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Analysis of the Influence of Work Ethics, Problem-Solving Skills, Emotional Intelligence, and Resilience on the Competitiveness of Generation Z Workers

Cucu Eva Lestari[1], Yannik Ariyati[2], Denny Amari Ramadhan[3], Yusep Rasta Dinata[4]
[1]Universitas Riau Kepulauan, Batam, Indonesia, cucu.eva.l@gmail.com
[2]Universitas Riau Kepulauan, Batam, Indonesia, yannik_ariyati@yahoo.co.id
[3]Universitas Riau Kepulauan, Batam, Indonesia, Denny@feb.unrika.ac.id
[4]Universitas Riau Kepulauan, Batam, Indonesia, yuseprastadinata@gmail.com

Corresponding Author: cucu.eva.l@gmail.com[1]

Abstract: This study analyzes the influence of work ethics, problem-solving skills, emotional intelligence, and resilience on the competitiveness of Generation Z workers at PT. Ennovi Integrated Engineering Services Batam. The method used in this study is a quantitative approach with a descriptive-causal design. The research sample consisted of 104 respondents who were Generation Z employees with more than one year of service. Data collection was conducted through a survey using a Likert scale questionnaire, and data analysis was performed using multiple linear regression. The results of the study indicate that the four independent variables have a significant simultaneous influence on competitiveness, with a determination coefficient (R^2) of 64.8%. Partially, problem-solving skills contributed the most, followed by resilience, work ethic, and emotional intelligence. These findings emphasize the importance of strengthening non-technical aspects in building the competitiveness of young workers. This study also contributes theoretically to the development of literature on individual competitiveness, as well as practical implications for company management in designing human resource development strategies that are more adaptive to the needs of Generation Z workers.

Keyword: Competitiveness, Work Ethic, Problem-Solving Skills, Emotional Intelligence, Resilience.

INTRODUCTION

Rapid industrial progress and digital transformation have significantly changed employment dynamics. Amid globalization and the Fourth Industrial Revolution, companies require human resources that are not only technically superior but also adaptive, ethical, and collaborative. Amid the demands of globalization and the era of the Fourth Industrial Revolution, companies are required to have human resources that are not only technically superior, but also adaptive, ethical, and capable of working synergistically in a dynamic work environment. Generation Z, as the new workforce born in the digital age, is expected to meet these challenges. However, on-the-ground realities reveal a gap between workplace

expectations and the readiness of young people. Various reports, including those published by CNBC Indonesia (2025), indicates an increase in the number of young workers being laid off due to low levels of professionalism, weak work ethic, and a lack of interpersonal and emotional skills in dealing with pressure in the workplace. This phenomenon signals that worker competitiveness is not only determined by technical competence, but also by character and soft skills (problem solving skills) possessed by individuals (Agazu & Kero, 2024).

In the context of Generation Z employment, one of the problems faced is the lack of optimal individual competitiveness in facing the increasingly complex and competitive demands of the world of work. Factors such as low adaptability, weak communication skills, and a lack of emotional maturity, problem-solving abilities, and resilience in the face of pressure pose significant challenges for companies in developing and retaining a productive and integrity-driven young workforce (Oduro & Haylemariam, 2025).

Generation Z is a demographic group that includes individuals born between 1997 and 2012, and is now increasingly dominating the workforce in Indonesia (Ali et al., 2024). Based on 2020 data, Gen Z accounts for 27.94% of Indonesia's total population, equivalent to approximately 75.49 million people (source: Antara News, Bisnis.com, Katadata). As time goes on, their contribution to the workforce is becoming increasingly important. In 2022, the total labor force in Indonesia reached 143.72 million people, with 27.94% of them belonging to Generation Z (source: Bisnis.com). This trend shows a steady increase, and it is estimated that by 2024, Indonesia's labor force will reach 149.3 million people, with around 39.65 million of them being Gen Z within the productive age range of 15–26 years (sources: Tempo, Pratama Institute, Antara News).

