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## Assessing Content Validity of IKBAR among Field Experts in Polytechnics

Mohd Effendi @ Ewan Mohd Matore\*<sup>a</sup>, Ahmad Zamri Khairani<sup>b</sup>

<sup>a,b</sup>School of Educational Studies, Universiti Sains Malaysia,  
Pulau Pinang, Malaysia

\*Corresponding Author: effendi\_ewan@yahoo.com

### ABSTRACT

This study aims to examine the content validity of measurement instruments of the Adversity Quotient or IKBAR for polytechnic students. The analysis used the Content Validity Ratio (CVR) based on the Lawshe Validity Model (1975). This study was conducted through the evaluation of written and online questionnaires on 28 field experts selected via purposive sampling. The experts specializing in particular fields who worked in polytechnics area as directors, lecturers, psychologists and student affairs officers. The validity involved 220 items with four main constructs such as Control, Ownership, Reach and Endurance. The CVR's critical value that must be adhered to is 0.370 (N = 28) for the purpose of refining items. The results of the study shows that the instrument has good content validity of the candidates in the research (N = 28,  $CVR_{critical} = 0.370$ ,  $CVR_{all} = 21$  items refined). The results have proved the IKBAR instrument has great potential to be promoted as a measuring instrument for psychometric adversity quotient for polytechnic students. It is recommended that further research be carried out using more sophisticated statistical analysis, for elaborating on quality items.

*Keyword:* Content validity, field experts, adversity quotient, CVR, polytechnics

### 1. Introduction

Measuring and reporting on the content validity of an instrument is the essence of a study. Content validity is an important topic for researchers who need high quality measurements (Polit, Beck, & Owen, 2007). Content validity functions by determining how well the dimensions and elements of a concept can be successfully defined (Sekaran & Bougie, 2011). A content validity function is to validate the items in the test representing each measured construct (Miller, Lovler, & McIntire, 2013). The validity of an instrument determines the extent to which it actually reflects or is able to measure the construct being examined (Grove, Burns, & Gray, 2013). Content validity is proven by expert assessment that will assess the measurement construct, test contents and to decide whether the content is sufficient to represent a dimension or construct (Johnson & Christensen, 2012). It is supported by constructive feedback regarding the quality of a new measuring instrument and the objective criteria for evaluating each item can be obtained from a panel of experts (Rubio, Berg-Weger, S.Tebb, Lee, & Rauch, 2003). Sternberg, Jarvin, & Grigorenko (2011) also emphasized that content validity is measured by expert evaluation and not just by numbers alone. Content validity is made possible through a team of experts who review and agree that the scale items contained in the scale represents items related to the measured concept (Sabitha Marican, 2009). It is supported by (Creswell, 2012) who clearly stated that content validity evidence could be derived from empirical evidence and an expert panel in the field of study to validate a questionnaire. Thus, the content validity of this study will use the approach as proposed by expert assessment (AERA, APA, & NCME, 1999; Cohen, Swerdlik, & Sturman, 2012; Creswell, 2012; DeVellis, 1991; Gregory, 2011; Johnson & Christensen, 2012; Miller et al., 2013; Nunnally, 1978; Popham, 2000; Rubio et al., 2003; Sabitha Marican, 2009; Sternberg et al., 2011; Wilson, 1989; Yaghmaie, 2003). In this research context, content validity using experts will evaluate the items of IKBAR, which is measuring the AQ constructs. IKBAR means Adversity Quotient Instrument among polytechnic students.

