# HASIL CEK_2nd Order CFA; Factor analysis; Employability; Skills; Science; understanding; Personality attributes

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# Employability Analysis of Students in Yogyakarta: Confirmatory Factor Analysis

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## ARTICLE INFO

## ABSTRACT

The employability of students is an essential factor that every school must consider. This study aims to test the validity and reliability of the employability scale construct, determine the contribution of each aspect and indicator in reflecting employability variables, and test whether the theoretical model of employability fits with empirical data. Employability is measured by four aspects, namely skills, knowledge, understanding, and personality attributes. The subjects in this study were 372 students of State Vocational High School 1 Kalasan Yogyakarta. The sample in this study amounted to 225 students. The sampling technique used probability sampling with simple random sampling. The data collection method used a job satisfaction scale and data analysis using Structural Equation Modeling (SEM) with 2nd Order CFA through Lisrel 8. 71 programs. The analysis results show that students at the State Vocational High School 1 Kalasan have employability in the reasonably high category. The aspects and indicators that make up the employability variables are declared valid and reliable based on the analysis results. The most dominant aspect that reflects employability is the scientific aspect, namely studying the material presented in school. The lowest aspect that reflects employability is the personality aspect, namely the perception of online to take risks for what is done. The employability variable measurement model fits the empirical data. The main fit model criteria used in testing the suitability of this model are Chi-Square p, RMSEA, NFI, NNFI, CFI, IFI, GFI, AGFI.

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## 1. INTRODUCTION

Vocational High School (SMK) is education-oriented to the world of work, and students are given a unique curriculum to have competence and understanding following the interests and needs of the market (Gibson & Mitchell, 2011). At this level, students are expected to enter the world of work and meet the needs of the community (Depdiknas, 2003). The high expectations of the community are because Vocational High Schools (SMK) are seen as a forum to form human resources who have skills and are ready to work after graduation (Behroozi, 2014), but the reality on the ground shows that there are still many Vocational High School (SMK) graduates who have difficulty getting a job (Kusuma, 2017). One of the factors identified as the cause of low vocational high school graduation (SMK) being absorbed by the world of work is low employability (Ronnås & Shamchiyeva, 2011). Employability is a skill, knowledge and competence that enhances students' ability to get a job. Students tend to enter the job market more easily at various life cycle periods with employability (Brewer, 2013).

Employability has played an essential role in work policy (ILO, 2000). Employability is the main principle in economic and social policy (Haughton, Jones, Peck, Tickell, & While, 2000); employability is also used in various contexts that refer to various meanings (McQuaid & Lindsay, 2002). Employability describes the objectives of the economic strategy in the world of work at the national, regional and local levels (UN, 2001). Employability is essential in finding work (Pool & Sewell, 2007). Employability is helpful for the development of individual competencies (Van der Heijde & Van der Heijden, 2006). Employability is essential because every job demands initiative, flexibility, and skills to complete different tasks (Hanafi, 2010). 2014). Individuals with employability tend to be willing to develop their knowledge and skills (Tymon, 2013). Employability increases students' self-confidence and self-esteem (Clark, 2013). Individuals will try to improve themselves to get a job (McQuaid & Lindsay, 2005).

Employability is a problem that often arises about finding work (Norman & Hyland, 2003). Low employability is a barrier for individuals to enter the world of work (Pool & Sewell, 2007; Yorke & Knight, 2007). Some literature shows that low employability limits individual work actions and ambitions (Benabou & Tirole, 2002), making it difficult to find work (Ronnås & Shamchiyeva, 2011). Employability helps individuals understand the things needed to get a job (Brewer, 2013). The function of employability for individuals is to make individuals confident in their abilities to get jobs according to their goals (Benabou & Tirole, 2002). Higher employability leads to better performance (Camps & Rodríguez, 2011), career success (Hauw & Heijden, 2011), and increased opportunities to find work (Mason, Williams, & Cranmer, 2009). Individuals are willing to be actively involved in various efforts and learning processes in order to be able to change job opportunities according to their work interests (Fugate, Kinicki, & Ashforth, 2004).

The level of employability is influenced by various factors, both internal and external, such as entrepreneurship training experience (Avramenko, 2012), work experience (internships) provided at school (Gbadamosi, Evans, Richardson, & Ridolfo, 2015), social involvement (Hinchliffe, & Jolly, 2011), self-concept (Tentama & Abdillah, 2019; Tentama & Jayanti, 2019), social support (Tentama, Subardjo, & Abdillah, 2019), and discipline (Tentama & Subardjo, 2019). This study refers to Hillage and Polard (1998) employability concept, which has been developed by Pool and Sewell (2007). Employability is defined as getting and keeping a satisfying job (Hillage & Polard, 1998). Employability refers to an individual's relative opportunity to obtain and retain his or her job (Brown, Hesketh, & Williams, 2003). Employability is an individual's ability to enter the workforce, adjust to the work environment, and become dynamically placed to work (Coetzee & Roythorne-Jacobs, 2007; Herr, Cramer, & Niles, 2004).