This data highlights the importance of understanding and improving the competitiveness of Generation Z workers through various key factors, including work ethic, problem-solving skills, emotional intelligence, and resilience (Carvalho & Albuquerque, 2025). This is particularly relevant for young Generation Z workers in the manufacturing industry, especially in the Batam region. The Head of the Batam Manpower Office revealed that the high unemployment rate among Gen Z is largely due to a skills gap and a lack of work readiness, particularly in terms of problem-solving skills and professionalism, which are highly sought after in the manufacturing sector (Zeng et al., 2025).

The impact of this lack of readiness is evident in the high turnover and dismissal rates among young workers, which disrupts labor stability and reduces the productivity of the manufacturing industry in Batam. Empirical evidence also indicates that Gen Z faces social pressures and a lack of information about career opportunities in manufacturing, resulting in low motivation and readiness to pursue a career in this sector. This situation calls for strategic interventions, including the development of problem-solving skills, the creation of an inclusive work culture, and comprehensive training programs to prepare Gen Z to enhance their professionalism and competitiveness in Batam's manufacturing job market (Ali et al., 2024).

In relation to the issues outlined above, the author conducted an observational study at a manufacturing company in Batam, PT. Ennovi Integrated Engineering Services, focusing on employment aspects, particularly those related to Generation Z employees. PT. Ennovi Integrated Engineering Services Batam has high expectations for the performance of young workers, which is measured by their actual abilities in the field. Emotional intelligence and resilience play a crucial role in helping young workers develop resilience through emotional regulation and preparedness in handling stress, as demonstrated through psycho-methodological approaches in (Hochrainer-Stigler et al., 2025). A study of college students also found a significant correlation between emotional intelligence and problem-solving ability, highlighting the relationship between emotional aspects and cognitive abilities, as revealed by Charis Asimopoulos et al. (2020). These findings indicate that in order to create competitive young workers, a deeper understanding of influential personal factors such as work ethic, problem-solving skills, emotional intelligence, and individual resilience is necessary.

Unfortunately, these factors have not yet been fully addressed in strategic human resource development (Notebaert et al., 2025).

Recent research shows that work ethics have a positive and significant influence on employee performance and competitiveness within organizations. Prihartini and Sudirno (2023) found that work ethics, work experience, and work culture simultaneously contribute significantly to improving employee performance at PT Berau Agrotech Cihaur, which directly impacts the company's competitiveness. This aligns with the findings of Hantrisna (2023), who revealed that work ethic is the primary factor influencing employee performance at PT Inlingua International Indonesia, where improvements in work ethic contribute to increased productivity and competitiveness of the workforce. Additionally, research Suryani et al. (2023) also emphasizes that work ethic has a significant impact on employee performance, with work motivation as an intervening variable, which ultimately supports individual competitiveness in the face of global competition. Thus, strengthening work ethics is a crucial aspect in building worker competitiveness in the modern industrial era (Elliethey et al., 2024).

Research by Sahar (2025) highlights soft skills in general, such as communication and teamwork, but has not yet examined these four variables in depth and integrated them into a single model that explains their contribution to workforce competitiveness. Expanding the research focus to include aspects of resilience and emotional intelligence, which are often overlooked in the context of soft skills development in the industrial sector, is crucial, as these aspects are vital for coping with pressure and change in the workplace (Zhang et al., 2025).

Kopp & Jekauc (2025) examining emotional intelligence as an important moderator variable in a model that combines problem-solving skills, self-efficacy, and personality to predict graduate employability. This study did not include work ethics and problem-solving skills simultaneously in the model. Gey et al. (2025) show that resilience acts as a mediator between emotional intelligence and perceived stress among young adults in Malaysia. “Emotional intelligence significantly contributes to work engagement among employees, where higher emotional intelligence leads to higher levels of work engagement. Emotional intelligence helps employees manage their emotions, enabling them to better handle conflicts and pressures at work.”(Cheraghi et al., 2025). Most studies focus on work engagement as an outcome, rather than directly on workforce competitiveness, so research is needed that links these soft skills to competitiveness as the main variable. The job demands-resources model used emphasizes stress and work motivation factors, but does not comprehensively integrate the variables of work ethics and problem-solving skills (Y. Chen et al., 2024).