## 2. Literature Review

### 2.1 Adversity Quotient

Adversity quotient (AQ) is a term implies the ability or the capability of an individual battling to confront and overcome the challenges, problems or difficulties encountered and turn it into an opportunity to be more successful (Stoltz, 1997). In the context this study, the researchers define AQ as a measurement of a polytechnic student's ability to survive and overcome challenges and turn them into opportunities to excel in academic studies. AQ is measured by four dimensions, which are control, sense of belonging, achievement and endurance. These dimensions are known as the CORE model. Construction AQ instruments were rarely focused on by previous AQ researchers and only several researchers had done so (Bing - Quan Li & Chen - Rui Chen, 2008; Desika Nanda Nurvita, 2011; Njoto Benarkah, 2006). In fact, the number of studies on AQ in Malaysia itself is far behind compared to other Asian countries in the region such as Indonesia, Thailand and the Philippines. Moreover, no specific studies on psychometric testing have been conducted. The lack of psychometric information has made it difficult to draw firm conclusions (Angelopoulos et al., 2002). One of the aspects that should be given more attention is content validity. Previous researchers had assumed that the validity measurement tools developed in the west were similar to their national context; this is an inappropriate practice (Ch'ng Pei Eng, Ch'ng Pei Cheng, & Suzana Ab. Rahim, 2007). The reliability and validity aspect in the original AQ instrument was not elaborated further (Angelopoulos et al., 2002). The original AQ instrument, which was the *AQ Response Profile* (ARP), was only confirmed using the convergent validity and discriminant validity (Grandy, 2009). From the expert review's aspect, the constructors of the original AQ instrument did not report whether they used Subject Matter Experts (SME) or just the "common sense" approach to produce the scenario in ARP (Angelopoulos et al., 2002). Previous researchers tended to use face and content validities through experts validation only briefly and did not use specific techniques such as CVR. Therefore, there is a research gap that can be filled by focusing on the quantitative approach through a group of expert panels to further strengthen the items when constructing the AQ instrument for polytechnic students. This research will focus on CVR by Lawshe (1975).

### 2.2 Content Validity Ratio

The content validity of IKBAR for polytechnic students is measured by quantitative measurement procedures by Lawshe (1975), which is the Content Validity Ratio or CVR. CVR used for measuring the content validity items through empirical measurements. CVR is a method from the classical measurement literatures, which is more practical from the aspect of time and costs, besides being easy to administer and fast in implementing (Dewi Rooslan Tojib & Ly-Fie Sugianto, 2006). These advantages have made CVR a choice among past researchers abroad (Allahyari, Rangi, Khosravi, & Zayeri, 2011; Baheiraei et al., 2013; Rensburg, Basson, & Carrim, 2011) and research in Malaysia (Mohd Arif Shuib, Shukran Abdul Rahman, & Nor Diana Mohd. Mahudin, 2013). The procedure begins with the review of the test takers, then the repaired instruments are given to the panel of experts for evaluation (Lewis, Templeton, & Byrd, 2005). For this research context, researcher been applied CVR among test taker reviews. The applicability of CVR was clear because face validity is a part of content validity. The three point scales was used for each item, which is (1) essential, (2) useful but not essential and (3) not necessary. Face validity was determined using the following formula, where  $CVR_i$  is the value of the item in the built-up test;  $n_e$  is the number of test takers that evaluate the item as essential and  $N$  is the total number of test taker involved ( $N = 10$ ). The formula is  $CVR_i = [n_e - (N/2)] / (N/2)$ . CVR values were in the range -1 to +1, where a value close to +1 indicates that the test takers agree that the item is very important in the content validity. Lawshe suggested that if more of the test takers involved in the study evaluate the item as very important, then the item is considered to have satisfied the face validity (Lawshe, 1975). The original table of CVR had been revised (Wilson, Pan, & Schumsky, 2012). When the total number of test takers was 10, hence the minimum value that must be adhered to for each item is 0.62 evaluated at  $\alpha = .05$ . This means that if there are items that fail to meet the minimum requirements value below than 0.62 or are statistically insignificant, the items will automatically be retained, refined or dropped (F. R. Wilson et al., 2012). The statement was in line with DeVon et al., (2007) that mentioned items that do not achieve minimum agreement by the expert panel must be either eliminated from the instrumen or revised. In this research, the items of IKBAR will only be refined and revised.

