

Student Readiness Model Facing the Industrial Revolution 4.0

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Abstract: The purpose of this study is to describe the factors that influence the student readiness in facing the industrial revolution 4.0. This study uses quantitative research methods. The population in this study was the student teacher of education faculty of Universitas Islam Riau. The sampling technique used is cluster random sampling. The data collection technique uses a questionnaire. Data analysis technique uses Product Moment Correlation and Path Analysis with the help of Lisrel 8.80 Software. The results showed that; (1) there is no significant effect the variable of Parent Support (PS) and Learning Environment (LE) on Industrial Revolution, (2) there is significant effect learning facilities (LF) and university policy (UP) on Industrial Revolution (IR), (3) there is significant effect of university policy and parent support (PS) on learning facilities, (4) there is significant effect of learning facilities (LF), parent support (PS) and university policy (UP) on the learning environment (LE).

1 INTRODUCTION

The beginning of the industrial revolution allowed all preparations to be made by every university. This is doing so that every university is able to keep up with the flow of globalization that is difficult to be stopped. The world is entering the era of 4.0 industrial revolution which is followed by technology developments and emphasizes on all digital (digital economy, artificial intelligence, big data, robotic), or the phenomenon of disruptive innovation. Universities need to pay attention to the factors that influence the readiness of students in facing the industrial revolution because the success of students facing the 4.0 industrial revolution depends on what is prepared both from students and universities.

Global competitiveness index data shows that Indonesia's ability to face the 4.0 industrial revolution is still lower compared Thailand which is at level 32, Malaysia ranks 23 and Singapore is at level 3. The factors that cause Indonesia still cannot compete with Malaysia, Thailand, and Singapore are weak in higher education, lack of training or workshops, the knowledge readiness of science and technology, innovation and satisfaction in doing business (Kemenristek Dikti, 2019).

These aspects need to be improved so that Indonesia's ability to face the 4.0 industrial revolution

is better and on top of Singapore.

Resources strengthening is very important for universities, resources strengthening includes the development of lecturer abilities, learning facilities, learning environment, campus policy, and parental support. Resources that are the determinants factors of success in facing the industrial revolution need to be strengthened so that the ability of students to face the flow of globalization in the era of 4.0 Industrial Revolution is not doubted because students are supported by strong and good facilities and resources.

Responding to the importance of competition in facing 4.0 industrial revolution, higher education specifically universities need to provide good quality services. In addition, the research needs to be done for knowing whatever the thing must be increased, repaired, and prepared so that research can be used to determine what factors are capable of making students ready to face the 4.0 industrial revolution. Based on this reason, the research titled "The Influence of Parent Support, Learning Facilities, Learning Environment, and Universities Policy, on Student Readiness in Facing the 4.0 Industrial Revolution is very important to be done.

2 LITERATURE REVIEW

Learning facilities are an important factor in getting maximum learning outcomes. Quality of learning facilities is a determining factor in improving student performance (Uline and Tschannen-Moran, 2008). Learning facilities such as online-based learning can improve student satisfaction in learning and influence learning outcomes or student achievement (Eom et al., 2006). Learning facilities create value or learning experiences that can produce better learning outcomes (Parnabas et al., 2014). Learning facilities can improve the quality of learning where students get learning experiences that are different from the previous process (Bliuc et al., 2007). Learning facilities have a significant relationship to student achievement, so it can be concluded that the better learning facilities, the better the learning outcomes (Keramati et al., 2011).

The learning environment is a factor that can influence the success of the learning process. The learning environment has an important role in increasing interest and learning outcomes (Kärnä and Julin, 2015). A conducive environment for learning can improve learning outcomes (Kleij & Fesken, 2015). A different or less conducive environment can be significantly different from the results of a conducive learning environment (Khalifa and Lam, 2002). The learning environment can make learning activities interesting because the learning environment becomes a stimulus for students to achieve success in learning (Rasch and Schnotz, 2009). The learning environment is a determining factor for the success of a teaching and learning process.