Although a number of previous studies have discussed the role of work ethics, problem-solving skills, and emotional intelligence on work performance or success, most of these studies are still partial and do not integrate other variables that play an important role, such as work ethics and resilience. In addition, there is still limited research that specifically highlights the competitiveness of the workforce from the perspective of Generation Z, particularly in the context of manufacturing companies in Indonesia.

Based on this background, this study seeks to identify the extent to which each of these personal variables influences the ability of young workers to adapt, innovate, and contribute productively in the manufacturing industry work environment. Through a quantitative approach, this study is expected to provide a valid empirical picture of the main factors shaping the competitiveness of Generation Z workers, particularly at PT. Ennovi Integrated Engineering Services Batam, which represents manufacturing companies in the Batam region of the Riau Islands.

METHOD

This study employed a quantitative approach with an explanatory research design. Explanatory research aims to explain the cause-and-effect relationship between variables using quantitative data obtained through standardized instruments, so that the results can be

generalized objectively (Sugiyono, 2020). This design was used to test the influence of four independent variables, namely work ethics, problem-solving skills, emotional intelligence, and resilience, on the dependent variable, namely the competitiveness of Generation Z workers. In this study, there is one dependent variable and four independent variables, each of which is operationalized into relevant measurable indicators. All indicators are measured using a five-point Likert scale, where 1 indicates "Strongly Disagree" and 5 indicates "Strongly Agree". The description of variable operationalization is compiled based on relevant theories and previous studies, as described in Table 1 below:

Table 1. Operationalization of Research Variables

Variable	Dimensions/Indicator	Scale	Source
Work Ethics	1. Work Discipline 2. Discipline towards work rules 3. Responsibility towards tasks 4. Integrity – honesty & work morality	Likert 1-5	Budiarjo et.al. (2025)
Problem Solving Skills	1. Problem identification 2. Solution generation 3. Decision making 4. Independent problem solving	Likert 1-5	Putri, R. A.,& Santoso, B. (2022)
Emotional Intelligence	1. Self-awareness 2. Self-regulation 3. Empathy 4. Social skills	Likert 1-5	Korn Ferry Institute (2025)
Resilience	1. Emotional regulation under pressure 2. Bounce back from failure 3. Optimism 4. Adaptability	Likert 1-5	(Tang et.al., 2024; Canniels et al., 2022)
Competitiveness	1. Technological adaptability 2. Continuous self-development 3. Value creation/contribution 4. Self-confidence in employability	Likert 1-5	(Rai, 2021)

The population in this study was all employees working at PT. Ennovi Integrated Engineering Services Batam, totaling 1,040 employees, a manufacturing company located in Batam, Riau Islands. The sample in this study consists of employees who fall into the Generation Z category (born between 1997 and 2012) with a minimum of one year of service. The sample was taken using the simple random sampling technique with a sample size of approximately 10% (104 employees) of the population.

The research procedure was carried out in several stages, starting from the preparation of instruments in the form of questionnaires, validity and reliability tests, field surveys, data collection, to data analysis. The instrument used in this study was a closed-ended questionnaire with a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), designed to measure respondents' perceptions of each research variable. The collected data were then analyzed using multiple linear regression analysis with the assistance of statistical software, namely SPSS. This analysis aimed to test the simultaneous and partial effects of each independent variable on the dependent variable. Before performing the regression analysis, classical assumption tests were first conducted, including normality, multicollinearity, and heteroscedasticity tests, to ensure that the data met the requirements for parametric data. The results of the analysis were then used to draw conclusions that supported or rejected the hypothesis by looking at the results of the coefficient of determination test, F test, and t test (plus interpretation). The conceptual framework in this study can be described as follows:

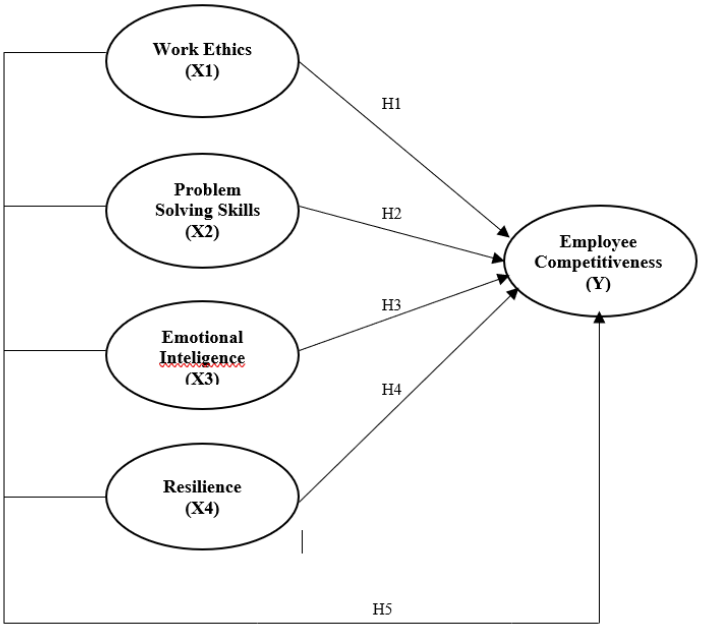

Figure 1. framework

To test the relationship between these variables, the hypotheses in this study are formulated as follows:

H1: Work ethics have a positive and significant effect on the competitiveness of Generation Z workers.

H2: Problem-solving skills have a positive and significant effect on the competitiveness of Generation Z workers.

H3: Emotional intelligence has a positive and significant effect on the competitiveness of Generation Z workers.

H4: Resilience has a positive and significant effect on the competitiveness of Generation Z workers.

H5: Work ethics, problem-solving skills, emotional intelligence, and resilience simultaneously have a positive and significant effect on the competitiveness of Generation Z workers.

RESULTS AND DISCUSSION

Results

Before conducting regression analysis, validity and reliability tests were performed on the questionnaire instruments used in this study. Validity testing was performed using Pearson's correlation technique (product moment), while reliability testing used Cronbach's Alpha values.

Table 1. Validity Test

WE	WE Value	PS	PS Value	EI	EI Value	R	R Value	DS	DS Value	Ket
WE1	0.872	PS1	0.596	EI1	0.889	R1	0.827	DS1	0.734	Valid
WE2	0.860	PS2	0.588	EI2	0.910	R2	0.836	DS2	0.768	Valid
WE3	0.857	PS3	0.673	EI3	0.842	R3	0.830	DS3	0.827	Valid
WE4	0.845	PS4	0.421	EI4	0.840	R4	0.751	DS4	0.798	Valid

Based on the results of data analysis, it can be said that all variables have a value greater than 0.1622, which means they are valid. Therefore, all data in this study can be tested further.

Reliability testing was carried out by looking at the Cronbach's Alpha value, which reached 0.70 or more, so the research instrument can be said to be reliable, meaning that the measuring instrument shows consistency in measuring the variables in question.

Table 2. Reliability Test

Variable	Number of Items	Cronbach's Alpha	Description
Work Ethics (WE)	4	0.877	Reliable
Problem Solving Skills (SS)	4	0.837	Reliable
Emotional Intelligence (EI)	4	0.855	Reliable
Resilience (RS)	4	0.773	Reliable
Competitiveness (DS)	4	0.875	Reliable

With all Cronbach's Alpha values > 0.7, all instruments used in this study are declared reliable and consistent in measuring the intended variables.

Furthermore, a normality test was used to examine whether the variables studied had a normal distribution or not. This is very important because many parametric statistical methods, such as t-tests and ANOVA, require normally distributed data in order for hypothesis testing to be valid.