### 3. Methodology

#### 3.1 Number of experts

Field experts in the context of this study consist of 28 experts, comprising the Director of Student Welfare in the Polytechnic Department (JPPoli) in Putrajaya, two polytechnic student affairs officers (HEP), ten polytechnic psychology officers and thirteen lecturers who are still serving. They are individuals who are relevant in the research context, as proposed by Rubio et al. (2003).

#### 3.2 Criteria of experts

The criteria for the selection of the panel of field experts were divided into four sections, namely experts in JPPoli (the officer heading the Division of Student Welfare who is the Director with more than five years' experience); psychology officers (more than 3 years' experience, holding a degree in psychology and working in the polytechnic); student affairs officers (experience of more than 3 years and serving in the polytechnic's student affairs section) and lecturers (more than 3 years teaching experience and have been an Academic Advisor). Selection of potential research subjects as experts will help represent the population that will be studied. The group of field experts would contribute towards evaluating the sentences, clarifying the sentences or terms and recommending items that are more important and relevant. In the context of education, the expert could be a friend in the faculty, the college administrator or students themselves (Miller et al., 2013; Rubio et al., 2003). Rubio et al., (2003) added that the practitioner in an institution is capable of becoming the source that develops and checks the measurement because they involved in the frontline of the population, which is the subject of the actual sample.

#### 3.3 Sampling

The sampling technique used was purposive sampling. This type of sampling refers to samples selected based on the expertise of the subjects studied. This technique can obtain information from individuals who are knowledgeable (Sekaran & Bougie, 2011). It's also based on certain justifications for obtaining confirmation on the content of the items related to AQ.

#### 3.3 Research location

The selection of the panel of field experts such as psychology officers covered ten polytechnics, namely Politeknik Port Dickson (PPD), Politeknik Tuanku Syed Sirajuddin (PTSS), Politeknik Sultan Mizan Zainal Abidin (PSMZA), Politeknik Tunku Sultanah Bahiyah (PTSB), Politeknik Kota Kinabalu (PKK), Politeknik Premier Ibrahim Sultan (PIS), Politeknik Seberang Perai (PSP), Politeknik Kota Bharu (PKB), Politeknik Merlimau Melaka (PMM), Politeknik Kuching, Sarawak (PKS), Politeknik Muadzam Shah (PMS) and Politeknik Nilai (PNS) in order to obtain a broader view. Two HEP officials involved were from Politeknik Sandakan Sabah (SSP) representing the Borneo zone and Politeknik Balik Pulau (BPP) representing the peninsular zone.

For the polytechnic lecturer's panel, it involved ten polytechnics, namely Politeknik Sultan Azlan Shah (PSAS), Politeknik Kota Kinabalu (PKK), Politeknik Seberang Perai (PSP), Politeknik Kota Bharu (PKB), Politeknik Port Dickson (PPD), Politeknik Sultan Idris Shah (PSIS), Politeknik Merlimau Melaka (PMM), Politeknik Nilai (PNS) and Politeknik Tunku Sultanah Bahiyah (PTSB). Samples of expert lecturers were selected from various departments, such as the Department of Civil Engineering (JKA), Department of Mechanical Engineering (JKM), Department of Electrical Engineering (JKE), General Studies Department (JPA), Department of Mathematics and Computer Science (JMSK), Department of Commerce (JP) and the Department of Hospitality (JH).

In the context of this study, 28 field experts were recruited. This research has referred to the definition of the word 'expert' as that given by Rubio et al., (2003) who divided panel of experts into two categories: professional experts and field experts. Rubio et al., (2003) proposed at least three panel experts for each group, which is the group of professional experts and a group of field experts with the total number of experts being more than ten or acceptable within a range of six to twenty experts. The number of experts exceeding the range recommended by Rubio et al., (2003). It was intended to obtain a content validity that is more substantiated and convincing. The validity of Lawshe's model can be assessed more effective if there are better returns from more than ten panel expert (Allahyari et al., 2011). The number of panel experts for the study depends on the level of expertise required and the diversity of knowledge itself (Grant & Davis, 1997). The use of more experts will produce more information on the subject matter that is to be measured. The more

evidence of content validity such as the expert evaluation is obtained, the higher the confidence of the researcher in the validity of the instruments being constructed (Johnson & Christensen, 2012).