Researchers use the employability aspect to determine the employability of students by referring to employability indicators based on the employability aspect according to Pool and Sewell (2007), namely: 1) skills aspect, namely the ability needed to perform several tasks that develop from the results of the training and life experience they get. This aspect refers to practical skills such as interpersonal and intrapersonal skills, teamwork, adjustment, and communication skills; 2) the knowledge aspect, namely making education a theoretical basis to become experts in their fields. This aspect leads to creativity, innovation, critical thinking and problem-solving; 3) aspects of understanding, namely efforts to

understand or understand something, so that what you want can be done and get its satisfaction. This aspect is described as understanding the knowledge that has been learned, making decisions, analyzing and predicting, and preparing; 4) the aspect of personality attributes is the urge to bring out the potential within oneself. These aspects include work ethics, responsibility, work ethic, and time management.

FrameworkThe conceptual construct of employability which consists of skills, knowledge, understanding, and personality attributes, can be seen in Figure 1.
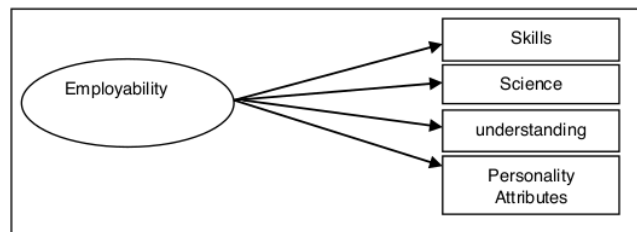


**Figure 1.** Employability Model

The hypothesis of this research is based on Figure 1, namely: aspects of employability, namely skills, knowledge, understanding, and personality attributes that form the construct of employability.

One approach that can be used in testing the construct of a measuring instrument is Confirmatory Factor Analysis (CFA), which is based on the theory of CFA according to Jöreskog and Sörbom (1989). CFA aims to test the validity and reliability of constructs that cannot be measured directly. CFA focuses on indicators that are conceptualized appropriately and consistently to identify the dominant indicators that make up the variable construct (Hendryadi & Suryani, 2014). The CFA model used in this study is Second Order Confirmatory Factor Analysis (2nd Order CFA), a measurement model consisting of two levels. The analysis is carried out from the aspect construct to the indicators in the first level. The second level, the analysis, is carried out from the latent construct to the aspect construct (Latan, 2012).

Based on the description above, the formulation of the problem in this study is whether the employability construct is valid and reliable? And whether aspects of skills, knowledge, understanding, and personality attributes form employability constructs? To answer these questions, the objectives of this research are: 1) to test the construct validity and construct reliability of employability scale measuring tools, 2) to find out the contribution of employability aspects and indicators in reflecting employability, 3) to test whether the theoretical model of employability variable is appropriate (fit) with empirical data.

## 2. METHODS

### 2.1. Population/Sample/Sampling Technique

The subjects in this study were 372 students of State Vocational High School 1 Kalasan Yogyakarta. The sampling technique in this study used probability sampling with simple random sampling.

### 2.2. Instruments

The instrument used to measure employability in this research is the employability scale constructed by the author based on the employability aspects according to Pool and Sewell (2007), namely skills, knowledge, understanding, and personality attributions. The number of items in the employability scale is 20 items using a Likert scaling model with two forms of statements in the form of favourable and unfavourable with a weighting score of 1-4. Examples of employability scale items in the skills aspect are "I have the experience needed in completing assignments", examples of items in the science aspect are "I am studying the material presented at school", examples of items in the

understanding aspect are "I can do my assignments well ", and an example of an item on the aspect of personality attributes, namely "I dare to take risks for what I do". The blueprint that becomes the reference in preparing the employability scale can be seen in table 1.

