the global and national economies. According to the 2023 Indonesian Economic Census, there are 66 million SMEs, which employ 97% of the workforce and contribute 61% to GDP (Arif & Herawan, 2025). Although strategically located, SMEs in Jember Regency still face competitiveness challenges in the highly competitive digital market. Various studies indicate that the competitiveness of SMEs is now determined more by the human resource capabilities of their owners than by physical capital (Gunartin *et al.*, 2023). Sustainable competitive advantage depends heavily on a company's unique combination of internal resources and competencies (Soomro *et al.*, 2024), with the owner's entrepreneurial competencies being the primary determinant of the company's ability to innovate and respond to market dynamics.

A significant current trend is the surge in Generation Z (born 1997–2012) participation as owners of small and medium-sized enterprises (SMEs). LinkedIn data shows that the percentage of business founders from Gen Z increased from 14.5% in 2023 to 18% in 2024 (NBC News, 2025). This generation brings characteristics, mindsets, and digital skills that mark a new chapter in the business world (Lopes *et al.*, 2024). In Jember Regency, the rapid growth of the creative sector reflects the profile of Gen Z, who possess strong technological skills and creativity in integrating cutting-edge technology into new businesses (Setiyawan & Ulfatun, 2023). They are not only tech-savvy but also leverage technology to transform business operations (Cirstea & Anagnoste, 2023). Digital

marketing skills have also become essential for them, as technology has become an integral part of daily life (Tarigan *et al.*, 2025)

The competency profile of Gen Z business owners is highly relevant to competitiveness, as they demonstrate high adaptability and resilience in the face of global change (Cirstea & Anagnoste, 2023). Their technological literacy, creative problem-solving skills, and collaborative agility constitute human capital with the potential to become a competitive advantage. Research confirms that entrepreneurial skills and networks have a positive impact on entrepreneurial competence, which in turn enhances business performance (Soomro *et al.*, 2024). Innovation, adaptability, and problem-solving skills are key to sustainable growth (Faruk *et al.*, 2025). Gunartin *et al.* (2023) also emphasize the importance of mastering entrepreneurial soft skills for long-term competitiveness.

However, competencies alone are not enough; their impact depends on the digital context. Digitalization significantly influences the financial performance and revitalization of SMEs (Anatan & Nur, 2023). Although digital transformation in Indonesia is constrained by limited resources, its benefits are evident in terms of efficiency and profitability (Purnomo *et al.*, 2024). In this context, digital adaptability emerges as a critical moderator that amplifies the impact of strategy on sustainable performance (Nuryanto *et al.*, 2024). Innovation capabilities and digital IT play a role in strengthening the link between business strategy and performance (Probohudono *et al.*, 2025). Successful transformation requires flexibility and adaptive capabilities (Kahveci, 2025), which align with the core competencies of Gen Z leaders.

Although the topic is highly relevant, research that integrates Gen Z competencies and digital adaptability into a single model remains limited, particularly in Jember Regency. The majority of previous studies have examined these variables separately (Gunartin *et al.*, 2023; Nuryanto *et al.*, 2024; Purnomo *et al.*, 2024). Therefore, this study aims to examine the effect of Gen Z owners' competencies on the competitiveness of SMEs, moderated by digital adaptability, using PLS-SEM. The findings are expected to provide theoretical contributions and practical insights for policymakers in Jember to optimize the potential of young entrepreneurs.

LITERATURE REVIEW

1. Generation Z Workforce Competencies

Those born between 1997 and 2012, or Generation Z, have competencies that differ significantly from those of earlier generations in the modern workplace. This generation was raised in a digital world where technology permeates every aspect of their lives. The primary ability that distinguishes Generation Z from other generations of workers across a variety of professions is digital literacy. These skills include understanding technology-based platforms, adapting to digital technologies, and using digital resources to solve organizational problems (Imjai et al., 2025). In addition to being digitally literate, Gen Z employees exhibit a strong work ethic by encouraging non-routine behavior, multitasking, and high levels of contact at work. People of Generation Z can be a benefit to companies that offer suitable development opportunities, as they desire clear, defined career paths. The aforementioned traits come together to generate a distinct competency profile that businesses may use to foster internal change and innovation.

Generation Z's leadership competencies are developing within a business environment characterized by high levels of uncertainty, complexity, and ambiguity. Research indicates that Generation Z individuals possess sufficient leadership readiness to navigate volatile, uncertain, complex, and ambiguous (VUCA) business conditions (Deepika & Chitranshi, 2021). This generation also demonstrates essential teamwork competencies and ethical decision-making skills in driving organizational change and innovation. Organizational learning culture has been shown to play a significant role in facilitating Generation Z's acquisition of new skills that dynamically align with industry demands. High learning agility enables Generation Z workers to adapt to rapid changes in organizational strategies and structures. Pandita et al. (2023) further emphasize that Generation Z employees contribute to the sustainability of organizational learning through their openness to feedback and digital experimentation. These leadership and collaborative competencies position the Generation Z workforce as a strategic group capable of accelerating an organization's adaptive capabilities amid contemporary industry dynamics.

