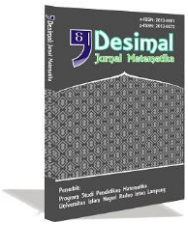
Desimal: Jurnal Matematika Vol 5 No 3 (2022) 265-278

Contents lists available at DJM

DESIMAL: JURNAL MATEMATIKA

p-ISSN: 2613-9073 (print), e-ISSN: 2613-9081 (online), DOI 10.24042/djm

http://ejournal.radenintan.ac.id/index.php/desimal/index



Structural model equations: Analysis on the performance abilities of the main competencies of graduates

Rahma Faelasofi*, Tri Yuni Hendrowati

Universitas Muhammadiyah Pringsewu, Indonesia

ARTICLE INFO

Article History
Received : 08-07-2022
Revised : 30-08-2022
Accepted : 14-11-2022
Published : 20-12-2022

Keywords:
Structural Equation Model; Partial Least Square; The Ability to Work; Main Competencies of Graduates.

*Correspondence: E-mail: rahmafaelasofi01@gmail.com

Doi: 10.24042/djm.v5i3.12974

ABSTRACT

The purpose of this research is to find out the structural equation model (Structural Equation Model) on the perceptions of users of the graduates of the Teaching and Education Faculty (FKIP) Muhammadiyah Pringsewu University on the performance abilities of graduates' main competencies and the ability to work in teams. This research will use the Partial Least Square (PLS) method which can be used for small samples. In addition, PLS does not require the assumption that the data distribution must be normal or not. The results of this research are ethics, developing English language skills, and self-development has a positive effect on the ability to work in teams and performance skills related to the main competencies of graduates. Also, there is a positive influence from the ability to work on the main competencies, whereby increasing the ability to work will increase the main competencies of FKIP UMPRI graduates.

http://ejournal.radenintan.ac.id/index.php/desimal/index

INTRODUCTION

Statistical methods that can be used to analyze causal relationships can be analyzed using structural equation modeling (SEM). SEM can accommodate the relationship of a variable that is not only direct but also indirect (Carrasco, 2010). The direct and indirect relationships are analyzed using path analysis. while the relationship between latent variables and their indicators was analyzed by confirmatory factor analysis, thus it can be stated that SEM is a combination of confirmatory factor analysis and path analysis (Sri Indra Maiyanti, Oki Dwipurwani, 2008). The application of SEM allows researchers to be able to answer research questions that are regressive or dimensional, where SEM combines factor analysis with multiple regression analysis (Dirgantara & Suryadarma, 2014) which can be applied separately only in factor analysis or only in regression analysis (Carrasco, 2010). Furthermore, SEM in conducting confirmatory data analysis always requires various assumptions such as the theory must be sufficiently supported, the number of samples is large, and must be normally distributed (Prayitno et al., 2021).

Partial Least Squares (PLS) is a method for building predictive models when the factors are multiple and highly collinear (Tobias, 1998). PLS can link a set of independent variables with several dependent (response) variables. On the predictor side, PLS can handle many independent variables, even when the predictor displays multicollinearity (Garson, 2016).

In this research, factors that influence performance will be analyzed as performance capabilities related to main competencies, and performance as an individual's ability to do something with certain expertise. Performance is achieved by a person or group of people in an organization, in accordance with their respective authorities and responsibilities, in an effort to achieve the goals of the organization concerned legally, not violating the law, and in accordance with morals and ethics. The above formulation explains that performance is the level of success of a person or institution in carrying out its work (Rahman, 2022).

Meanwhile, endogenous variables include behavioral ethics, communication skills, English language skills, and the ability to use information technology. Behavioral ethics is a collection of principles, values, or morals, which are used as a guide for someone to behave (Sultoni et al., 2018). Communication ability is a person's skill in interacting between individuals with other individuals (Pehrson et al., 2016), the ability to speak English skills in interacting using a foreign language (English) (Handayani, 2016), the ability to use information technology is the ability to use information technology that requires skills in mastering computer programs in utilizing available technology (Ceha et al., 2008), and self-development efforts are activities carried out to increase self-professionalism in order to have professional competence (Rahman, 2022).

The purposes of this research are: (1) to analyze the influence of ethical behavior, communication skills, English language skills, and the ability to use information technology on the ability to work in teams for FKIP UMPRI graduates; (2) to analyze the influence of ethical behavior, communication skills, English language skills, and the ability to use information technology on the performance achievements of the main competency abilities of FKIP UMPRI graduates through the ability to work in teams; and (3) to analyze the effect of the ability to work in a team on the performance achievements of the main competency abilities of FKIP UMPRI graduates.