The success of students is also influenced by the stake holder's policy. Stakeholders who tend to have the desire to advance education through policies that build student achievement (Price and Roberts, 2008). Governments that have the same policies as leaders in each educational institution can produce good learning outcomes (Ngware, Onsomu, Muthaka, & Manda, 2006). Collaboration between government and educational institutions can realize educational goals in producing great educational output (Bektaş and Tayauova, 2014). Government policies that specifically have their own fields of education can affect the educational institutions below them through programs aimed at improving education (Lumby and Wilson, 2003).

Parent support is very important in student success of learning both at school as well as the university. Parent support is described as the main support because they have an enormous effect in developing

the student to achieve success in its life (Creech, 2010). Parental involvement will help students more if they are supported by easily accessible technology (Lewin and Luckin, 2010).

3 RESEARCH METHODOLOGY

The research method used in the study is a quantitative research method with a correlational approach. This research aims to find the relationship or influence of one or several independent variables on the dependent variable. Creswell (2014) states that the correlational research method can in the form of correlation, regression, path analysis, and Structural Equation Modeling (Creswell, 2012; Hair et al., 2013).

3.1 Population and Sample

The population in this study were all Teachers and Education Faculty students, while the sample was some of the Teaching and Education Faculty students who were taken randomly. The sampling technique used in this study is the stratified random sampling technique, the number of research samples was 265 students. In the context of this study, researchers will randomize students in all Teaching and Education Faculty Study Programs based on the level or semester taken by Students, that is 2, 4, 6, 8.

3.2 Research Instrument

The data collection instrument used in this study was a questionnaire. A questionnaire was developed based on studies of variables so that indicators were found. Based on these indicators, items are arranged to obtain data in the field.

3.3 Validity and Reliability of Instrument

The validity of the instrument in this study used content and construct validity while reliability used construct reliability and Cronbach Alpha. Content validity was analyzed using Aiken's Formula while construct validity was analyzed using CFA (Confirmatory Factor Analysis). Construct reliability was analyzed using CFA based on the value of loading factor and error, while Cronbach Alpha reliability used the formula from Cronbach Alpha.

3.4 Analysis Data Technique

Data analysis in this study using product moment correlation and path analysis. Product Moment correlation is used to see the relationship between independent variables to other independent variables and independent variables to the dependent variable with the help of SPSS 16. Path analysis is used to see how far the independent variable affects the dependent variable and see how far the independent variables affect the other independent variables as moderator. Path analysis was carried out with the help of the Lisrel 8.80 program.

4 RESULT

4.1 Product Moment Correlation

Product moment correlation in this research aims to see the correlation between variables of parent support, learning facilities, university policy, learning environment, and readiness of student facing the industry revolution 4.0. the result of product moment correlation can be seen at the correlation matrix in Table.

Table 1: Correlation Matrix

	PS	LF	UP	LE	IR
PS	1	.553**	.515**	.583**	.319**
LF	.553**	1	.717**	.652**	.563**
UP	.515**	.717**	1	.657**	.582**
LE	.583**	.652**	.657**	1	.477**
IR	.319**	.563**	.582**	.477**	1

**= significant with level 95%

Based on Table 1 were acquired the result of analysis of product moment correlation from all variables. From analysis has found that there is a significant correlation between independent variables PS with LF, UP, LE and IR with values consecutively are 0.553, 515, 583, 0.319. there is a significant correlation between LF variable with UP, LE, and IR with values consecutively are 0.717, 0.622, and 0.563. There is a significant correlation between UP variable with LE and IR with values consecutively are 0.657 and 0.582. There is a significant between LE variable with IR variable. These results show that all variables have the good correlation and significant with level 95%.

4.2 Path Analysis Result

Path analysis will describe the effect of the independent variable on independent variables and

independent variables (moderation variables) on dependent variables. in this research, parent support (PS) as independent variables. Learning facilities (LF), university policy (UP), learning environment as moderation variables, and student readiness facing the industrial revolution as the dependent variable. Before the result of the analysis is shown. the first step, the researchers must know that the analysis result has got good data which is the measurement model has developed. the data was said well if the Goodness of Fit that acquired from the analysis result has fulfilled criteria. The result of the analysis can be seen in Table 2.

Table 2: Standard and Result of Goodness of Fit.