2. SMEs' Competitiveness

Small and medium-sized businesses (SMEs) are under more intense pressure to compete as the global economy's digital transformation picks up speed. According to research on industrial zones, rivalry between businesses in the same ecosystem speeds up

the industrial revolution in developing nations (Ngwu et al., 2025). The advantages of flexibility and creativity that SMEs naturally possess are essential for sustaining competitiveness in an ever-evolving market. However, one of the major challenges SMEs face in updating their human resource capabilities is attracting and retaining Generation Z talent. More flexible hiring practices are needed to close the expectation gap caused by young workers' worries about job security, pay scales, and career routes in SMEs. According to Abdull Rahman et al. (2025), strategies that emphasize digitizing the hiring process, flexible work schedules, and assistance for employees' mental health have been successful in making SMEs more appealing to Generation Z workers. These circumstances suggest that SMEs must change their HRM practices to improve their competitiveness in an increasingly competitive labor market.

In an ever-changing industrial context, SMEs' adoption of digital transformation is a crucial driver for bolstering their competitive position. SMEs seeking to develop successfully within the Industry 4.0 framework must have a thorough understanding of Generation Z's traits. Increased organizational adaptability is enabled by SME investment in digital infrastructure and the cultivation of a digital mentality at all organizational levels. A synergy that improves operational efficiency and innovation capacity results from the alignment of SMEs' technology capabilities with Generation Z's expectations for a digital work environment (Imjai et al., 2025).

3. Digital Adaptability

The ability of people and organizations to adapt to, integrate, and maximize the use of digital technology in a dynamic operational environment is known as "digital adaptability." According to Imjai et al. (2025), Generation Z business students in Thailand can improve their employability in the labor market by strengthening their digital adaptation skills in a well-designed digital learning environment. In an organizational setting, digital adaptability acts as a link between the operational requirements of evolving SMEs and the innate skills of Generation Z workers. The continuous learning process of Generation Z has been shown to be supported by e-learning platforms and digital knowledge management systems, which, in turn, improve SMEs' organizational agility in responding to changes in the business environment (Pandita et al., 2023). The workforce's high level of digital adaptability also contributes to the quicker internalization

of an innovation culture, which is necessary for SMEs to remain competitive over the long run.

RESEARCH METHOD

a. Types and Sources of Data

The data used in this study consists of primary data obtained through the distribution of questionnaires to respondents. The respondents in this study are Generation Z SMEs entrepreneurs who own and operate businesses in the Jember region.

Based on the data collected, the number of respondents in this study was 52, predominantly individuals aged 18–24 who operate various types of businesses, such as food and beverage, fashion, creative services, and other sectors, and who have utilized digital technology in their business operations.

b. Data Collection Methods

The data collection method used in this study involved an online questionnaire. The questionnaire consists of two main sections: the first section contains respondent profiles, including age, gender, business type, length of business operation, number of employees, and business turnover; and the second section contains statements designed to measure the research variables, namely Generation Z workforce competencies and SMEs competitiveness, and digital adaptability.

The measurement scale used in this study is a 5-point Likert scale, with the following categories: 5 (Strongly Agree), 4 (Agree), 3 (Neutral), 2 (Disagree), and 1 (Strongly Disagree). This scale was used to provide a more representative range of responses reflecting the respondents' perceptions.

c. Research Model Design

This study employs a research model comprising independent, dependent, and moderating variables. The independent variable is the workforce competencies of Generation Z, which reflect their ability to use digital technology, creativity, innovation, decision-making, and collaboration skills in running a business. The dependent variable is the competitiveness of SMEs, as measured by operational efficiency, improved business performance, the ability to meet

customer demand, and business sustainability. The moderating variable is digital adaptability, which refers to the ability of business owners to adopt digital technologies, utilize digital platforms, and respond quickly to changes in digital trends.

The research hypotheses are formulated as follows:

H1: The competencies of Generation Z workers influence the competitiveness of SMEs.

H2: Digital adaptability moderates the effect of Generation Z workers' competencies on the competitiveness of SMEs.

d. Data Analysis Method (SEM-PLS)

This study employs Structural Equation Modeling (SEM) with the Partial Least Squares (PLS) approach. This method is used to analyze the relationships among latent variables and to test the research hypotheses. SEM-PLS was selected because it can handle data with relatively small sample sizes, does not require the assumption of a normal distribution, and is suitable for research models involving moderator variables.

