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Research Article

Application of Digital Tools in Outcome-Based Assessment for Accounting Courses at a Regional University in Vietnam

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Abstract: Digital transformation in higher education has accelerated the integration of technology into teaching and assessment, especially in Outcome-Based Education (OBE). In Vietnam, regional universities face specific challenges in implementing digital tools for Outcome-Based Assessment (OBA), especially in professional-oriented disciplines such as accounting, which require both theoretical and practical competencies. This study aims to examine the application of digital tools in OBA for accounting courses at Tay Bac University. The study has two objectives: (1) Analyze the current status of integrating digital tools into accounting assessment activities, point out the limitations in connecting digital tools and OBA requirements; (2) Provide evidence-based recommendations to enhance digital transformation in OBA in accounting education. A qualitative research design was adopted, combining document analysis, field observations and semi-structured interviews with six accounting lecturers. The data were analyzed using inductive content analysis and compared with the theoretical frameworks of OBE, OBA and digital learning ecosystem. The results showed that digital tools such as Learning Management Systems (LMS), Excel, MISA accounting software and tax declaration software of the tax authority (HTKK) are widely used in teaching but have not been fully integrated into the assessment process. Limitations include the lack of outcome-based test design, digital grading scales, electronic question banks and system feedback mechanisms. The study proposed a number of recommendations to enhance the integration of LMS, outcome-based grading scales, automated assessment processes and virtual accounting offices. Enhancing digitally enabled OBA can improve transparency, evidence-based decision-making and alignment with AUN-QA quality assurance standards, while enhancing students' professional competencies in the digital age.

Keywords: digital tools; Outcome-Based Assessment; accounting; learning assessment; AUN-QA

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1. Introduction

The global shift toward Outcome-Based Education (OBE) has transformed the way higher education institutions design curricula, deliver instruction, and assess students' achievement of learning outcomes. According to Biggs (1996) constructive alignment framework, assessment plays a central role in demonstrating whether intended learning outcomes are achieved and whether teaching activities effectively support competency development. In this context, assessment systems must provide reliable, valid, and transparent evidence of students' performance across knowledge, skills, and professional attributes. International studies have emphasized that competency-based assessment is essential for preparing graduates for rapidly evolving professional environments, particularly in fields that require digital fluency and practical decision-making skills, such as accounting (Jackling & De Lange, 2009; Apostolou et al., 2017).

The rapid advancement of digital technologies has created new opportunities for enhancing assessment processes in higher education. Digital tools – including Learning Management Systems (LMS), specialized accounting software, e-assessment platforms, automated grading systems, and digital rubrics – enable institutions to streamline assessment workflows, improve transparency, and strengthen evidence-based evaluation (Debuse & Lawley, 2016; Basioudis et al., 2012). Moreover, digital technologies enhance the traceability of learning evidence, support feedback analytics, and facilitate continuous quality

improvement aligned with accreditation frameworks such as AUN-QA. Recent research also demonstrates that LMS platforms contribute significantly to learning effectiveness when used not only for content delivery but also for assessment, feedback, and learning analytics (Jannah et al., 2023; Nguyen-Anh et al., 2022). In accounting education, digital tools such as Excel, MISA, and simulation-based environments promote the development of practical skills and digital competence required in modern workplaces (Rusinov & Sokolova, 2025; Schaefer & Stevens, 2016). However, little is known about how regional universities operationalize digital Outcome-Based Assessment (OBA).

Evidence from developing countries suggests that the integration of digital tools into assessment remains limited and inconsistent. In many Vietnamese universities, digital transformation has focused primarily on online teaching rather than strengthening the OBA process (Yen et al., 2024). Assessment practices are often still manual, lacking digital rubrics, structured question banks, analytics-supported feedback, and systematic mechanisms for aligning assessment tasks with Course Learning Outcomes (CLOs). These challenges are particularly pronounced at regional public universities, where infrastructure constraints, limited staff capacity, and traditional teaching norms hinder the full adoption of digital-supported OBA models. Accounting programs face additional barriers due to their heavy reliance on practical software-based exercises that are not yet fully integrated into assessment frameworks.

