

Research Article

Development and Content Validation of the Integrated Audit Management System (IIAMS) for Educational Institutions

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Abstract:

This study evaluates the content validity and usability of the IAB Integrated Audit Management System (IIAMS), a digital tool developed by the Aminuddin Baki Institute to enhance internal audit management through ISO 9001:2015 standards and Lean principles. Employing a descriptive quantitative design, seven expert evaluators assessed the system's content using a structured questionnaire. The Content Validity Index (CVI) and descriptive analysis via SPSS Version 28 were used to analyze the data. All items received I-CVI values above 0.78, signifying high content validity. Experts rated the system highly (mean scores: 4.2–4.6) in terms of interface usability and content clarity, despite noting some smartphone access issues. Findings support IIAMS as a platform for digital audit innovation with potential for broader implementation across Malaysia's educational training institutions.



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1. INTRODUCTION

With over one million organizations certified to ISO 9001 globally (ISO, 2020), and the growing adoption of other international standards such as ISO 14001, ISO 27001, ISO 22000, ISO 45001, ISO 13485, and ISO 50001, the demand for robust Quality Management Systems (QMS) and Integrated Management Systems (IMS) has become increasingly critical (Ab Wahid & Grigg, 2021). These standards, harmonized through the standardized framework of Annex SL (ISO, 2015c), necessitate a consistent, high-quality, and comprehensive audit approach to ensure global alignment and uniformity in certification practices.

A QMS is instrumental in sustaining and enhancing the efficiency and effectiveness of organizational processes. It ensures that an organization consistently fulfils both customer expectations and regulatory requirements. Brachnata and Wening (2021) underscore the pivotal role of QMS in safeguarding process integrity, ensuring regulatory compliance, and elevating customer satisfaction. Similarly, Gremyr et al. (2021) affirms that an effective QMS is essential for optimizing operational efficiency and regulatory alignment. Akhtulov et al. (2019) further emphasize that a well-executed QMS facilitates continuous improvement, while Bakhtiar et al. (2023) provide empirical evidence that ISO 9001 implementation significantly enhances organizational performance.

In response to this need, the Institut Aminuddin Baki (IAB) has developed the IAB Integrated Audit Management System (IIAMS) accessible via <http://iiams.iab.edu.my> as a strategic digital initiative to strengthen the governance of educational audits in Malaysia. IIAMS offers a centralized and integrated platform to support systematic, transparent, and data-driven audit implementation. More than just a digital repository, it empowers auditors to provide constructive, improvement-oriented feedback, thereby supporting continuous quality enhancement in educational institutions. This initiative aligns with the aspirations of Malaysia MADANI, promoting effective, efficient, and accountable education governance.

The core purpose of IIAMS is to streamline the collection, storage, and management of audit documentation, while accelerating the audit workflow. By enabling real-time access and submission of audit reports and corrective actions, the system facilitates timely decision-making, enhances transparency, and reinforces institutional accountability through traceable and monitorable records.

Despite ISO 9001's global recognition as the benchmark for quality management, backed by over a million certified entities worldwide (Bravi et al., 2019; Başaran, 2021; Wilson & Campbell, 2020), implementation challenges persist, especially within public sector and educational settings. Often, QMS adoption is approached bureaucratically, prioritizing documentation over process improvement, resulting in inefficiencies, resource wastage, and audit outcomes that yield minimal organizational value (Gebregergs, 2019; Brooks et al., 2021).

To overcome such limitations, Lean Management principles focusing on waste reduction, process efficiency, and value creation have emerged as promising complements to ISO-based QMS (Bacoup et al., 2018). However, the practical integration of Lean principles with ISO frameworks remains underdeveloped, particularly in the context of training and educational institutions. The absence of a structured model that combines ISO compliance with Lean efficiency impedes institutions from achieving optimal quality management outcomes.