### 4. Results

#### 4.1 Field experts review

Figure 1 show 14 items from Control construct are not reaching the critical value of CVR (N = 28,  $CVR_{critical} = 0.370$ ,  $CVR_{control} = 14$  items refined) from Lawshe (1975). The items are C5 (0.286), C6 (0.286), C7 (0.286), C9 (0.357), C10 (0.143), C12 (0.357), C22 (0.286), C29 (0.286), C33 (0.214), C35 (0.214), C36 (0.357), C40 (0.357), C43 (0.286) and C44 (0.286).

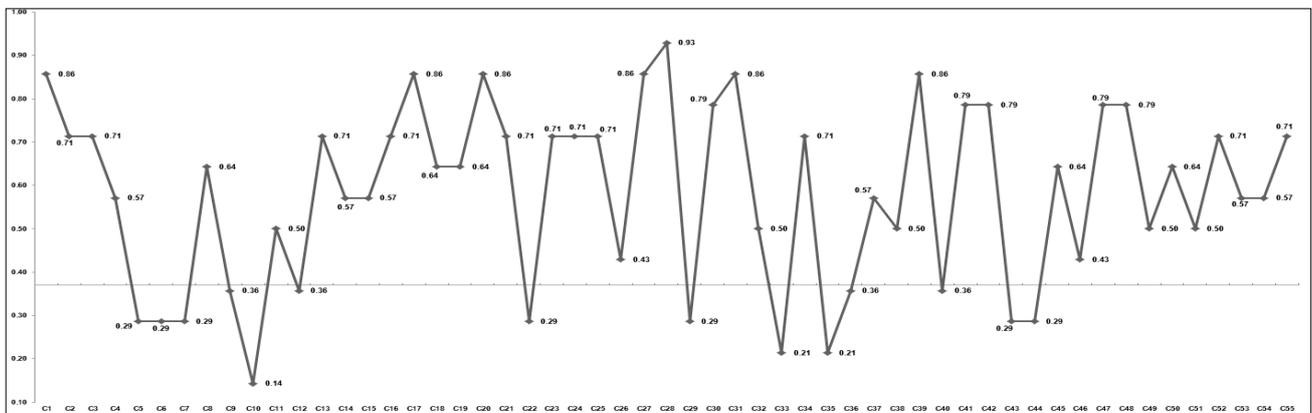


Figure 1

#### CVR value for each item in Control construct

Figure 2 show 4 items from Ownership construct are not reaching the critical value of CVR (N = 28,  $CVR_{critical} = 0.370$ ,  $CVR_{ownership} = 4$  items refined) from Lawshe (1975). The items are O69 (0.214), O70 (0.357), O87 (0.286) and O91 (0.286).