**Table 1.** Employability Scale Blueprint

| No | Aspect | Item Number | | Amount | Weight (%) |
|---|---|---|---|---|---|
| | | Favourite | Unfavourable | | |
| 1 | Skills | 1,2,3,4,5 | 5,6,7,8 | 8 | 25 |
| 2 | Science | 9,10,11,12 | 13,14,15,16 | 8 | 25 |
| 3 | Understanding | 17,18,19,20 | 21,22,23,24 | 8 | 25 |
| 4 | Personality Attributes | 25,26,27,28 | 29,30,31,32 | 8 | 25 |
| | Amount | 16 | 16 | 32 | 100 |

### 2.3. Construct Validity and Reliability Test

The construct validity and reliability of the indicators (items) form the latent construct by conducting Confirmatory Factor Analysis (CFA) (Latan, 2012). According to Hair, Black, Babin, and Anderson (2014), in addition to validity testing, reliability testing can also be done through Confirmatory Factor Analysis (CFA) using construct reliability. Testing the validity and reliability of this instrument needs to be done so that in conducting research using Confirmatory Factor Analysis (CFA), valid and reliable data are obtained. In other words, this test is used to carry out model measurements to describe how well aspects and indicators can be used as instruments for measuring latent variables (Ghozali & Fuad, 2008). Construct validity states that the instrument being tested genuinely follows the theoretical concept (Malhotra, 2007). Construct validity provides an overview of how a perfect result can be obtained using measurements based on theory. Testing the validity of the 2nd order CFA construct was carried out by looking at the factor load value (>0.5) and the t-count value (>1.96). The minimum number of factor loads is 0.5, while for construct reliability, the construct has good reliability if the construct reliability (CR) value is 0.70 and the variance extracted value is 0.50. Reliability is met when the construct reliability value shows a value > 0.70 (Hair, Black, Babin, & Anderson, 2014). To determine the amount of reliability (Construct Reliability) can be used the formula from Wijayanto (2008), namely:

$$CR= \frac{(\sum SLF)2}{(\sum SLF)2 + (\sum e)}$$

$$VE= \frac{SLF2}{SLF2 + (\sum e)}$$

Description:

| | | |
|---|---|---|
| CR (Construct Reliability) | : | Consistency of a measurement |
| VE (Variance Extracted) | : | Total variance in the manifest variable that the latent variable can explain |
| SLF | : | The standard number of factor loads of each item |
| e | : | Number of errors for each item |

Analysis Techniques

The method of data analysis was carried out with the Structural Equation Model (SEM) using the Linear Structural Model (LISREL) version 8.71 ofJöreskog and Sörbom(1989) through the 2nd Order CFA. This study uses SEM to incorporate latent variables into the analysis (Hair, Black, Babin, & Anderson, 2014).

## 3.    FINDINGS AND DISCUSSION

### 3.1.  *Character Education Values in the Novel Sepatu Dahlan*

**Findings**

The 2nd Order CFA test is carried out by looking at the factor load value (>0.5) and the t-count value (>1.96). A factor load of 0.50 or more is considered vital enough to explain the latent construct (Hair, Black, Babin, & Anderson, 2014). Data analysis was carried out using the LISREL program by looking at the factor loading value (>0.5) and the t-count value (>1.96), the results of which can be seen in Figure 2 and Figure 3 below:
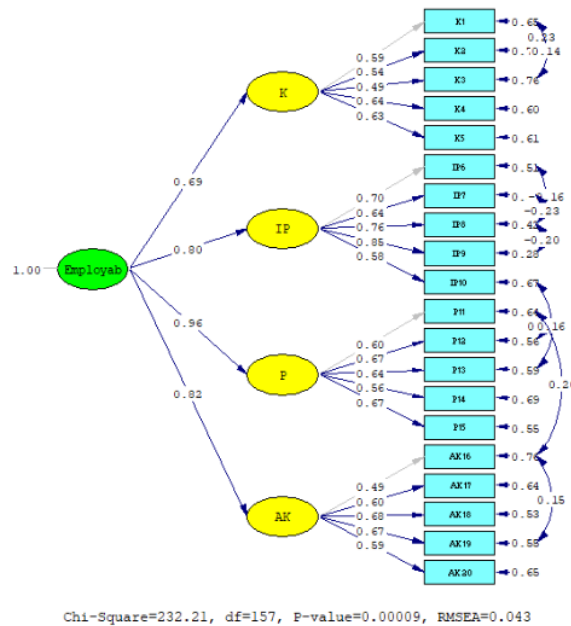


