Assessing Content Validity of Students' Self-efficacy Scale in the context of Massive Open Online Course (MOOC)

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1. INTRODUCTION

Assessing content validity is an essential part in the process of measuring scale development. Content validity refers to the process in determining how well the dimensions and elements of a concept can be successfully defined (Sekaran & Bougie 2011). Content validity describes the extent to which the scale is able to measure the dimensions. The more evidence of validity is obtained, such as the expert evaluation of the content, the higher is the confidence in the validity of the scales being constructed (Johnson & Christensen, 2012). It is supported by Creswell (2012) who clearly stated the content validity evidence can be derived from empirical evidences and an expert panel in the fields of study.

This study aimed to measure the content validity of students' self-efficacy scale in the context of Massive Open Online Course (MOOC). MOOC is a new innovation in web-based distance learning program which posed a great challenge to the traditional classroom teaching mode and it is also an alternative way of delivering interactive teaching and learning (Ministry of Education Malaysia, 2015). "Massive" indicates an unlimited offerings of courses and "open" means that the courses are opened to the participation of a large number of geographically dispersed students. Online courses are those where teaching and learning are delivered online. Students' self-efficacy is defined as the perceptions of their

own ability to perform specific tasks (Bandura, 2000; Cartwright & Atwood, 2014; Brenda & Alejandro, 2017). In the context of this study, the expert panel evaluation was very essential. Briefly, the consensus of the panel of experts was the key factor in determining the content validity of the students' self-efficacy scale in MOOC.

2. LITERATURE REVIEW

2.1 Massive Open Online Course (MOOC)

In recent years, online learning has grown in scale, significance and acceptance globally. However, MOOC is comparatively a recent phenomenon in online education. MOOC refers to internet-based courses that promotes the utilization of online open education resources. MOOC is identified as a potential rejuvenation in educational technologies and a blended format in traditional teaching and learning in order to respond to the technologically-driven environment of the 21st century and industrial revolution 4.0 (Rose Alinda, Syed Norris, Marlia & Siti Hamisah, 2017).

MOOC development in Malaysia is in tandem with the two important national plans. Firstly, in order to achieve the aspiration of the nation to provide better access and quality education, The Malaysia Education Blueprint (Higher Education) (2015-2025) outlines 10 Shifts that will spur continued excellence in the higher education system. All 10 Shifts address the key performance issues in the system, particularly with regard to quality and efficiency, as well as global trends that are disrupting the higher education landscape. Shift 9 mentioned in the blueprint describes the Global Online Learning (GOL) (Ministry of Education, 2015), as one of the indicators to determine the achievement of GOL that is, Massive Open Online course (MOOC). MOOC aims to make online learning an integral component of higher education and lifelong learning, starting with the conversion of common undergraduate courses into MOOC, and requiring up to 70% of the programmes to use blended learning models. The second important national plan which encourages MOOC development, is the National Economic Model and Economic Transformation

Program (11th Malaysia Plan, 2016-2020). In the 11th Malaysia Plan, the focus is to improve the quality of education for better students' outcome and strengthening the role of institutional higher education (IHE) as a conduit for innovation by encouraging the launching of MOOC. MOOC will increase access, lower the cost of delivery, bring Malaysian expertise to the world, enhances the branding and visibility of Malaysian IHE. The Government will launch MOOC in niche areas of expertise for Malaysia, make online learning an integral component of teaching and learning, support eligible IHE in establishing the required cyber infrastructure in areas where none exist yet (Eleven Malaysia Plan 2016-2020, 2015). Furthermore, MOOC also supports the elements of high impact educational practices in the curriculum implementation in higher education (Aida Suraya & Suria, 2016).

Open Learning was selected as Malaysia's National MOOC Platform. The government aims 15% of all public university courses online as MOOC by the end of 2015 and should increase to 30% of all university courses by the year 2020 (Open Learning, 2014). Continued growth in MOOC is an essential part of the Ministry of Higher Education's strategic plan to increase the quality and accessibility of higher education within Malaysia. MOOC is a challenge to universities to renew their focus on teaching and to upskill their course design teams to ensure that they can develop MOOC. The significant increase in the number of MOOC means more planning and coordinating are needed among the universities. However, MOOC is still at an infancy stage. MOOC should be able to provide the practical, interactive, engaging and hands-on learning experiences. In the Malaysian context, there are few studies on MOOC, e.g. Ahmad Dahlan et al. (2015); Fadzleen (2014); Habibah et al. (2016); Mansor Fadzil et al. (2015); Nordin et al. (2015; 2016). All these studies suggested continuous researches are really needed and to take into account the quality of the learning experiences in MOOC, in terms of students' motivation, efficacy, engagement, feedbacks, usability, appropriateness of content and activities.

