CHAPTER IV

RESEARCH FINDING AND DISCUSSION

This chapter will present and explain findings from the result of statistical analysis of construct validity of TOEFL-like test

A. Findings

1. Section of TOEFL-like Test

TOEFL-like test consists of listening section, structure and written expression section and reading section. The categorization at the analyzed TOEFL-like test is checked again Cliff's TOEFL preparation by Michaele A Pyle. [1]

a. Listening section

1) Detail information

In this sub question types, the test-takers' ability in finding the detail information will be tested. The listening items which categorized in detail information present in appendix 1 table 4.1.

2) Main ideas

In this sub question types, the test-takers' ability in finding the main idea/main topic will be tested. The listening items which categorized in main ideas present in appendix 2 table 4.2.

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[1] Michael A Pyle, *Cliff's Test Preparation* (New York: IDG Books Worldwide, 2001), 39.

3) Implication

In this sub question types, the test-takers' ability in finding the detail information will be tested. The listening items which categorized in implication present in appendix 3 table 4.3.

b. Structure and Written Expression Section[2]

1) Sentence structure

The sentence structure questions test more than a word or two; they test your ability to make a sentence complete. A sentence must have a subject, verb, and perhaps a complement. Sentence structure questions also test your understanding of subordinate clauses, which must not be independent clauses. The test item which is categorized as sentence structure presents in appendix 4 table 4.4.

2) Word order

Word order questions are generally more detail-oriented than sentence structure questions. They test, for example, your understanding that an adjective should appear before the noun it modifies, not after it. The test item which is categorized as sentence structure presents in appendix 5 table 4.5.

3) Word choice

The word choice type of question tests your understanding of idiomatic expressions, of which prepositions to use with certain words,

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[2] Michael A Pyle, *Cliff's Test Preparation* (New York: IDG Books Worldwide, 2001), 63.

of problem words that are sometimes confused, and so on. The test item which is categorized as sentence structure presents in appendix 6 table 4.6.

c. Reading section[3]

1) Main idea

In this type of question, the test-takers will be asked to identify the main idea of a passage or to indicate what an appropriate title for the passage. The result of test items which categorized as main idea is present in appendix 7 table 4.7.

2) Detail information

In this type of question, the test-takers will be asked to identify the detail information of a passage. The result of test items which categorized as detail information is present in appendix 8 table 4.8.

3) Vocabulary

In this type of question, the test-takers will be tests the understanding of particular words within passage. The result of test items which categorized as vocabulary is present in appendix 9 table 4.9.

4) References

In this type of question, the test will test the test-takers' ability in identifying antecedents of pronouns used in the passage. The result

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[3] Ibid, 153.

of test items which categorized as vocabulary is present in appendix 10 table 4.10.

5) Inferences

In this type of question, the test will test the test-takers' ability in making logical conclusion based on the passage. The result of test items which categorized as vocabulary is present in appendix 11 table 4.11.

After being categorized, the KMO is done against the TOEFL-like test. The KMO table and interpretation is presented in the following sub chapter.

2. Data analysis

1. Initial solution

Table 4.12

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.531
Bartlett'sTestofSphericity	Approx. Chi-Square	13402.964
	Df	9730
	Sig.	.000

From the table above, it shows that the Kaiser-Meyer-Olkin (KMO) is 0,531. Based on Subhash Sharma, the KMO value ≥ 0.5 means that the data is

can be used for factor analysis. Thus, this data is appropriate for the next factor analysis steps.[4]

2. Extracting the factors

The result of this step is presented in appendix 12 table 4.13. Eigenvalue is the number of variance which explained by each factor. From the eigenvalue score,we can found the number of factor made. Supranto said that A factor can be said as a factor if the eigenvalue score is high; 1 or more than 1.[5] From the table, it can be seen that more than 140 items/variables can be reduce as 52 factors with the eigenvalue score more than 1.

3. Rotating factors

Rotation is held for looking the more clear grouping and how high the contribution of each item/variable to the factors. According to Kerlinger, an item can be a part of factor if it has factor loadings at minimum score 0.30.[6] The rotation method used in this research is varimax method. Varimax method is an orthogonal rotation method which used in minimizing the variable with high loading ($\geq 0,30$). The result of the rotation process using varimax method is showed in appendix 13 table 4.14.

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[4] Subhash Sharma, *Applied Multivariate Technique*, (New York: John Willey & sons Inc., 1996), 107.

