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Experts' Validation on Competence Index for Teaching Librarians in Academic Libraries in Higher Education: Content Validity Index (CVI) approach

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Abstract
This study uses the CVI approach to evaluate the content validity of a competence index designed for teaching librarians in academic libraries, employing the CVI approach. A purposive sampling method was used to select eight experts from eight public universities, each with over 20 years of experience as academic librarians, to assess the index. The evaluation comprised 108 items across three main constructs. Results indicated, three items scored below the minimum I-CVI score, while 86 items achieved a perfect score of 1.0. The S-CVI yielded an average score of 0.97 and a universal agreement score of 0.80, confirming the overall validity of the competence index.

Keywords: Competence Index, CVI, Information Literacy, Teaching Librarian

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1.0 Introduction

In Malaysia's higher education, academic librarians working in academic libraries must possess a bachelor's degree in librarianship or a related field as set by the Public Service Department (JPA). In the preliminary study done by Dzulkipli et al. (2024), a total of 161 teaching librarians were recorded across 20 public higher education and these big numbers represent the importance of the profession in this research as information professionals in academic libraries in the higher education system which to fulfilling the information needs, and their clients are students, faculty members, and researchers (Nakitare et al., 2020). Their job description is not limited to providing access to information (Rabasa & Abrizah, 2024) but as an information professional responsible for an executive position in the library to lead a varied range of contexts (Wong, 2021), the roles and responsibilities are divided into three main roles, research support, teaching, and administration (Donkor et al., 2024). These responsibilities have changed immensely over the years to meet the industrial needs, especially in a higher education environment where services and technologies are integrated (McGuinness, 2021). Defined by McGuinness (2021) actively contributes to the educational mission who teaches instructional information literacy in disciplinary or general learning outcomes, which is positioned to support student learning and success. Despite never being taught as educators during

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the academic years (Caffrey et al., 2022), they are required to teach instructional information literacy, which led to issues in developing the need skills required for teaching (Moser & Abramovich, 2023). This led to the criticism for more than 30 years in the literature, saying that academic librarians are lacking pedagogical knowledge, yet still, librarians actively perform roles as teachers (Saib et al., 2022). Therefore, teaching librarians need to have a specific competence index as a guideline or standard in delivering instructional information literacy, especially in higher education settings, since the environment of scholarly conversation is changing and requires teaching librarians to be ready.

1.1 Objectives

This study's objective is to measure the content validity of the competence index for teaching librarians in academic libraries in higher education using the content validity index (CVI) for both the Item-Content Validity Index (I-CVI) and Scale Level-Content Validity Index (S-CVI) on average method and universal agreement.

2.0 Literature Review

In constructing this competence index, the study focuses on four central concepts: academic librarians, teaching librarians, competence, and information literacy. Hence, the development process for a competence index tailored to teaching librarians in academic libraries within higher education encompasses three distinct phases, culminating in the assessment of content validity through the Content Validity Index (CVI) as the final phase.

2.1 The Central Concepts in Constructing Competence Index

As higher education institutions increasingly offer distance and online classes, academic librarians must adapt their service delivery methods, particularly in teaching and supporting instructional information literacy by integrating new technologies. This transition drives librarians to evolve with the digital era and respond to the changing needs of their users (Nakitare et al., 2020). The expansion of technology within libraries has fueled a longstanding debate about the necessary knowledge and skill competencies in the information field (Khan & Parveen, 2020). A significant gap was found in the previous research focusin on specific skills and knowledge, especially the technological aspect, rather than a wide range of human attributes, which consist of knowledge, skills and abilities. A proficient competency consists of the knowledge, skills, and abilities needed by academic librarians to successfully perform responsibilities and master the tasks (Tang et al., 2024). Therefore, the initial research objective is to explore and define the needed competency consisting of knowledge, skills and abilities of teaching librarians. As this competence index was developed to focus on specific job descriptions or tasks as an academic librarian, a framework for information literacy for higher education is essential to study. This framework is a tool to guide the development of instructional information literacy in higher education and a potential collaboration between librarians and faculty members in the information area that suits the higher education environment (Association of College and Research Libraries, 2015). The framework itself has never been used or adopted in the Malaysian environment. Since it has been successfully adapted, academic libraries can expand and be dynamic with the framework blended into the instructional information literacy (Walker & Whitver, 2020). Information literacy involves focusing on research skills during academic years (Diekema et al., 2020), treating the latest concept of literacy like digital literacy (Azik & Steinerov, 2021) and information overload can be avoided when students learn information literacy so they can use the information reliably and ethically (Bernard, 2024).