2.2 Students' Self-Efficacy and MOOC

Students' self-efficacy belief is important in order for MOOC to be successful (Branson, 2017). Some researchers had reported completion rates for MOOC as low as 5% to 15% (Greene, Oswald, & Pomerantz, 2015; Jordan, 2014). The lack of the development of positive self-efficacy beliefs might be one of the reasons that MOOC had such low completion rates (Hodges, 2016). In the Malaysian context, it was revealed more than half of the students believed they were unable to complete the tasks in MOOC if there was no one instructing them to act (Nordin et al., 2015). This was in line with the research by Bandura (2000) who revealed positive self-efficacy beliefs could affect self-directed learning ability leading to successful academic outcomes. As self-efficacy is a strong predictor of academic performance, its increase will likely translate into better academic outcomes (Bartimote-Aufflick, Bridgeman, Walker, Sharma & Smith, 2015; Komarraju & Nadler, 2013; Putwain et al., 2013) which could in turn enhance retention and success in MOOC. Students with a strong sense of self-efficacy are more likely to challenge themselves with difficult tasks and be intrinsically motivated.

The notion of self-efficacy is defined as the individual's belief in his/her capabilities to carry out, organize and perform tasks successfully (Bandura, 2000). While according to Cartwright & Atwood, (2014) and Brenda & Alejandro, (2017), students' self-efficacy is defined as their perceptions of their own ability to perform a specific task. Beliefs on self-efficacy influence how people feel, think, behave and motivate themselves (Bandura, 2000). Students with a high level of self-efficacy are confident in their own skills for success, self-motivation, regulating their learning, requiring minimal guidance, persistence in the face of difficulties and tend to have high goal achievement. Self-efficacy is a strong predictor of academic performance, learning (Aurah, 2013; Bartimote-Aufflick et al., 2015) and success in MOOC (Hodges, 2016; Branson, 2017). However, studies on identifying students' self-efficacy in the context of MOOC are very limited. Nordin et al., (2015) research on technology acceptance of MOOC in Malaysia had only three items to measure students' self-efficacy and that was very limited.

Future researches should focus on students' self-efficacy in different target audiences operating in different contexts in order to have success in MOOC (Brenda & Alejandro 2017; Melody & Judith 2015). Melody & Judith (2015) proposed further insight should be gained to examine internal factors such as ability and motivation, understanding learners' expectations and how they coped with specific challenges associated with MOOC. Ghazali & Nordin (2016) also made suggestions and pinpointed for and instrument development in MOOC in order to improve the implementation of MOOC. Thus, this study aimed to examine the content validity of students' self-efficacy scale in the context of MOOC in order to measure the degree of students' capabilities of using MOOC.

2.3 Students' Self-Efficacy Dimensions in This Study

Students' self-efficacy in MOOC in this study was measured and conceptualized in four important dimensions: (i) information searching; (ii) query; (iii) MOOC learning and iv) MOOC usability. Self-efficacy in Internet-Based Learning Environment Scale (SIBLE, Yu-Li Chen, 2014) was adopted to measure students' self-efficacy in the context of MOOC. SIBLE was developed from a combination of the online academic help seeking (OAHS) survey and the web-based learning self-efficacy (WLSE) survey. The concept of the OAHS is the notion that although the students with high self-efficacy are learning on their own, they need to know when to seek for help and clear up questions. OAHS consists of 3 dimensions, namely: information searching, formal query, and informal query. In this study, the researcher collapsed the three dimensions into two dimensions which became information searching and query dimensions. Formal query in SIBLE measured students' capabilities to ask instructors through internet based learning platform while informal query measured students' capabilities to make enquiry generally in other internet based platforms. From the findings of a preliminary study (Ghazali & Nordin, 2016), the researcher decided to integrate formal query and informal query as query dimension. These was due to the scope of this study which was specifically in MOOC, with no other internet based learning platforms. As for the WLSE, the items were generally on determining the integration of the concept of web based learning and web based

usability self-efficacy. For this study, the researcher adopted these two dimensions into the MOOC context: MOOC learning and MOOC usability. Figure 1.1 shows the conceptual framework of students' self-efficacy in the MOOC context.

