

Analysis of Work Readiness Based on Soft Skills, Machining Knowledge, and 5S Work Culture

Ainun Maulidina and Bernardus S. Wijanarka

ABSTRACT

The aims of this study were to analyze 1) the influence of soft skills on the work readiness of students at Mechanical Engineering Vocational High Schools in the city of Palembang; 2) the effect of machining knowledge on the work readiness of students of Mechanical Engineering Vocational High Schools in the city of Palembang; 3) the effect of 5S work culture on the work readiness of students of Mechanical Engineering Vocational High Schools in Palembang city; and 4) the influence of soft skills, machining knowledge, and 5S work culture simultaneously on the work readiness of students of the Mechanical Engineering Vocational High School in the city of Palembang. The research method used is correlational research. The subjects of this research were class XII students of Mechanical Engineering Vocational Schools in Palembang City, recruited using a purposive sampling technique with the provision that students would work after graduating from Vocational High School. Thus, for a population of 360, the total sample was 187 respondents. The technique of collecting data for this research is a questionnaire and multiple-choice tests. Data analysis techniques were performed using correlational statistical analysis and regression analysis. The results of the study were the following: 1) Soft skills have a positive and significant effect on work readiness by 34.56%; 2) Machining knowledge has no effect on job readiness; 3) 5S work culture has a significant and positive effect on work readiness by 15.90%; and 4) Soft skills, machining knowledge, and 5S work culture have a positive and significant effect on work readiness by 53.5%.

Keywords: 5S work culture, machining knowledge, soft skill, work readiness.

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I. INTRODUCTION

Vocational schools form a society ready to work industrially and can adapt and innovate in specific vocational competencies, be it technology, industry, or business (Prihastomo *et al.*, 2020). Apart from that, the Vocational High School also aims to prepare students to be ready to work, have an entrepreneurial spirit, be wise, and be competitive to compete in the global market (Prianto *et al.*, 2021). Vocational education and training are the leading suppliers of the labor market and are often considered the economic foundation or backbone of society (Raad, 2017). Vocational High School is secondary education that aims to prepare students to be ready to work in specific fields, to be able to adapt to a natural work environment, and to see job opportunities and develop themselves in the future. Ironically, in the last three years, graduates of Vocational High Schools have become the highest contributor to unemployment in Indonesia; this can be seen based on the Open Unemployment Rate.

The Open Unemployment Rate is an indicator unit used to measure labor not absorbed by the labor market. The Central Bureau of Statistics released the Open Unemployment Rate in the Official Statistical News No. 35/05/Th.XXVI, May 05,

2023. Suppose the Open Unemployment Rate is reviewed based on the highest level of education the workforce completes. In that case, the workforce who graduated from Vocational High Schools (VHS) is the most significant contributor, equal to 9.60% compared to graduates of other educational levels. One of the reasons for the high open unemployment rate among vocational students is the need for mental readiness to enter the world of work (Fikri, 2018).

Job readiness is essential for vocational high school students because, generally, the preparation must be considered in developing the work skills required by certain types of work (Nurlaela *et al.*, 2021). In addition, work readiness can increase a person's value because he has prepared everything that might be required for registering for a job vacancy (Magallanes, 2022). Job readiness can be defined as the extent to which individuals possess the attitudes and characteristics necessary for future success at work (Sultoni *et al.*, 2022). Job readiness relates to graduate employment. It is evidenced by the large number of school graduates who become unemployed because they need skills, and there are still many vocational education graduates who do not work or even work not under their vocational field (Ismara *et al.*, 2019). Student work readiness related to mastery of soft skills and relevant knowledge guarantees

students a more professional level by significantly contributing to the industry (Borg *et al.*, 2018). Students' more focused perceptions can increase their knowledge and skills to be more optimal and ready for the world of work (Pratama & Komaro, 2019). Factors of ability, academics, behavior, and self-potential can also influence the readiness of Vocational High School students (Ihsan, 2018).