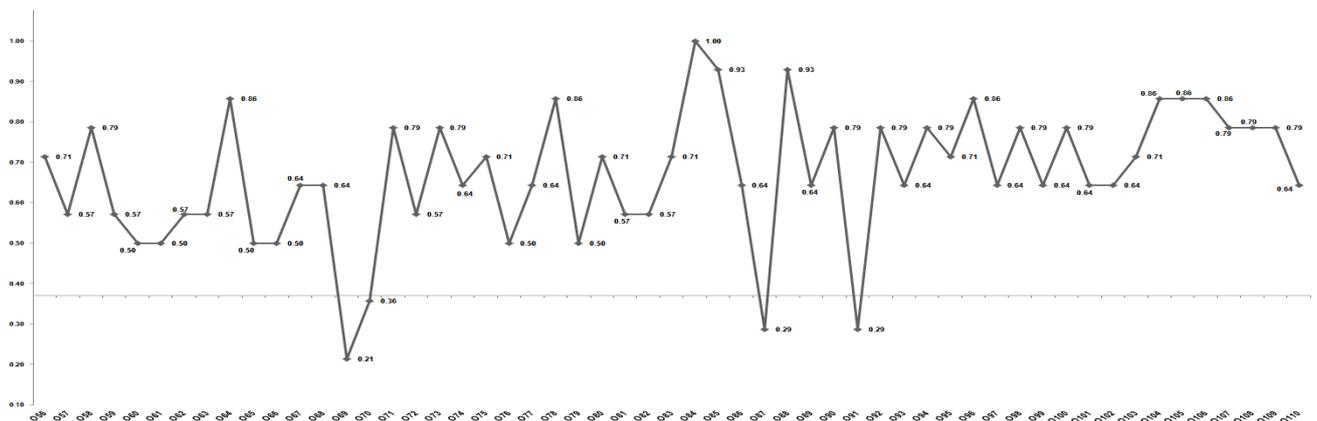


Figure 2

#### CVR value for each item in Ownership construct

Figure 3 show 1 items from Reach construct is not reaching the critical value of CVR (N = 28,  $CVR_{critical} = 0.370$ ,  $CVR_{reach} = 1$  item refined) from Lawshe (1975). The item is R152 (0.286).

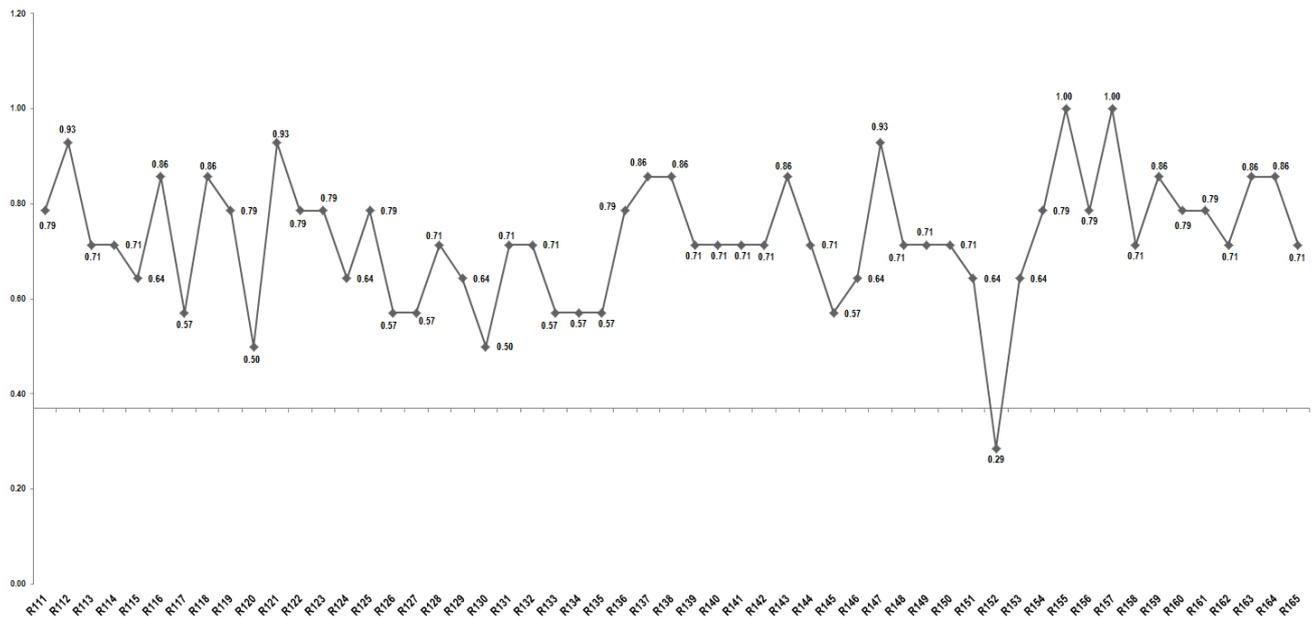


Figure 3  
CVR value for each item in Reach construct

Figure 4 show 2 items from Endurance construct is not reaching the critical value of CVR (N = 28,  $CVR_{critical} = 0.370$ ,  $CVR_{endurance} = 2$  item refined) from Lawshe (1975). The item is E166 (0.214) and E170 (0.357).

