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# Vocational Learning in Industry as a Work Readiness Strategy of Industrial Era 4.0: Model of Path Analysis

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This study aimed to find the most dominant factors that affected student work-readiness in industry, namely career guidance, vocational learning in industry, work motivation, and entrepreneurial motivation. The research method used a non-experimental quantitative design using path analysis. The study used a sample of 205 vocational high school students majoring in Computer and Network Engineering. Data collection was carried out for 6 months. Data collection used questionnaires, tests, and observation instruments. This research result, in the finding of the most dominant factors, had a significant impact on work readiness. The findings were vocational learning in industry, career guidance, work motivation. On the other hand, entrepreneurial motivation did not have a significant impact on work readiness.

**Key words:** *Career Guidance, Vocational Learning, Work Motivation, Entrepreneurial Motivation, Work Readiness, Industry 4.0.*

## Introduction

The disruptive appearance of technology is very fast to carve history with the development of technology and dominant science. One sign of the 4.0 industrial revolution marked by many changes in aspects of life including educational institutions that also face challenges namely Vocational High School. The substitution of technology, machines, robots, and artificial intelligence in the industry replace human labor. As a result, many Vocational High School graduates who can work immediately end up being threatened with unemployment.



The number of Vocational High School graduates in Malang City as a labor supply is sufficient to meet industrial needs and increases from year to year. However, compared to the number of Vocational High School as a whole, some supplies are found to be abundant but on the other hand there is a scarcity of graduates for certain types of expertise. The availability of job opportunities with this scarcity has resulted in graduates from year to year being more inclined to not work but continue to higher education, more specifically in the field of computer and network technology expertise with data on student graduates in 2018 the number of graduates is 75 percent to continue to college and 25 percent work (Iampost, 2018)

Therefore, in facing the industrial era 4.0 with faster technological advances, humans should be able to adapt more quickly to their work readiness so that they are better prepared to face all problems that occur in the field. In addition, a person's success in working in the industrial era 4.0 is determined by hard skills, namely a person's technical ability to complete certain tasks according to their respective professions and can be assessed from technical tests or practitioner tests, but also supported by soft skills, namely non-technical abilities that are not visible form (intangible) but very necessary. The ability to manage oneself appropriately and the ability to build relationships with others effectively which involves a variety of abilities and a willingness to complete certain tasks (Judge & Robbins, 2017)

In the industrial era of 4.0, the ability to master the useful skill to be a professional workforce is needed to get the balance with the existence of current technology. In cultivating these abilities, vocational learning is needed to encourage the condition of awareness of the skill. This vocational learning determines the readiness of students to be ready to enter the industry (BIS, 2016)(Docherty, 2015) (Farenga & Quinlan, 2016). The obstacles that students still encounter are not getting vocational learning in the industry because it is not following their field of expertise. According to (Eni & Kuswanto, 2018), industry often complained that the quality of personnel (graduates) has not met the expected competency skills demands, due to gaps and discrepancies that occur between the demands of work capabilities setting by industry and the material taught in Vocational High School.

Preparation of students before entering the working world at the Vocational High School must be equipped with skills that match their field. School and industry need to participate in achieving the goals of vocational secondary education because students' competencies are expected to have soft skills and hard skills in preparation for entering the working world. This reflects that the work motivation of students is not in line with expectations, so there are still many vocational high school graduates who have not yet determined whether to work or continue their education to a higher level. Moreover, vocational learning is needed to provide meaningful learning experiences so that competent graduates are produced and do not just



dwell on how high the income earned after students graduate or employment issues that will arise after they graduate from school.

Vocational learning that was done through the process of working in work practices will provide knowledge of the useful skills and values of the working world that are impossible or difficult to obtain at school. The skills that are needed are inseparable from the technical skills and personality as provisions to improve the economic status in society. Learning obtained by students during work practices in the industry. The learning outcomes are an accumulation of student values both from the industry and from the supervising teacher. The assessment of the industry is given a weighting of 60% and a tutor of 40% with the consideration that the authority to score for learning activities in the industry is more observed in the industry.

In addition to industrial vocational learning problems, researchers are interested in the amount of confusion experienced by adolescents in determining the type of work going forward. School should have the responsibility to guide students not only in academic growth, but also in their career development ( Hughes et al., 2015). According to overcome work problems after graduation and career maturity of students in school, career guidance is the provision of appropriate services to prepare themselves for the working world while adjusting to various the demands of the jobs entered and that are by the competencies of these students (Wingkel & Hastuti, 2012).

