International Journal of Advanced Science and Technology
Vol. 29, No. 01, (2020), pp. 815-827

Model of Vocational Teachers (Audio Video Engineering) Efforts to Support Graduates' Work Readiness

P. Sudira*, D. Santoso, S. Waluyanti and P. Utami

Universitas Negeri Yogyakarta, Karangmalang, Sleman, Yogyakarta, Indonesia

Abstract

This article is a study to determine the validity and reliability model of vocational teacher efforts to support graduates' work readiness using outer model analysis. The model points out relationship of factors associated with vocational teachers with graduate work readiness. Data was collected using a questionnaire method with a survey design of 60 vocational teachers (Audio Video Engineering) in Yogyakarta. Development of hypotheses and questionnaires with a theory testing approach. Convergence validity in terms of outer loading shows that there are WR1 (mastering basic skills) and WR7 (interest) indicators which have values below 0.7. Based on the AVE value all indicators are greater than 0.5. Discriminant validity shows that all values in each construct are greater than values in other constructs. Based on AVE and cross-loading values, as well as construct representation, WR1 and WR7 are maintained. Both the composite reliability and the Cronbach's alpha value are ≥ 0.70, so reliability is accepted. From these results, the instrument can be used for further research because it has been valid and reliable. The indicators on the construct variables can be used to analyze the relationship of on the efforts of Vocational Teachers (Audio Video Engineering) to support graduates' work readiness.

Keywords: *vocational concept, vocational teacher, vocational learning, work readiness*

1. Introduction

Work readiness and employability skills remain the main issue of the main outcome of vocational education and training graduates. Work readiness and employability skills are related to the capabilities of graduates to perform in the world of work. Vocational education and training aim to provide students with the knowledge, competencies, specific skills, generic skills needed in certain jobs in the workplace [5]-[18]-[2]-[27]. Vocational High School (VHS) is a secondary education in Indonesia that prepares students to work. VHS graduates are the highest contributor to unemployment [3]. This shows that there are problems in preparing vocational students to have work readiness. The preparation of vocational students competencies is directly regulated by the teacher. On recruitment of civil servants, many higher education graduates take vacancies that can be taken by VHS graduates [4]. From the learning experiences of the two graduates, the work readiness of VHS graduates is lower than that of higher education graduates. One of the study programs in VHS is Audio Video Engineering. The big challenge of the study program in Industry 4.0 is learning and learning support that needs to change and synergize with the use of the latest technology. The potential for graduates of Yogyakarta City is large, faced with limited workplaces [4]. Therefore the recruitment of workers becomes selective. Related to this, the role of work readiness of VHS graduates can enhance

ISSN: 2005-4238 IJAST

opportunities for graduate employment. In order for vocational education goals to be achieved, teachers need to ensure graduate work readiness.

Vocational teacher plays an important role in organizing learning that aims for students to have work readiness [34]. Teacher experience and competence influence student achievement [32]. Regarding preparation for work after graduation, student learning outcomes need to be emphasized on material related to the workplace [22]. Teachers need to implement workplace-oriented learning to support graduate work readiness. Learning-related to the workplace requires the involvement of many stakeholders. Stakeholders, in this case, can assist in learning planning, learning, and learning assessment. The existence of stakeholder support, the limitations of learning can be overcome. Learning outcomes can be supported through stakeholder involvement [10]. Various efforts to prepare students for work readiness require a comprehensive understanding of the concept of vocational education by the teacher. That is because, through understanding the concept, the teacher can maintain the values of vocational education through strategies or new things related work competencies in learning process [5].

The important role of understanding the concept of vocational education by teachers in learning needs to be modeled along with learning support variables (stakeholders and teacher competencies), learning and graduate work readiness. The relationship between these variables is still one way [5]-[10]-[17]-[25]. Concept understanding by the teacher as the basis of all teacher actions to achieve educational goals plays an important role in learning [5]-[17]. Vocational education has five functions including socialization, social control, selection and allocation, cultural compilation and conservation, and promoting change for improvement. In other words, the function of vocational education as acculturation (self-adjustment) and enculturation (the bearer of change). Vocational education aims to prepare students for a higher level, enter the workforce (as a workforce or entrepreneur), have a community, and develop themselves in line with developments. Vocational education is beneficial for students, the world of work and society.

Characteristics of vocational education are demand driven, hands-on, focusing on mastering knowledge, skills, attitudes and values in the world of work and the need for supporting facilities. There are three main foundations of vocational education, including law, philosophy and science. There are four models of the implementation of vocational education, including the school model, the dual system model, the internship model and the production unit model [8]. There are 16 principles of vocational education [19]. Concept understanding of vocational education is assumed to have a positive impact on efforts to obtain learning support and learning work competencies for the effectiveness of achieving learning objectives, including job readiness of graduates.

