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The factors that influence employability skills of vocational school student mechanical engineering

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Abstracts. This study aimed to find out the significance of the direct effect of industrial work practices on work readiness, vocational competency, and employability skills, the direct effect of work readiness on employability skills, and the direct effect of vocational competency on employability skills. Furthermore, it was to find out the significance of the indirect effect of industrial work practices on employability skills through work readiness, indirect effect of industrial work practices to employability skills through vocational competency. The significance of the effect founds was expected to enhance the knowledge and consideration for developing employability skills vocational high school (VHS) students especially at industrial work practice, work readiness, vocational competency at vocational high school. The research used quantitative approach with ex-post facto type. The data were analyzed quantitavely to test the formulated hypotesis. The research was conducted at State and Private Vocational High School in DIY. The study population was grade XII students majoring in mechanical engineering. The research samples were 444 student who were selected using proportionate stratified random sampling. The data collection techniques were questionnairies distribution and documentation. The content validity was established using expert judgment. The construct validity was estabilised using analysis factor by Kaiser Meyer Olkin *Measure of Sampling Adequacy* (KMO MSA) with value of 0.691. The reliability of the research was judged using cronbachs alpha with value for work readiness of 0.921 and employability skills of 0.864. The data analysis technique used path analysis. The result showed that (1) direct effect of industrial work practice on work readiness was found with r 23.3%, (2) direct effect of industrial work practices on vocational competency was found with r 28.2%, (3) direct effect of work readiness on employability skills was found with r 10.1%, (4) direct effect of work readiness on employability skills was found with r 50.1%, (5) direct effect of vocational competency on employability skills was found with r 15.4%, (6) indirect effect of industrial work practices on employability skills through work readiness was found with r 11.7%, (7) indirect effect of industrial work practices on employability skills through vocational competency was found with r 4,3%. Employability skills can be improved through effective implementation of industry work practice, work readiness, and vocational competency.

Keyword: employability skills, vocational competency

Introduction

Vocational High School (SMK) is one of the educational channels in Indonesia to prepare students to get jobs through mastering skills relevant to the world of work. Vocational high schools have distinctive learning characteristics with high schools in general, the first is industrial work practices (Prakerin) in vocational schools aiming to prepare high-quality, mid-level skilled workforce in accordance with the needs of the community / industry. The dual system education model (dual system) is a system that is effective enough to educate and prepare someone to deepen and master complex skills that are impossible or never done in school [1].

The problems found in apprenticeship, especially from the aspect of the process and results still feel a lot of gaps. According to Sanyoto (2008) the gap between the quality of graduates and industrial needs is still high. Industrial participation in the implementation of vocational education is still weak. Students who are in industrial practice in various fields do not receive adequate

guidance from the industry.

The second problem is the difference in the level of readiness and the level of progress of SMK is also one of the causes of the not optimal level of work readiness of SMK graduates. The high and low level of work readiness possessed by students is actually determined by the students themselves [2]. Students as prospective workers who are declared ready to work usually have experienced / through various processes, both theoretically and practically. Many factors or variables that can affect work readiness, both from within students and from outside students. In this case the connection between the experience of internship and work readiness is felt to be very strong.

Furthermore, what distinguishes SMKs from high schools in general is the holding of student competency tests conducted in accordance with the competence of their expertise and carried out before the national examination. DP SMK (2018) the purpose of conducting competency testing is as an indicator of achievement of graduate competency standards, while for stakeholders competency tests are used as information on the competencies of prospective workers. Students are said to have passed the competency test if they have implemented the competency test of expertise including practical competency tests and theory competency tests. The overall verification of the implementation of the competency test is intended so that the implementation of the competency test runs well and the results of competency tests can be fully recognized by the industry.

From the problems described above, vocational students are also required to have skills that make them ready to be employed. In the vocational realm, job skills are known as employability skills. Employability skills are a number of skills that can be used in everyday life in the workplace and can be transferred to various fields of work and professions, which include elements of teamwork, communication skills, problem solving skills, adaptability, ability to manage oneself [3].

Based on the background described, identified the problem of business confidence and the world of industry towards the competence of vocational students is still very low, the creation of a mutually beneficial climate between students' ability to demand the industry, most students do not have readiness to work because they lack experience in DU / DI, equipment in practice in schools that are inadequate, value mismatches obtained by students with their competencies, students tend to be able to theorize but lack skilled at practice, and there needs to be an analysis of factors that influence vocational students' employability skills technical expertise program machining in the Special Province of Yogyakarta.

This study aims to find out there is a direct influence of apprenticeship on work readiness, there is a direct influence of apprenticeship on vocational competence, there is a direct influence of apprenticeship on employability skills, there is a direct effect of work readiness on employability skills, there is a direct influence of vocational competence on employability skills, there are influences not directly apprenticeship towards employability skills through work readiness, there is an indirect influence of internship on employability skills through vocational competence.