2.2 Competence Index for Teaching Librarians

At the initial stage in the competence index's construction, two preliminary studies were conducted to gather information and statistics on the populations of teaching librarians and prominent library administrators. Then, the methodological processes were used to construct the competence index. The methodological processes involved three phases: predetermined themes, Delphi rounds, and expert validation. This paper explains the final phase of experts' validation of the competence index for teaching librarians in academic libraries in higher education. Information literacy is more complex as compared to library instruction, which focuses on citations, library catalogues, and library introduction (Anna et al., 2023). This initiative created awareness among library users and exposed them to their services and facilities. Having a complex and well-structured program in information literacy, the teaching librarians who give instructional information should be competent enough, and the competencies required knowledge and skills (Khan & Parveen, 2020) to fully function to deliver the session accordingly, affecting the users' learning outcomes. Information literacy finds value in basic skills (Davidson Squibb & Zanzucchi, 2020) and assures them, despite having the advantage of features in technology, to seek and evaluate information (Svensson et al., 2022). Therefore, teaching librarians delivering instructional information literacy should be equipped with a list of competence indexes since the outcomes of learning sessions contribute to the future development of students in using the information evaluated ethically. At the beginning process of developing a competence index, literature studies took place to find the best framework or model to be adopted in the study, alongside knowledge, skills, and ability attributes, since workers perform effectively, which is reflected in these three human attributes (Nguyen, 2022).

The framework for information literacy in higher education was used as the main conceptual framework, in line with three human attributes, a view of a conceptual framework, as shown in Fig. 1.

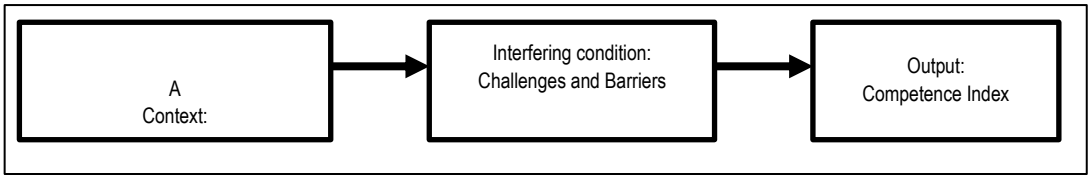

Fig 1: Conceptual Framework for Competence Index for Teaching Librarians in Academic Libraries in Higher Education

One hundred thirty nine items were identified across three constructs, 85 items from the first construct and 48 items from the KSA (Knowledge, Skills, and Abilities). The last construct is the six components of information literacy were added from focus group interview. Following the focus group interview, a consensus among panellists led to refining the list to 108 items through removal and consolidation. These 108 items were then advanced to the final phase of the methodological framework for expert validation.

3.0 Research Method

3.1 Research Design

Expert validation is the last phase in the research for constructing a competence index for teaching librarians. This study employed the Content Validity Index (CVI) to measure the content validity of the competency index. Content validity is an additional measurement tool that represents the measured construct to support the validity as important evidence of the measurement tool (Yusoff, 2019). During this expert validation phase, the population consisted of chief librarians from 20 academic libraries that serve in Malaysia's public higher education, and eight experts participated in this study. The study employed purposive sampling, the selecting experts based on specific criteria, as mentioned in paragraph 3.3.