Table 3. Normality Test

One-Sample Kolmogorov-Smirnov Test			
Statistics		Variables	
		Unstandardized Residual	
N			104
Normal Parameters	Mean		0
	Std. Deviation		2,430901
Most Extreme Differences	Absolute		0,107
	Positive		0,081
	Negative		0,107
Test Statistic			0,107
Asymp. Sig. (2-tailed)			0,675
Monte Carlo Sig. (2-tailed)	Sig.		0,716
	99% Confidence Interval	Lower Bound	0,754
		Upper Bound	0,688

The significance value (0.676) is greater than 0.05, indicating that the data is normally distributed and suitable for further testing. Multicollinearity testing is usually performed by looking at the Variance Inflation Factor (VIF) and tolerance values. If the VIF value is less than 10 and the tolerance is greater than 0.1, the model is considered free of multicollinearity.

Table 4. Multicollinearity Test

Coefficients			
Model		Collinearity Statistics	
		Tolerance	VIF
1	WE	0,646	1,549
	PS	0,778	1,285
	EI	0,339	2,952
	R	0,353	2,831
a. Dependent Variable: DS			

The results show that the tolerance values of all variables are greater than 0.1 and the VIF values of all variables are less than 10. This indicates that there is no multicollinearity.

The basic assumption of homoscedasticity requires that the residual variance be constant across all observations. If this assumption is violated and heteroscedasticity occurs, then even though the regression coefficient estimates remain unbiased, the efficiency of the estimates decreases. As a result, the calculated standard errors become inaccurate, which can be misleading in statistical tests such as t-tests and F-tests.

Table 5. Heteroscedasticity Test

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1						
	(Constant)	3,89	1,457		2,67	0,009
	WE	-0,005	0,086	-0,007	-0,057	0,954
	PS	-0,004	0,043	-0,01	-0,092	0,927
	EI	0,039	0,134	0,05	0,294	0,769
R	-0,194	0,131	-0,245	-1,484	0,141	
a. Dependent Variable: ABS_RES						

The results show that the significance value of all variables is greater than 0.05. This indicates that there is no heteroscedasticity or homoscedasticity. This means that further testing can be carried out.

To test the research hypothesis, multiple linear regression analysis was used to determine the extent of the influence of each independent variable on competitiveness. Multiple linear regression analysis includes the coefficient of determination test, F test, and T test. The coefficient of determination (R^2) test is a statistical indicator used to assess the level of goodness of fit between the regression model and the observed data. R^2 describes the proportion of variation in the dependent variable that can be explained by all the independent variables in the model.

Table 6. Testing the Coefficient of Determination

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.718a	0,516	0,497	2,47952
a. Predictors: (Constant), R, PS, WE, EI				

Based on the analysis results, the R Square value is 0.516 or 51.6%, indicating that the variables of work ethics, problem-solving skills, emotional intelligence, and resilience influence the variable of worker competitiveness by 51.6%. The remaining 48.4% of worker competitiveness is influenced by other variables not included in the study.

Table 7. F-test

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	649,306	4	162,326	26,403	.000b
	Residual	608,656	99	6,148		
	Total	1257,962	103			
a. Dependent Variable: DS						
b. Predictors: (Constant), R, PS, WE, EI						

Based on the results of the F test table, it shows that the significance is 0.000 < 0.05, which means that the independent variables of work ethics, problem-solving skills, emotional intelligence, and resilience simultaneously affect worker competitiveness.

Table 8. T-test

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1					
(Constant)	5,392	2,191		2,461	0,016
WE	0,403	0,13	0,27	3,108	0,002
PS	0,124	0,065	0,151	1,908	0,059
EI	-0,005	0,202	-0,003	-0,026	0,979
R 0,757	0,197	0,452	3,845	0	
a. Dependent Variable: DS					

It can be seen that the results show that the variables of work ethics and resilience have a significance value of less than 0.05. Therefore, it can be concluded that work ethics affects worker competitiveness and resilience affects worker competitiveness. In contrast to these results, the variables of problem-solving skills and emotional intelligence have significance values greater than 0.05. Therefore, it can be said that problem-solving skills and emotional intelligence have less influence on worker competitiveness.