In Malaysia, IAB serves as the apex institution for educational leadership development under the Ministry of Education. As the national training center for school principals and headmasters, IAB must ensure that its internal management and training delivery systems uphold the highest standards of quality, transparency, and impact. Nonetheless, the continued reliance on conventional audit methods has led to fragmented documentation, inconsistent audit execution, and limited mechanisms for translating audit findings into strategic institutional improvements.

To address these gaps, IAB has introduced IIAMS as a transformative platform to digitalize and enhance internal audits across its training centers. By embedding Lean Quality Management System (LQMS) principles into ISO-compliant audit workflows, IIAMS aims to eliminate redundancies, standardize practices, and produce actionable data that drives evidence-based continuous improvement.

Given this context, research into systems like IIAMS particularly their ability to synergize Lean and ISO methodologies is crucial. Such investigations are essential for advancing quality management in educational training institutions, ensuring that audits not only fulfill compliance requirements but also serve as catalysts for institutional excellence through strategic, impact-oriented reform.

3. METHODOLOGY

This study employed a descriptive quantitative method to assess IIAMS content validity via expert judgment. A purposive sample of seven experts (lecturers, department heads) evaluated system content using a 5-point Likert scale questionnaire. The instrument focused on interface usability, terminology, access, and content coherence. Questionnaires are used to collect data. Questionnaires are a low-cost and highly effective tool for measuring the user experience of application systems (Sudana et al., 2020). The expert assessment process is carried out to determine the level of content validity through a work process, as shown in Figure 1.

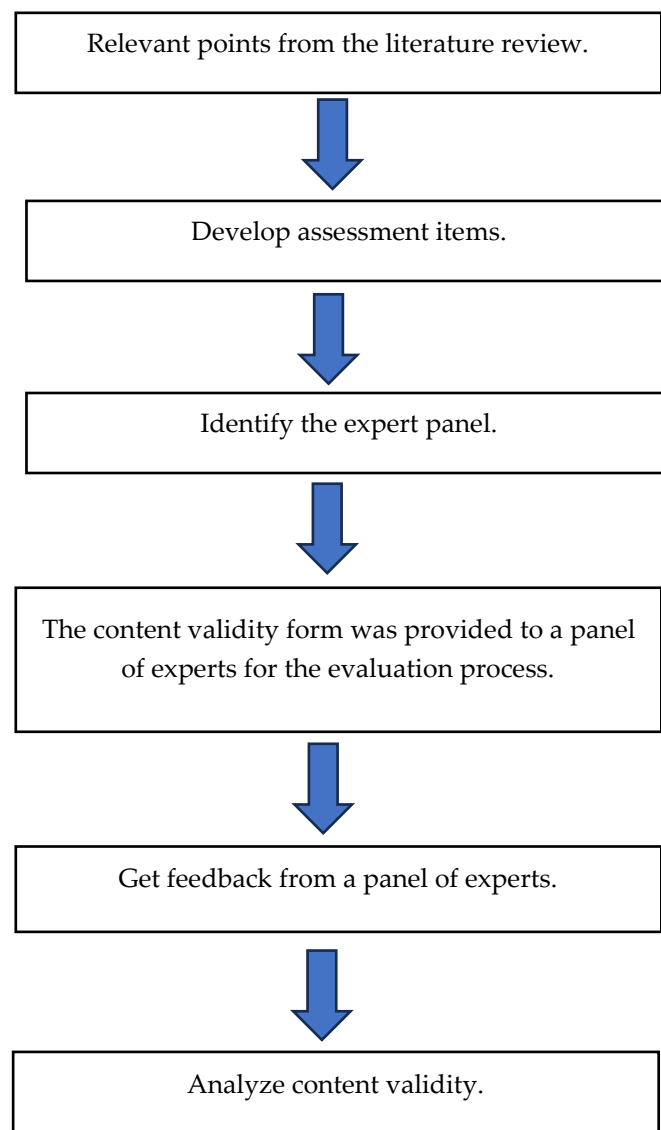


Figure 1. Study methods
Adapted from Mahadzir et al. (2024)

Content validation through expert judgment involves gathering views from individuals with expertise in the relevant field. This process provides information, evidence, judgment and evaluation that form the basis for explaining, adding or changing certain aspects of a content development (Fernández-Gómez et al., 2020; Mohd Zukhi, 2023). According to Ghazali et al. (2018) and Mohajan (2017), this method can determine the extent to which the methods, dimensions and elements required for a concept can be defined and followed accurately and effectively. It is also able to improve the quality of the information produced (Yogarajah et al., 2021). Once the digital platform is developed, a review and validation process by experts needs to be implemented to assess the design of the application, especially in terms of the suitability and consistency of the content displayed through the user interface.