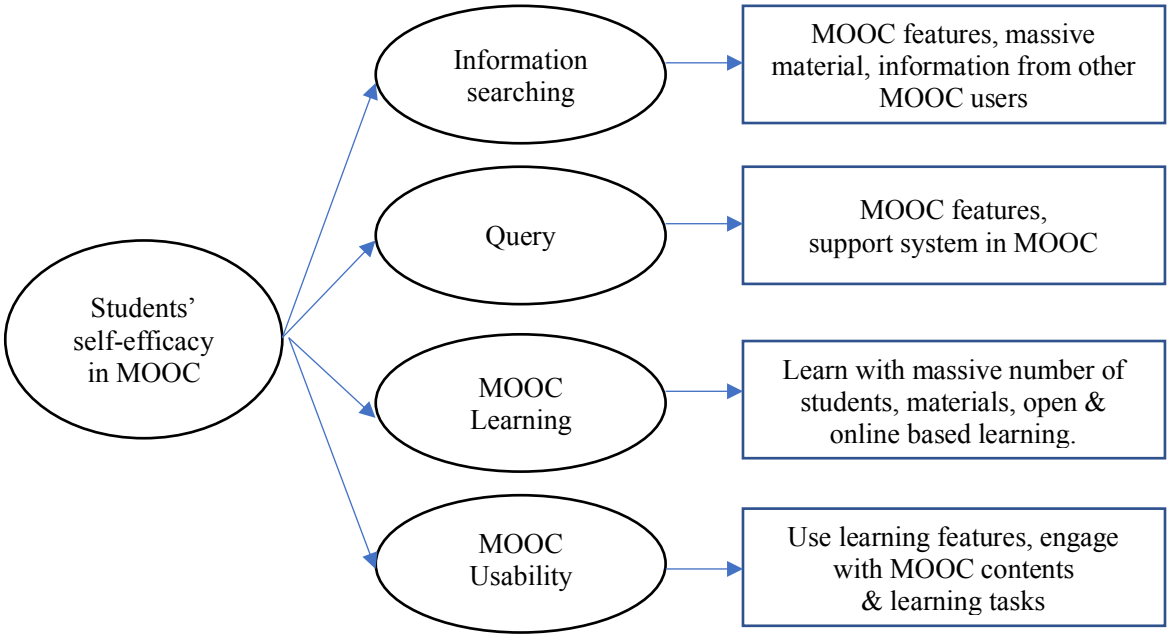

Figure 1.1 Conceptual Framework of students' self-efficacy in MOOC

i) Information Searching

Information searching dimension in this study measured students' capabilities to get information from MOOC features, massive materials in MOOC and from information by other MOOC learners as well as instructors. Students with high self-efficacy were learning on their own and they needed to believe in their capabilities to search the information by using the web based learning features (Yu-Li Chen, 2014). In MOOC, students were learning on their own and they needed to know how to obtain the information by using MOOC features. Students had to know and explore the available features in MOOC to obtain the information. Learning that was more "open" in MOOC required higher level of management skills to manage and understand the learning materials (Nordin et al., 2016). Discussion might enhance learner self-

efficacy through vicarious experiences and verbal persuasion (Hodges, 2016). The discussion allowed learner-to-learner or instructor communication to obtain and share the information. Discussion with other learners and instructor was one of the alternatives for students to search information in MOOC. Instead of obtaining the information, students' discussion capabilities also provided social network analysis by which to assess learners' level of participation (Nordin et al., 2016).

ii) Query

Query dimension in this study referred to the degree to which students' capabilities to make query from MOOC features and support system in MOOC. Students with high self-efficacy needed to know when to seek for help and cleared up questions. They could use the features in the web based learning environment to make a query (Yu-Li Chen, 2014). There were the few features to make a query in MOOC. Nordin et al., (2015) in their research revealed more than half of the students (50.9%) perceived they were not able to complete the tasks in MOOC if there was no one instructing them to act. This could also be linked to the MOOC autonomy of the learners. From this finding, a probable solution could be to integrate the concept of "community of practice" using mentors. The mentors would be the members who had been part of the community (MOOC course) in which they would have developed a " shared knowledge bank" of learning experiences. The mentors could give feedbacks to students who faced difficulties or required guidance and assistance in their learning especially in MOOC (Nordin et al., 2015). The presence of instructors and other support systems could help students clear up any issue.

iii) MOOC Learning

MOOC learning dimension in this study measured students' capabilities to engage with the massive number of learners and materials. This dimension also measured students' capabilities to learn in open, online based learning environment and collaborated with other MOOC learners. In the past few years, MOOC had emerged as one of the rapid-growing learning environments for online learning. MOOC allowed 'massive' number of materials and learners to learn from 'open-based' online courses (Nordin et al., 2015). The three defining characteristics of MOOC; 'massive', 'open' and 'online', represented three key factors to

determine whether or not MOOC could achieve considerable impact in Malaysia (Mansor et al., 2015). Students' self-efficacy in MOOC learning should measure the degree of students' capabilities to learn in MOOC where there are a massive number of learners and materials, in open and online based environment. MOOC learning environment also encouraged collaboration with other learners in MOOC (Nordin et al., 2016).

iv) MOOC Usability

MOOC usability in this study referred to students' capabilities to use the learning features in MOOC. This dimension also measured the degree of students' capabilities to engage with MOOC contents and the learning tasks. Downloading, uploading and understanding the learning materials were general functions in web-based learning self-efficacy (Yu-Li Chen, 2014). In this study, MOOC usability dimension measured students' capabilities to use the learning features to download, upload and the ability to respond through their learning process in MOOC. Students' should also be capable to make their self-evaluation through their learning process in MOOC. Besides the learning materials, the learning tasks were also the important elements in MOOC (Nordin et al., 2016). Students who were capable of managing the learning contents and tasks in MOOC showed they could use MOOC platform effectively (Yu-Li Chen, 2014).