Tay Bac University represents a typical case of a regional institution undergoing digital transformation while simultaneously implementing OBE and internal quality assurance procedures aligned with AUN-QA standards. Although the university has deployed an LMS and integrated digital tools such as MISA and Excel into several practical courses, the connection between these tools and the OBA process remains fragmented. As previous studies suggest, without a systematic digital assessment framework – including exam blueprints, digital rubrics, feedback mechanisms, and evidence storage – institutions risk weakening the alignment between intended learning outcomes and actual assessment practices (Gibbs & Simpson, 2005; Brown & Knight, 1994; Ciudad-Gómez & Valverde-Berrocoso, 2014).

Given this gap, the topicality of the present study lies in the urgent need to support regional universities in Vietnam to strengthen OBA through the effective application of digital tools, thereby enhancing transparency, improving learning evidence, and meeting international quality assurance requirements. Therefore, this study aims to analyze the current application of digital tools in OBA for accounting courses at Tay Bac University and to propose a feasible digital-supported OBA model aligned with the PDCA cycle and AUN-QA standards. To achieve this aim, the study pursues the following research objectives:

(1) Analyze the current status of integrating digital tools into accounting assessment activities, pointing out the limitations in connecting digital tools and OBA requirements;

(2) Provide evidence-based recommendations to enhance digital transformation in OBA in accounting training.

2. Literature Review

In the OBE approach, assessment holds a central role in determining the level of competency achieved by learners. Biggs (1996) stated that the alignment between learning objectives, teaching methods, and assessment forms is a prerequisite for ensuring learners achieve the intended learning outcomes. Especially in the field of accounting – where a combination of professional knowledge, practical skills, and professional ethics is required – the assessment system needs to be scientifically designed, transparent, and evidence-based.

In the context of digital transformation, the application of digital tools in OBA has become an inevitable trend in higher education. Platforms such as the LMS, specialized accounting software, electronic rubrics, and online feedback systems allow instructors to monitor learning progress, quantitatively assess the level of achievement, and provide timely feedback to students. Schaefer and Stevens (2016) demonstrated that using rubrics in accounting programs helps enhance the evidence base and reliability of assessment results, while also increasing learners' self-regulation capabilities. Research by Ciudad-Gómez and Valverde-Berrocoso (2014) also showed that rubrics have high reliability (Cronbach's Alpha = 0.771) when measuring practical accounting competence, which is evidence of the effectiveness of the OBA approach.

Alongside rubrics, the LMS system increasingly proves its critical role in organizing, managing, and storing assessment data. Basioudis et al. (2012) and Jackling and De Lange

(2009) indicated that accounting students in the UK, Australia, and New Zealand reported high satisfaction when the LMS was used not only to post lectures but also to manage assignments, feedback, and discussions – factors that directly influence learning outcomes. This result is reinforced by Jannah et al. (2023) in Indonesia, where Moodle LMS was shown to have a positive impact on academic achievement, particularly when integrated with online feedback and grading tools. Similarly, Debuse and Lawley (2016) noted that electronic assessment and feedback systems contribute to increasing the self-learning ability, proactivity, and study motivation of accounting students.

From the theoretical and practical overview above, the application of digital tools in OBA not only supports instructors in the teaching-learning process but also plays a crucial role in ensuring training quality and providing evidence of learning outcomes according to AUN-QA standards. Despite extensive research on LMS, rubrics, and digital assessment, limited evidence exists on how regional Vietnamese universities – characterized by infrastructural constraints and limited digital readiness – integrate digital tools within OBA frameworks. This gap justifies the present study.

3. Materials and Methods

3.1. Research Design

This study employed a qualitative research design to explore the current integration of digital tools into OBA in accounting courses at Tay Bac University. The qualitative approach was selected because it enables an in-depth understanding of lecturers' experiences, perceptions, and practices, which are essential for identifying contextual challenges and proposing relevant improvement solutions. The study combined document analysis, classroom observation, and semi-structured interviews within an interpretivist paradigm.