Chi-Square=232.21, df=157, P-value=0.00009, RMSEA=0.043

**Figure 2.** 2nd Order CFA Employability factor load value

Chi-Square=232.21, df=157, P-value=0.00009, RMSEA=0.043
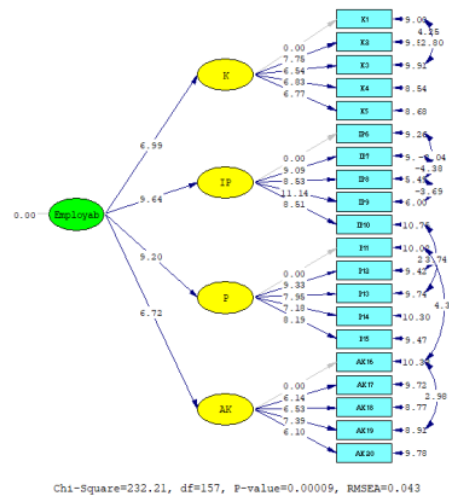
**Figure 3.** T-value 2nd Order CFA Employability

Description:
EMPLOYAB: Employability
K               : Skills
IP              : Science
P               : Understanding
AK              : Personality Attributes

The first level of analysis is carried out from the latent construct of the aspects to the indicators. The analysis results above show that all factor load values are > 0.5 and all t values needed to test the significance of factor load values are more significant than 1.96. This means that of the 20 items that measure employability, all are valid and significant. The summary of these results can be seen in Table 5 below:

**Table 2.** 2nd Order CFA Construct Validity Employability (Indicator Aspect)

| No. | Items | Factor Load | T-Value | Description |
|-----|-------|-------------|---------|-------------|
| 1 | K1 | 0.59 | | |
| 2 | K2 | 0.54 | 7.75 | Sig |
| 3 | K3 | 0.49 | 6.54 | Sig |
| 4 | K4 | 0.64 | 6.83 | Sig |
| 5 | K5 | 0.63 | 6.77 | Sig |
| 6 | IP6 | 0.70 | | |
| 7 | IP7 | 0.64 | 9.09 | Sig |
| 8 | IP8 | 0.76 | 8.53 | Sig |
| 9 | IP9 | 0.85 | 11.14 | Sig |
| 10 | IP10 | 0.58 | 8.51 | Sig |
| 11 | P11 | 0.60 | | |
| 12 | P12 | 0.67 | 9.33 | Sig |
| 13 | P13 | 0.64 | 7.95 | Sig |
| 14 | P14 | 0.56 | 7.18 | Sig |
| 15 | P15 | 0.67 | 8.19 | Sig |
| 16 | AK16 | 0.49 | | |
| 17 | AK17 | 0.60 | 6.14 | Sig |

| 18 | AK18 | 0.68 | 6.53 | Sig |
| 19 | AK19 | 0.67 | 7.39 | Sig |
| 20 | AK20 | 0.59 | 6.10 | Sig |

The second level is the analysis of the latent construct to its aspect construct. The test results above show that all factor load values are >0.5 and all t-count values needed to test the significance of factor load values are more significant than 1.96. The skill aspect itself (K) has a factor load of 0.69 with a t count of 6.99, the science aspect (IP) has a factor load of 0.80 with a t count of 9.64, the understanding aspect (P) has a factor load of 0.96 with a t count of 9.20, the personality attribute aspect (AK) ) has a load factor of 0.82 with a t count of 6.72. The summary of the analysis results can be seen in Table 3 below.

**Table 3.** 2nd Order CFA Construct Validity Employability (Latent Aspect)

| No. | Aspect | Factor Load | T-Value | Description |
|---|---|---|---|---|
| 1 | Skills | 0.69 | 6.99 | Sig |
| 2 | Science | 0.80 | 9.64 | Sig |
| 3 | Understanding | 0.96 | 9.20 | Sig |
| 4 | Personality Attributes | 0.82 | 6.72 | Sig |

These results indicate that the four aspects of employability: skills, knowledge, understanding, and personality attributes, are valid and significant for measuring the latent variable of employability. The validity results are also supported by the Chi-Square (r) value which produces a value of 232.21 with a p-value of 0.00009 (p>0.05). Based on the reliability construct calculation formula, the results obtained CR = 0.93 and VE = 0.40, which means that the employability variable has good reliability.

**Table 4.** 2nd Order CFA Construct Reliability Employability

| No. | Items | Factor Load | Error | CR | VE |
|---|---|---|---|---|---|
| 1 | K1 | 0.59 | 0.65 | | |
| 2 | K2 | 0.54 | 0.70 | | |
| 3 | K3 | 0.49 | 0.76 | | |
| 4 | K4 | 0.64 | 0.60 | | |
| 5 | K5 | 0.63 | 0.61 | | |
| 6 | IP6 | 0.70 | 0.51 | | |
| 7 | IP7 | 0.64 | 0.59 | | |
| 8 | IP8 | 0.76 | 0.42 | | |
| 9 | IP9 | 0.85 | 0.28 | | |
| 10 | IP10 | 0.58 | 0.67 | 0.93 | 0.40 |
| 11 | P11 | 0.60 | 0.64 | | |
| 12 | P12 | 0.67 | 0.56 | | |
| 13 | P13 | 0.64 | 0.59 | | |
| 14 | P14 | 0.56 | 0.69 | | |
| 15 | P15 | 0.67 | 0.55 | | |
| 16 | AK16 | 0.49 | 0.76 | | |
| 17 | AK17 | 0.60 | 0.64 | | |
| 18 | AK18 | 0.68 | 0.53 | | |
| 19 | AK19 | 0.67 | 0.55 | | |
| 20 | AK20 | 0.59 | 0.65 | | |