The analysis was conducted in two stages. The first stage involved the outer model, which was used to test the validity and reliability of the indicators through indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. The second stage involved the inner model, which was used to test the relationships among variables through the coefficient of determination (R^2), effect size (f^2), and hypothesis testing based on path coefficients and p-values.

e. Research Variables and Indicators

The variables in this study consist of three main constructs: Generation Z workforce competencies as the independent variable, SME competitiveness as the dependent variable, and digital adaptability as the moderating variable. The competencies of Generation Z workers are measured through indicators such as their ability to use digital technology, creativity and innovation in business development, teamwork skills, and the ability to make sound decisions in dynamic situations.

The competitiveness of SMEs is measured by their ability to operate efficiently, improve business performance, consistently meet customer demand, and adapt to market changes. Meanwhile, digital adaptability is measured by the use of digital platforms, the adoption of new technologies, the use of digital payment systems, and the ability to respond quickly to changing digital trends without disrupting business operations.

RESULT AND DISCUSSION

a. Outer

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
X	0.760	0.766	0.838	0.509
Y	0.817	0.826	0.872	0.577
Z	0.900	0.910	0.919	0.561

Model (Rho & Khoc & AVE)

To assess the psychometric qualities of each construct, the measurement model was evaluated using convergent validity, internal consistency reliability, and composite reliability. The indicators within each construct show sufficient internal consistency, as indicated by the Cronbach's alpha values for the Generation Z Workforce Competence construct ($X = 0.760$), SME Competitiveness ($Y = 0.817$), and Digital Adaptation ($Z = 0.900$) exceeding the minimum threshold of 0.70. The measurement model's reliability is reinforced by the rho_a coefficient, which yields values of 0.766, 0.826, and 0.910 for X, Y, and Z, respectively, exceeding the 0.70 threshold and offering a more accurate estimate of reliability than Cronbach's alpha. The three constructs recorded values of 0.838, 0.872, and 0.919 for composite strength (rho_c), which is thought to be a more reliable measure for assessing construct strength in variance-based SEM. These values are all significantly higher than the suggested 0.70 threshold for confirmatory purposes. Average Variance Extracted (AVE), which quantifies the percentage of variance captured by a construct in relation to measurement error,

was used to assess convergent validity. The AVE values obtained for X, Y, and Z were 0.509, 0.577, and 0.561, respectively, exceeding the 0.50 criterion set by Hair et al. (2022), indicating that each construct explains more than half of the variance in the associated indicators. All of these findings support the external model's compliance with the psychometric requirements needed for structural path analysis in the PLS-SEM framework.

b. Inner Model (R Square)

	R-square	R-square adjusted
Y	0.697	0.685
Z	0.508	0.498

The structural model's predictive ability in explaining variance within the endogenous constructs was assessed using the coefficient of determination (R^2). According to the criterion proposed by Hair et al. (2022), the R^2 for SME Competitiveness (Y) was 0.697, indicating that the exogenous and mediating factors in the model account for about 69.7% of its variance. By penalizing the addition of more predictors, the adjusted R^2 for Y (0.685) accounts for model complexity. Its closeness to the unadjusted value indicates that the number of predictors has not artificially increased the model's explanatory power. With an R^2 of 0.508 and an adjusted R^2 of 0.498 for Digital Adaptability (Z), the model explains around 50.8% of the variation in this construct, which is classified as moderate-to-substantial and suggests meaningful predictive value (Ringle et al., 2023). Further evidence that the structural model preserves parsimony without compromising explanatory depth comes from the consistency between unadjusted and modified R^2 values across both constructs. When combined, these results demonstrate that the inner model has sufficient predictive accuracy to proceed with hypothesis testing within the PLS-SEM framework.

c. Inner Model (F Square)

	X	Y	Z
X		0.453	1.032
Y			
Z		0.225	

The effect size (f^2) results show that Generation Z Workforce Competencies (X) have a strong impact on SME Competitiveness (Y) with a value of 0.453, indicating that competencies significantly contribute to improving business competitiveness. In addition, the effect of X on Digital Adaptability (Z) is 1.032, which reflects a very strong influence, meaning that Generation Z competencies play a dominant role in shaping digital adaptability.