3.2. Samples and Participants

The research involved six lecturers from the Faculty of Economics who were directly responsible for teaching accounting courses that incorporate digital tools such as Excel, MISA software, and the LMS. Participants were selected using purposive sampling to ensure they possessed relevant teaching and assessment experience. Their teaching experience ranged from 5 to 18 years, providing diverse perspectives on both long-standing assessment practices and recent digital transformation efforts.

3.3. Data Collection

Data were collected from three principal sources. (1) Document analysis was conducted on institutional reports, faculty annual summaries, and internal documents related to OBE/OBA implementation and the use of digital tools, including reports on LMS utilization from 2020-2025. (2) Semi-structured interviews were carried out in October 2025, each lasting approximately 30 minutes. Interview questions focused on the types of digital tools used, the purposes of their use in teaching and assessment, perceived advantages and challenges, and lecturers' support needs for implementing OBA. All interviews were audio-recorded and transcribed. (3) Classroom observation was performed in selected accounting courses to examine how digital tools were applied in practical teaching and assessment activities.

3.4. Data Analysis

The study applied qualitative content analysis to identify recurring themes and patterns. Interview transcripts and document data were coded inductively to categorize the forms and extent of digital tool usage, challenges encountered, and alignment with OBA requirements. Observation notes were triangulated with interview findings to enhance data validity. The analysis also included cross-referencing the empirical findings with theoretical frameworks of OBE, OBA, and AUN-QA quality assurance standards. This multi-source analytical approach allowed for the development of a contextually grounded model for improving digital-supported OBA at Tay Bac University.

4. Results

4.1. Current Status of Integrating Digital Tools into Accounting Assessment Activities

Tay Bac University has made significant efforts in recent years to innovate training activities according to the OBA approach, in line with the orientation of internal quality assurance according to AUN-QA standards. Training programs, including the Accounting major, have developed corresponding Program Output Standards (PLO) and CLO, and

clearly defined the level of contribution of each subject to PLO. This is the basis for implementing activities to evaluate teaching and learning outcomes of students according to the PDCA cycle.

In the Accounting training program at Tay Bac University, in addition to the theoretical specialized subjects, the Faculty of Economics has organized two groups of practical subjects applying digital tools: (1) practical subjects using Excel, and (2) practical subjects using specialized accounting software. (3) Additional digital tools (Software to support tax declaration of tax authorities (HTKK) and LMS system)

First, the practical courses using Excel are designed to help students consolidate theoretical knowledge through simulating accounting situations at a hypothetical practice unit, such as practical accounting for manufacturing, trading, construction and public accounting enterprises, with exercises such as preparing ledgers, balance sheets, calculating costs and preparing financial statements. Students are provided with a set of documents simulating transactions arising in manufacturing, trading, construction and public accounting enterprises. During the course, students perform the entire accounting cycle: arranging, checking and classifying documents; entering data; recording accounting books; preparing balance sheets and financial statements. Practicing on Excel helps learners develop data processing skills, logical thinking, the ability to present and analyze accounting information accounting, skills that are highly valued in the digital working environment, and at the same time create a foundation for the use of more complex accounting software later. Second, practical courses using specialized accounting software (such as MISA SME.NET, MISA MIMOSA, MISA AMIS) allow students to experience the entire business accounting process in a digital environment, from entering documents, processing transactions to recording accounting books and preparing financial reports. This practice helps students become familiar with popular accounting software in Vietnamese enterprises, thereby improving their professional capacity and ability to adapt to the actual working environment. The strength of this group of courses is to improve the skills of processing, controlling and comparing data between different accounting subsystems (purchasing, selling, inventory, fixed assets, salaries, taxes, etc.).

With the continuous development of digital tools, accounting practice greatly reduces the time for data entry tasks because it has been automated Automation, accounting needs to focus on the ability to analyze and advise managers on decision making rather than data entry and data processing skills. In fact, both of these skills are of interest in the teaching process, but when testing and evaluating, only one type of data entry skill is focused on, the ability to analyze, synthesize and think critically about financial information has not received due attention.

Recently, the Tax Accounting subject has also been innovated, supplemented with instructions on using the HTKK of the General Department of Taxation. This allows students to access the electronic process for declaring VAT, CIT, PIT, thereby not only mastering professional knowledge but also better understanding the application of IT in accounting and tax compliance.