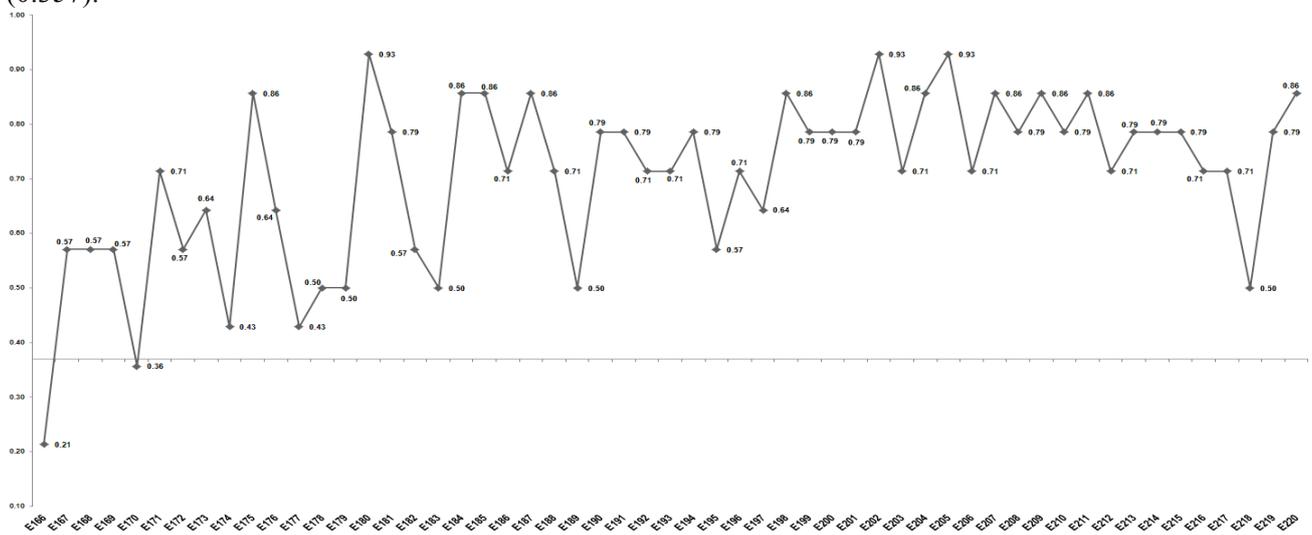


Figure 4  
CVR value for each item in Endurance construct

4.1 Field experts review

Field experts who are lecturers in polytechnics had suggested that the researcher change the item that has the word ‘rental homes’ and ‘hostels’ to ‘accommodation’s’. In addition, they also said that redundant question items should be combined, as this would bore the respondents. Experts among psychology officers and Student Affairs Officers had listed several key points, some of which referred to items that were quite long and confusing. Therefore, much has been summarized to ease the respondent’s comprehension. For the use of language, the grammar used was appropriate according to the level of understanding of polytechnic students and straight to the point. One other suggestion was the addition of the term ‘own home’ or ‘family home’ into the item because there were some students who lived with their family, although these were isolated cases.

### 5. Conclusion

In conclusion, a total of only 21 items from 220 item required refinement thus showing that the items were built with a good operationalization and conceptualization. The strength of CVR was prominent in this study when the differences in test takers could be seen clearly and easily. The researcher suggested that all 21 items that were refined would undergo with professional experts evaluation. Decisions on items (i.e., eliminating, modifying or conserving them) should not exclusively be based on empirical data. They should be subject to overall consideration by the researcher depending on the objective intended when they were created, always based on the definition of the construct (Delgado-Rico, Carretero-Dios, & Ruch, 2012). Through the Rasch model analysis, the items can selected after some due consideration such as unidimensionality, local independence, item fit, item polarity and differential item functioning in order to fulfil the needs of Rasch Model.

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