This is an interesting research study because several research results state that the development of courses based on communication skills, foreign language skills, and applicable courses according to the skills and competencies of graduates are several points that are used as recommendations to improve graduate competencies (Setyaningsih, 2013). The ability for self-development and high integrity are expected to be possessed by graduates as an effort to deal with the professional needs required by graduate users (Santoso et al., 2019). The measurement of graduate performance needs to be carried out by universities as the basis for implementing higher education strategies for progressive improvement (Prasetyawati & Kosasih, 2021). Performance capability is supported by program administration and study program service quality (Sulistiana et al., 2016).

Based on the description, the measurement of factors that affect the ability to work in teams and performance abilities related to the main competencies of the Teaching and Education Faculty (FKIP) Muhammadiyah Pringsewu University (UMPRI) is the topic of the

discussion in this research with its update by analyzing these factors using SEM PLS.

METHOD

This research is a type of quantitative approach research that explains the influence of research variables using Structural Equation Analysis (SEM), to be precise using PLS, because the research sample consisted of 27 graduate users who responded to graduates working in the institutions/institutions they led. The sampling technique is classified as purposive sampling, in which the questionnaire given is intended to be filled in by users who have graduated from FKIP UMPRI.

Operational Definition of Variables

The following is presented in Table 1 to Table 7, namely operational descriptions of each research variables:

Table 1. Operational Variables of the Behavioral Ethics

Construct	Definition	Indicator	Code	Measurement Scale
Behavioral ethics (exogenous)	A collection of principles, values, or morals, which guide a person's behavior	Honest	X_1	Likert
		Friendly	X_2	Likert
		Polite and courteous toward other employees	X_3	Likert
		Respect all components in the work environment	X_4	Likert
		Fair in attitude	X_5	Likert
		Comply with office/company rules	X_6	Likert
		Have good work performance	X_7	Likert

Table 2. Operational Variables of the Communication Ability

Construct	Definition	Indicator	Code	Measurement Scale
The ability to communicate (exogenous)	One's skills in interacting between one individual and another individual	The ability to accept other people's opinions/suggestions	X_8	Likert
		Written communication skills (reports, documents)	X_9	Likert
		Good verbal communication skills	X_{10}	Likert
		Good foreign language skills	X_{11}	Likert

Table 3. Operational Variables of the English Proficiency

Construct	Definition	Indicator	Code	Measurement Scale
English language proficiency (exogenous)	A person's ability to interact using a foreign language (English) so can make it easier for a person to get a high appreciation in the world of work with their abilities	English language proficiency	X_{12}	Likert

Table 4. Operational Variables of the Ability to Use Information Technology

Construct	Definition	Indicator	Code	Measurement Scale
The ability to use information technology (exogenous)	Proficiency in mastering computer programs, utilizing available technology, and facilitating teaching	Mastery of information technology	X_{13}	Likert
		Mastery of task areas	X_{14}	Likert
		Using/paying attention to work safety attributes	X_{15}	Likert

Table 5. Operational Variables of Self-Development Efforts

Construct	Definition	Indicator	Code	Measurement Scale
Self-development efforts (exogenous)	Activities carried out to improve self-professionalism in order to have professional competence in accordance with applicable regulations so that they can carry out basic tasks and obligations in accordance with the mandate given	Responsible for the duties and obligations	X_{16}	Likert
		Quick and responsive in solving work problems that arise	X_{17}	Likert
		Generate ideas for improving systems and procedures in the work unit	X_{18}	Likert
		Work independently	X_{19}	Likert
		Able to think integrally (overall)	X_{20}	Likert
		On time (meeting attendance, arrival, departure, etc.)	X_{21}	Likert
		The results of work according to standards	X_{22}	Likert
		The low work error rate	X_{23}	Likert
		Meet the target according to the number	X_{24}	Likert
		Meet targets on time	X_{25}	Likert
		Able to set priorities in tasks	X_{26}	Likert
		Hard to give up in facing the problems/work	X_{27}	Likert
		The ability to maintain systems and operational procedures that apply	X_{28}	Likert

Table 6. Operational Variables of the Ability to Work in a Team

Construct	Definition	Indicator	Code	Measurement Scale
The ability to work in a team (endogenous)	The ability possessed by individuals in carrying out work together which aims to achieve common goals by sharing knowledge and skills with each other	Have a clear vision for the future	Y_1	Likert
		Be a role model	Y_2	Likert
		Act decisively in solving problems	Y_3	Likert
		Direct other team members to achieve task goals	Y_4	Likert
		Coordinate resources within the work unit	Y_5	Likert
		Positive ability to cooperate with other employees	Y_6	Likert
		Able to express opinions	Y_7	Likert
		Adaptable	Y_8	Likert
		Self-confident	Y_9	Likert
		Calm to work under pressure	Y_{10}	Likert
		Able to control emotions	Y_{11}	Likert
		Able to accept criticism	Y_{12}	Likert
		Active in training activities, training, etc.	Y_{13}	Likert
		Have goals in the career	Y_{14}	Likert