Work-based learning is learning that connects competence in the workplace with planning learning programs in a class. Work-based learning supports work readiness. Work-based learning requires stakeholder support in planning learning that is connected to the workplace with a variety of work-based learning experiences, assessment of work competencies, strengthening learning and other skills needed at work [9]. Work-based learning components include learning planning, student characteristics, learning objectives (material), material delivery

methods and assessments [1]. Learning material must be in accordance with the context at work, where some learning methods are through inquiry activities to strengthen thinking and metacognition skills, learning at work and giving students the freedom to determine their own learning methods through project assignments [22]. With the concept of vocational education that underlies teachers, it is possible to optimize work-based learning. Teachers can seek work-based learning support, for example related to stakeholder involvement in learning planning, learning, and assessment. Concept understanding of vocational education by the teacher can encourage him to always learn to improve his competence. That is because teacher competence affects student learning outcomes [31]. Regarding work-based learning, stakeholders play an important role in supporting their effectiveness [10]. Referring to the National Education System Law, stakeholders, in this case, are the Government, the community (workplaces, alumni, parents who join the school committee) and the School (Management, Teachers, Library Officers, and all school members) [26] competence consists of mastering basic skills, workplace-related skills, soft skills and hard skills [32]. Work readiness is influenced by self-confidence [21], interest and practical experience [35]. More specifically, vocational graduates' job readiness is influenced by practical work experience, workplace insights, and employability skills [21]. Soft skills are part of work readiness at workplace [16]. Related to employability skills and soft skills refer to The 21st Century Knowledge-and-Skills Rainbow, which consists of Learning and Innovation Skills, Digital literacy skills, career, and life skills [30]. Work readiness related to the mastery of aspects of work needs [6]. The need for work, in this case is technical competence.

This article describes the results of the outer model analysis using SmartPLS [23]. This article is model of vocational teacher efforts to support graduates' work readiness in audio video engineering field. This study to carry out outer model testing, which will be used in testing hypotheses regarding factors related to vocational teachers to graduate work readiness. This study includes the explanation of the construction of the variables in this study, both exogenous and endogenous variables that are in accordance with theoretical studies to support hypothesis verification. Justification of the construct regarding the relationship between variables, it is possible to provide recommendations for strategic efforts related to work readiness for students. With questionnaire data that are a valid and reliable construct, it will produce a meaningful hypothesis analysis. Educational backgrounds and diverse student characteristics in vocational education, as well as the occurrence of curriculum changes, require the existence of concepts that become a benchmark for vocational values for teachers. The importance of concepts owned by the teacher has not been widely studied, even though the concept has an important role in learning [17]. The importance of understanding this concept has not been matched by a comprehensive study of why and how understanding the concept can form the basis of the teacher. This article examines a model consisting of variables of concept understanding, learning support, learning and work readiness. Modeling is based on theoretical concepts. The contribution of this article is to describe the construction of exogenous variables is the understanding of concepts and other endogenous variables, including work readiness that is analyzed using the outer model on SmartPLS.

ISSN: 2005-4238 IJAST

2. Methodology

The construction of variables related to vocational teachers to support work readiness is described through an outer model analysis. The analysis used is using the outer model on SmartPLS. Data was collected through a survey design using a questionnaire with a theory-testing approach. The approach is used for developing hypotheses. The respondents were 60 Audio Video Engineering teachers in Yogyakarta. Sampling uses a purposive sampling technique, which is a sampling technique with certain considerations [28]. The considerations referred to are: (1) public and private VHS representation; and (2) teacher representation in group A subjects (Religious Education and Characteristics; Pancasila and Citizenship Education; Indonesian; Mathematics; Indonesian History; English), Group B (Cultural Arts; Physical Education, Sports and Health), and group C (Digital Communication Simulation; Physics; Chemistry; Electrical Workshops and Drawing Work; Basic Electricity and Electronics; Microprocessor and Microcontroller Programming Techniques; Microprocessor and Microcontroller Programming; Application of Electronic Circuits; Planning and Installation of Audio Video Systems; Application of Radio and Television Systems; Maintenance and Repair of Audio and Video Equipment; and Creative and Entrepreneurship Products). These subjects are supported by more than one teacher so that the determination of respondents' samples is technically done randomly.

The survey questionnaire consisted of variables understanding the concept of vocational education, learning environment support, work competency learning, and graduate work readiness. The variables in this study were developed from the theory with the first-order method. The method is a variable that is measured directly by the indicators it develops [11]. There is one exogenous variable, which is conceptual understanding. There are three endogenous variables, including learning environment support, learning and work readiness. The questionnaire was assessed by the expert regarding its content validity. Content validity assessment is done to ensure indicators on the instrument are able to describe aspects in a construct. Content validity is done by the expert before retrieval of data. The expert also assessed open questions on the questionnaire. The things the researcher did was the reconstruction of the sentences on each indicator to be shorter, unambiguous and in accordance with the construct of the instrument. This assessment is carried out through Focus Group Discussion (FGD) so that the process of correction, improvement, and confirmation of the results of improvements can be done at once. The questionnaire was developed until it was declared valid in terms of content by the expert. Data collection is done by giving print questionnaires to the teachers by giving the collection time lag in accordance with the agreement between the research team and the respondent (the time collection varies from one day to one week).