GOF	Standard	Result	Conclusion
Chi-Square	P > 0,05	0,4421	Fit
RMSEA	RMSEA < 0.08	0,000	Fit
GFI	GFI ≥ 0.90	0.96	Fit
NFI	NFI ≥ 0.90	0.95	Fit
CFI	CFI ≥ 0.90	0.96	Fit
IFI	IFI > 0.80	0.96	Fit
RFI	RFI 0-1	0.91	Fit

From table 2 was got seven criteria of GOF. this result show that the data were collected at the field are fit and fulfilled the criteria the good data. This result indicates that the measurement model has developed from studying the theory in accordance that was proposed by the statistics expert. because of the result has fulfilled the good criteria, so the result of path analysis can be continued or interpreted. The result of path analysis can be seen in Table 3.

Table 3: The Result of Path Analysis.

Variables	Coefficient	T-Value	Criteria
PS → LF	0,25	3,91	Significant
PS → UP	0,52	7,26	Significant
PS → IR	-0,08	-0,01	Not Significant
PS → LE	0,27	3,88	Significant
UP → LF	0,59	9,17	Significant
UP → LE	0,32	3,98	Significant
UP → IR	0,35	3,46	Significant
LF → LE	0,27	3,23	Significant
LF → IR	0,29	2,88	Significant
LE → IR	0,11	1,14	Not Significant

From Table 3 above can be concluded that there is significant effect variable PS on LF, UP, and LE with the contribution of each variable are 25%, 52%, and 27% but there is no significant contribution PS variable on IR variable. There is a significant effect of UP variable on LF, LE, and IR with contribution are 59%, 32%, and 35%. There is a significant effect of LF variable on LE and IR with contribution are 27% and 29%. There is no significant effect of LE

variable on IR variable. The biggest contribution in this research is UP variable on LF variable and the smallest contribution is LE variable on IR variable.

5 DISCUSSION

From the result of analysis has got the effect of independent variables on the dependent variable. the analysis shows there is an effect of Parent support on Learning Facilities. This information explains that parent support gives a good contribution to learning facilities. Dempsey (2001) said that parental involvement in education is very important as a school-improvement effort. Parental involvement in educational setting and activities are the important thing for the schools because the parent can give any contribution to the school for creating the good school that educates the student from various useless things (Hara and Burke, 1998). Parent support has a good effect on learning Environment because the student parent is an element of school that gives recommendation about the learning environment and will care with learning environment (Hara & Burke, 2019). Parent support in form learning facilities will give an opportunity to the student for developing their skill (Hoefler et al., 2001). Family support will have a tremendous role in helping the student adapt to rapid technology development (Ratelle et al., 2005).

There is a significant result of parent support on university policy, learning facilities, and learning environment. this result explains that university policy depends on parent support to make policy for creating good facilities and environment. the college collaboration with the parent of student will make education become more effective (Ratelle et al., 2005). Parent and school need to work together for achieving the maximum outcome. Schools have accountabilities about the academic outcome, and the parent has accountabilities about moral, cultural, and religious (Hill and Taylor, 2004).

From analysis was acquired negative contribution of Parent support on the Student readiness facing the industry revolution 4.0. this thing happens because many of parent doesn't have knowledge about the important facing the industry revolution 4.0 so they don't think how to motivate their children to face the industry revolution 4.0. Anderson & Minke (2010) said that parent involvement in student study can give a positive outcome for the student but it depends on how the parent decides for motivating their children.

Effect of learning facilities on the learning environment and the readiness student facing the industry revolution 4.0 is significant. this result

shows that facilities are an important factor in making the conducive environment of learning and good outcome. student performance in the classroom depends on learning facilities and facilities management (Leung and Fung, 2005). Bad facilities of learning can make the learning environment uncomfortable and give a negative impact on student outcome (Earthman, 2002). Learning facilities is very important for increasing the quality of education.

6 CONCLUSIONS

Based on the analysis result can be made the conclusion that there are two factors or variables were affected the student readiness in facing the industry revolution 4.0 that is Learning Facilities with contribution 25% and University Policy (52%) while Learning Environment (27%) and Parent Support can't contribution on the student readiness in facing the industry revolution 4.0. Biggest contribution on the student facing the industry revolution variable is University Policy variable while the smallest contribution on the student readiness in facing the industry revolution 4.0 is Learning Facilities.

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