The results of this study are expected to provide theoretical benefits, namely providing scientific contributions to the science of education in the vocational realm, namely finding factors in the development of employability skills to improve students' skills. The practical benefit is that students are expected to obtain direct influence from the existence of internship, and make it ready for work, and have vocational competence so that the development of student employability skills can increase.

Research Method

This study uses a quantitative approach, with an expost facto type. The nature of this explanatory research with the intention of proving an existing theory.

The place of research was carried out in the State Vocational Schools and Private Vocational Schools in the Special Province of Yogyakarta in the Mechanical Engineering program. There are 1 municipalities and 4 districts.

The population of this study was 1060 students. The sampling technique is done using the Multi Stage sampling technique.

To get the number of clusters from each Vocational School, a Cluster Random Sampling technique is used. The minimum sample of this study was 444 students.

The instruments in this study were questionnaires and documentation. Questionnaires are used to obtain variable data on work readiness and employability skills while variables of apprenticeship and vocational competence are obtained from the results of student fieldwork practices and competency tests of students' skills.

There are four variables in this study, namely one independent variable, two intervening variables or mediation, and one dependent variable. The independent variables in this study are industrial work practices, intervening variables namely work readiness and vocational competence, and the dependent variable is student employability skills.

The test in this study are two parts, first is testing the data analysis with descriptive statistics and path analysis testing which consists of making paths based on theory, making path diagrams, identifying models, evaluating model estimates, and testing the feasibility of the model. The feasibility test of the model including the structural test model or hypothesis testing.

Result

The results of this study get a description of the data using statistical analysis and path analysis models, and obtained a path analysis based on the previous theory, and poured it into the path diagram obtained as follows:

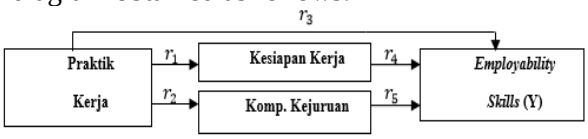

Figure 1. *Path Diagram*

SEM analysis can only be done if the model identification results show that the model belongs to the over-identified category. This identification is done by looking at the df value of the model made. Table 1. AMOS output results which show the df model value of 17. This indicates that the model belongs to the over-identified category because it has a positive df value. Therefore, data analysis can proceed to the next stage.

Table 1. Result of degrees of freedom

Number	df (derees of freedom)
NUMBER OF DISTINC SAMPLE MOMENT	36
NUMBER OF DISTINC PARAMETER TO BE ASTIMATED	19
DEGREES OF FREEDOM	36-19 = 17

The next testing phase is the model feasibility test consists of two stages of testing, namely testing the measurement model and structural model. To test the measurement model, testing Goodness Of Fit (GOF) was conducted to find out how fit the model was with the research data obtained. Figure 2 is the path diagram generated after performing the SEM assumption test stages.

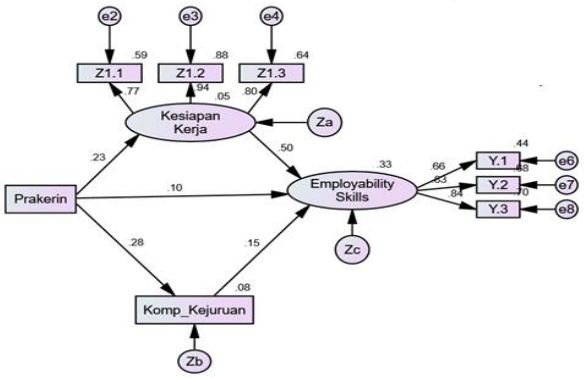

Figure 2. *Output Path Diagram*

Based on the output path diagram, a path analysis formed consisting of endogenous variables is apprenticeship, mediation varibale is work readiness and vocational competence, and for exogenous variables are employability skills. Each variable is tested for compatibility to obtain a observed frequency result with the expected frequency. The results of the compatibility test are made in the summary of the results of the Goodness Of Fit test as follows:

	Skills			
Y.3 - Employability Skills	0,837	.064	13.985	.000

Table 2. Result of GOF Model

Goodness of Fit	Cut Value	Nilai Model	Keterangan
Chi-square	Kecil	103,637	
DF	> 2 , 0	6,096	Good Fit
p (probabilitas)	>0,05	0,000	Good Fit
RMSE >0,08		0,107	Good Fit
GFI >0,09		0,947	Good Fit
TLI >0.09		0,904	Good Fit

Hasil pengujian Goodness Of Fit yang terangkum pada tabel 3 dengan keterangan kesiapan kerja (KK) Prakrin (P) Kompetensi Keahlian (UKK) dan employability skills (ES), terbukti bahwa model hasil modifikasi fit dengan data yang ada. Model diakatakan fit jika salah satu dari uji kecocokan diatas memenuhi kriteria yang disyaratkan dalam uji GOF. Dengan melihat nilai DF, RMSE, GFI, TLI sudah mewakili jawaban bahwa model struktural yang diuji sudah cocok dan fit.