In parallel, the school's LMS system is deployed to support learning management, allowing lecturers to download documents, announce and collect lessons online. However, the current exploitation of LMS mainly serves as a document repository, often only used to provide learning materials in the first lesson. In subsequent lessons, LMS is rarely used again unless students want to find learning materials again. Faculty and students rarely take full advantage of advanced features such as online quizzes, automated feedback, electronic grading, or learning analytics. This limits the role of the LMS in collecting evidence, feedback, and assessing the level of learning outcomes in a digital and transparent way.

The Assessment Process has many limitations. Within the OBA approach, assessment is not only a measure of learning outcomes but also a management tool to ensure consistency between PLO-CLO teaching content and assessment methods. Therefore, an OBA assessment process needs to ensure: (1) each assignment/test is clearly linked to CLO; (2) cognitive levels are classified according to Bloom's Taxonomy; (3) scoring criteria are transparent; and (4) output data is used for continuous improvement according to the PDCA cycle.

The reality at Tay Bac University shows that the process of building and controlling exam questions has not yet met these requirements.

First, lack of consistency between questions and CLOs: Although Tay Bac University has a relatively complete CLO and a matrix of course contributions to the PLO, the process of constructing and controlling exam questions has not been standardized according to OBA.

In fact, at the end of each semester, the lecturers in charge of the subject design the exam questions and guide the grading, then the Dean approves the exam questions, but the approval is mainly based on the content and amount of knowledge, lacking tools or processes to test specific CLOs and at what level of competence (e.g., remembering, understanding, applying, analyzing, etc.) each question actually measures.

Second, lack of structured question bank: The University has not built an electronic question bank labeled (tagged) by CLO, Bloom level, question type, difficulty. Therefore, it is difficult to ensure coverage and balance between competencies, as well as conduct statistical analysis (difficulty, discrimination, reliability) to improve the assessment tool. According to Brown and Knight (1994), a test question bank designed based on the competency matrix not only helps standardize the assessment but also increases objectivity and fairness. The lack of a question bank also means a lack of data to analyze the difficulty, discrimination and reliability of the assessment tool - core factors in quality assurance.

Third, lack of rubrics and standardized assessment criteria: Rubrics are assessment criteria (assessment rubric) that clearly describe: Criteria that need to be assessed (e.g., accuracy of accounting entries, report presentation, data analysis ability, teamwork skills, etc.); Levels of achievement for each criterion (e.g., Excellent, Good, Achieved, Needs improvement); Specific descriptions for each level (level 3: meets requirements; level 2: needs improvement; level 1: not met...). In other words, rubrics turn output standards into specific scales, helping lecturers and students clearly understand "what is meeting standards" instead of just seeing a general score. However, many courses are still graded on a general scale without a rubric that specifically describes the level of achievement of each competency. The lack of rubrics makes it difficult for lecturers to ensure consistency and objectivity in grading, while students do not receive clear feedback on strengths and weaknesses to improve learning outcomes. At the same time, schools also find it difficult to collect authentic evidence of learners' level of achievement of output standards.

Fourth, feedback is not used for improvement: Learning outcomes are mainly shown through total scores, lacking a mechanism to analyze student feedback to improve assessment content or methods. According to Gibbs and Simpson (2005), learning feedback is the most important element in "closing the PDCA loop", ensuring that assessment results not only reflect the level of CLO achievement but also provide data for continuous improvement.

These limitations directly affect the validity and reliability of assessment tools: if questions are not properly linked to CLOs, scores will not reflect the target competencies; if scoring rubrics are not applied, scoring will be inconsistent between instructors. Furthermore, the lack of question bank data and question analysis also prevents universities from making evidence-based improvements.

From the above analysis, it is evident that the application of digital tools in OBA at Tay Bac University has shown positive aspects – especially in professional practical courses using MISA, Excel, or HTKK software – but still has many limitations at the system level. Specifically:

- Digital tools are primarily used in the "Do" phase (teaching and practice), while the "Check" phase (assessment, feedback, data storage) and "Act" phase (improvement) remain manual.
- There is a lack of a mechanism to control the suitability between exam questions and CLOs, leading to a gap between design and execution in quality management.
- The lack of an electronic question bank and digitalized learning data prevents the assessment from providing evidence of students' CLO achievement.
- The LMS system has not fully exploited its functions to support assessment, feedback, and learning analytics.