Soft skills in the vocational world are also known as employability skills (Fitriyanto & Pardjono, 2019). Students possess soft skills and experiences while participating in practicum processes both in the field and at school, extracurricular activities, and character education training (Putri *et al.*, 2019). The control of students' soft skills still needs to be higher than the machining knowledge they have mastered. At the same time, the industrial world considers soft skills are the primary consideration in recruiting prospective employees (Arif *et al.*, 2021). Therefore, today's vocational education graduates need to master professional skills in their field of work but also have to master various soft skills, including the ability to communicate, coordinate, work under pressure, and solve problems (Ummatqul Qizi, 2020).

Soft skills that students must master include interpersonal skills, leadership skills, performance management skills, cultural skills, communication/persuasion skills, and self-management skills (Rahmi *et al.*, 2021). Soft skills in the world of work refer to a set of personal qualities, which include habits, attitudes, and sociability that can make an employee excellent and suitable to work with (Vasanthakumari, 2019). The National Association of Colleges and Employers (NACE) has conducted a survey and determined that ten skills that companies see first are problem-solving skills, ability to work in a team, strong work ethics, analytical/quantitative skills, communication skills (written), leadership, communication skills (verbal), initiative, detail-oriented, and technical skills. Based on these opinions, the soft skills needed are work ethic, problem-solving, leadership, communication, and teamwork. Soft skills have a positive and significant influence on job readiness (Desi & Mayasari, 2021; Harjanto, 2019; Irfan *et al.*, 2022; Santoso & Sudjimat, 2019; Usman & Nuraini, 2022). However, this is slightly different from the results of a study (Ratuela *et al.*, 2022), which states that soft skills have a positive but insignificant effect on work readiness.

Knowledge competence is needed in the learning process for self-development and understanding the basic theoretical concepts of practicum implementation (Wijanarka, 2023). Knowledge is an aspect of work readiness, with the knowledge that makes education theoretical so that one can become an expert in his field (Muspawi & Lestari, 2020). The knowledge dimension refers to teaching topics originating from various disciplines that have comprehensive studies (González-Pérez & Ramírez-Montoya, 2022). Thus Vocational High School Students in the machining engineering expertise program certainly learn knowledge related to machining engineering, which is expected to be able to apply the knowledge they gain to a more professional level in the industrial world.

Knowledge of machining theory is the level of students' understanding of the theory of machining engineering subjects which is used as a basis for carrying out machining

practicum subjects (Nurcahyo *et al.*, 2018). Students can obtain knowledge related to machining through learning theory in class. Students from practicum processes can even obtain it through a practicum at school and fieldwork practice. Knowledge directly affects work readiness (Nurcahyo *et al.*, 2018).

The 5S work culture is universal, so the 5S work culture can be adapted to be implemented in Vocational High Schools. The 5S work culture is a work culture originating from Japan which consists of Seiri (Concise), Seiton (Neat), Seiso (Clean), Seiketsu (Take Care), and Shitsuke (Diligent). Applying work culture in Vocational Schools is expected to foster students' habits so that when they enter the industrial world, they are used to it and are not surprised by the work culture that applies in an industry. The application of 5S work culture is proven to have many benefits: clean workshop area, free from any hazards, better working environment and conditions, well-organized workshop, well-secured storage of tools, materials, and equipment, and better space utilization through proper placement (Khumalo & Gupta, 2019).

Applying the 5S work culture in a vocational high school environment can provide benefits such as optimizing performance, laboratory security, and saving on the cost of using goods. These advantages come from a diligent and disciplined work attitude; therefore, the better the implementation of the 5S Work Culture, the better the vocational character of SMK students (Divine *et al.*, 2020). Applying the 5S work culture influences increasing the effectiveness of practicum activities. The work culture in Vocational Schools still needs to be aligned, and there is no compatibility and compatibility between the work culture needed in the industrial world and the availability of vocational education graduates (Ismara *et al.*, 2020). The effect of 5S work culture on work readiness has been studied by (Rohmantoro, 2018). The results of this study show that 5S work culture affects work readiness. The 5S work culture that students have can help them prepare to enter the world of work; apart from that, of course, being armed with a good work culture will make it easier for them to adapt to the work culture applied in the industrial world.