3.2 Expert Criteria

Chedi (2017) further clarified that an expert is defined as an individual with 20 years of practical experience in the field. All experts were identified during the preliminary stage of the research, which aimed to establish a comprehensive profile of teaching librarians and chief librarians working in academic libraries across 20 public higher education institutions. General and specific criteria to be selected as experts, as suggested in the literature, are as follows:

- Knowledge and experience
- Capacity and willingness to participate
- Enough time
- Minimum of 20 years of experience as an academic librarian
- Chief librarian

3.3 Content Validity Index (CVI) Procedures

The whole process of CVI conducted was based on Yusoff (2019) procedures, consisting of six procedures, and the cut-off of a minimum of experts is six experts and not exceeding ten experts. The six procedures involved are preparing the content validity form, expert selection, conducting content validation, reviewing constructs and items, providing a score on each item, and calculating CVI. The summary of the procedures is listed in Table 1.

Table 1. Content Validity Index Procedures

Procedures	Procedures	Method
Prepare CVI form	● A form was prepared using a 4-level Likert scale. A relevance rating one to four for scoring items.	Degree of relevance: 1 = the item is **not relevant** to the measured domain 2 = the item is **somewhat relevant** e to the measured domain 3 = the item is **quite relevant** to the measured domain 4 = the item is **highly relevant** to the measured domain
Experts' selection	● Experts were selected based on position, years of experience and expertise in studied area.	See paragraph 3.2
Conduct content validation	● A non-face-to-face approach	Conducted using Google forms
Review constructs and items	● A clear view of instruction and definition were stated in the form for experts' understanding	-
Scoring each item	● Experts were required to score each item individually	See Table 2 for cut-off numbers of CVI acceptance
Calculating CVI	● Two methods on calculating CVI: i. CVI for items ii. CVI for scales (Average & Universal Agreement)	The formula to calculate the I-CVI and S-CVI on average and universal agreement are as: i. I-CVI = (agreed items) / (number of experts) The rating was recoded as 1 (relevance scale of 3 and 4) and 0 (relevance scale of 1 and 2). ii. S-CVI/Ave = (sum of I-CVI scores) / (number of items) iii. S-CVI/UA = (sum of UA items) / (number of items)

Due to geographical barriers, experts were spread throughout peninsular Malaysia, and due to the schedule of experts, the validation

process was conducted through an online platform. The validation is based on an expert's knowledge, opinion and experience, so that a subjective interpretation bias might occur during the validation process. However, CVI consists of two methods of measurement: Item-Content Validity Index (I-CVI), defined as the proportion of content given by an expert by rating the relevancy level three or four, and Scale level-Content Validity Index (S-CVI), defined as the relevance of all scale which decided by the content experts. All results were validated through an agreement of experts and rated based on the CVI acceptance numbers. The recommended number of experts based on this study and the acceptance cut-off score of CVI is shown in Table 2.

Table 2. Cut-off Numbers of CVI Acceptance

Number of Experts	Acceptable CVI Values	Sources
Six to eight experts	At least 0.83	(Lynn, 1986)

4.0 Findings

4.1 Experts' Demographic Profiling

The demographic and professional profiles highlight the strength of the validation process. Most had 26–30 years of experience and advanced degrees, adding credibility to the results. Their diverse but relevant backgrounds ensured that highly qualified individual reviewed the instrument. While most experts were female (87.5%), reflecting the profession's gender composition, future studies could aim for more balanced representation. Overall, the selection of experts supports the study's goals and ensures reliable evaluations. The spread of this information is in Table 3.