A total of seven professional experts were involved in the content validation process, including lecturers, management officers and professional staff from the Aminuddin Baki Institute. All these experts have extensive experience and direct involvement in research and implementation of programs related to educational leadership training. They also meet the criteria of relevant academic qualifications, are socially and professionally recognized, demonstrate consistency in expertise, and have undergone sufficient professional training. The selection of these experts is in line with the criteria recommended by Ghazali et al. (2018), Idros et al. (2019), and Izwani et al. (2020). Complete details of the experts involved in this study are presented in Table 1.

These experts were selected using purposive sampling methods, specifically judgmental sampling, which refers to the selection of individuals who are truly qualified and experienced in the relevant field to assess content validity (Surip et al., 2019). Content validity assessment was conducted quantitatively through the distribution of questionnaire instruments, which were specifically developed to obtain feedback on the content elements of the developed module or system.

For analysis purposes, data obtained from the questionnaire were assessed using the Content Validity Index (CVI). Each item in the instrument was rated on a 5-point Likert scale (1 = Very Inappropriate to 5 = Very Appropriate) to measure the level of appropriateness and clarity of content. The CVI score for each item (I-CVI) was calculated based on the number of experts who gave a score of 4 or 5, divided by the total number of experts. An I-CVI value ≥ 0.78 is generally considered to indicate high content validity (Polit & Beck, 2006). The overall CVI value (S-CVI) was also analyzed to determine the overall validity of the instrument.

The results will show that most items obtained high I-CVI values, reflecting a strong level of agreement among experts on the appropriateness of the developed content. Thus, this will confirm that the instrument has good content validity and is suitable for use in the context of this study.

Table 1. List of experts involved

Experts	Academic qualifications	Position	Experience
1	Master's Degree	Seniour lecturer	16 tahun
2	Master's Degree	Seniour lecturer	10 tahun
3	Master's Degree	Seniour lecturer	21 tahun
4	Master's Degree	Seniour lecturer	11 tahun
5	Master's Degree	Seniour lecturer	21 tahun
6	Master's Degree	Head of Department	21 tahun
7	Master's Degree	Seniour lecturer	21 tahun

The collected data were analyzed using Statistical Package for the Social Science (SPSS) version 28 software. The data were analyzed descriptively, with mean scores, standard deviations, percentages, and frequencies used to measure content validity by experts and interpret the level of expert agreement. Table 2 presents the interpretation of the validity level of the mean scores adjusted in this study to determine the level of agreement and validity based on expert assessments by Mohd Khaidir and Mohd Rashid (2016) and Nazir and Deris (2019).

Table 2. Interpretation of Content Validity Mean Score

Score	Interpretation	Level of Agreement
1.00 - 2.49	Low	Disagree
2.50 - 3.79	Moderate	Agree
3.80 - 5.00	High	Strongly Agree

4. FINDINGS

The findings of this study are discussed descriptively to analyze data related to content validity assessment obtained from the experts involved. In addition to providing an assessment of the elements in IIAMS, experts also contributed feedback and suggestions for improvement to strengthen the function and suitability of the system. In this regard, Mohd Matore et al. (2017) emphasized that content validity is usually assessed through the judgment of experts who have expertise in the relevant field. Data from the content validity assessment by seven experts (n = 7) of the IAB Integrated Audit Management System (IIAMS) system developed for the purpose of audit management at the Aminuddin Baki Institute are displayed in Table 3.