2.4 Content Validity Ratio

Content validity ratio (CVR) is used to measure the content validity of the scale through empirical measurement. CVR is a method from the classical measurement literature, which is more practical in terms of time, costs, easy to administer and fast in implementation (Dewi Rooslani & Ly-Fie, 2006). These advantages have made CVR a choice among past researchers abroad (Allahyari, Rangi, Khosravi, & Zayeri, 2011; Baheiraei et al., 2013; Van Rensburg, Basson, & Carrim, 2011) and in Malaysia (Mohd Arif Shuib, Shukran, & Nor Diana, 2013; Mohd Effendi & Ahmad Zamri, 2015; Norashady et al., 2016).

In content validity ratio, a few expert panels will be invited to review the items with regard to item content representativeness of the dimensions' clarity, relevance and format. A panel of experts is made up of two categories: professional experts and field experts (Rubio et al, 2003). The panel members will be required to indicate whether each one of the items is 'essential', 'useful but not necessary' or not necessary' to be included in the scale to measure the dimensions (Cohen & Swerdlik, 2010). Lawshe suggested if more experts are involved in the study evaluating the item as essential, then the item is considered to have satisfied the face validity (Lawshe, 1975). In this study, the panel of experts were also required to check on item clarity and to comment on scale instructions, item format, sentences and response options after completing the evaluation. The percentage of agreement was computed using the following formula:

Content validity ratio, $CVR = (\eta_e - N/2) / (N/2)$

η_e = number of panellists indicating essential,

N = total number of panellists

Content validity ratio (CVR) values are in the range -1 to +1, where a value will be positive if more than half of the panel experts indicate the item as essential. It will be 0 if only half of the panel members indicate the item as essential and negative if less than half of the panel members indicate the item as essential. The CVR helps the researchers to improve on the scale and to decide which items to retain and which items to remove.

3. METHODOLOGY

To assess content validity of the dimensions, the purposive approach was adopted and undertaken in figure 1.2 (Colin & Andrew, 2013; Lawshe, 1975; Lewis et al, 2005).

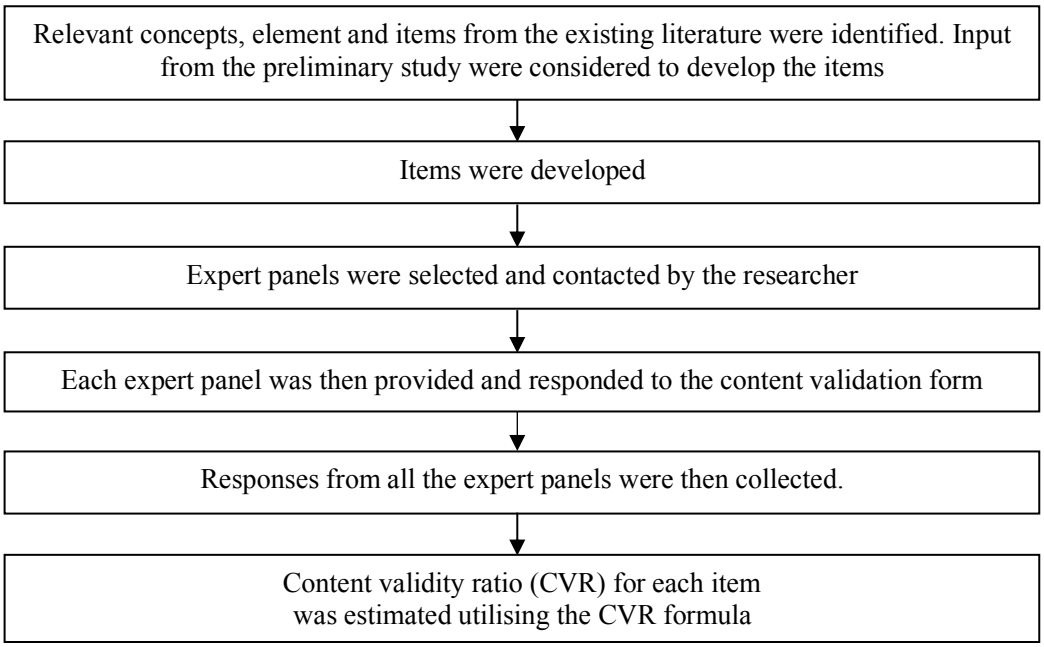

Figure 1.2 Assessing content validation process

3.1 Number of experts

Fourteen senior lecturers, lecturers or researchers at the university were involved as professional experts in this study. All the professional experts were expertise in their respective field e.g., psychology, psychometric, educational measurement, and MOOC. The field experts consisted of sixteen PhD holders from four public universities in Malaysia (Universiti Putra Malaysia, Universiti Kebangsaan Malaysia, Open University, International Islamic University Malaysia) specializing in particular fields of study. There were a total of 30 professional and field experts. Although Lawshe's method only requires at least five members for the panel, the researcher decided to include as many experts as possible to increase the value of the model. The validity of Lawshe's model could be assessed more effectively if there are more than ten panel experts (Allahyari et al., 2011). The total of 30 experts in this study exceeded the recommendations from past researchers (Baheiraei et al., 2013; Delgado-Rico, 2012; Rubio et al., 2013). Rubio et al., (2003) proposed at least three panel of experts for each group, which was the group of professional experts and a group of field experts with the total number of experts as more than ten or acceptable within a range of six to twenty experts. Previous researches (Norashady et al., 2016) used a total of 14 experts, in order to

measure the content validity of the Marine Engineer Personality Inventory (MEPI). While Mohd Effendi & Ahmad Zamri (2015) used 28 field experts in their study to determine the content validity of the Adversity Quotient or IKBAR measuring instrument for polytechnic students.