Table 3. Experts Demographic Profiling

Demographic Variables	Numbers	Valid (%)
Gender		
Male	1	12.5
Female	7	87.5
Education		
Master's degree	6	75
Bachelor's degree	2	25
Experience		
20 – 25 years	2	25
26 – 30 years	5	62.5
30 – 35 years	1	12.5
Position		
Chief Librarian	8	100

4.2 Item-Content Validity Index (I-CVI)

The high number of items (105 out of 108) meeting the acceptance threshold demonstrates strong content validity for most of the instrument. The exclusion of three items with I-CVI values of 0.75 reflects a rigorous approach to maintaining the integrity of the competence index. This decision ensures that only items with a high degree of expert agreement are included, thereby enhancing the overall validity of the instrument. The variation in I-CVI values (1.0 for 86 items and 0.87 for 19 items) suggests a slight disparity in expert agreement for specific items, which may warrant further investigation. Future refinements could involve re-evaluating or rephrasing items with lower scores to address potential ambiguities or improve clarity, and this situation might contribute to the self-awareness and adaptability of teaching librarians to the dynamic changes in the demands of information. Items that reached the CVI value of 1.0 achieved the highest agreement among experts, which means all 86 items should be important to the competence index for teaching librarians. Overall, the findings indicate that the validated instrument is robust and reliable for assessing the competence of teaching librarians. This will assure the credibility and trust among stakeholders where the index is relevant and appropriately validated with higher quality outcomes when the index reflects actual competencies of teaching librarians. The acceptance value of CVI can be referred to in Table 2, and details of I-CVI are shown in Table 4.

Table 4. Number of Items in I-CVI Value

I-CVI Value	No of Items
1.0	86
0.87	19
0.75	3
Total	**108**

4.3 Scale Level-Content Validity Index (S-CVI)

Table 5 indicates the high S-CVI/Ave value of 0.97, indicating strong agreement among experts on the relevance of the items' relevance, supporting the instrument's content validity. However, the lower S-CVI/UA value (0.80) highlights that not all experts universally agreed on every item's relevance. While this does not invalidate the instrument, it suggests that some items may require minor revisions or further review to achieve unanimous agreement. Overall, the results demonstrate sufficient content validity, as the S-CVI/Ave meets the required threshold, validating the instrument's competence for its intended purpose. Future research could explore strategies to enhance universal agreement to strengthen the instrument further. Additionally, content validity is sufficient to validate the competence by having

the CVI acceptance value of I-CVI and S-CVI/Ave.

Table 5. S-CVI Value

S-CVI	CVI Value
S-CVI/Ave	0.97
S-CVI/UA	**0.80**

5.0 Discussion

The outcomes analysis of CVI indicates that there is strong content validity among experts in the competence index. Only three items were rated 0.75, which is below the acceptance of the CVI value, and these items scored only six for expert agreement out of eight experts, and all items were from information, method and research themes. While the 105 items scored above 0.87 of acceptance CVI value, all items in the new themes emerged in focus group interviews, and the new components of instructional information literacy were accepted. The new themes that emerged are research advocates and academic assessment, and there are six new components of instructional information literacy. The new theme, research advocates, shows that the dynamic change of higher education settings and institutions is directing their agenda on strengthening the research area to raise the standard of education. Teaching librarians need to familiarise themselves with research to support in research (Anna et al., 2023), have research skills, assist in research activities and know standard research processes and research methodology. As educators in instructional information literacy, teaching librarians play a pivotal role in aligning institutional missions to strengthen research capabilities. Their involvement is increasingly recognised as essential for fostering collaboration with faculty members to advance scholarly research (Rabasa & Abrizah, 2024). In the Malaysian context, there has been significant progress in supporting open science initiatives, particularly through data stewardship training to empower librarians to adapt to the evolving landscape of librarianship (Zainal et al., 2023). This evolution underscores the critical role of teaching librarians in contributing to research processes and advancing institutional goals. The validated index certainly helps organisations and human resources to assess skills and evaluate and certify the competencies of teaching librarians with better quality outcomes, where it is vetted for being essential, focused and efficient. Looking forward, the role of teacher librarians in Malaysian primary and secondary schools also warrants attention as an integral component in shaping the future of Malaysia's educational advancements, ensuring that information literacy skills are cultivated early. The validation of the competence index reveals strong content validity metrics. The Scale-Level CVI using the average method (S-CVI/Ave) scored 0.97, exceeding the acceptance threshold, while the S-CVI using universal agreement (S-CVI/UA) scored 0.80, slightly below the widely recommended minimum of 0.83. By incorporating expert evaluations to measure the Item-Level CVI (I-CVI) and S-CVI/Ave, this study provides robust evidence to validate the competence index, demonstrating its reliability and relevance for assessing teaching librarians' roles. The content validity of the competence index aligns with constructivist theories of professional competency development, which emphasise the need for assessment tools grounded in real-world relevance and expert consensus. This supports broader educational frameworks that prioritise authentic assessment as a driver of competence building over time.