Table 3. Expert Validity About IIAMS

REACTION TO IIAMS					
		Mean	Standard Deviation	Interpretation	Level of Consent
1	I found the IIAMS system interface (buttons, icons, and dialog boxes) easy to use.	4.4	0.89	High	Strongly agree
2	I feel confident and comfortable using the IIAMS system.	4.6	0.55	High	Strongly agree
3	I feel that IIAMS provides consistent and predictable feedback.	4.4	0.89	High	Strongly agree
4	Information in IIAMS is easy to find.	4.6	0.55	High	Strongly agree
5	Total graphics in IIAMS are appropriate.	4.2	0.84	High	Strongly agree
6	The terminology used in IIAMS is clear and precise.	4.6	0.55	High	Strongly agree
7	I always know where to access the information I want.	4.6	0.55	High	Strongly agree
OVERALL REACTION TO IIAMS					
8	I find it difficult to log in or use IIAMS.	1.8	1.30	Low	Dissagree
9	IIAMS met my expectations.	4.2	0.84	High	Strongly agree
10	IIAMS functions stably without interruption.	4.2	0.84	High	Strongly agree

11	Saya yakin bahawa IIAMS berfungsi dengan konsisten dan boleh dipercayai.	4.2	0.84	High	Strongly agree
12	Reka bentuk IIAMS adalah ringkas dan mudah difahami.	4.4	0.90	High	Strongly agree
13	Antara muka IIAMS mudah difahami dan mesra pengguna	4.4	0.90	High	Strongly agree
14	IIAMS boleh digunakan dengan mudah..	3.8	1.64	High	Strongly agree
OVERALL REACTION TO IIAMS INTERFACE DESIGN					
15	The amount of information that can be displayed is sufficient.	4.4	0.55	High	Strongly agree
16	The arrangement of information is logical.	4.4	0.55	High	Strongly agree
17	The colors on the IIAMS dashboard are appropriate.	4.4	0.89	High	Strongly agree
18	The content of IIAMS is easy to understand briefly.	4.2	0.84	High	Strongly agree
19	I can access all IIAMS on my smartphone.	4.0	1.73	High	Strongly agree

Based on Table 1 above, the average level of expert reaction to IIAMS was very high (4.4 to 4.6), indicating that the expert panel felt that the system was easy to use, secure, responsive, and information was easy to find. Overall, the reaction to IIAMS was positive with a high level of consistency. Despite the statement that stated difficulty in accessing (statement 8), the overall reaction level was still high (3.4). The impact of statement 8 on the overall level needs to be further studied to understand the impact of difficulty of access on overall use. The overall reaction level to the interface design of IIAMS was very high (4.4 to 4.4), indicating user satisfaction with the amount of information, information arrangement, colors, and content comprehension immediately. However, there were some concerns regarding accessibility on smartphones (statement 19), but the overall reaction level remained high (4.0). Overall, users gave a very positive reaction to IIAMS and its interface design. Although there are some concerns regarding accessibility, the high overall satisfaction level indicates that IIAMS has the potential to enrich the user experience and improve the quality of quality document management at Institut Aminuddin Baki.

To assess the content validity of the IIAMS system, a quantitative approach using the Content Validity Index (CVI) was used. This assessment was carried out through a questionnaire distributed to seven experts with extensive experience in the field of educational leadership training. Each item in the questionnaire was rated based on a five-point Likert scale (1 = Very Inappropriate to 5 = Very Appropriate), and only scores of 4 or 5 were considered in the I-CVI calculation.

The I-CVI calculation was done by dividing the number of experts who gave a score of 4 or 5 to an item by the total number of experts. Based on the findings, all key items obtained mean scores between 4.2 and 4.6, indicating that at least six out of seven experts gave a high rating (score of 4 or 5) for each item.

For example, for items such as "I found the IIAMS system interface easy to use" and "Information in IIAMS is easy to find", the mean scores recorded were 4.4 and 4.6. This proves that the number of experts who gave high scores was sufficient to ensure that the I-CVI value exceeded 0.78. Overall, these findings confirm that all items in the instrument used have a high level of content validity, thus supporting the usability and suitability of the IIAMS system for internal audit management at Institut Aminuddin Baki.