Discussion

Work Ethics plays an important role in shaping the discipline, responsibility, and commitment of workers, which supports increased competitiveness. The t-test results show that Work Ethics has a significant influence on Worker Competitiveness with a significance value of p=0.002p=0.002 (< 0.05), which means that the higher a person's work ethics, the greater their competitiveness. Research by Dashtipour et al. (2025) supports this finding by stating that work ethics significantly affect employee performance, which contributes to increased worker competitiveness. In addition, Yusdayanti (2024) asserts that work ethics training can significantly improve work performance (Özal et al., 2024).

Problem Solving Skills (PS) are the ability to identify and solve problems effectively. The t-test results show that PS has no significant effect on Worker Competitiveness with a p-value of 0.059, although it is close to the significance threshold of 0.05. This suggests that problem-solving skills may have a limited effect or be influenced by other factors in the context of this study. Lestari et al. (2023) state that problem-solving skills can contribute to improved performance in certain contexts, especially when supported by a conducive work environment (Musengimana et al., 2025).

Emotional Intelligence (EI) encompasses the ability to recognize and manage one's own emotions and those of others. The analysis results indicate that EI does not significantly influence Employee Competitiveness, with a p-value of 0.979, far above the 0.05 threshold. This indicates that emotional intelligence is not a primary factor in determining worker competitiveness in the context of this study. Nugroho and Sari (2021) support this finding by stating that the influence of EI on performance or competitiveness may vary depending on job characteristics and organizational environment (Chen et al., 2024).

Resilience is the ability of workers to persevere and adapt in the face of work pressures and challenges. Statistical analysis shows a significant effect of resilience on worker competitiveness with a p-value of 0.000, well below the 0.05 threshold. This indicates that workers with high resilience tend to be more competitive. These findings are consistent with studies Suryani et al. (2023) which states that resilience helps workers cope with stress and pressure, thereby improving their performance and competitiveness (Onwumere et al., 2025).

Based on the results of the F-test, it is known that the F value is 26.403 with a significance (Sig.) of 0.000. This significance level is far below the 0.05 threshold, so it can be concluded that the four independent variables—Resilience (R), Problem Solving Skills (PS), Work Ethics

(WE), and Emotional Intelligence (EI)—simultaneously have a significant effect on Worker Competitiveness (DS) among Generation Z.

This means that the combination of these four factors collectively enhances the competitiveness of Generation Z in the workplace. This finding aligns with recent research by Sembiring et al. (2023), which shows that resilience and emotional intelligence simultaneously contribute positively to employee engagement and competitiveness in the financial services sector. Additionally, a study by Yasmin et al. (2023) also emphasizes that emotional intelligence and problem-solving skills play a crucial role in preparing young people to face the challenges of the modern workplace. Thus, the results of this analysis reinforce the importance of developing resilience, problem-solving skills, work ethics, and emotional intelligence simultaneously to enhance Generation Z's competitiveness in the era of global competition.

The results of this study reinforce a number of previous theories and empirical findings that state that workforce competitiveness is not only shaped by technical abilities, but is also greatly influenced by non-technical factors such as work ethic, problem-solving skills, emotional intelligence, and resilience. Robbins & Judge (2021) in their book Organizational Behavior emphasize the importance of interpersonal skills, communication, and adaptability in building professionalism and work effectiveness in the modern era. They also acknowledge that problem-solving skills are an essential component of the skills required to address complex and dynamic workplace challenges.

Next, the results of the study Holt & Yamauchi (2023) reveals that interpersonal skills, problem solving, and resilience collectively contribute significantly to the work readiness of Gen Z students, which is a key asset for competitiveness in the workplace. Recent research indicates that while emotional intelligence has a significant influence on various psychological and social aspects of Generation Z, its contribution in certain contexts remains relatively low compared to other factors. This may be attributed to the lack of formal training in emotional management and work environments that do not yet fully demand high emotional skills (Pratama et al., 2024).