3.2 Sampling Technique

The purposive sampling technique was utilized. This sampling technique refers to samples selected based on the expertise of the study area. The criteria for selecting the panel of professional experts were based on expertise, academic qualification and experiences. The researcher contacted the experts via telephone and emails to explain the purpose of the study, the procedures and sought their approval for participation.

3.3 The Measuring Scale

An initial pool of items representative of all the dimensions were developed. All the items were adopted from previous instruments, rubrics, input from a preliminary study and supporting literatures. The researcher kept on revising and rechecking the items to avoid any redundancy, double barrels, very long and confusing items. Care was also taken to ensure the items were clearly phrased and most important they reflected their respective dimensions (information searching, query, MOOC learning and MOOC usability). Table 1.0 shows the number of items and samples of the generated items representing their respective dimensions in the measuring scale. The sample of the content validation form which was distributed to the panel of experts is shown in Figure 1.3.

Table 1.0 Number of items and sample of items for each dimension

Dimensions	Number of Items	Sample Items
Information Searching	8	**When I need to search for information while using MOOC, I am able to** 1. use online interaction features to obtain information. 2. gather relevant information from various materials.
Query	8	**When I face difficulties in MOOC, I can always** 1. communicate by using 'HELP DESK' features requesting for help. 2. seek for MOOC's instructor for advice.

MOOC Leaning	10	**I experience no difficulties** 1. accessing learning materials in MOOC at anytime. 2. learning in MOOC as online based learning environment.
MOOC Usability	10	**It is easy for me to** 1. upload learning materials in MOOC. 2. respond during the learning process in MOOC (comment/forum).
Total number of items	36	

STUDENTS' SELF-EFFICACY IN MOOC

Expert Assessment:

1 = Essential (Keep the item),

2 = Useful but not necessary (Keep item but Needs some refining), and

3 = Not necessary (Doesn't align with operational definition; Remove Item)

Dimension	Operational definition	Questionnaire items	Expert Assessment		
			1	2	3
1. Information Searching	**Students' capabilities to obtain the information** from **MOOC features, massive material in MOOC** and from the **collaborative information by other**	**When I need to search for information while using MOOC, I am able to…**			
		1. use online interaction features to obtain information	○	○	○
		2. use the links given to access relevant information website	○	○	○
		3. use the HELP features to search for information	○	○	○
		4. gather relevant information from various materials	○	○	○

Figure 1.3 Sample for content validation form

4. FINDINGS AND DISCUSSION

The original table of CVR value was from Lawshe (1975). This original table had been revised (Colin & Andrew, 2013; Wilson, Pan & Schumsky, 2012). However, this study focused on revised CVR value by Colin & Andrew (2013). They stated when the total number of experts is 30 (N= 30), then the minimum value (critical value) that must be adhered to for each item is 0.333. This means that if there are items that failed to meet the minimum requirement value i.e., below 0.333 or are statistically insignificant, the items will automatically be retained, refined or dropped (Wilson et al., 2012). The statement was in line with DeVon et al., (2007) who mentioned items that did not achieve the minimum agreement by the panel of experts must be either eliminated from the measuring scale or revised. In this study, the items were only be

refined and revised if the value of CVR was less than the minimum agreement but were still in positive value. This was in line with the study by Mohd Effendi & Ahmad Zamri (2015), where the items of IKBAR that did not achieve the minimum agreement by the panel of experts' assessment were refined and revised.

Figure 1.4 shows all the items in the students' self-efficacy scale that were above the CVR critical value, except for only 2 items that did not reach the critical value of CVR (N = 30, $CVR_{critical}$ = 0.333, $CVR_{self\text{-}efficacy}$ = 2 items refined). The items were SE5 (0.267) and SE33 (0.267). These two items were refined and revised. The other items were suggested by the experts to be revised were also considered by the researcher. Almost ten percent (10%) of the items required small modifications and refinement as suggested by the panel of experts in order to make the items more comprehensible and clear. In addition, they also suggested that long and confusing items should be rephrased to ease the respondents' comprehension. From the language aspect, the terms used were appropriate according to the level of understanding of higher institution students. They were precise and straight to the point.