The analysis is carried out for the results of closed statements and open-ended questions. Open questions are analyzed by the triangulation method, which is to confirm with the results of closed statements and theories. The analytical method uses SEM with SmartPLS [23]. For testing cause-effect-relationships models with latent variables, SEM has become the dominant analytical tool. PLS-SEM is used assuming the data are not normally distributed and the sample size is relatively small [24]. Regarding the assumption that the data is not normally distributed, the

use of PLS-SEM needs to apply bootstrapping to determine the level of significance of each indicator weight. Measurement model or outer model evaluation to measure the reliability and validity of the data. Validity test is done to determine the ability of research instruments to measure what should be measured. Reliability test is used to measure the consistency of measuring instruments in measuring a concept or can also be used to measure the consistency of respondents in answering question items in a questionnaire or research instrument. Outer models assess the relationship between latent variables (constructs) with several manifest variables (indicators). The instrument evaluation was carried out in several stages, namely assessing content validity and empirical evaluation. Content validity assessment is carried out at the development stage of the questionnaire. Empirical evaluation through an outer model that produces convergent validity and discriminant validity. In convergent validity, the data is declared valid when each item has an outer loading above 0.70 and when each construct's average variance is extracted (AVE) is 0.50 or higher. The measurement of discriminant validity can be through checking the cross-loadings of the indicators, where the value must be greater than the value in the other constructs [24]-[12]. Reliability is measured through composite reliability and Cronbach's alpha, with acceptable reliability values ≥ 0,70 [12].

3. Results and Discussion

The relationship between conceptual understanding, learning support, learning and work readiness is formulated in six hypotheses and conceptual models such as Figure 1. Then a description of each variable is carried out to develop the questionnaire. Concept Understanding (CU) in this case is an understanding of the concept of vocational education that has functions, goals, characteristics, principles, foundations, models and the importance of cooperation in preparing students with certain skills. Supporting Factors (SF) are things that support the achievement of student competencies in the form of stakeholder support, alumni, policies, infrastructure and teacher competencies. Learning (LA) is an activity of planning, implementing, and evaluating learning. Work Readiness (WR) is a work readiness that is demonstrated through mastery of basic skills, technical competencies, the 21st Century Knowledge and Skills as well as ownership of confidence, interests, and experience in the use of work skills. The indicators on the questionnaire are formative indicators. Formative indicators cause constructs [11]. Questionnaire data has grading ratings from one (low) to five (very high). Table 1 shows a description of the questionnaire used by researchers.

H1: Understanding the concept of vocational education by teachers has a positive effect on learning support related to the workplace
H2: Understanding the concept of vocational education by teachers has a positive effect on work readiness
H3: Understanding the concept of vocational education by teachers has a positive effect on learning work competence
H4: Learning support has a positive effect on learning work competence
H5: Learning support has a positive effect on work readiness
H6: Learning work competence has a positive effect on work readiness

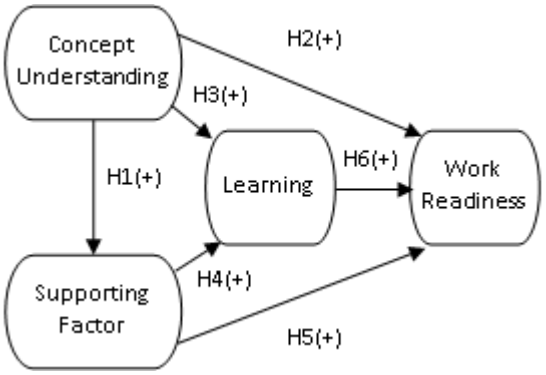

Figure 1: Hypothesis and the conceptual model proposed

Table 1: Survey Questionnaire Description

No	Variable	Indicator	Method
1	Concept Understanding (CU)	Function (CU1); goal (CU2); characteristics (CU3); principle (CU4); assumption (CU5); model (CU6): and cooperation (CU7)	7 closed statement
2	Supporting Factor (SF)	Stakeholder support (government (SF1); workplace (SF2); alumni in the world of work (SF3); school committee (SF4); school facilities (SF5); teacher competency (SF6, SF7, SF8)	8 closed statement
3	Learning (LA)	Planning (curriculum) (LA1); learning media (LA2); learning assessment (LA3); contextualization of the material world of work (LA4); inquiry learning activities (LA5); learning activities in the world of work (LA6); and project-based learning activities (LA7)	7 closed statement
4	Work Readiness (WR)	Mastering basic skills (WR1), mastering technical competency (WR2), mastering The 21st Century Knowledge and Skills (WR3, WR4, WR5), self-confidence (WR6), interests (WR7) and experience (WR8)	8 closed statement and 1 open question item

Table 1 describes the closed statements on the questionnaire. The questionnaire consisted of 30 items of closed statements and one open question. The open question on the questionnaire is "Explain the obstacles to preparing students' work readiness experienced by the teacher?". Open questions are validated through content validity testing by experts. The question has been revised, namely: (1) a reduction in the number of questions, where previously there were some questions that were considered expert not relevant to the purpose of the instrument; and (2) changing the wording and choice of words, so that the respondent is clear in capturing the purpose of the question. After the data is collected, Figure 1 is used as the basis for compiling the model in SmartPLS (Figure 2) for testing the outer model (relationship of indicators to variables).