The phenomenon, in reality, many students feel not ready to work and be entrepreneurship because work motivation in industry and entrepreneurial motivation of graduates of vocational high school are low. Vocational learning that is listed in the vocational high school curriculum has not been able to influence the students' entrepreneurial motivation, because vocational learning in schools should be able to produce entrepreneurial behavior as well as leadership spirit related to how to manage a business and also equip students to be able to try independently.

Luthans (2010) states two kinds of situations that affect each individual on their work, namely the motivator satisfiers group including achievement, recognition / appreciation, working alone, responsibility, and obtaining progress and development at work. Group of dissatisfiers or hygiene factors include company policy and administration, supervision, technical supervision, salary, interpersonal relations, supervisors, working conditions. Satisfiers are a source of job satisfaction, while dissatisfiers are situations that are a source of dissatisfaction. Another phenomenon that occurs is that students do not have clear directions and goals after they graduate whether they want to work or study. This reflects that the work motivation of students is not in accordance with expectations, so that there are still many



SMK graduates who have not decided whether to work or continue their education to a higher level.

They stated that entrepreneurial motivation is a process of responsibility for initiating and directing human activities towards specific goals (Weinstein, 2014). The growth of student entrepreneurial motivation is usually accompanied by the growth of industrial work motivation. Motivation to work in industry is something that gives rise to enthusiasm or encouragement of individuals to work in the industrial world, both from within themselves and outside themselves. A student certainly has aspirations for a job after graduating from Vocational High School and with the motivation to work someone has an effort how to allocate resources for work-related actions, including the direction, intensity, and perseverance of the job.

Based on the background of the problems and empirical data that have been presented in this study, the researcher conducted a deeper study of the phenomena in the field by using career guidance variables, entrepreneurial learning achievement, vocational learning in industry, work motivation, entrepreneurial motivation in Computer and Network Engineering major to work readiness of students in the industrial era 4.0, with the hope of getting answers which factors were more dominant for work readiness in the industrial era 4.0.

### **Method**

Based on data from the Directorate of Vocational High School Development from a total of 52 Private Vocational High Schools in Malang, there are 27 Vocational High Schools that open Computer and Network Engineering major. The population representation of Vocational High School students involved in this study amounted to 511 students. Determination of the number of samples in this study used an error level of 5%, then obtained a sample of 205 students.

The research data was obtained by assessing career guidance with a questionnaire of 30 question items. Industrial vocational learning assessment used 16 questionnaire questions. Assessment of students' work motivation used observation of 22 question items. The measurement of entrepreneurial motivation by using observations was 20 question items. Measurement of work readiness by giving tests to students was 16 question items.

Analysis of the data used in this research was descriptive analysis and inferential analysis. The descriptive test was used to describe data collected from questionnaires of career guidance, vocational learning in industry, work motivation, entrepreneurial motivation, entrepreneurial learning achievement, and work readiness. As well as to describe the



tendency of data seen from the average, median, standard deviation, and variant data of each variable.

Researchers set 4 categories to determine whether the research variables were good or not, namely: bad, deficient, good, and excellent. The criteria for determining the interval for each category were calculated using the ideal mean as a comparison norm for determining categories based on the calculation results obtained by the range of ideal scores per item in the category of bad, deficient, good, and excellent.

The total score of each item was obtained from the total sum of each answer that was timed with the frequency score. The ideal score was obtained by multiplying the highest answer score with the number of respondents. Then, the results of the calculation of the percentage of the acquisition score of each item were consulted with interpretation a few, small, medium, most, and in general. The inferential analysis used to determine the effect between variables and path analysis was used to test the magnitude of the contribution shown by the path coefficient on each path diagram of the direct and indirect relationship with a 0.5% error level.

## Results

Descriptive test results obtained from 30 questions about career guidance with a mean of 2.96 and a percentage of 74% which means that most students had answered well. Motivation with 14 questions given to students with a mean of 2.93 and a percentage of 73% means that most students had answered well. Entrepreneurial motivation with 20 questions given with a mean of 2.94 and a percentage of 65% which means that most students had answered well. Vocational learning in the industry with 19 questions given had a mean of 2.75 and a percentage of 77% which means most students had answered well. Work readiness with 15 questions given to students with a mean of 3.23 and a percentage of 81% means that in general students had answered well. The results of the item analysis are explained in Table 3.1