Not only that, supporting the study by Gremyr et al., (2021), the website <http://iiams.iab.edu.my/> developed for the management of MS ISO 9001:2015 Internal Audit at Institut Aminuddin Baki (IAB) not only facilitates the systematic collection, storage, and management of audit documents, but also speeds up the audit management process by allowing auditors to upload and access reports and corrective actions online. This helps management act more quickly and efficiently and increases transparency and accountability because all audit records can be tracked and monitored by relevant parties.

In addition, the use of this digital platform encourages a proactive attitude in continuous improvement as auditors and staff can easily refer to previous audit findings and plan improvement measures effectively. It also reduces reliance on physical documents and face-to-face meetings, allows audit work to be carried out flexibly and collaboratively even in different locations, and opens opportunities for audit data analysis to formulate more accurate and effective risk management and quality improvement strategies at IAB.

5. DISCUSSION

The implementation of this project is in line with the main goal of strengthening the efficiency and effectiveness of internal audit implementation through the development of the IAB Integrated Audit Management System (IIAMS). The main objective of this project is to create an integrated digital system that supports the implementation of audits that are more systematic, transparent, and in line with Lean principles and ISO 9001 standards.

Overall, the project achieved its goals. IIAMS successfully provided a digital platform that integrated the IAB internal audit process, including planning, execution, reporting and follow-up on improvements. Key achievements included reducing reliance on manual documentation, increasing information transparency, and facilitating real-time access to audit data.

An important aspect of the project evaluation was the content validity of the system, which was assessed using the Content Validity Index (CVI) method. This evaluation involved seven experts with expertise in the fields of training management and quality audit. Each item in the questionnaire was rated using a five-point Likert scale, and only scores of 4 and 5 (Appropriate and Very Appropriate) were considered in the I-CVI calculation.

The analysis results showed that all key items obtained I-CVI values ≥ 0.857 , which exceeded the minimum threshold value of 0.78 as recommended by Amatan et al. (2021). This means that at least six out of seven experts gave high scores for each item, thus indicating a high and consistent level of agreement among experts on the appropriateness of the content of the IIAMS system.

These findings prove that the interface design, content structure, and functionality of the system meet the needs of the target users. Although there are some concerns regarding access via mobile devices such as smartphones, the overall level of validity is still at a high level. Thus, the high level of i-cvi provides strong support for the quality of the system's content, thus strengthening confidence for wider implementation at other training institutions under the ministry of education Malaysia.

6. CONCLUSION

The development of the IAB Integrated Audit Management System (IIAMS) has proven the effectiveness of a digital and systematic approach in strengthening internal audit management at Institut Aminuddin Baki. This system not only facilitates the implementation of audits more efficiently

and transparently, but also supports continuous improvement through information consolidation, data-based monitoring, and structured feedback. Based on the findings of the study and expert feedback, IIAMS shows great potential to be developed as a high-impact audit model in the context of educational training institutions.

Looking at the potential added value offered by this system, the next plan is to explore opportunities for commercialization and replication of this system to other training institutes under the Ministry of Education Malaysia. In addition, this project also has the potential to participate in innovation competitions or awards, especially in the categories of digitalization of quality management or public sector innovation.

Expansion steps will also involve improving system features such as the use of artificial intelligence (AI) for audit analysis, automatic report generation, and integration with existing training management systems. In addition, more systematic user training modules and technical support will be planned to ensure that the use of the system can be expanded consistently.

In addition, further studies are warranted to assess the long-term effectiveness of IIAMS on organizational quality culture, audit performance, and user satisfaction. Impact studies can also be conducted in different locations to test the usability and feasibility of this system in various organizational contexts.

Overall, the IIAMS project has great potential to be taken to a higher level, either as a national model for the audit system of training institutions, or as a digital innovation product that contributes to the overall national education management transformation agenda.

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