Evaluation of items on instruments of consumer attitudes, word of mouth, and decisions of private universities

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Abstract. Early research is motivated by demands and developments in the world of education that are so competitive that universities must be able to carry out professional education so that it suits the needs of the labor market. Factors of human resources (HR) that have high competition are necessary for the era of global market competition and national development as a whole. These conditions increasingly encourage the world of education, including universities, to immediately prepare human resources which have high competence, can innovate and be creative. The rapid increase of higher education institutions has increasingly made the conditions of competition in seizing every market share increasingly tight. However, some research results still found some disadvantages including still using the same instrument but the results are different, there is no valid measuring instrument (instrument) to measure students' decision to choose to study in private universities that are influenced by consumer attitudes and word of mouth. The study was conducted in Rokan Hulu Regency by using several respondents in private universities in Rokan Hulu regency including Pasir Pengaraian University, Rokania STKIP, ISQ, STAI Tuanku Tambusai, and Open University. The purpose of this study is to obtain a valid instrument in measuring student decisions in choosing to study at private universities so that these instruments are expected to be valid benchmarks that can be used as a measure of consumer decisions. The population in the study were all students enrolled as active students in private universities in Rokan Hulu district. The research sample was taken using a random sampling technique and used the sample criteria. The research data was processed using the Rash Model with the help of the Rasch Ministep (Winsteps) program.

1. Introducing

In Indonesia, universities are based on higher education data consisting of academics, universities, polytechnics, high schools, institutes, academic communities. The following is a table showing data on the number of universities in Indonesia up to the end of 2017.

| No | College         | Type of University          | Number |
|----|-----------------|------------------------------|--------|
| 1  | Public universities | University                  | 75     |
|    |                 | Polytechnic                 | 107    |
|    |                 | High School                 | 68     |
|    |                 | Institute                   | 41     |
|    |                 | Academic                    | 83     |
|    |                 | Academic Community          | 3      |

Table 1. Number of Universities in Indonesia 2017
Based on Table 1, it is known that until 2017 Indonesia had 4,497 Universities, most of which were dominated by Private Universities. This number shows that the private sector plays an essential role in improving the education of the nation's children in general and higher education in particular [1]. If there are not many private universities in Indonesia, there are a large number of students who have graduated from high school that is not accommodated for higher education in state universities [2]. Not many studies have focused on developing instruments for measuring consumer behavior in decision-making in choosing to study at private universities, which indicates that current measurements still use old statistics, even though having valid instruments will make it easier we measure consumer behavior that is focused on decision making. In Indonesia studies using the Rasch model approach to evaluating psychometric properties of scale in career decision making are still not many, and only studies that use rash models in self-efficacy measures to evaluate psychometric properties of scale are found [3][4]. This shows that there are no different updates and developments related to measurement instruments in consumer decision making. Therefore, research that is focused on developing and updating related measurement instruments in consumer decision making, in this case, is prospective students. This research focuses on developing a measuring tool for decision making in choosing to study at a private university with a marketing management approach and using Rasch modeling. In this study, the authors scale the consumer/student decision making based on the dimensions of consumer decisions proposed [5], and added the measurement of rash models. [6]These dimensions are the level (level of difficulty), generality (range of breadth of field), and strength (level of strength) of the measuring instrument used [7][8].

2. Methodology

2.1. Data Used

The research will be conducted in Rokan Hulu Regency with the object of research being the entire student population in private universities in the Rokan Hulu Regency. The population of this study was all students who were still declared active in studying at all private universities in Rokan Hulu Regency. The sampling technique in this study was using random sampling, taking into account the following criteria:

1. Students who are respondents are active students who are listed in the Forlab Dikti
2. The student has taken a maximum of 1 year of study; this criterion is used because it is assumed that the student is still a fresh senior high school graduate

2.2. Operational Variables

Table 2. Operational Variables

| Variable                  | Definition of Variables                                | Indicator |
|---------------------------|--------------------------------------------------------|-----------|
| Consumer Attitude         | Consumer attitude is an important psychological factor that needs to be understood by marketers because attitude is considered to have a positive and strong | 1. Trust 2. According to interests 3. Add insight 4. Quickly get a job 5. Feelings of object |
Variable | Definition of Variables | Indicator
---|---|---
| | correlation with behavior. Even attitude is seen as a useful predictor of consumer behavior [9] | 1. To talk
| Word Of Mouth | Word of Mouth (WOM) or communication by word of mouth is a communication process in the form of giving recommendations both individually and in groups to a product or service that aims to provide information personally [5] | 2. Recommendations
| | | 3. Invitation
| Decision to Choose | The ability, efforts, and actions of students directly in their efforts to decide on choosing a college [5] | 1. Decision Process Choosing a lecture based on a positive attitude
| | | 2. Decision Process Choosing lectures based on consumer attitudes
| | | 3. The decision process to choose lectures based on Word of Mouth

2.3. Data analysis technique

Data analysis was performed using the Rasch model approach through the Winsteps program. In the Rasch model approach, in addition to paying attention to items also pay attention to the response aspects and calculate the correlation size. The analysis results displayed are summary statistics, item accuracy index, respondent accuracy index, scalogram, unidimensionality, item-respondent map, and rating scale. Furthermore, to clarify the results of data analysis from the Rasch model approach, the analysis was also carried out using the classical test theory approach. In the classical test theory approach, reliability testing uses the Cronbach alpha formula. At the final compilation stage, finalization of the scale is carried out based on the results of the analysis that has been done previously.