**Table 3.1:** Result of descriptive analysis of the items

Item	Mean	Criteria	Percentage	Criteria
Career guidance	2,96	Good	74%	Majority
Work motivation	2,93	Good	73%	Majority
Entrepreneurial Motivation	2,94	Good	65%	Majority
Vocational learning in industry	2,75	Good	77%	Majority
Working Readiness	3,23	Good	81%	In general





Inferential test results of regression analysis obtained that vocational learning in the industry got a significance value of 0,000 to work readiness, so path analysis can be done because vocational learning had a contribution to work readiness. Career guidance regression analysis tests got the significance of 0.005 on work readiness so path analysis can be done because career guidance had a contribution to work readiness. Regression analysis of entrepreneurial motivation test got a significance of 0.117 on work readiness, so path analysis cannot be done because entrepreneurial motivation had no contribution to work readiness. Work motivation regression analysis test got a significance value of 0,000 on work readiness, it can be done a path analysis because work motivation had a contribution to work readiness. The test results can be seen in table 3.2

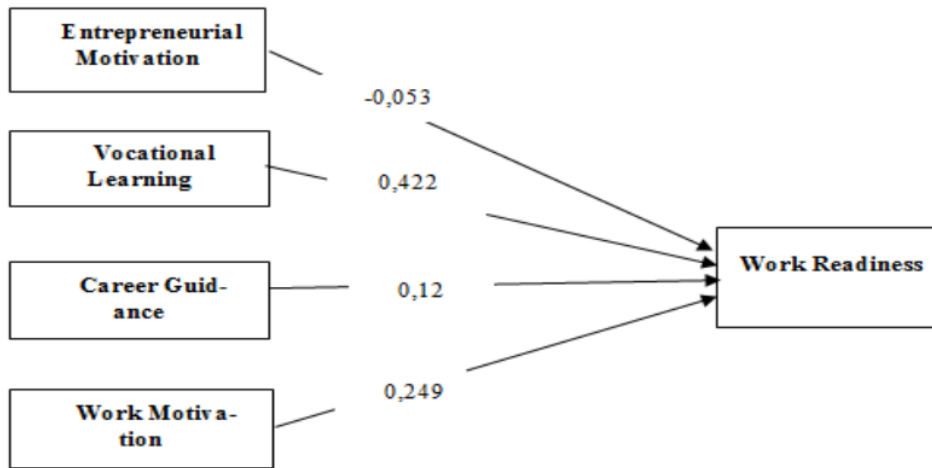
**Table 3.2:** Test result of regression analysis and path analysis

Variable		sig	Direct Effect	Indirect effect		Total
Dependent	Independent			Through work motivation	Through entrepreneurship motivation	
Vocational Learning in Industry	Work readiness	0,000	0,422	0,105	0,174	0,701
Career Guidance		0,005	0,129	0,067	0,041	0,237
Entrepreneurial Motivation		0,117	-0,053	-	-	-0,053
Work motivation		0,000	0,249	-	-	0,249

The result of calculating the coefficient of career guidance path to work readiness was  $0.4222 = 0.178$  or 17.8%. The result of calculating the path of career guidance path to work readiness was  $0.1292 = 0.017$  or 1.7%. The result of calculating the path of entrepreneurship motivation toward work readiness was  $-0.0532 = 0.003$  or 0.03%. The result of the calculation of the path coefficient of work motivation to work readiness was  $0.2492 = 0.062$  or 6.2%. The results of the calculation are explained in the figure below



**Figure 3.1.** Relationship between variables



### Discussion

The result of the correlation analysis of the vocational learning paths in the industry on work readiness showed a fairly strong correlation. This shows the contribution of vocational learning correlations in the industry with work readiness. According to (Shane, 2003), vocational learning in the industry will provide knowledge and experience at work. The experience gained when they had received vocational learning in the industry in addition to learning how to get a job, and how to have jobs that are relevant to the skills and interests possessed by these students (Jackson, 2014).

The result of the correlation analysis of the path between career guidance and work readiness showed a very strong correlation. Career guidance provided a good contribution to the strategy of producing graduates who are ready to work and to face the working world through the provision of career guidance services that can explore the potential of students so that teachers can direct students to work following their potential and abilities (McIlveen & Pensiero, 2008)

Eley (2010) that career guidance services aim to prepare graduates who are ready to face the world of work, so that students can develop their abilities before graduating. The result of correlation analysis between internship experience and job readiness shows a strong correlation. states that students are said to be ready to work if students can collaborate their technical knowledge in this case hard skills for problem identification, problem solving, and communication in this case soft skills while in the world of work, then with experience in the





industry students can learn how to become employees so students can train their hard skills and soft skills.