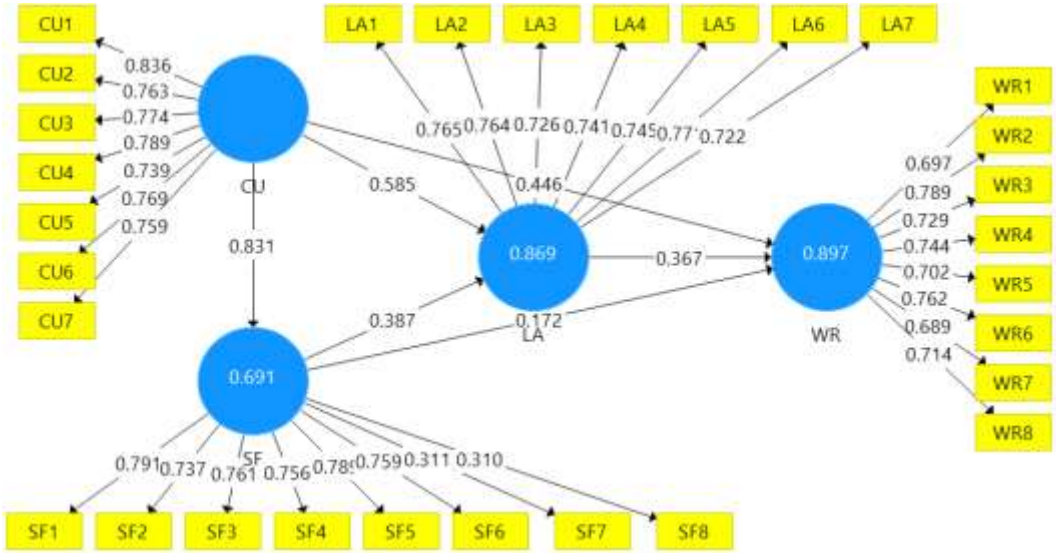

Figure 2: The first path diagram model uses SmartPLS

Table 2: Validity test results for the first model on the indicators SF7, SF8, WR1, and WR7

Latent Variable	Indicator	Convergent Validity			Discriminant Validity				Interpretation
		Outer Loading	Interpretation	AVE (Interpretation)	CU	SF	LA	WR	
SF	SF7	0,311	Invalid	0,464 (Invalid)	0,108	0,311	0,225	0,156	Valid
	SF8	0,310	Invalid		0,261	0,310	0,357	0,258	Invalid
WR	WR1	0,697	Invalid	0,526 (Valid)	0,648	0,662	0,639	0,697	Valid
	WR7	0,689	Invalid		0,597	0,665	0,665	0,689	Valid

In Figure 2, related indicators have been included in each variable. The next step is to test the validity and reliability of the data through empirical evaluation using an outer model evaluation on SmartPLS. The calculate menu on the SmartPLS used is PLS Algorithm to see the validity and reliability values. Figure 2 shows the outer loading value on each indicator and the R2 value of each endogenous variable that is displayed when the PLS Algorithm is used. There are four indicators that have an outer loading value below 0.7. Further testing is done to decide whether the indicators need to be discarded or maintained. The test is testing the AVE value, cross-loading value and its representation of the construct. Table 2 shows the results of the first model Validity Test specifically with regard to the indicators SF7, SF8, WR1, and WR7. Table 2 shows that the AVE construct value on the SF variable is below 0.5, which means it is invalid. Additionally, the cross-loading value for the SF8 indicator in the SF construct is not greater than the value for other constructs. For the SF7 and SF8 indicators the first model is declared invalid. This is because the convergent validity value, both outer loading, and AVE do not meet the requirements. The cross-loading value for SF 7 is valid, while SF8 is invalid. Indicators SF6, SF7, and SF8 represent one construct in SF, namely teacher competency. Because the construct was already represented by SF6, SF7 and SF8 were discarded. For WR1 and WR 7 indicators, even though the outer loading value is below 0.7, it can be said to be close to 0.7 and if rounded is 0.7.

Additionally, the value of AVE and cross-loading is in accordance with the requirements. Therefore, WR1 and WR7 indicators are maintained. In addition, the two indicators are needed to construct representation. Table 3 summarizes the convergent and discriminant validity test results, where the SF7 and SF8 indicators have been discarded.