Compared to previous studies such as those conducted by Rahmawati et al. (2020) which examined the competitiveness of young workers in the service sector, the findings in this study are similar in terms of the important role of problem-solving skills, but differ in the context of the influence of emotional intelligence, which in that study was dominant. This difference is likely influenced by the different industrial sectors, where the manufacturing sector emphasizes efficiency, productivity, and team collaboration, while the service sector demands emotional competence in dealing with customers.

Thus, the results of this study not only reinforce previous theories and findings but also enrich our understanding of the specific context of Gen Z workers' competitiveness in the manufacturing industry in Indonesia. Adjustments to the HR development approach need to be made by considering the characteristics of the industrial sector and the generation of workers involved.

Implications

This study makes an important contribution to the development of literature on workforce competitiveness, particularly in the context of Generation Z workers in the manufacturing sector. The results of the study indicate that work ethics and resilience are significant determinants of individual competitiveness. These findings support and expand existing theoretical frameworks, as highlighted by Robbins & Judge (2021), that behavioral and psychological factors play a crucial role in the performance and competitiveness of modern labor. The positioning of resilience as the most dominant predictor indicates a shift in the competencies required by the workplace, moving from technical skills toward social and adaptive abilities.

The regression coefficient for the resilience variable of 0.757 indicates that the ability to bounce back from pressure, failure, and challenging work situations significantly contributes to enhancing the competitiveness of Gen Z workers. Resilience enables individuals to remain focused and productive amid uncertainty and rapid changes in the workplace especially in the high-pressure manufacturing industry. These findings align with modern research on psychological capital (PsyCap), where resilience, alongside optimism, hope, and efficacy, forms the core foundation for enhancing employees' adaptive performance in today's dynamic era. A systematic study by Tang et al. (2024) confirms that the positive components of PsyCap, including resilience, have a strong relationship with employees' adaptive performance, enabling them to respond to workplace challenges with creative thinking and high flexibility. Thus, resilience is not merely the ability to endure but also a psychological resource that strengthens an individual's effectiveness in coping with change, achieving high productivity, and maintaining competitiveness in complex work environments.

The findings of this study provide a strong basis for PT. Ennovi Integrated Engineering Services Batam to formulate more strategic and contextual HR management policies. First, there is a need for training and development programs that focus on improving problem-solving skills, such as effective communication, teamwork, and problem-solving, which have been proven to have a dominant influence on worker competitiveness. Second, it is important for management to build a work culture that supports resilience, such as through coaching, mentoring, and strengthening ethical and professional values.

In the context of recruitment, a behavior-based competency approach needs to be adopted by systematically assessing dimensions such as emotional intelligence, integrity, and adaptability from the initial selection stage. This can be complemented by structured assessment tools to identify potential problem-solving competencies. In terms of talent management, companies can develop character-building career paths and succession planning programs oriented toward the values of young leaders who are resilient and socially and emotionally competent.

More broadly, the results of this study can be used as a reference for other manufacturing industries in managing young workers, especially Generation Z. Human resource development approaches can no longer rely solely on technical training, but need to integrate a holistic approach that includes emotional, social, and psychological aspects. The industry needs to adjust its workforce management strategies to the characteristics of Gen Z, who tend to be digital natives, multitaskers, and have high expectations regarding the meaning of work and work-life balance.

The importance of work ethics and resilience is also emphasized, as these two factors have proven to play a crucial role in maintaining stability and sustaining productivity amid high work pressures. Therefore, companies need to build a work system that supports psychological well-being and provides space for young workers to innovate and develop. In other words, building the competitiveness of the younger generation is not only about work skills, but also about shaping well-rounded workers who are adaptable to the changing times.