3. Results and Discussion

![Summary of 99 Measured Person](image1.png)

![Summary of 12 Measured Item](image2.png)

Figure 1. Provides overall information about the quality of respondents
Figure 1. Provides overall information about the quality of respondents, the quality of the instruments used by the interaction between person and item. It is known that the value of person reliability is 0.87 and reliability items 0.85 can be concluded that the consistency of answers from respondents is excellent and the quality of the items in the instrument is so good that the items on the instrument are reliable to use in this study. While the quality of interaction between people and items as a whole is seen from the non-Cronbach values obtained at 0.89 which is categorized as excellent[10].

3.1. Person and item validity
Instrument unidimensionality is an essential measure for evaluating whether the instrument being developed can measure what is measured, in this regard is the contract of this study. The Rasch analysis model uses an analysis of the main components of the residual, which measures the extent to which the diversity of the instrument measures what should be measured. The following are the results of the unidimensionality evaluation of the instruments of this study

| Table of STANDARDIZED RESIDUAL variance (in Eigenvalue units) |
|---------------------------------------------------------------|
| -- Empirical -- | Modeled |
| Total raw variance in observations = | 22.8 | 100.0 | 100.0 |
| Raw variance explained by measures = | 10.8 | 47.4 | 47.9 |
| Raw variance explained by persons = | 5.4 | 23.7 | 23.9 |
| Raw Variance explained by items = | 5.4 | 23.7 | 24.0 |
| Raw unexplained variance (total) = | 12.0 | 52.6 | 100.0 | 52.1 |
| Unexplained variance in 1st contrast = | 2.5 | 11.2 | 21.2 |
| Unexplained variance in 2nd contrast = | 2.0 | 8.6 | 16.3 |
| Unexplained variance in 3rd contrast = | 1.4 | 6.3 | 12.0 |
| Unexplained variance in 4th contrast = | 1.3 | 5.5 | 10.4 |
| Unexplained variance in 5th contrast = | 1.1 | 4.7 | 9.5 |

Figure 2. Provides overall information about the quality of respondents

From figure 2, the results of the measurement of raw variance data are 47.4%. This indicates that a minimum unidimensionality requirement of 20% can be fulfilled. The unidimensionality value is 47.4% in the better category[10].

3.2. Research Findings
Using the Rasch analysis of this model, the researcher obtained the bottom findings of the instrument items that I used to know which statement items were the most difficult to approve and which statement items were most easily approved, as shown in the figure below.

| Item STATISTICS: MEASURE ORDER |
|--------------------------------|
| ENTRY | TOTAL | MEASURE S.E. | MNSQ | ZSTD | MEASURE | MNSQ | ZSTD | MEASURE | MNSQ | ZSTD |
|-------|-------|--------------|------|------|---------|------|------|---------|------|------|
| 1     | 321   | 0.45         | 0.11 | 0.81 | -0.13   | 0.70 | -2.3 | 0.72 | 55.6 | 41.3 | N8 |
| 2     | 326   | 0.39         | 0.11 | 0.93 | -0.58   | 0.53 | -0.7 | 0.63 | 45.9 | 41.0 | N9 |
| 3     | 359   | 0.93         | 0.12 | 0.86 | -1.04   | 0.96 | -0.9 | 0.75 | 50.5 | 43.2 | N3 |
| 4     | 372   | 0.20         | 0.13 | 0.84 | -1.2    | 0.77 | -1.6 | 0.79 | 63.6 | 46.5 | N4 |
| 5     | 376   | 0.27         | 0.11 | 0.12 | 0.08    | 0.80 | -0.1 | 0.66 | 41.4 | 46.0 | N5 |
| 6     | 379   | 0.26         | 0.11 | 0.12 | 0.08    | 0.80 | -0.1 | 0.66 | 41.4 | 46.0 | N6 |
| 7     | 381   | 0.34         | 0.13 | 0.15 | 1.15    | 1.00 | 4.4 | 0.46 | 43.4 | 46.8 | N11 |
| 8     | 384   | 0.39         | 0.12 | 0.15 | 0.09    | 0.80 | -0.1 | 0.66 | 41.4 | 46.0 | N7 |

Figure 3. Using the Rasch analysis of this model
In figure 3, it is known that the item logit value, for item number N8 with +0.45 logit shows the item that is most difficult to be approved by respondents in the consumer attitude instrument with the statement "I believe in information provided by private universities" while item N12 with -0.39 logit is the most easily approved item on the decision instrument with the sound of the statement "I am careful in determining the choice of study in PTS, one of which is a positive attitude towards this college.

4. Conclusion
The conclusions that can be drawn from this research are:
 a. There are several invalid assessment/questionnaire items that indicate that the questionnaire items cannot be used to make measurements
 b. Psychologically the respondent in answering the statement on the questionnaire has an impact on the validity of the data
 c. Rasch model is very precise and accurate in measuring items of research instruments in the field of management
 d. In this study, it was found that Rasch analysis models can show instrument items in constructs that are difficult to approve and instrument items that are easily approved.
 e. That the construct of consumer attitudes has a significant influence on the decision to choose college at a private tertiary institution while the word of mouth construct does not significantly influence the decision to choose to study in a private college.

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