Table 3: Convergent Validity and Discriminant Validity

Latent Variable	Indicator	Convergent Validity			Discriminant Validity				Interpretation
		Outer Loading	Interpretation	AVE (Interpretation)	CU	SF	LA	WR	
CU	CU1	0,837	Valid	0,602 (Valid)	**0,837**	0,717	0,713	0,764	Valid
	CU2	0,763	Valid		**0,763**	0,603	0,756	0,730	Valid
	CU3	0,774	Valid		**0,774**	0,654	0,659	0,686	Valid
	CU4	0,789	Valid		**0,789**	0,691	0,725	0,746	Valid
	CU5	0,738	Valid		**0,738**	0,547	0,690	0,680	Valid
	CU6	0,769	Valid		**0,769**	0,694	0,762	0,656	Valid
	CU7	0,760	Valid		**0,760**	0,626	0,615	0,742	Valid
SF	SF1	0,792	Valid	0,591 (Valid)	0,645	**0,792**	0,707	0,734	Valid
	SF2	0,741	Valid		0,669	**0,741**	0,667	0,643	Valid
	SF3	0,759	Valid		0,674	**0,759**	0,685	0,640	Valid
	SF4	0,755	Valid		0,611	**0,755**	0,641	0,684	Valid
	SF5	0,802	Valid		0,634	**0,802**	0,654	0,666	Valid
	SF6	0,762	Valid		0,622	**0,762**	0,626	0,627	Valid
LA	LA1	0,766	Valid	0,559 (Valid)	0,748	0,570	**0,766**	0,721	Valid
	LA2	0,763	Valid		0,684	0,730	**0,763**	0,699	Valid
	LA3	0,725	Valid		0,625	0,625	**0,725**	0,679	Valid
	LA4	0,741	Valid		0,638	0,700	**0,741**	0,696	Valid
	LA5	0,744	Valid		0,651	0,694	**0,744**	0,666	Valid
	LA6	0,771	Valid		0,760	0,581	**0,771**	0,725	Valid
	LA7	0,722	Valid		0,632	0,627	**0,722**	0,632	Valid
WR	WR1	0,697	Invalid	0,532 (Valid)	0,648	0,654	0,639	**0,697**	Valid
	WR2	0,789	Valid		0,711	0,677	0,703	**0,789**	Valid
	WR3	0,728	Valid		0,707	0,492	0,698	**0,728**	Valid
	WR4	0,744	Valid		0,740	0,630	0,720	**0,744**	Valid
	WR5	0,702	Valid		0,663	0,623	0,665	**0,702**	Valid
	WR6	0,763	Valid		0,617	0,687	0,604	**0,763**	Valid
	WR7	0,690	Invalid		0,597	0,674	0,657	**0,690**	Valid
	WR8	0,714	Valid		0,678	0,624	0,678	**0,714**	Valid

Table 4: Reliability Test Results

Latent Variable	Cronbach's Alpha	Composite Reliability	Interpretation
Concept Understanding (CU)	0,891	0,915	Reliability is accepted
Supporting Factor (SF)	0,861	0,897	Reliability is accepted
Learning (LA)	0,869	0,899	Reliability is accepted
Work Readiness (WR)	0,871	0,899	Reliability is accepted

The results of convergence validity and discriminant validity can be seen in Table 3, while the reliability test results can be seen in Table 4. For convergence validity, all outer loading values > 0.7 except for indicators WR1 (0.697) and WR7 (0.690). Both indicators have values close to 0.7 (rounding up). AVE values for all variables > 0.5. This shows that the removal of the SF7 and SF8 indicators can increase the value of AVE. For discriminant validity, the cross-loadings of the indicator's value is higher than the cross-loading on other constructs. Based on the results of the assessment, all indicators are maintained and have met the validity requirements. Both the composite reliability value and the Cronbach's alpha value are ≥ 0.70. The CR and CA values indicate that the internal consistency of the data from the questionnaire is reliable. For reliability measurement, CR is considered better than CA because composite reliability does not assume that all indicator loadings are equal in the population and composite reliability is able to accommodate different indicators of reliability [24]. From these results, the instrument was declared valid and reliable, so the instrument was worth using. Figure 3 shows a graph of AVE, Cronbach's alpha, composite reliability taken from SmartPLS. The graph shows that the value of each variable is above the boundary value (blue).