[5] Supranto, *Analisis Multivariat: Arti & Interpretasi*, (Jakarta : Rineka Cipta, 2004), 318.

[6] Kerlinger FN. *Behavioral research: a conceptual approach*. (New York: Holt, Rithen and Witsen, 1979), 150.

4. Naming the factor

This is the last step of factor analysis. The results of the rotating factors step are group factor and factor loadings of each item, but the factor is not having name yet. Naming factors is based on the similar characteristic of each items based on the factor loading. The naming factor is presented in appendix 14 table 4.15.

B. Discussion

The analysis of construct validity of TOEFL-like test in this research use factor analysis. Recalling back to James Dean Brown states above, the nature of construct validity is to make sure that the test measured what it needs to be measured. In factor analysis, each item of the test is being examined to make sure that the each of test item measured the indicators that need to be claimed. Therefore, this research uses factor analysis for examining the construct validity of TOEFL-like.

The data of this research is from the TOEFL-like test questions' sheet and also the test-takers' answer sheets. SPSS version 21.0 was used for analyzing the factor analysis of this research. Factor analysis consists of four steps: initial step, extracting factors, rotating factors and naming the factors.

The first step is initial step. In this step, the feasibility of the analysis is being examined by using Kaiser-Mayer-Olkin (KMO). In conducting factor analysis, the KMO value should ≥ 0.5 as the criteria in conducting the next step of factor analysis. The KMO value of this research is 0.531. According to Subhash Sharma the data $\geq$

0.5 is feasible for the next step of factor analysis. Thus, the data of this research is appropriate for the next step of factor analysis.

The second step is extracting the factors. The purpose of this step is to get fewer factors than the variables. Recalling back to the Kaiser states that the number of factor is formed by finding the eigenvalue more than 1.[7] Eigenvalue is the total variance explained by each factor. The eigenvalue score of each factor is showed in the initial eigenvalue column. Based on the data analysis, there are 52 factors of the TOEFL-like test. The number of factors after the extraction is fewer than the number of factors before the extraction; the number of factors before extraction is 140.

The third step is rotating the factors. Recalling back to the Rummel, the purpose of rotating factors is to make a grouping of each items based on the factor loadings score of each items.[8] Factor loadings are the correlation between variable and factors. The coefficient of factor loadings of each items/variables is showed in the matrix component on appendix 13 table 4.14 from the rotating factor analysis using SPSS. The coefficient of factor loadings with high score indicating the correlation between factor and variable are fairly strong. It means that the factor and variable are correlated and part of the factor. In this step, there are 28 test items which rotated. The rotated test item is presented in appendix 15 table 4.16.

The last step is naming the factors. From the research of TOEFL-like test at EIP of UIN Sunan Ampel Surabaya, there are 52 factors which can be sum up as

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[7] Kaiser, H. F, "The application of electronic computers to factor analysis". *Educational and Psychological Measurement,* 20, 145.

[8] Rummel, R.J. *Applied factor analysis.* (Evanston, IL:Northwestern University Press, 1970), 135.

listening for detail information, listening for main ideas, implication of listening, uncorrelated factor of listening, structure of word order, structure of sentence structure, structure of word form, word choice, inference reading, vocabulary reading, reference of reading, reading for main idea, reading for detail information and uncorrelated factor of reading.

As the researcher has said above, the TOEFL-like test has clear factor structure. This provides evidence for the construct validity of the test. One problem was over-factoring by which it is mean that the factors are more than expected. There are just 140 TOEFL-like test items which lent themselves to 52 factors. This has to be accounted for. One explanation can be that the 140 items belong to different paradigms in language testing. Since this TOEFL-like test is the compilation of some difference TOEFL resources, such as Cliff's TOEFL and Longman and etc. The other problem was that some factors were represented only by one item. The reason can be that this item taps only one construct in a way that no other item does. The item may have been taken from somewhere without it being in harmony with the rest of the items. Other oddity was the fact some items are rotated from their previous factor. Some of rotated test items are 20, 102, 111, 106, 112, 62, 66, 67, 85 and 83. The rotation of test items shows that the test items are not able to measure the indicators

that need to be measured. It is the one of the cases where one must apply logic and not rely on factor analysis machine.[9]

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[9] Kristopher J.Preacher and Robert C. MacCallum, "Repairing Tom Swift's Electric Factor Analysis Machine", 2003, 37.