Based on the literature review that has been described, this research will focus on job readiness and the factors that influence it. This study aims to analyze (1) the effect of soft skills on the work readiness of students of Mechanical Engineering Vocational High Schools in the city of Palembang; (2) the effect of machining knowledge on the work readiness of students of Mechanical Engineering Vocational High Schools in Palembang city; (3) the effect of 5S work culture on the work readiness of students of Mechanical Engineering Vocational High Schools in Palembang city; and (4) the influence of soft skills, machining knowledge, and 5S work culture simultaneously on the work readiness of students of Mechanical Engineering Vocational High Schools in the city of Palembang, South Sumatra, Indonesia. The implications of the results of this study are expected to be useful for competency development and work readiness for vocational high school students in South Sumatra, Indonesia.

II. METHODS

This study uses a type of quantitative correlational research. The research was conducted on class XII students of the Mechanical Engineering Expertise program for SMKs located in the city of Palembang, namely: SMK Negeri Sumatera Selatan, SMK Negeri 2 Palembang, SMK Negeri 4 Palembang, SMK Negeri 7 Palembang, SMK YP Gajah Mada Palembang, SMK PGRI 2 Palembang, and SMK Pembangunan YPT Palembang. The technique used to determine the sample is purposive sampling with the provision that students will work after graduating from Vocational High School; thus, for a population of 360, the total sample is 187 respondents.

Research data collection was carried out using questionnaires and tests for data collection on soft skills, work culture, and work readiness. The instrument for the questionnaire technique consists of statements with alternative answers using a Likert scale which consists of four alternative answers, namely Always, Often, Rarely, and Never. The test was carried out for machining knowledge data retrieval. The test instrument consists of multiple-choice questions with five alternative answers.

The data analysis technique used is descriptive analysis for each variable, requirements analysis test for further hypothesis testing using multiple linear regression analysis. The analysis requirements tests performed were the normality, linearity, multicollinearity, and heteroscedasticity tests. Hypothesis testing using multiple linear regression analysis was carried out to determine whether the independent variables influence the dependent variable either partially or simultaneously, as well as to determine the linear regression equation. Analysis of requirements testing, hypothesis testing, and multiple linear regression analysis equations using the help of IBM SPSS Statistics version 25 software.

III. RESULTS

The research results are data analysis starting from requirements analysis test and hypothesis testing.

A. Requirements Analysis Test

The requirements analysis tests carried out in this study included the normality test, linearity test, multicollinearity test, and heteroscedasticity test.

1) Normality Test

The results of the normality test using the Kolmogorov Smirnov are presented in Table I.

TABLE I: NORMALITY TEST RESULTS

N	Significance	Explanation
187	0.200	Data is normally distributed

Adequate information based on Table I has a significance value larger than 0.05, so the data is normally distributed.

2) Linearity Test

The results of the linearity test using Analysis of Variance (ANOVA) can be seen in Table II.

TABLE II: LINEARITY TEST RESULTS

Correlational	Deviation from Linearity	
	F	Sig.
Soft Skill (X_1) → Work Readiness (Y)	0.874	0.697
Machining Knowledge (X_2) → Work Readiness (Y)	2.257	0.060
5S Work Culture (X_3) → Work Readiness (Y)	1.571	0.099

Table II shows that the value of Deviation from Linearity Significance is larger than 0.05, so there is a linear relationship between the independent variable and the dependent variable.

3) Multicollinearity Test

The results of the multicollinearity test can be seen in Table III.

TABLE III: MULTICOLLINEARITY TEST RESULTS

Correlational	Collinearity Statistics	
	Tolerance	VIF
Soft Skill (X_1) → Work Readiness (Y)	0.501	1.995
Machining Knowledge (X_2) → Work Readiness (Y)	0.859	1.164
5S Work Culture (X_3) → Work Readiness (Y)	0.510	1.963

Table III shows that with a tolerance value larger than 0.10 and a VIF value smaller than 10, there are no symptoms of multicollinearity in the relationship between the independent variable and the dependent variable.

4) Heteroscedasticity Test

The results of the heteroscedasticity test using Spearman's rho testing method can be seen in Table IV.

TABLE IV: HETEROSCEDASTICITY TEST RESULTS

Correlational	Significance
Soft Skill (X_1) → Work Readiness (Y)	0.786
Machining Knowledge (X_2) → Work Readiness (Y)	0.817
5S Work Culture (X_3) → Work Readiness (Y)	0.765

Table IV reveals a significance value larger than 0.05. Therefore, none of the independent variables has any symptom of heteroscedasticity.