6.0 Conclusion & Recommendations

The validated competence index for teaching librarians in academic libraries within Malaysian public higher education provides a legitimate and standardised framework tailored specifically to their roles. This competence index, developed with insights from frameworks widely adopted by academic libraries in the United States, establishes a foundation for enhancing instructional information literacy practices. The findings contribute to a comprehensive understanding of instructional information literacy and its components, aligning with the evolving role of teaching librarians within the dynamic landscape of higher education. The limitation of this study is the subjectivity of rating by experts and simplistic rating, which focuses on relevance, not clarity and ambiguity of the items. Future research should focus on a detailed investigation of the new items that emerged from these findings to ensure their applicability and relevance. Additionally, further studies should explore how these discoveries can be effectively implemented by teaching librarians in Malaysian academic libraries, perhaps by having a real-life testing among teaching librarians. This competence index should first be patterned and later endorsed by the committee of librarianship, such as Majlis Ketua Pustakawan Universiti Awam and the Association of Malaysian Librarians, to get recognition before it is implemented in academic libraries in Malaysian higher education.

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Paper Contribution to Related Field of Study

This paper on expert validation of the competence index for teaching librarians in academic libraries in higher education is significant to the practical implications of defining a standard of competence index for teaching librarians in delivering instructional information literacy in Malaysia's higher education environment.

References

Anna, N. E. V., Kiran, K., & Idaya, A. M. K. Y. (2023). Teaching strategies for library instruction: directions from the literature. *Malaysian Journal of Library and Information Science*, 28(2), 63–87. https://doi.org/10.22452/mjlis.vol28no2.4

Association of College and Research Libraries. (2015). Framework for Information Literacy for Higher Education. http://www.ala.org/acrl/files/issues/infolit/framework.pdf.

Azik, J. F. & Steinerov, J. (2021). Technologies, knowledge and truth: the three dimensions of information literacy of university students in Slovakia. *Journal of Documentation*, 77(1), 285–303. https://doi.org/10.1108/JD-05-2020-0086

Bernard, S. (2024). Investigating curriculum integrated information literacy. *Journal of Academic Librarianship*, 50(1). https://doi.org/10.1016/j.acalib.2023.102839

Caffrey, C., Lee, H., Withorn, T., Clarke, M., Castañeda, A., Macomber, K., Jackson, K. M., Eslami, J., Haas, A., Philo, T., Galoozis, E., Vermeer, W., Andora, A., & Kohn, K. P. (2022). Library instruction and information literacy 2021. *Reference Services Review*. https://doi.org/10.1108/rsr-09-2022-0035

Chedi, J. M. (2017). A preliminary review on needs analysis and delphi technique: effective tools for data collection. *Journal of Asian Vocational Education and Training*, 10, 44–52.

Davidson Squibb, S. L., & Zanzucchi, A. (2020). Apprenticing researchers: exploring upper-division students' information literacy competencies. *portal: Libraries and the Academy,* 20(1), 161–185.