Furthermore, for the suitability of the model (model fit). Overall it has been good. The main Fit Model criteria used in testing the suitability of this model are Chi-Square p, RMSEA, NFI, NNFI, CFI, IFI, GFI, AGFI (Hair, Black, Babin, & Anderson 2014). The criteria for the fit model are as shown in table 8 below:

**Table 5.** Criteria for Fit Model Employability Scale

| No | Fit Index | Mark | Standard Value | Description |
|---|---|---|---|---|
| 1 | Chi Square p | 232.21 (P=0.00009) | >0.05 | Unwell |
| 2 | RMSEA | 0.043 | <0.08 | Fit |
| 3 | NFI | 0.95 | >0.90 | Fit |
| 4 | NNFI | 0.98 | >0.90 | Fit |
| 5 | CFI | 0.98 | >0.90 | Fit |
| 6 | IFI | 0.98 | >0.90 | Fit |
| 7 | GFI | 0.92 | >0.90 | Fit |
| 8 | AGFI | 0.89 | >0.90 | Unwell |

Based on the analysis results, it is known that 7 of the 8 fit indices state that the model is fit. These results indicate that the theoretical model of the employability variable fits the empirical data. Based on the overall results of the research analysis, students in the vocational high school of Kalasan State 1 Yogyakarta have employability in the high category because the aspects and items that makeup student employability are valid and reliable. All aspects of these indicators can reflect and form employability.

### 3.2. Discussion

The analysis results show that the employability measuring instrument has met the validity and reliability; aspects of skills, knowledge, understanding, and personality attributes can reflect employability. The dominant aspect that reflects employability is the scientific aspect, as indicated by the t-value of 9.64, where the primary indicator is studying the material presented in school. In contrast, the lowest aspect that reflects employability is the personality aspect indicated by a t-value of 6.72, where the primary indicator is the courage to take risks for what is done.

The results of this study have differences and similarities with previous studies regarding employability factor analysis, including the results of research conducted by Tentama, Subardjo, and Abdillah (2019) conducting confirmatory factor analysis on employability variables using regression with a Cronbach alpha value of 0.82. The equation of previous research with this research refers to the theory of Pool and Sewell (2007), which is the same as that used by this researcher. Karli's research (2016) with confirmatory factor analysis using LISREL with a Cronbach alpha value of 0.81. The similarities between the previous research and this research use LISREL in their data analysis. Research conducted by Husain, Mustapha, Malik, and Mokhtar (2014) conducted a confirmatory factor analysis on the employability variable using AMOS with a Cronbach alpha value of 0.70 while using this study LISREL. Then in the research of Misra and Mishra (2011) with confirmatory factor analysis using AMOS, it is known that Cronbach's alpha is 0.90.

Furthermore, research by Yusof, Mustaphab, Mohamadc, and Seri Bunian (2012) with confirmatory factor analysis using AMOS with Cronbach alpha moving from 0.79-0.91. Praskova, Creed, and Hood (2015) with confirmatory factor analysis using SEM with a Cronbach alpha value of 0.89. Pitan and Atiku's research (2017) with confirmatory factor analysis using SEM with a Cronbach alpha value of 0.86. Furthermore, Chen (2018), with confirmatory factor analysis using SPSS, it is known that the Cronbach alpha is 0.90. While in this study, the construct reliability value obtained was 0.93.

## 4. CONCLUSION

Thus, it can be seen employability of students, construct validity and reliability of employability constructs, the contribution of employability aspects in reflecting/measuring employability variables and confirming the hypothesized model, namely the fit of the model and data. The concept of employability with these aspects was chosen to be tested for its measurement model because these aspects can reflect the problems of students at the state vocational high school 1 Kalasan so that in the end, the results of this study can test the theoretical model of the employability variable whether it fits with the empirical data in the field.

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# HASIL CEK_2nd Order CFA; Factor analysis; Employability; Skills; Science; understanding; Personality attributes

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