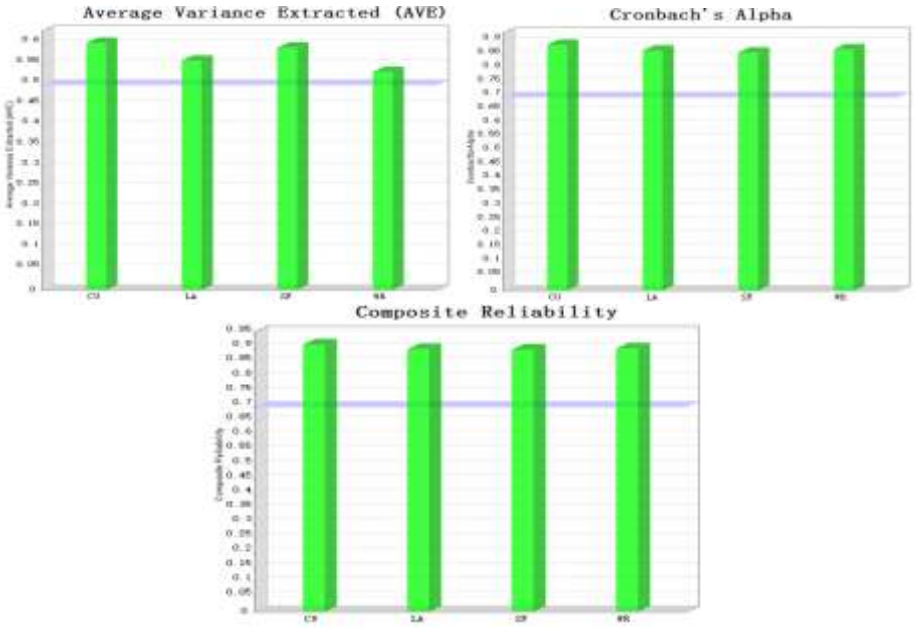

Figure 3: AVE, Cronbach alpha, and composite reliability graphics

Teachers as actors who deal directly with students need to have a comprehensive understanding of the concept of vocational education. The concept of vocational education in question includes the functions, objectives, characteristics, principles, assumptions, models and cooperation. The outer model test results show that the seven indicators are valid and reliable. The seven indicators then need to be pursued in vocational education by considering several perspectives. These perspectives include pedagogical and andragogical perspective to support learning and development of competences. System perspective related to providers and how to manage it, Socioeconomic perspective related to its function in the community and workplace [5]. Mastery of the concept of vocational education by teachers needs to be applied to support learning and competency development, management of resources needed in the achievement of competencies and preparation of students who are ready to work in order to take a role both in the community and the world of work. The concept of vocational learning in the XXI Century is capacity building learning constructs in-depth knowledge, adult learning directs itself to integrate knowledge continuously as a life-long-learning process. Socially vocational learning requires a network of cooperation. Vocational learning in the XXI Century requires readiness to learn to face change, a high curiosity based on personal needs as an adult person. The orientation of vocational learning in the XXI Century leads to the acquisition of problem-solving competencies according to real tasks at work or in the community. Teachers' understanding of the concept of vocational education supports the capability of teachers in the development of vocational learning to be more effective, increasingly related to the world of work and to make work readiness of graduates better [27].

Implementing work competency learning requires support from stakeholders (government, workplaces, alumni, school committees, schools facilities) and appropriate teacher competencies. Teacher competence, in this case, is not limited to the ability of the technical field, but also the ability to teach both verbal and non-verbal aspects. Vocational teacher competencies include technical domains, pedagogy domains, and attitude domains. Increasing teacher competency is important. Qualified (competent) vocational teachers produce competent graduates who are able to meet the requirements in the workplace [13]. Steps that can be taken to involve stakeholders can be preceded by workshop activities related to the perception and related technical steps [7]. More specifically, stakeholder involvement, in this case parties in the workplace can participate in the development of learning including, planning (curriculum), learning media, learning assessment, contextualization of the world of work material, inquiry learning activities, learning activities in the world of work and based learning activities project. Inclusion of aspects of work readiness needs to be included in the curriculum [29]. That is because the curriculum will underlie the implementation of learning. Stakeholder involvement and teacher competence that is appropriate for work competency learning will encourage students to have mastery of basic skills, mastery of technical competency, mastery of The 21st Century Knowledge and Skills, self-confidence, work interest, and practical experience. Practical experience can be obtained through industry practice. Students who attend internship programs assessed positively all aspects of the work readiness construct [15]. Cooperation from stakeholders is needed to help graduate work readiness, especially regarding the transition to the workplace [33]. Figure 4 shows the final path analysis model, where validity and reliability have been tested and are feasible. Further research is about testing the inner model. Some further research that can be done is regarding the stakeholder engagement model in learning work competence to support work readiness

and efforts to improve teacher competence, especially in training teachers to "teach" more easily and quickly understood by students.