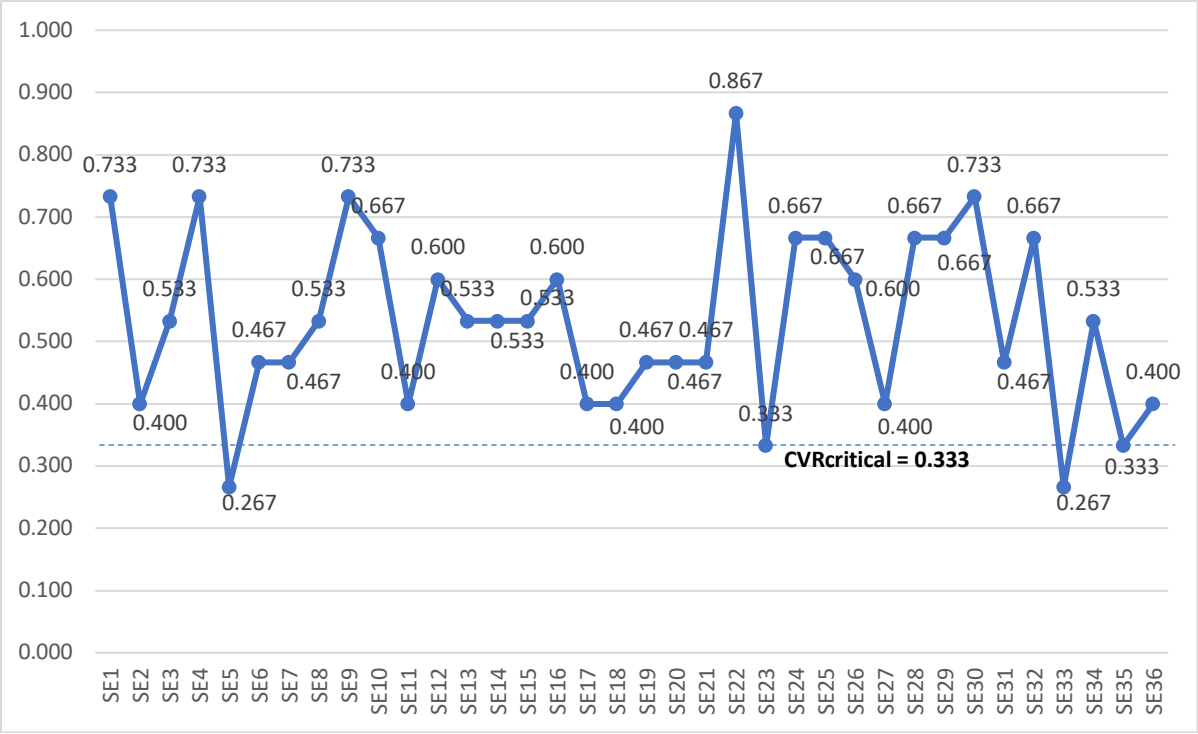

Figure 1.4 CVR values for all items in the students' self-efficacy scale in the MOOC content.

5. CONCLUSION

This finding showed the items were built with good operationalization and conceptualization. Only 2 items out of 36 items required refinement due to the CVR values that were below the critical value based on the CVR table by Colin & Andrew (2013) (N = 30, $CVR_{critical}$ = 0.333, CVR_{all} = 2 items refined and revised). Only ten percent (10%) of the items required small modifications and refinement as suggested by the panel of experts in order to make the items more comprehensible and clear. Each item were revised considering all the comments from the experts as preparation for pilot testing. All the 36 items that were refined were pilot-tested. The results of the research showed the measuring scale had good content validity and has great potential to be proposed as a good measuring scale of students' self-efficacy in the MOOC context. The CVR helped to improve the scale and in the decision to retain or to remove the items. Decisions on items (eliminating, modifying or conserving them) were not exclusively based on empirical data. They were subjected to the overall consideration of the researcher depending on the objectives intended and based on the definitions of the dimension (Delgado-Rico, Carretero-Dios, & Ruch, 2012).

SUMMARY

This study aimed to examine the content validity of students' self-efficacy scale in the context of the Massive Open Online Course (MOOC) by using the Content Validity Ratio (CVR). This study was conducted based on the evaluation of a panel of 30 experts selected via purposive sampling technique. The panel of experts were divided into two categories which are professional experts and field experts. Fourteen professional university experts were involved. They were experts in psychology, psychometric, educational measurement and MOOC. The field experts consisted of sixteen Doctor of Philosophy (PhD) holders from four public universities in Malaysia specializing in particular fields of study. Students' self-efficacy in this study was measured and conceptualized in four important dimensions: (i) information searching; (ii) query; (iii) MOOC learning and iv) MOOC usability. There were 36 items. The CVR critical value adhered to was 0.333 (N = 30) for the purpose of refining and revising items. The findings of the study showed only 2 items required refinement due to the CVR values which were below the critical value (N = 30, $CVR_{critical}$ = 0.333, CVR_{all} = 2 items refined and revised). The findings of the study showed the scale had good content validity and had great potential to be promoted as a measuring scale for students' self-efficacy in MOOC.