Table 7. Operational Variables of Performance Capability Associated with Main Competencies

Construct	Definition	Indicator	Code	Measurement Scale
Performance capabilities related to main competencies (endogenous)	Activities or jobs where great responsibility is required in their implementation so that it is expected to provide maximum and perfect results in accordance with the main competencies possessed along with the ability so that these competencies really support the success of a performance	The ability to develop learning	Y_{15}	Likert
		The ability to provide judgment	Y_{16}	Likert
		Research ability	Y_{17}	Likert
		Problem-solving ability	Y_{18}	Likert
		The ability to produce creative products	Y_{19}	Likert
		The ability to provide learning services	Y_{20}	Likert

Conceptual Framework

An overview of the path diagram of the hypothesized proportions in the endogenous and exogenous variables connectedness model can be presented in Figure 1.

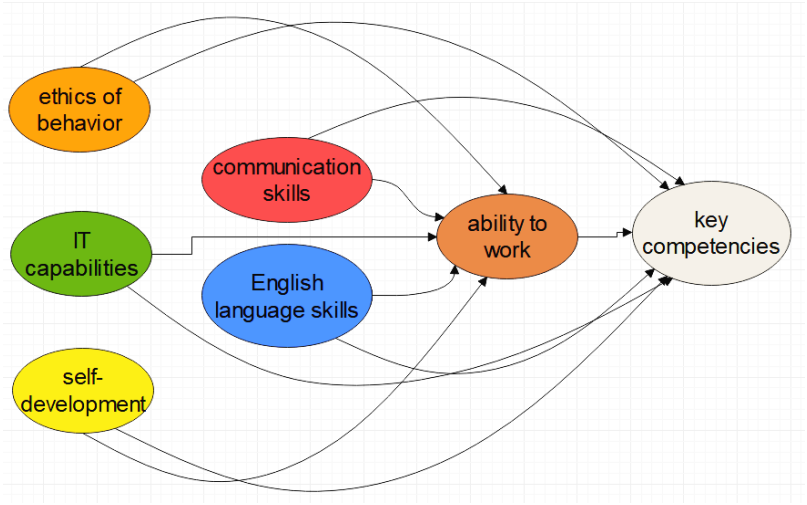


Figure 1. Relationship Model between Research Variables

RESULTS AND DISCUSSION

Based on the results of data analysis using software R, the following results are obtained:

1. Measurement Model Assessment

a. Convergent validity

In evaluating convergent validity, it can be seen from the value of the loading factor. Individual indicators are considered valid if they have a loading value of >0.70. However, there is research using a loading of 0.50 to 0.60 which is still acceptable. Therefore this research will use a loading value >0.6. Based on the results obtained, not all indicators have a loading factor value of more than 0.6 so the indicators used will be reduced. After reduction, it is obtained indicators that have a loading factor value of more than 0.6, namely X_1, X_2, X_5, X_6, X_7, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{18}, X_{21}, X_{22}, X_{23}, X_{24}, X_{25}, X_{26}, X_{27}, X_{28}, Y_2, Y_3, Y_5, Y_6, Y_8, Y_{10}, Y_{11}, Y_{12}, Y_{13}, Y_{14}, Y_{15}, Y_{16}, Y_{18}, Y_{19}, Y_{20}. These indicators are good enough to measure each latent variable. After obtaining valid indicators, composite validity is carried out.

b. Composite Validity

Composite validity is used to measure the stability and consistency of combined reliability measurements. Internal consistency reliability (composite reliability) with RhoA data, average variance extracted (AVE) is expected to be above 0.5, and RhoA above 0.7. Table 8 shows the results of the composite validity calculation.