B. Hypothesis Test

Hypothesis testing was conducted to analyze whether there is an influence of soft skills, machining knowledge, and 5S work culture on work readiness either partially or simultaneously. The analysis technique used in testing the hypothesis in this study is multiple linear regression analysis.

1) The Effect of Soft Skills on Job Readiness

The results of the partial significance test analysis for the soft skill variable can be seen in Table V.

TABLE V: SOFT SKILL T-TEST RESULTS

Variable	t	Sig.	R ²
Soft Skill (X_1) → Work Readiness (Y)	6.927	0.000	0.3456

Table V shows that the significance value is smaller than 0.05. So, partially, soft skills have a positive and significant effect on work readiness. The magnitude of the influence can be seen in the coefficient of determination R² of 0.3456 or 34.56%. Partially, soft skills contributed to job readiness by

34.56%.

2) The Effect of Machining Knowledge on Job Readiness

The results of the partial significance test analysis for the machining knowledge variable can be seen in Table VI.

TABLE VI: MACHINING KNOWLEDGE T-TEST RESULTS

Variable	t	Sig.	R ²
Machining Knowledge (X ₂) → Work Readiness (Y)	1.613	0.108	0.0306

Table VI reveals a significance value of 0.108 (larger than 0.05). So, partially, there is no significant effect between machining knowledge and work readiness. The magnitude of the influence can be seen in the coefficient of determination R² of 0.0306 or 3.06%. Partially machining knowledge contributes to job readiness by 3.06%.

3) The Effect of 5S Work Culture on Work Readiness

The results of the partial significance test analysis for work culture variables can be seen in Table VII.

TABLE VII: 5S WORK CULTURE T-TEST RESULTS

Variable	t	Sig.	R ²
5S Work Culture (X ₃) → Work Readiness (Y)	3.602	0.000	0.159

Table VII shows that the significance value is smaller than 0.05. So, partially, there is a positive and significant influence between work culture and work readiness. The magnitude of the influence can be seen in the coefficient of determination R² of 0.159 or 15.9%. Partially, the 5S work culture contributes to work readiness by 15.9%.

4) The Effect of Soft Skills, Machining Knowledge, and 5S Work Culture on Job Readiness

The results of the simultaneous significance test can be seen in Table VIII.

TABLE VIII: SIMULTANEOUS SIGNIFICANT TESTS RESULTS

Model	F	Sig.	R square
Regression	70.241	0.000	0.535

Information that can be obtained from Table VIII is the significance value for the influence of soft skills, machining knowledge, and work culture simultaneously on work readiness is 0.000 < 0.05, so there is a positive and significant influence of soft skills, machining knowledge, and work culture on the work readiness of students of Mechanical Engineering Vocational Schools in Palembang.

The magnitude of the influence can be seen in the value of the coefficient of determination. The value of the coefficient of determination is obtained from the value of R square. The R square value of 0.535 indicates the simultaneous influence of soft skills, machining knowledge, and work culture by 53.5%.

C. Multiple Linear Regression Analysis Equations

The results of multiple regression analysis can be seen in Table IX.

The values of the constants and coefficients contained in Table IX are then substituted in the multiple linear regression equation so that the following equation will be obtained:

TABLE IX: MULTIPLE REGRESSION ANALYSIS TEST RESULTS

Model	Unstandardized Coefficients	
	B	Std. Error
(Constant)	21.481	4.724
Soft Skill	0.350	0.050
Machining Knowledge	0.105	0.065
5S Work Culture	0.218	0.060

a. Dependent Variable: Work Readiness.

$$Y = 21.481 + 0.350 X_1 + 0.105 X_2 + 0.218 X_3 \quad (1)$$

Equation (1) explains:

1) For every increase in one unit of soft skills variable, there is an increase in the work readiness variable of 0.350.

2) For each increase of one unit of machining knowledge variable, there is an increase in the work readiness variable of 0.105.

3) For each increase in one unit of the work culture variable, there is an increase in the work readiness variable of 0.218.