These limitations highlight the need to deploy synchronous solutions to enhance the application of digital tools, link the assessment process to CLOs, and operate the entire system according to the AUN-QA PDCA cycle, thereby improving training quality and the university's internal quality assurance capacity.

4.2. Evidence-based recommendations to enhance digital transformation in OBA in accounting training

In the context of higher education reform towards the OBA approach and digital transformation in teaching, enhancing the effective application of digital tools in assessing the learning outcomes of accounting students is an urgent requirement. The solutions proposed below aim to address the limitations stated in the current status section while maximizing the utilization of the university's existing resources.

4.2.1. Building and Controlling Outcome-Based Assessment

One of the current weaknesses is the loose connection between PLO, CLO and exam questions. Although lecturers are aware of CLO, the design of exam questions, assignments or course projects is still mainly based on personal experience, lacking control tools to verify whether the assessment content has fully covered the competencies prescribed by CLO.

To ensure consistency between CLOs and assessment content, Tay Bac University needs to develop an exam matrix for each subject. An exam matrix is a structured diagram of the exam, illustrating the relationship between learning outcomes, cognitive levels (according to Bloom's Taxonomy) and the score coefficient. Specifically, each CLO is assigned a specific contribution ratio to the total subject score; the design helps ensure that the questions and exercises in the exam accurately and fully reflect that ratio, while ensuring a reasonable distribution between cognitive levels. Applying the design not only helps lecturers design evidence-based exam questions but also provides a basis for the faculty council to check the scope and balance of questions before assessment. An example of a test matrix is as follows as table 1:

Table 1. Reference exam matrix.

Course Learning Outcome (CLO)	Competency level (according to Bloom)	Score weighting
CLO1	Level 3 – Application	30%
CLO2	Level 4 – Analysis	40%
CLO3	Level 5 – Evaluation	20%
CLO4	Level 3 – Application	10%

Using the exam matrix helps ensure the exam fully covers the CLOs, controls the ratio of remembering – understanding – application – analysis, and standardizes among instructors towards the goal of achieving consistency in structure and level across different classes and academic years. This also forms the basis for constructing an electronic exam question bank, as each question is "tagged" with CLO, Bloom level, and difficulty, which facilitates automatic question selection and quality analysis.

Concurrently, the university needs to establish an electronic question bank with metadata to store, retrieve, and analyze assessment tools systematically. Each question or exercise should be tagged with descriptive information (metadata) such as the relevant CLO, Bloom's level, question type, difficulty, author, and version. This system allows for the automatic extraction of exam papers based on the blueprint, while also supporting statistical analysis (difficulty, discrimination index, reliability) to identify and adjust inappropriate questions. Consequently, the question bank is not just a storage tool but a data platform serving quality assurance, helping the university standardize the exam development process, control the validity and reliability of the assessment, and promote digital transformation in training management by creating a foundation for integration with the LMS or online assessment systems, moving towards automated assessment and learning analytics. This is a crucial data foundation for continuous improvement and digital transformation in training management. This not only helps ensure fairness but is also important evidence in the AUN-QA PDCA cycle, ensuring that the "Check" (assessment) activity is carried out objectively and with clear evidentiary data.

4.2.2. Application of Digital Tools in Assessing Practical Accounting

Currently, "Computerised Accounting" courses use MISA software in teaching and practical exams, which is a significant step forward in digital transformation of training. However, this application is limited to "technical operation practice" and is not yet deeply integrated into the OBA system.

The proposed solution is to develop a set of digital competency assessment criteria linked to each software or tool. For instance, when students practice on MISA software, instructors can assess based on 3 competency groups: (1) data entry and voucher processing skills; (2) the ability to analyze financial reports automatically generated by the software; and (3) the competence to detect and correct errors. This "digital rubric" assessment model not only helps accurately reflect the level of student achievement for each criterion but also provides a basis for continuous feedback and improvement (Plan – Do – Check – Act).