Kuijpers et al. (2006) career guidance can reflect a person's desires and will also help by making realistic choices about one's career, especially when that person's work motivation is created because the person feels competent in a field that is needed in the industrial world. (Bridgstock, 2011) concluded that career guidance has a positive impact on work motivation so that the provision of career guidance programs can give students an idea of how the world of business and the real world of industry is, with career guidance students can find out the future prospects for the chosen job so that students will arise motivation in himself to work after graduating from vocational high school.

Career guidance services aim to prepare graduates who are ready to face the working world, so students can develop themselves before graduating (Eley, 2010). The result of the correlation analysis between the experience of the apprenticeship with work readiness showed a strong correlation. The students are said to be ready to work if students can collaborate their technical knowledge, in this case, hard skills for problem identification, problem-solving, and communication, in this case, soft skills while in the working world, then with experience in industry, students can learn how to become employees so students can train hard their skills and soft skills.

With good career guidance, students will be more motivated to be entrepreneurial, besides that students involved in career guidance will have an impact on entrepreneurial motivation so that students effectively have practical and theoretical skills in entrepreneurship (Alina & Daniel, 2014). The results of the correlation analysis of apprenticeship experiences on entrepreneurial motivation show a strong correlation with the increasing entrepreneurial motivation of students, which will give birth to young entrepreneurs who have a high creative, innovative and productive spirit in all fields. The experience gained while doing industrial work practices will indirectly accelerate the transition of students from school to the industrial world, in addition to learning how to get a job, they also learn how to have a job that is relevant to their talents and interests. Because talents and interests will encourage individuals to focus attention and increase mental activity and activities that match their interests.

The result of the correlation analysis between entrepreneurial motivation and work readiness showed a low correlation. This shows that there was an insignificant contribution of entrepreneurship motivation to work readiness. Entrepreneurial-oriented students tend to take higher risks, more needs for achievement, and innovation more than other students without entrepreneurial desires. entrepreneurship motivation indicates that if students have the desire to realize entrepreneurial opportunities, have a strong sense of responsibility and have strong



self-confidence, students will feel ready to enter the working world, increase their work-readiness (Segal et al., 2005). Students are required to master entrepreneurial competence and work experience, thus forming entrepreneurial motivation as a provision to enter the business world as an entrepreneur.

The result of the correlation analysis between work motivation and work readiness showed a strong correlation. This shows that there was a significant contribution from work motivation to work readiness. Work motivation can encourage student work-readiness because motivation can create student attitudes and behaviors at work, so students feel ready to go into the working world (Noah et al., 2013). Work motivation arises because of the encouragement from within students to be able to meet their needs, appreciation for a job and the desire to continue to develop in achieving the career that they expected before. The result of research said that work readiness is needed for every person before enters the working world because the provision of work readiness includes meeting the competencies needed by the working world and physically well-prepared (Li et al., 2006).

### **Conclusion**

In entrepreneurship, motivation needs to be improved by the way students are invited to see firsthand the types of entrepreneurs in the field so that it can encourage students' motivation and desires in entrepreneurship. The teacher can collaborate with the potential of the students so that the impact on graduation can later adjust the desire for entrepreneurship by its potential. In vocational learning at school, teachers must encourage students to explore opportunities in daily life in entrepreneurship by providing concrete examples to encourage student entrepreneurial motivation so that when students graduate from vocational high school, they can be independent entrepreneurs. Teachers must always encourage and enthusiastic students to obtain information by giving gifts or appreciation to increase student motivation to do their assignments well.

Before carrying out industrial work practices, the teacher must explain how the rules are applied in the industry, how real conditions exist in the industry, how the system and workflow so that students get a picture of the situation in the industry to be occupied. Besides, the industry should always guide students like employees during industrial work practices with regular mentoring so that students feel they are employees in the industry. It needs to increase in terms of achievement in the industry by proactively consulting with teachers to find solutions to be taken if faced with problems that cannot be solved. Students should further increase work motivation and entrepreneurship by increasing vocational learning in industry and at school so that they are ready to face the business world and the industrial world in the industrial era 4.0.



Future studies can use a qualitative approach to uncover the phenomenon of actual work readiness that occurs in the field so that it can become an added value for this research. The next researcher can uncover other factors that influence work readiness outside the variables that have been studied.

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