Untuk tahapan selanjutnya adalah pengujian hipotesis. Uji hipotesis dilakukan dengan melihat nilai C.R. (critical ratio) yang terdapat pada tabel berikut.

Tabel 3. Regression Weihts

Path Analyze	Estimate	S.E	C.R	P
Work Readiness – Industrial Work Practice	0,233	.003	4.690	.000
Vocational Competency – Industrial Work Practice	0,282	.035	6.196	.000
Employability Skills – Work Readiness	0,501	.039	7.953	.000
Employability Skills – Vocational Competency	0,154	0.28	2.989	.003
Employability Skills – Industrial Work Practice	0,101	.020	2.125	.034
Z1.1 – Work Readiness	0,766			
Z1.2 – Work Readiness	0,936	.052	19.194	.000
Z1.3 – Work Readiness	0,800	.019	17.505	.000
Y.1 – Employability Skills	0,662			
Y.2 – Employability	0,827	.090	14.359	.000

Hypothesis testing is done by comparing the value of C.R. in Table 3. the critical value is identical to the calculated t value, which is 1.65 at the 5% significance level. If the value is C.R. greater than the critical value with a significance level of p <0.05, then the proposed hypothesis is accepted. However, if the value of C.R. has not been able to reach its critical value at a significance level of p> 0.05, then the proposed hypothesis is rejected. First value C.R. amounting to 4,690. This value exceeds the critical value, which is 1.65. These results indicate that internship factors have a significant influence on work readiness. This is in line with the research conducted by [4] saying that the experience of field work practices significantly influences students' work readiness by 50.1%.

The second value of C.R is 6.196. This value exceeds the critical value, which is 1.65. These results indicate that internship factors have a significant influence on vocational competence. This is in line with the research of Syaad Patmanthara (2016) saying that there is a positive and significant influence between internship, insight into the world of work, and competency competency on work readiness.

The third value is C.R. amounting to 2,125. This value exceeds the critical value, which is 1.65. These results indicate that internship factors have a significant influence on employability skills. This is in line with research conducted by [5] stating that the suitability of industrial work practices contributes to students' employability skills of 28.35.

Fourth value C.R. amounting to 7,953. This value exceeds the critical value, which is 1.65. These results indicate that the work readiness factor has a significant influence on employability skills.

Fifth C.R. the next is 2,989. This value exceeds the critical value of 1.65. This shows that vocational competency factors have a significant influence on employability skills.

The six t-count values for apprenticeship factors influence the employability skills through work readiness of 4.036. Prakerin has a significant effect if the value of t count> t table (1,965). The internship factor has a significant influence on employability skills through vocational competence with a coefficient value of 0.043.

Seventh, for apprenticeship factors influence the employability skills through vocational competence obtained by t count of 2.649. Prakerin has a significant effect if the value of t count> t table (1,965). The internship factor has a significant influence on employability skills through vocational competencies with a coefficient of 0.117. This is in line with the research conducted by [6] that the results show that there is a significant influence between the experience of internship, insight into the world of work, and vocational competence towards work readiness through employability skills.

Conclusion

Based on the results of research obtained conclusions as follows.

1. Providing direct influence on apprenticeship to the preparation of vocational students in mechanical engineering in DIY Province with a critical ratio of 4.690 and a coefficient of 0.233.
2. There is a direct influence of apprenticeship on vocational competence of vocational students majoring in mechanical engineering in DIY Province with a Critical Ratio of 6.196 and a coefficient of 0.282.
3. There is a direct influence of apprenticeship on vocational student employability skills majoring in mechanical engineering in DIY Province with a Critical Ratio of 2.125 and a coefficient of 0.101.
4. There is a direct effect of work readiness on the employability skills of vocational students majoring in mechanical engineering in DIY Province with a Critical Ratio of 7.953 and a coefficient of 0.501.
5. There is a direct effect of vocational competence on vocational student employability skills in mechanical engineering majors in DIY Province with a Critical Ratio of 2.989 and a coefficient of 0.154.
6. There is an indirect influence of apprenticeship on employability skills through work readiness of vocational students majoring in mechanical engineering in DIY Province with a Critical Ratio of 2.649 and a coefficient of 0.117.
7. There is an indirect influence of apprenticeship on employability skills through vocational competence of vocational students majoring in mechanical engineering in DIY Province with a Critical Ratio of 4.036 and a coefficient of 0.043.

Based on the results above it can be concluded that the work readiness factor has the highest coefficient value compared to other factors. The coefficient value that is owned is 7,953. Job readiness factors are the strongest predictors that affect employability skills.

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