Table 8. Composite Validity Results

	alpha	AVE	RhoA
Ethics	0.853227	0.527456	0.855101
Communication	0.797199	0.565181	0.800552
Development English	1	1	1
IT Capabilities	0.853773	0.656641	0.853455
Self-Development	0.866266	0.444809	0.868267
The Ability to Work	0.904072	0.487819	0.909487
Competencies	0.879073	0.592586	0.887059

Table 8 shows that self-development and the ability to work variables have an AVE value of less than 0.5. This can be interpreted that the two variables are not stable and consistent enough. It would be better if the indicator was reduced again.

c. Discriminant Validity

Discriminant validity with cross-loading data, where the value for an indicator on one variable must be greater than the cross-loading value for another variable indicator in the same column. To find out whether the latent variable has sufficient discriminant, that is by comparing the intended cross-loading value, it must be greater than the other latent variables. The results obtained show that not all indicators meet discriminant validity, which means that not all indicators have sufficient discriminant. Because there are latent variables that are actually more explained by other indicators. This seems to support composite reliability in that it is necessary to reduce the indicators again, namely by eliminating the indicators that have the smallest loading factor values.

2. Determination of Appropriate Indicators

Due to the results obtained do not meet the indicators that deserve to be included in the model, by using R software, new indicators will be obtained to be used in the SEM model.

Table 9. Acquisition of Indicators in the SEM Model

Ind	Et	Com	D-En	ITC	S-D	AW	Com
X_1	0.68	0	0	0	0	0	0
X_2	0.77	0	0	0	0	0	0
X_5	0.68	0	0	0	0	0	0
X_6	0.82	0	0	0	0	0	0
X_7	0.75	0	0	0	0	0	0
X_9	0	0.76	0	0	0	0	0
X_{10}	0	0.68	0	0	0	0	0
X_{11}	0	0.81	0	0	0	0	0
X_{12}	0	0	1.0	0	0	0	0
X_{13}	0	0	0	0.77	0	0	0
X_{14}	0	0	0	0.87	0	0	0
X_{15}	0	0	0	0.78	0	0	0
X_{24}	0	0	0	0	0.80	0	0
X_{28}	0	0	0	0	0.74	0	0
Y_2	0	0	0	0	0	0.85	0
Y_3	0	0	0	0	0	0.73	0
Y_6	0	0	0	0	0	0.72	0
Y_{11}	0	0	0	0	0	0.73	0
Y_{14}	0	0	0	0	0	0.80	0
Y_{15}	0	0	0	0	0	0	0.86
Y_{16}	0	0	0	0	0	0	0.83
Y_{18}	0	0	0	0	0	0	0.76

The results of the loading factor values shown in Table 9 show that all indicators have met convergent validity which exceeds the value of 0.6. Following are the results of obtaining composite validity on indicators that are feasible to be included in the model.

Table 10. Composite Validity Results

	alpha	AVE	RhoA
Ethics	0.853227	0.527352	0.854892
Communication	0.797199	0.563816	0.799323
Development English	1	1	1
IT Capabilities	0.853773	0.655766	0.85434
Self-development	0.748133	0.599476	0.751338
The Ability to Work	0.876506	0.589528	0.880725
Competencies	0.855113	0.66765	0.860656

Table 10 shows that each indicator is well-represented or reliable for measuring each latent variable. Furthermore, based on the indicator data that can represent each variable, the value of the loading factor will be determined. If a loading factor value is obtained that is more than 0.6, then the acquisition of each indicator will be continued by determining the structural model equation.

Table 11. Acquisition of Loading Factor Value

Ind	Et	Com	D-En	IT-C	S-D	AW	Com
X_1	0.84	0.54	0.49	0.48	0.28	0.34	0.4
X_2	0.83	0.43	0.38	0.61	0.33	0.49	0.49
X_5	0.80	0.53	0.28	0.58	0.28	0.47	0.39
X_6	0.77	0.51	0.28	0.68	0.59	0.49	0.56
X_7	0.73	0.71	0.62	0.65	0.37	0.48	0.48
X_9	0.55	0.83	0.51	0.72	0.47	0.38	0.48
X_{10}	0.58	0.87	0.47	0.80	0.48	0.37	0.40
X_{11}	0.6	0.4	0.43	0.74	0.47	0.48	0.45
X_{12}	0.51	0.56	1.0	0.36	0.44	0.64	0.59
X_{13}	0.66	0.76	0.27	0.89	0.48	0.47	0.47
X_{14}	0.64	0.78	0.29	0.83	0.67	0.45	0.62
X_{15}	0.72	0.81	0.39	0.91	0.49	0.5	0.46
X_{24}	0.41	0.41	0.29	0.56	0.90	0.63	0.69
X_{28}	0.45	0.59	0.5	0.56	0.89	0.58	0.65
Y_2	0.49	0.58	0.54	0.65	0.70	0.87	0.73
Y_3	0.33	0.33	0.42	0.36	0.55	0.86	0.71
Y_6	0.59	0.42	0.53	0.42	0.51	0.78	0.63
Y_{11}	0.53	0.47	0.64	0.43	0.47	0.75	0.64
Y_{14}	0.44	0.21	0.51	0.34	0.54	0.84	0.70
Y_{15}	0.57	0.55	0.62	0.59	0.70	0.76	0.91
Y_{16}	0.55	0.50	0.47	0.57	0.73	0.72	0.89
Y_{18}	0.44	0.32	0.49	0.39	0.53	0.73	0.83

Table 11 shows that the loading factor obtained from each indicator on the attribute obtained a loading factor value of more than 0.6. This shows that indicators can measure their latent variables well.