Limitations

This study has limitations in terms of the scope of the population studied, focusing solely on Generation Z workers at a single manufacturing company, PT. Ennovi Integrated Engineering Services Batam, located in Batam, Riau Islands. This means that the study's findings cannot be generalized to the entire population of workers across generations or to companies with different industry characteristics. Variations in organizational culture, job structure, and competency requirements across industries can influence the relevance of factors such as work ethics, problem-solving skills, emotional intelligence, and resilience in shaping employee competitiveness. Therefore, these findings are contextual and need to be tested in different environments to obtain a more comprehensive picture.

This study uses a quantitative approach with a survey method through a closed questionnaire. This approach allows for objective and measurable analysis of the relationship between variables, but has limitations in capturing qualitative dimensions, such as subjective work experience, intrinsic motivation, and the deep emotional dynamics of respondents. Additionally, the data collected is entirely self-reported, which may contain perception bias or social desirability bias, where respondents tend to provide answers that are considered "socially acceptable" rather than reflecting what actually occurred. This can impact the internal validity of the research findings.

The measurement instrument in this study uses a 1–5 Likert scale, which, although commonly and practically used in quantitative surveys, has limitations in capturing the actual behavior of respondents. This scale only reflects perceptions or attitudes, not concrete actions that can be observed directly. Additionally, this study did not include mediating or moderating variables that may influence the relationship between independent variables and labor competitiveness, such as leadership style, work environment, or organizational culture. The absence of control over these variables may limit the explanatory power of the regression model used and leave room for undetected bias in the statistical analysis.

Given these limitations, future research should use a mixed methods approach, combining quantitative and qualitative data, to gain a more holistic understanding of the factors that influence the competitiveness of young workers. This approach can explore subjective and contextual aspects, such as personal narratives about work experiences or the dynamics of relationships between employees and supervisors. Additionally, comparative studies across industries (e.g., manufacturing, services, and technology sectors) or across generations (between Gen Z, Y, and X) can provide a broader perspective on the differences in the contributions of variables across various work contexts. The addition of mediating variables, such as job satisfaction, organizational commitment, or even intrinsic motivation, will enrich the modeling and open up opportunities to explore more complex causal relationships. This is expected to enhance the theoretical and applied quality of future research in the field of human resource management and workforce competitiveness development.

CONCLUSION

The statistical analysis shows that all four variables simultaneously affect competitiveness significantly. However, partially, only problem-solving skills, resilience, and work ethics have a significant effect. Problem-solving skills are the variable with the most dominant influence on the competitiveness of Gen Z workers, followed by resilience and work ethics. Meanwhile, emotional intelligence shows a positive but statistically insignificant influence. These findings emphasize that to build the competitiveness of Gen Z workers in the manufacturing industry, human resource development approaches cannot rely solely on technical skills or emotional intelligence alone. Competitiveness is instead more influenced by social skills, resilience to pressure, and consistent work ethics. Thus, this research enriches the literature on human resource management by highlighting the urgency of developing problem-solving skills and resilience as priorities in training young employees.

Based on the research findings, it is recommended that PT. Ennovi Integrated Engineering Services Batam strengthen its training and development programs focused on mastering problem-solving skills such as communication, collaboration, and conflict resolution, as well as developing resilience-enhancement modules through stress management training, mental resilience, and adaptation to change. The company also needs to build a work culture that instills ethical values in the younger generation through the cultivation of disciplined behavior, integrity, and responsibility, for example through value-based mentoring or coaching. Additionally, emotional intelligence should be considered as a complementary aspect of social and psychological skills that contribute to enhancing competitiveness. For further research, variables such as job satisfaction, organizational commitment, or work motivation can be

explored as mediating or moderating variables, using qualitative or mixed-method approaches to enrich understanding of the psychological dynamics and behavior of Gen Z in the workplace. This research contributes practically and theoretically to enhancing the competitiveness of young workers in the manufacturing industry., and serves as a reference for other companies facing similar issues in managing young generations in human resources management.

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