IV. DISCUSSION

A. The Effect of Soft Skills on Job Readiness

Soft skills have a significant and positive effect on work readiness. Thus, the soft skills possessed by students affect high or low student work readiness. Soft skills have an influence of 34.5% on work readiness, thus making soft skills the most dominant factor in influencing work readiness. It implies that the higher the student's soft skills, the better the student's work readiness, and vice versa; the lower the student's mastery of soft skills, the lower the student's work readiness.

The research results for the influence of soft skills on work readiness are in line with previous research conducted by (Desi & Mayasari, 2021; Harjanto, 2019; Irfan *et al.*, 2022; Ratuela *et al.*, 2022; Santoso & Sudjimat, 2019; Usman & Nuraini, 2022) where the results of this study show that there is an influence of soft skills on work readiness.

Students' Soft skills can help them prepare to enter the world of work; apart from that, armed with good soft skills will make it easier for them to adapt to the work environment later. With soft skills, a person can adapt to the work environment and be able to communicate well with co-workers so that they can achieve maximum work goals. Soft skills are often part of the recruitment requirements for a job, so prospective workers should have good soft skills; of course, soft skills can be a factor for prospective workers to get jobs and retain jobs and can also increase career paths. Class XII students who already have good soft skills will help them enter the real world of work.

B. The Effect of Machining Knowledge on Job Readiness

The machining knowledge students possess does not affect vocational students' work readiness. It implies that the level of students' machining knowledge does not affect their work readiness, so the high or low student machining knowledge does not affect vocational students' high or low work readiness. Students with high knowledge do not necessarily have high work readiness, and vice versa. Students with insufficient knowledge do not necessarily have low work readiness either.

The research results for the effect of machining knowledge on work readiness align with research conducted by (Eliyani *et al.*, 2016), in which the research results stated that there was no direct effect between student competency and knowledge of productive training subjects on student work readiness. However, the results of this study are in contrast to research conducted by (Nurcahyo *et al.*, 2018), who found the results of a direct influence of knowledge on work readiness.

C. The Influence of 5S Work Culture on Work Readiness

The 5S work culture has a positive and significant effect on work readiness, so the 5S work culture possessed by students influences the high or low level of student work readiness. 5S work culture has an influence of 15.90% on work readiness. It implies that the higher the student's work culture, the better the student's work readiness, and vice versa; the lower the student's work culture mastery, the lower the student's work readiness. It is in line with previous research conducted by Rohmanto (2018), where the results of his research showed that there was an influence of 5S work culture on work readiness of 7.2%.

The 5S work culture that students have can help them prepare to enter the world of work; apart from that, of course, being armed with a good work culture will make it easier for them to adapt to the work culture applied in the industrial world.

D. The Effect of Soft Skills, Machining Knowledge, and 5S Work Culture on Job Readiness

Soft skills, machining knowledge, and the 5S work culture possessed by students influence student work readiness. Soft skills, machining knowledge, and 5S work culture affect job readiness by 53.5%. Thus the high or low soft skills, machining knowledge, and student work culture influence the work readiness of vocational students. It implies that the higher the students' soft skills, machining knowledge, and 5S work culture, the better their work readiness, and vice versa.

Increasing work readiness needs to be followed up considering the importance of work readiness for vocational students to enter the world of work; good work readiness can help someone enter the real world of work. Work readiness can be increased by increasing the mastery of soft skills of Mechanical Engineering Vocational High School students in the city of Palembang. Improving the work culture and knowledge of machining is equally essential in increasing the work readiness of students of Mechanical Engineering Vocational Schools in the city of Palembang. These various efforts are expected to increase the work readiness of Mechanical Engineering Vocational High School students in the city of Palembang so that Vocational High School graduates can be more competitive in the world of work. Thus, the percentage of the open unemployment rate for Vocational High School graduates can decrease from previous years.

V. CONCLUSION

Based on the results of this study, the conclusions in this study are 1) Soft skills have a positive and significant effect on work readiness by 34.56%; 2) Machining knowledge has no effect on job readiness; 3) 5S work culture has a positive

and significant effect on work readiness of 15.90%; and 4) Soft skills, machining knowledge, and 5S work culture have a positive and significant effect on work readiness by 53.5%. Increasing work readiness needs to be followed up, considering the importance of work readiness for vocational students to enter the real world of work.

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CONFLICT OF INTEREST

The authors declare that they do not have any conflict of interest.

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