3. Structural Model Assessment

a. Collinearity Test

To see if there is multicollinearity between indicators can be seen by the collinearity test shown in Table 12.

Table 12. Collinearity Test Results

Indicator	VIF	Latent Variables
X_1	2.735	Ethics
X_2	2.094	
X_5	2.164	
X_6	1.634	
X_7	1.787	
X_9	1.673	Communication
X_{10}	2.052	
X_{11}	1.618	
X_{12}	1.000	Development English
X_{13}	3.123	IT Capabilities
X_{14}	1.598	
X_{15}	3.271	
X_{24}	1.556	Self-Development
X_{28}	1.556	
Y_2	2.525	The Ability to Work
Y_3	2.490	
Y_6	1.872	
Y_{11}	1.709	
Y_{14}	2.350	
Y_{15}	2.612	Competencies
Y_{16}	2.489	
Y_{18}	1.769	

Table 12 shows that the acquisition of VIF values for all indicators is less than 5, this means that all indicators do not experience multicollinearity.

b. Coefficient of Determination

The coefficient of determination R^2, *R* square value 0.75; 0.50, or 0.25 respectively which means that the proportion of indicators is substantial (good), moderate (moderate), or weak (less), the percentage in measuring endogenous variables can be seen in Table 13.

Table 13. The Coefficient of Determination R^2

	The Ability to Work	Competencies
R^2	0.869	1.001
AdjR^2	0.838	1.001
Ethics	0.563	0.361
Communication	-0.244	-0.221
Development English	0.241	0.074
IT capabilities	-0.364	-0.177
Self-development	0.838	0.728

Table 13 shows that the coefficient of determination is more than 0.75. This result means that the proportion of indicators is substantial; or good and fit for use.

c. The Effect of Independent Variables on Dependent Variables

The *f* square gain will indicate the magnitude of the effect of independent variables on the dependent variables with a category value range of 0.02; 0.15; and 0.35 which indicates a small-medium effect, or a large effect. In the following, the obtained *f* square calculation results are presented using R software:

Table 14. *f* Square Calculation Results

	Et	Com	De Eng	IT cap	S-D	AW	Com
Et	0	0	0	0	0	0.76	-36.77
Com	0	0	0	0	0	-0.54	185.36
De Eng	0	0	0	0	0	0.47	-5.5
IT cap	0	0	0	0	0	-0.31	21.14
S-D	0	0	0	0	0	2.51	-108.17
AW	0	0	0	0	0	0	-25.74
Com	0	0	0	0	0	0	0

Table 14 shows that all variables have a significant effect on the dependent variable. However, not all variables have a positive effect whereas there are variables that have a negative effect on the dependent variables. In addition, a value of 0 is obtained because in the initial model construction there is no relationship between ethics, communication, BI development, IT skills, and self-development.

4. SEM Modeling

SEM modeling with PLS uses indicators that have fulfilled the test. After bootstrapping, the SEM pathway model is obtained as in Figure 2.