Diekema, A. R., Hopkins, E. (Betsy) S., Patterson, B., & Schvaneveldt, N. (2020). Listening to alumni voices to enhance disciplinary information literacy instruction. *Innovations in Higher Education Teaching and Learning*, 26, 129–143. https://doi.org/10.1108/S2055-364120200000026008

Donkor, A. B., Asimah, A. P. A., & Nwagwu, W. E. (2024). Torn between two worlds: perceptions of the role, status, and career progression of librarians working in university libraries. *Journal of Academic Librarianship*, 50(2). https://doi.org/10.1016/j.acalib.2024.102861

Dzulkipli, M. R., Abu, R., & Shaifuddin, N. (2024). Practicing teaching librarian in public higher education: what is lacking in the profession? *Journal of Technology Management and Technopreneurship*, 12(1), 24–33.

Khan, S. A., & Parveen, A. (2020). Professional competencies for librarians working in special libraries: the case of Pakistan. *Electronic Library*, 38(5–6), 1135–1148. https://doi.org/10.1108/EL-02-2020-0030

Lynn, M. R. (1986). Determination and quantification of content validity. *Nursing Research*, 35(6), 381–385. https://pubmed.ncbi.nlm.nih.gov/3640358/

McGuinness, C. (2021). Shaping the academic teaching librarian. http://ebookcentral.proquest.com/lib/unimap-ebooks/detail.action?docID=6578287.

Moser, D. W., & Abramovich, S. (2023). How six religious pedagogies can inform ACRL threshold concepts for IL instruction training. *The Journal of Academic Librarianship*, 49, 99–1333. https://doi.org/10.1016/j.acalib.2022.102624

Nakitare, J., Sawe, E., Nyambala, J., & Kwanya, T. (2020). The emerging roles of academic librarians in Kenya: apomediaries or infomediaries?. *Library Management*, 41(6–7), 339–353. https://doi.org/10.1108/LM-04-2020-0076

Nguyen, A. T. (2022). Industry 4.0 competencies: a model for the Vietnamese workforce. *Industrial and Commercial Training*, 54(2), 201–219. https://doi.org/10.1108/ICT-08-2021-0057

Rabasa, T., & Abrizah, A. (2024). The academic librarians' empowerment and engagement as research partners: a qualitative study. *Malaysian Journal of Library and Information Science*, *29*(1), 75–89. https://doi.org/10.22452/mjlis.vol29no1.4

Saib, M. O., Rajkoomar, M., Naicker, N., & Olugbara, C. T. (2022). Digital pedagogies for librarians in higher education: a systematic review of the literature. Information Discovery and Delivery. https://doi.org/10.1108/idd-06-2021-0066

Svensson, T., Wilk, J., & Gustafsson Åman, K. (2022). Information literacy skills and learning gaps– students' experiences and teachers' perceptions in interdisciplinary environmental science. *Journal of Academic Librarianship*, 48(1). https://doi.org/10.1016/j.acalib.2021.102465

Tang, R., Hu, Z., Henry, N., & Martin, E. (2024). Towards an optimal competency framework for interprofessional informationists (IPI): a multiphased and mixed methods investigation into competency areas, elements, and framework structures. *Education for Information*, 40(1), 65–87. https://doi.org/10.3233/EFI-230044

Walker, K. W., & Whitver, S. M. (2020). Assessing information literacy in first year writing. *Journal of Academic Librarianship*, 46(3). https://doi.org/10.1016/j.acalib.2020.102136

Wong, G. K. W. (2021). Taking leadership development into your own hands: a perspective for academic librarians. *The Journal of Academic Librarianship*, 47, 1-4. https://doi.org/10.1016/j.acalib.2020.102301

Yusoff, M. S. B. (2019). ABC of content validation and content validity index calculation. *Education in Medicine Journal*, 11(2), 49–54. https://doi.org/10.21315/eimj2019.11.2.6

Zainal, H., Amanullah, S. W., Ibrahim, S., & Abdullah, H. (2023). Cultivating open science: a quantitative exploration of leadership practices in Malaysian academic libraries. *Malaysian Journal of Library and Information Science*, *28*(3), 113–128. https://doi.org/10.22452/mjlis.vol28no3.7