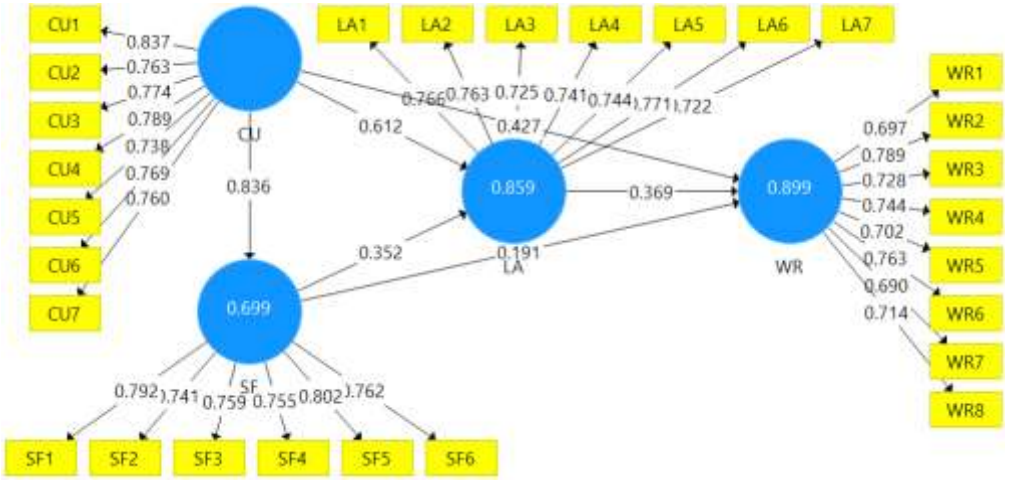

Figure 4: The final path diagram model

4. Conclusion

The final path diagram model is the second model from the outer model test results. The difference with the first model is the removal of two indicators on the SF variable because it does not meet the validity requirements. The deletion is considered not to affect the construction of the SF variable because the construct is represented by other indicators. The use of SmartPLS is considered appropriate for this study because the sample size is relatively small. The results show that validity and reliability meet the requirements criteria. Validity is reviewed from: (1) convergent validity on the outer loading value and AVE value. There are only two indicators below the criteria (<0.7), but the value is very close to the criteria. The two values are 0.697 and 0.690. All constructs meet AVE criteria with a value greater than 0.5. (2) discriminant validity, where all cross loading indicator values in the construct are greater than the cross loading indicator values in other constructs. The composite reliability value and Cronbach's alpha value exceed 0.7, so both values meet the reliability criteria. This preliminary analysis brings the conclusion that the questionnaire is feasible to be used as a data collection method in order to test the research hypotheses in future studies through inner model analysis. Furthermore, the questionnaire can be used to analyze the relationship of factors related to vocational teachers and graduate work readiness.

Acknowledgments

This research was funded by the Faculty of Engineering, Yogyakarta State University. Thank you to the Dean of the Faculty of Engineering, Chair of the Institute for Research and Community Services, and Chair of the Department of Electronics and Informatics Engineering Education.

References

[1] I. Aytekin, "Instructional design in education: New model," Turkish Online J. Educ. Technology, vol. 10, no. 1, (2011), pp. 136–142.

[2] S. Billet, Vocational education purposes, traditions and prospects. London: Springer Science+Business Media, (2011).

[3] Berita Resmi Statistik, "Tingkat Pengangguran Terbuka (TPT) sebesar 5,01 persen," 2019, https://www.bps.go.id/pressrelease/2019/05/06/1564/februari-2019--tingkat-pengangguran-terbuka--tpt--sebesar-5-01-persen.html.

[4] Badan Pusat Statistik Daerah Istimewa Yogyakarta, "Statistik ketenagakerjaan Daerah Istimewa Yogyakarta 2017-2018," Indonesia, (2018).

[5] Cedefop, "The changing nature and role of vocational education and training in Europe Volume 1: Conceptions of vocational education and training: An analytical framework," (2017), https://www.cedefop.europa.eu/files/5563_en_0.pdf.

[6] H. Clark, M. LeFebvre, K. Burkum, and T. Kyte, "Work readiness standards and benchmarks the key to differentiating america's workforce and regaining global competitiveness," (2013), http://www.act.org/content/dam/act/unsecured/documents/Work-Readiness-Standards-and-Benchmarks.pdf.

[7] SMASTE-CPD Joint Technical Committee, "School-Based Continuing Professional Development (SBCPD) through lesson study," (2007), https://www.jica.go.jp/project/zambia/0700918/04/pdf/guideline.pdf.

[8] W. Djojonegoro, "Pengembangan sumber daya manusia melalui SMK," Jakarta: Jayakarta Agung Offset, (1998).

[9] Federal Partners in Transition, "What to know about work-based learning experiences for students and youth with disabilities," (2015), https://www2.ed.gov/about/offices/list/osers/transition/products/fpt-fact-sheet--work-based-eperiences--11-5-15.pdf.

[10] G.W. Gichohi, "Stakeholder involvement in schools in 21st century for academic excellence," Int. J. Educ. Res., vol. 3, no. 2, (2015), pp. 13–22.

[11] Haryono and Siswoyo, "Konsep dasar dan prosedur SEM," in Metode SEM Untuk Penelitian Manajemen dengan AMOS 22.00, Lisrel 8.80 dan SMART-PLS 3.0. (2017), pp. 22–62.

[12] J.F. Hair, C.M. Ringle, and M. Sarstedt, "Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance," Long Range Plann., vol. 46, no. 1–2, (2013), pp. 1–12.