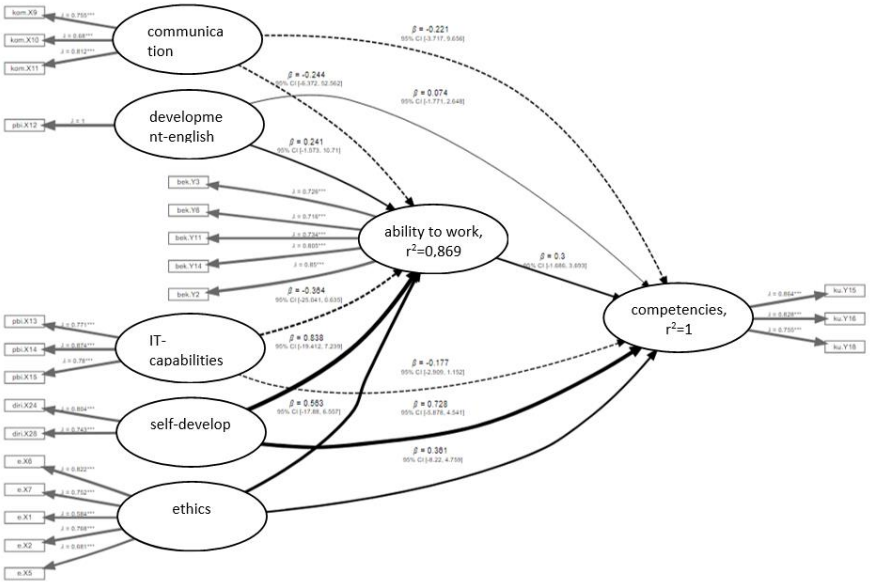


Figure 2. SEM-PLS Pathway Model

The visualization in Figure 2 is the SEM-PLS path model by bootstrapping 50 times. Furthermore, to see whether the influence is significant, it can be seen by the absence of a value of 0 between the upper and lower limits. The upper and lower limits are the confidence intervals of 0.025 or 2.5% and 0.975 or 97.5%, shown in Table 15.

Table 15. Significance between Variables

	Ori Est.	Boot Mean	Boot SD	T Stat.	2.5% CI	97.5% CI
e.X_1 ->ethics	0.58	0.57	0.19	3.11	0.07	0.82
e.X_2 ->ethics	0.77	0.76	0.09	7.69	0.56	0.93
e.X_5 ->ethics	0.68	0.7	0.11	6.22	0.44	0.84
e.X_6 ->ethics	0.82	0.83	0.07	11.35	0.67	0.98
e.X_7 ->ethics	0.75	0.77	0.14	5.28	0.37	0.94
com.X_9-> com	0.76	0.75	0.15	4.88	0.48	1.05
com.X_{10}-> com	0.68	0.62	0.19	3.60	0.23	0.97
com.X_{11}-> com	0.81	0.80	0.22	3.76	0.16	0.99
d-en.X_{12}-> d-en	1	1	9.3E-17	NA	1	1
IT ca.X_{13}-> IT ca	0.77	0.79	0.15	5.25	0.45	0.96
IT ca.X_{14}-> IT ca	0.87	0.88	0.24	3.62	0.52	1.27
IT ca.X_{15}-> IT ca	0.78	0.79	0.15	5.35	0.46	1.01
S-D.X_{24}-> S-D	0.80	0.8	0.16	5.03	0.41	1.03
S-D.X_{28}-> S-D	0.74	0.7	0.16	4.62	0.36	0.98
AW.Y_2-> AW	0.85	0.85	0.07	12.34	0.69	0.97
AW.Y_3-> AW	0.73	0.76	0.09	7.62	0.58	0.90
AW.Y_6-> AW	0.72	0.73	0.09	7.75	0.54	0.91
AW.Y_{11}-> AW	0.73	0.76	0.08	9.75	0.63	0.89
AW.Y_{14}-> AW	0.80	0.80	0.09	9.19	0.63	0.93
Com.Y_{15}-> Com	0.86	0.84	0.09	8.72	0.66	0.97
Com.Y_{16}-> Com	0.83	0.82	0.09	9.76	0.6	0.92
Com.Y_{18}-> Com	0.76	0.74	0.12	6.20	0.5	0.92

Table 15 states the effect of each indicator on the latent variables. The estimated value is indicated by the column Original Est. X_{12} has a value of 1 because BI development only has 1 indicator, namely X_{12}. Next, Table 16 is the estimation of the structural model.

Table 16. Structural Model Estimation

	Ori Est.	Boot Mean	Boot SD	T Stat.	2.5% CI	97.5% CI
ethics-> AW	0.56	2.21	18.65	0.03	-7.34	4.55
ethics-> Com	0.36	0.05	3.86	0.09	-4.00	4.65
Commu->AW	-0.24	-0.56	10.36	-0.02	-5.25	9.94
Commu ->Com	-0.22	0.08	1.73	-0.13	-3.42	4.7
De Eng ->AW	0.24	-0.34	4.4	0.06	-6.19	2.41
De Eng -> Com	0.07	-0.16	1.59	0.05	-1.81	1.34
IT cap-> AW	-0.36	-1.18	9.78	-0.04	-4.11	4.88
IT cap ->AW	-0.18	-0.11	2.9	-0.06	-2.13	3.09
SD-> AW	0.84	1.37	10.06	0.08	-2.61	3.34
SD ->Com	0.73	0.42	2.29	0.32	-2.78	5.59
AW -> Com	0.3	0.77	1.04	0.29	-0.94	2.38

Table 16 shows that ethics has a positive effect on the ability to work and ethics also has a positive effect on main competencies. This means that ethics will improve the ability to work as well as improve the main competence. Meanwhile, communication skills have a negative effect on the ability to work and also have a negative effect on main competencies. Another thing is the development of English language skills has a positive effect on the ability to work and main competencies. This means that improving English skills will improve the

ability to work as well as main competencies.