SUGGESTIONS

It is recommended that further researches be carried out to apply more sophisticated statistical analysis, such as the Factor Analysis and Structural Equation Modelling (SEM) to elaborate on quality items and to develop measurement model for students' self-efficacy in the MOOC context. Further investigations should be carried out on the validity evidence of the scale such as construct validity, convergent validity & discriminant validity. In addition, the reliability test or consistency of the items should measure the internal consistency of the items.

REFERENCES

Ahmad Dahlan, A. R., Juhari, S. S. & Ahmad Shafiee, A. S. (2015). MOOCs at International Islamic University Malaysia. *International Journal of Computer Science and Information Technology Research*, *3*(2), 140—149.

Aida Suraya, M. Y. & Suria, B. (2016). *Guideline for the Implementation of (HIEPs) High Impact Educational Practices in the Curicullum.* Malaysia Higher Education Teaching and Leaning Council & Centre for Academic Development (CADe), Universiti Putra Malaysia.

Allahyari, T., Rangi, N. H., Khosravi, Y., & Zayeri, F. (2011). Development and Evaluation of a New Questionnaire for Rating of Cognitive Failures at Work. *International Journal of Occupational Hygiene, 3*(1), 6–11.

Aurah, C. (2013). The Effects of Self-efficacy Beliefs and Metacognition on Academic Performance: A Mixed Method Study. *American Journal of Educational Research, 1*(8), 334–343.

Baheiraei, A., Khoori, E., Ahmadi, F., Foroushani, A.R., Ghofranipour, F., & Weiler, R.M. (2013). Psychometric properties of the adolescent health concern inventory: the Persian version. *Journal of Psychiatry*, *8*(1), 28–36.

Bandura, A. (2000). Self-efficacy. In A. E. Kazdin (Ed.), *Encyclopedia of psychology*. New York: Oxford University Press.

Bartimote-Aufflick, B., Bridgeman, A., Walker, R., Sharma, M., & Smith, L. (2015). The study, evaluation, and improvement of university student self-efficacy. *Studies in Higher Education, 41*(11), 1918–1942.

Branson, K. J. (2017). Academic self-efficacy and massive open online course (MOOC) completion rates: Do academic self-efficacy and adult learner characteristics influence MOOC outcomes? Unpublished Dissertations.

Brenda, C. P. R. & Alejandro, A. (2017). Developing self-efficacy through a massive open online course on study skills. Open Praxis. *International Council for Open and Distance Education*, *9*(3), 335-343.

Cartwright T. J. & Atwood J. (2014) Elementary pre-service teachers' response-shift bias: Self-efficacy and attitudes toward science. *International Journal of Science Education*, *36*, 2421– 2437.

Cohen, R. J. & Swerdlik, M. E. 2010. *Psychological Testing and Assessment: An Introduction to Test and Measurement* (8th ed.). Boston: McGraw-Hill.

Colin, A & Andrew, J. S. (2013). Critical values for Lawshe's content validity ratio: revisiting the original methods of calculation. *Measurement and Evaluation in Counseling and Development*, *47*(11), 79-86.

Creswell, J. W. (2012). *Educational research: planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Boston: Pearson Education.

DeVon, H. A., Block, M. E., Moyle-Wright, P., Ernst, D. M., Hayden, S. J., Lazzara, D. J. et al. (2007). A psychometric Toolbox for testing Validity and Reliability. *Journal of Nursing Scholarship*, *39* (2), 155-164.

Dewi Rooslani T., & Ly-Fie S. (2006). Content validity of instruments in IS research. *Journal of Information Technology Theory and Application (JITTA), 8*(3), 31–56.

Din, R. (2010). Development and Validation of an Integrated Meaningful Hybrid ETraining (IMet) For Computer Science: Theoretical Empirical Based Design and Development Approach. PhD Thesis. Bangi: UKM.

Delgado-Rico, E., Carretero-Dios, H. & Ruch, W. (2012). Content-related validity evidence in test development. *International Journal of Clinical and Health Psychology*, *12*(3), 449-460.

Dewi Rooslani Tojib & Ly-Fie Sugianto (2006). Content validity of instruments in IS research. *Journal of Information Technology Theory Applications, 8*(3), 31-56.

Eleven Malaysia Plan 2016-2020. (2015). Retrived March 20, 2018, from http://epu.gov.my/en/rmk/eleventh-malaysia-plan-2016-2020

Fadzleen, N. (2014). Is Malaysia ready for MOOC? Retrieved October 8, 2017, from http://fadzleen.com/?p=371

Ghazali, N. & Nordin, M. S. (2016). The perception of university lecturers of teaching and learning in massive open online courses (MOOCs). *Journal of Personalized Learning*, *2*(1): 51-56.

Greene, J.A., Oswald, C.A., & Pomerantz, J. (2015). Predictors of retention and achievement in a massive open online course. *American Educational Research Journal, 52*(5), 925-955. doi: 10.3102/0002831215584621

Johnson, B. & Christensen, L. (2012). *Educational research quantitative, qualitative, and mixed approaches*. Alabama: SAGE Publications Inc.