[13] K. Ismail, Z.M. Nopiah, M.S. Rasul, and P.C. Leong, "Development of competency items for vocational teachers using rasch model analysis," J. Eng. Sci. Technol., Special Issue on ICEES2018, (2019), pp. 51–58.

[14] A. Ismail, R. Hassan, A.A. Bakar, H. Hussin, M.A.M. Hanafiah, and L.H. Sary, "The development of TVET educator competencies for quality educator," J. Tech. Educ. Train., vol. 10, no. 2, (2018), pp. 38–48.

[15] I. Kapareliotis, K. Voutsina, and A. Patsiotis, "Internship and employability prospects: Assessing student's work readiness," High. Educ. Ski. Work. Learn., vol. 9, no. 4, (2019), pp. 538-549.

[16] S. Mariah, "Developing soft skills for the work readiness in industry of vocational high school students," in International Conference on Vocational Education and Training, (2012), pp. 203–211.

[17] S. Opel, and T. Brinda, "Learning fields in vocational IT education – How teachers interpret the concept," International Conference on Informatics in Schools: Situation, Evolution, and Perspectives, (2013), pp. 147-158.

[18] M. Pavlova, "Technology and vocational education for sustainable development empowering individuals for the future," (2009), Queensland: Springer Science Business Media B.V.

[19] C.A. Prosser and T.H. Quigley, "Vocational education in a democracy," (1949), Illinois: American Technical Society.

[20] E. Putriatama, S. Patmanthara, and R.M. Sugandi, "Work readiness by vocational school graduates viewed from industrial work practice's experience and vocational skills," AIP Conf. Proc., vol. 1778, no. 1, (2016). pp. 1–9.

[21] M. Raftopoulos, S. Coetzee, and D. Visser, "Work-readiness skills in the Fasset Sector," SA J. Hum.

Resour. Manag., vol. 7, no. 1, (2009), pp. 1–8.

[22] A.C. Rule, "Editorial: The components of authentic learning," J. Authentic Learn., vol. 3, no. 1, (2006), pp. 1–10.

[23] C.M. Ringle, S. Wende, and J.M. Becker, "SmartPLS 3," Boenningstedt: SmartPLS GmbH, (2015).

[24] J. F. H. Jr, M. Sarstedt, L. Hopkins, and V.G. Kuppelwieser, "Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research," Eur. Bus. Rev., vol. 26, no. 2, (2014), pp. 106–121.

[25] C. Smith, S.Ferns, L. Russel, and P. Cretchley, "The impact of work integrated learning on student work-readiness," (2014), https://espace.curtin.edu.au/bitstream/handle/20.500.11937/55398/255434.pdf?sequence=2.

[26] Direktorat Jenderal Kelembagaan Iptek dan Dikti Kementerian Riset, Teknologi dan Pendidikan Tinggi, "Undang-undang Republik Indonesia Nomor 20 Tahun 2003 tentang Sistem Pendidikan Nasional," (2003), https://kelembagaan.ristekdikti.go.id/wp-content/uploads/2016/08/UU_no_20_th_2003.pdf.

[27] P. Sudira, TVET abad XXI: Filosofi, teori, konsep, dan strategi pembelajaran vokasional," Yogyakarta: UNY Press, (2017).

[28] Sugiyono, "Metode penelitian kuantitatif kualitataif dan kombinasi (mixed methods)," Bandung: Alfabeta, (2016).

[29] W. Teng, C.M.S. Pahlevansharif, and J.J. Turner, "Graduate readiness for the employment market of the 4th industrial revolution: The development of soft employability skills," Educ. Train., vol. 61, no. 5, (2019), pp. 590–604.

[30] B. Trilling, and C. Fadel, "21st century skills learning for life in our times," San Fransisco: Jossey-Bass A Wiley Imprint, (2009).

[31] A. Ugbe, and J. Agim, "Influence of teachers' competence on students academic performance in senior secondary school chemistry," Glob. J. Educ. Res., vol. 8, no. 1–2, (2009), pp. 61–66.

[32] G. Works, "Work readiness competency guide," (2012), http://ww1.insightcced.org/uploads/nnsp/webinars/2013/work-readiness-competency-guide-1.pdf.

[33] J. Winterton and J.J. Turner, "Preparing graduates for work readiness: An overview and agenda," Educ. Train., vol. 61, no. 5, (2019), pp. 536–551.

[34] H. Woo, W. Kim, Y. Yi, and G. Yoon, "Examining training performance of TVET trainers, with/without TVET certificate in the republic of Korea," Journal of Technical Education and Training, vol. 10, no. 2, (2018), pp. 1-12.

[35] F.A. Zulmi, "Pengaruh minat bekerja, kepercayaan diri dan pengalaman praktik kerja industri (prakerin) terhadap kesiapan kerja siswa kelas XII SMK Abdi Negara Muntilan Tahun Ajaran 2017/2018," (2018).