The opposite happened to the influence of IT skills which had a negative influence on the ability to work and main competencies. While self-development has a positive effect on the ability to work and main competence with a fairly large ratio. This means that increasing self-development will also improve the ability to work and main competencies. The same is followed by the positive influence of the ability to work on the main competencies. Where the increased ability to work will increase the main competence.

Thus, from the results obtained, it can be stated that (1) ethical behavior, English language skills, and self-development have a positive effect on the ability to work in teams for FKIP UMPRI graduates and the achievement of the performance of the main competency abilities of FKIP UMPRI graduates; and (2) communication skills and the ability to use information technology have a negative effect on the ability to work in teams and the performance achievements of the main competency abilities of FKIP UMPRI graduates. Based on these results, the user's perception of the factors that support the competency of FKIP UMPRI graduates is still in ethical behavior, English skills, and self-development. On the other hand, for communication skills and the ability to use information technology from processed data it can be stated that when a graduate's communication skills and ability to use technology are good, it does not guarantee that the ability to work in teams and the performance achievements of the main competency abilities of FKIP UMPRI graduates will be good too, and vice versa.

Furthermore, if viewed from the results of the PLS process, where the bootstrapping results are carried out 50 bootstrapping times it seems that the latent variables influence each other but are not significant. However, if it is done more than 50 bootstrapping, no results (errors) are obtained. As is the case in the initial model where indicator reduction has not been carried out that the latent variables have no significant effect. The recommended solution is to increase the amount of bootstrapping, but adding bootstrapping does not produce anything, by adding samples.

The implications of the research results indicate that ethical behavior, English language skills, and self-development efforts have a positive effect on the ability to work. In contrast, the results of other research show that the components of communication skills and the ability to use information technology have not had a positive effect on the ability to work in teams and the performance achievements of graduates' main competency abilities. Based on these results, the user's perception of the factors that support the competency of FKIP UMPRI graduates is still in behavioral ethics, English skills, and self-development efforts. This is in line with several research results which state that good ability to work is associated with high-quality work and high productivity as well as the enjoyment of remaining in one's job (Tuomi et al., 2001). Professional graduate competence is accompanied by the fulfillment of attitudes and values toward work (Van Den Berg et al., 2009). The measurement factor of the available ability to work highlights the facts that have an impact on the ability to work possessed by workers in accordance with the purpose of the measurement (Fadyl et al., 2010). Thus, the recency in this research is the measurement of two endogenous variables, namely the competence of graduates which is influenced by the ability to work, where the ability to work is influenced by five exogenous variables simultaneously the five exogenous variables (ethics, self-development, IT skills, English skills, and communication) do not jointly have a

positive influence on the ability to work and the competence of graduates. Research data and results show that the interrelationship of factors that influence graduate competence and ability to work is in accordance with the social and environmental conditions where graduates come from and where graduates work, where the ability to work is in accordance with the factors that influence physically, mentally, socially, environmental, and organizational demands on work and capacity (Duivenbooden & Burdorf, 2015).

CONCLUSIONS AND SUGGESTIONS

Based on the results of data analysis and discussion in this research, it can be concluded that not all indicators have sufficient effect on latent variables so that indicator reduction is carried out until sufficient indicators are obtained, the acquisition of variables that give effects, namely ethical behavior, English language skills, and self-development efforts. It can also be shown that there is a positive influence from the ability to work on the main competencies, where increasing the ability to work will increase the main competencies of FKIP UMPRI graduates.

A suggestion for future researchers based on the results of this research is the expansion of factors that affect the ability to work and competence of graduates based on physical, mental, social, environmental conditions and organizational demands.

REFERENCES

Carrasco, J. L. (2010). Structural equation model. *Encyclopedia of Biopharmaceutical Statistics*, *8*(3), 1300–1305. https://doi.org/10.3109/9781439822463.209

Ceha, R., Prasetyaningsih, E., Bachtiar, I., & S., A. N. (2008). Peningkatan kemampuan guru dalam pemanfaatan teknologi informasi pada kegiatan pembelajaran. *ETHOS: Penelitian Dan Pengabdian Masyarakat*, *4*(1), 131–138.