Jordan, K. (2014). Initial trends in enrollment and completion of massive open online courses. *The International Review of Research in Open and Distributed Learning, 15*(1), 133-160. Retrieved Mei 25, 2016 from: http://www.irrodl.org/index.php/irrodl/article/view/1651/2813

Komarraju, M. & Nadler, D. (2013). Self-efficacy and academic achievement: Why do implicit beliefs, goals, and effort regulation matter? *Learning and Individual Differences*, *25*, 67–72.

Habibah Ab Jalil, Alyani Ismail, Norasiken Bakar & N. A. Kasma Azizan K. A. Nasir. (2016). *Evaluation of Malaysia Pilot MOOC (Final Report).* CADe UPM: Serdang.

Hodges, C. B. (2016). The development of learner self-efficacy in MOOCs. In *Proceedings of Global Learn 2016 (pp. 517-522).* Association for the Advancement of Computing in Education (AACE).

Lawshe, C.H. (1975). A quantitative approach to content validity. *Journal of Personality and Social Psychology, 28*(4), 563- 575.

Lewis, B.R., Templeton, G.F. & Byrd, T.A. (2005). A methodology for construct development in MIS research. *European Journal of Information System*, *14*(4), 388-400.

Mansor, F, Latifah, A. L. & Tengku Amina Munira (2015). MOOCs in Malaysia: A preliminary case study. Paper presented at the E-ASEM Forum: Renewing the Lifelong Learning Agenda for the Future, Bali, Indonesia, 10 - 11 March 2015.

Melody M. T. & Judith, R. (2015). Massive open online courses (MOOCs): Insights and challenges from a psychological perspective. *British Journal of Educational Technology*, *4*(3).

Ministry of Education Malaysia. (2015). MOOC: Massive Open Online Course. Putrajaya. KPM.

Ministry of Education Malaysia. (2015). Malaysian Education Blueprint on Higher Education [Discussion Document] – Shift 9: Globalised Online Learning. Retrived February 20, 2016, from http://moe.gov.my/cms/upload_files/files/Chapter%2010-

Mohd Arif S., Shukran A. R., & Nor Diana M. M. (2013). Assessing psychosocial elements of crowds during Hajj: Scale construction and content validation. In Ahamad Tajudin K. & Naimah K. (Eds.), 5th National Seminar on Hajj Best Practices on Crowd and Health During Hajj. Pulau Pinang: Universiti Sains Malaysia.

Mohd Effendi, M. M & Ahmad Zamri, K. 2015. Assessing content validity of IKBAR among field experts in polytechnics. The International Conference on Language, Education, Humanities & Innovation, Singapore. 1 – 22 March 2015.

Norashady, M. N., Muhammad Aziz Shah, M. A., Eftah, M. @ H. A. & Haniza, Y. (2016). Measuring the content validity of MEPO using content validity ratio. *Journal of ICT in Education*. ISSN 2289-7844. Vol 3: 81-88.

Nordin, N., Embi, M., & Norman, H. (2015).Technology acceptance of massive open online courses in Malaysia. *Malaysian Journal of Distance Education*, *17*(2): 1–16.

Nordin, N., Norman, H., Embi, M., Mansor, A. Z. & Idris, F. (2016). Factors for Development of Learning Content and Task for MOOCs in an Asian Context. *International Education Studies*, *9*(5).

Open Learning. (2014). Retrived Oktober 10, 2017, from https://www.openlearning.com/pressreleases/OpenlearningComSelectedAsMalaysiaSNationalMoocPlatform

Putwain, D., Sander, P., & Larkin, D. (2013). Academic self-efficacy in study-related skills and behaviours: Relations with learning-related emotions and academic success. *British Journal of Educational Psychology*, *83*(4), 633–650.

Rose Alinda, A., Syed Norris, H., Marlia, P., & Siti Hamisah, T. Redesign Higher Education Towards Industry 4.0, Kuala Lumpur, Malaysia. 23 – 24 August 2017.

Rubio, D.M., Berg-Weger, M., Tebb, S.S., Lee, E.S., & Rauch, S. (2003). Objectifying content validity: Conducting a content validity study in social work research. *Social Work Research: Oxford Journals*, *27*(2): 94-105.

Sekaran, U. & Bougie, R. (2011). *Research methods for business: A skill building approach*. New Delhi: John Wiley & Sons.

Van Rensburg, H., Basson, J., & Carrim, N. (2011). Human resource management as a profession in South Africa. *SA Journal of Human Resource Management/SA Tydskrif vir Menslikehulpbronbestuur, 9*(1), 1-15.

Wilson, F. R., Pan, W., & Schumsky, D. A. (2012). Recalculation of the critical values for Lawshe's content validity ratio. *Measurement and Evaluation in Counseling and Development*, *45:* 197–210. doi:10.1177/0748175612440286

Yu-Li Chen. (2014). A study on student self-efficacy and technology acceptance model within an online task-based learning environment. *Journal of Computers*, *9*(1): 34-43.

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