Meanwhile, the effect of Digital Adaptability (Z) on SME Competitiveness (Y) is 0.225, indicating a moderate contribution. Overall, these results confirm that competencies not only directly influence competitiveness but also indirectly enhance it through digital adaptability.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ((O/STDEV))	P values
X -> Y	0.528	0.528	0.126	4.193	0.000
X -> Z	0.713	0.719	0.078	9.099	0.000
Z -> Y	0.372	0.377	0.129	2.882	0.004

d. Direct Effect Hipotesis

The direct effect results indicate that Generation Z Workforce Competencies (X) have a positive and significant effect on SME Competitiveness (Y), with a coefficient of 0.528, t-statistic of 4.193, and p-value of 0.000. This means that higher levels of competencies among Generation Z SME owners are associated with higher levels of business competitiveness. The strength and

significance of this relationship confirm that competencies are an important factor in improving SME performance.

Furthermore, Generation Z Workforce Competencies (X) also have a positive and highly significant effect on Digital Adaptability (Z), with a coefficient of 0.713, t-statistic of 9.099, and p-value of 0.000, indicating a strong relationship between competencies and the ability to adapt to digital changes. In addition, Digital Adaptability (Z) has a positive and significant effect on SME Competitiveness (Y), with a coefficient of 0.372, t-statistic of 2.882, and p-value of 0.004, showing that businesses with higher adaptability tend to achieve better competitiveness outcomes.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
X -> Y	0.265	0.268	0.090	2.954	0.003

e. Indirect Effect Hipotesis

The indirect effect analysis shows that the pathway Generation Z Workforce Competencies (X) enhance Digital Adaptability (Z), which subsequently impacts SMEs Competitiveness (Y) has a coefficient of 0.265, with a t-statistic of 2.954 and a p-value of 0.003, indicating that the indirect effect is positive and significant. This result demonstrates that digital adaptability plays an important role in strengthening the relationship between competencies and competitiveness.

This means that competencies alone already contribute to competitiveness, but their impact becomes stronger when supported by higher levels of digital adaptability. In other words, the ability to adapt to digital environments enhances how effectively competencies can be translated into improved business performance.

f. Discussion (Hipotesis)

The findings of this study support both proposed hypotheses.

1. H1 stated that Generation Z Workforce Competencies influence SME Competitiveness, and the results confirm a positive and significant relationship, with a path coefficient of 0.528, t-statistic of 4.193, and p-value of 0.000. This indicates that higher levels of competencies among Generation Z SME owners are associated with increased competitiveness. The relatively strong coefficient suggests that competencies play a substantial role in improving business performance and the ability to respond to market demands.
2. H2 proposed that Digital Adaptability moderates the relationship between Generation Z Workforce Competencies and SME Competitiveness. The results show that Digital Adaptability has a significant direct effect on SME Competitiveness ($\beta = 0.372$; $t = 2.882$; $p = 0.004$) and also contributes through a significant indirect effect in the relationship between competencies and competitiveness ($\beta = 0.265$; $t = 2.954$; $p = 0.003$). These findings indicate that Digital Adaptability strengthens the influence of Generation Z competencies on SME Competitiveness, meaning that competencies become more effective in improving competitiveness when supported by higher levels of digital adaptability.

Overall, the results demonstrate that both hypotheses are supported, where SME competitiveness is influenced directly by Generation Z competencies and further reinforced by Digital Adaptability, highlighting its role in strengthening the relationship within the proposed model.

CONCLUSIONS

This study concludes that the competencies of Generation Z SME owners play a crucial role in determining business competitiveness in the digital economy era, particularly within the SME ecosystem in Jember Regency. Based on the results of data analysis using the SEM-PLS approach, this study yielded several key findings:

1. The Significant Impact of Gen Z Competencies: The unique competencies possessed by Generation Z such as high technological literacy, creativity in integrating cutting-edge technology, and agility in problem-solving have been shown to have a positive and significant impact on the competitiveness of SMEs.

This confirms that their characteristics as digital natives and their entrepreneurial skill sets constitute human capital capable of enhancing business productivity and operational efficiency.

2. **The Moderating Role of Digital Adaptability:** This study demonstrates that digital adaptability serves as a moderating variable that strengthens the relationship between Gen Z owners' competencies and business competitiveness. This means that the competitive advantage derived from owners' competencies will be significantly more effective when supported by the organization's capacity to adapt to technological changes and the effective utilization of digital infrastructure.
3. **Implications for Jember's SME Ecosystem:** These findings underscore the importance of developing a digital ecosystem at the local level. For young entrepreneurs in Jember, success depends not only on individual skills but also on the ability to remain adaptable in the face of massive digital transformation.

Theoretically, this study reinforces the competency-based perspective in the literature on SME competitiveness by incorporating a generational dimension and digital moderation. Practically, the findings of this study provide recommendations for local governments and stakeholders in Jember Regency to continue supporting programs aimed at strengthening digital literacy and providing technological infrastructure in order to maximize the potential of young entrepreneurs in driving sustainable regional economic growth.

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