Dirgantara, U., & Suryadarma, M. (2014). Penerapan structural equation modeling (sem) dengan lisrel terhadap perbedaan tarif penerbangan pada penumpang domestik di bandara halim perdanakusuma. *Jurnal Sistem Informasi Universitas Suryadarma*, *9*(1), 203–209. https://doi.org/10.35968/jsi.v9i1.855

Duivenbooden, C. Van, & Burdorf, A. (2015). Influence of work-related factors and individual characteristics on work ability among dutch construction workers. *Danish National Research Centre for the Working Environment Norwegian National Institute of Occupational Health Finnish Institute of Occupational Health Scandinavian Journal of Work, Environment & Health Influence*, *33*(5), 351–357.

Fadyl, J. K., McPherson, K. M., Schlüter, P. J., & Turner-Stokes, L. (2010). Factors contributing to work-ability for injured workers: Literature review and comparison with available measures. *Disability and Rehabilitation*, *32*(14), 1173–1183. https://doi.org/10.3109/09638281003653302

Handayani, S. (2016). Pentingnya kemampuan berbahasa inggris sebagai dalam menyongsong asean. *Ikatan Sarjana Pendidikan Indonesia (ISPI) Jawa Tengah*, *3*(1), 102–106.

Pehrson, C., Banerjee, S. C., Manna, R., Shen, M. J., Coyle, N., Krueger, C. A., Maloney, E., Zaider, T., Carma, L., Kettering, S., & Corporation, M. (2016). Responding empathically to patients: Development, implementation, and evaluation of a communication skills training module for oncology nurses cassandra. *Patient Educ Couns.*, *99*(4),

610–616. https://doi.org/10.1016/j.pec.2015.11.021.Responding

Prasetyawati, M. P., & Kosasih, M. (2021). Analisis kinerja dan daya saing pada lulusan teknik industri fakultas teknik umj. *JISI: Jurnal Integrasi Sistem Industri*, *8*, 67–75.

Prayitno, G., Ahari, M. I., & Rukmi, W. I. (2021). Structural equation model with partial least square (sem-pls) of place dependence with land used change. *Journal of International Studies*, *14*(1), 153–171. https://doi.org/10.14254/2071-8330.2021/14-1/11

Rahman, A. (2022). Upaya peningkatan standar kompetensi lulusan. *Adiba: Journal of Education*, *2*(1), 122–132.

Santoso, B., Mahmudi, H., & Basuki, P. (2019). Studi pelacakan (tracer study) kinerja lulusan program pascasarjana magister ilmu ekonomi (mie) fakultas ekonomi dan bisnis universitas mataram. *Elastisitas - Jurnal Ekonomi Pembangunan*, *1*(1), 1–15. https://doi.org/10.29303/e-jep.v1i1.3

Setyaningsih, I. (2013). Analisis kualitas lulusan berdasarkan tingkat kepuasan pengguna lulusan. *Ilmiah Teknik Industri (JITI)*, *12*(01), 73–82.

Sri Indra Maiyanti, Oki Dwipurwani, E. K. (2008). Aplikasi structural equation model (sem) untuk mengetahui hubungan antara latar belakang keluarga, lingkungan belajar di luar kampus, motivasi, dan prestasi mahasiswa. *Jurnal Penelitian Sains*, *11*(3), 575–586.

Sulistiana, S., Winarni, I., Kurniati, S., & Prasetyo, B. (2016). Tingkat kepuasan lulusan terhadap penyelenggaraan dan mutu layanan, serta persepsi pemangku kepentingan terhadap kinerja lulusan program studi biologi fmipa-ut. *JPBI (Jurnal Pendidikan Biologi Indonesia)*, *1*(3), 274–282. https://doi.org/10.22219/jpbi.v1i3.2660

Sultoni, S., Gunawan, I., & Sari, D. N. (2018). Pengaruh etika profesional terhadap pembentukan karakter mahasiswa. *Jurnal Administrasi Dan Manajemen Pendidikan*, *1*(3), 279–283. https://doi.org/10.17977/um027v1i32018p279

Tobias, R. D. (1998). An introduction to partial least squares regression. *European Addiction Research*, *4*(4), 1–8. https://doi.org/10.1159/000018947

Tuomi, K., Huuhtanen, P., Nykyri, E., & Ilmarinen, J. (2001). Promotion of work ability, the quality of work and retirement. *Occupational Medicine*, *51*(5), 318–324. https://doi.org/10.1093/occmed/51.5.318

Van Den Berg, T. I. J., Elders, L. A. M., De Zwart, B. C. H., & Burdorf, A. (2009). The effects of work-related and individual factors the work ability index: A systematic review. *Occupational and Environmental Medicine*, *66*(4), 211–220. https://doi.org/10.1136/oem.2008.039883