Furthermore, for practical accounting courses using Excel, the university can deploy an automated submission, grading, and feedback system via the LMS, helping to quantitatively

monitor the progress and competency of each student. This also aligns with AUN-QA guidelines on "using quantitative evidence in quality assurance".

4.2.3. Virtual Accounting Office Model for Comprehensive Competency Assessment

One of the great potentials of Tay Bac University is the modern virtual accounting office facility. This is not just a learning environment but a simulated enterprise platform, where students can assume roles and practice the entire accounting, tax, and financial processes in a "digitalized" environment.

It is proposed to implement a competency assessment model based on Accounting Simulation Assessment. Accordingly, students are divided into groups, with each group acting as a small enterprise with roles such as cash accountant, inventory accountant, tax accountant, payroll accountant, chief accountant, etc. During the course, students rotate through these positions, performing transactions with simulated "partner entities" such as tax authorities, banks, social insurance, or other enterprises. The data generated from these transactions will be used as the basis for assessment: the accuracy of journal entries, the reasonableness of vouchers, data analysis capability, and the competence to respond to errors. This form of assessment is tightly linked to CLOs regarding professional competence and accounting ethics, while also overcoming the limitations of traditional written exams that poorly reflect actual working ability.

International studies have affirmed the effectiveness of accounting simulation in professional competency development. For example, Jackling and De Lange (2009) suggested that simulation and experiential learning help accounting students develop critical thinking and practical decision-making competence more effectively than passive teaching methods. Similarly, research by Apostolou et al. (2017) also highlighted the role of simulation technology and accounting software in the comprehensive assessment of student competency.

4.2.4. Enhancing Faculty Capacity in Designing and Assessing According to Learning Outcomes

A key factor determining assessment effectiveness is the capacity of instructors in designing appropriate assessment tools and criteria. Regular training courses need to be organized on:

- Designing rubrics and mapping between CLOs – content – assessment tools.
- Applying standardized rubrics for all assessment tasks (exercises, projects, practical exams), and publicly sharing rubrics with students before they take the exam to increase transparency and self-learning ability.
- Designing exams according to OBA.
- Using item analysis tools and objective scoring techniques.
- Applying LMS, MISA, Excel, and simulation tools in automated grading.

Additionally, it is necessary to form a specialized quality assurance group for accounting assessment, tasked with periodically reviewing tests, exam papers, and assessment results (difficulty, discrimination index, correlation coefficient), ensuring consistency and articulation among courses to filter, adjust, or eliminate low-quality questions.

4.2.5. Continuous Feedback and Digital Evidence in Quality Management

Finally, the use of digital tools should be directed towards managing the entire assessment lifecycle, including: question development, execution, feedback, and improvement. All score data, rubrics, instructor feedback, and student competency evidence should be stored on the LMS system, creating a basis for internal and external quality auditing, and for updating CLOs, course content, and assessment methods, as well as establishing an Assessment Committee to ensure consistency. This model not only serves quality assurance goals but is also consistent with the requirement for digital transformation in higher education, contributing to the formation of a modern accounting training ecosystem where learners are assessed based on actual competency and evidence can be accessed anytime.

5. Discussion

The findings of this study provide important insights into how digital tools are currently integrated into OBA in accounting education at a regional Vietnamese university. These findings both align with and diverge from the existing scientific literature in several key dimensions.

First, similar to prior studies, the results reaffirm that digital tools such as LMS platforms,

Excel, and specialized accounting software have become indispensable in modern accounting education (Basioudis et al., 2012; Rusinov & Sokolova, 2025). International research consistently shows that when LMS systems are fully utilized – especially features related to assessment, automated quizzes, and digital feedback – students' learning outcomes improve significantly (Jannah et al., 2023; Nguyen-Anh et al., 2022). However, the present study reveals a divergence: at Tay Bac University, LMS is still used predominantly as a document repository, with very limited employment of its assessment and analytics functions. This underutilization highlights an implementation gap not emphasized in the literature, which often assumes a more mature level of digital adoption.

Second, consistent with Schaefer and Stevens (2016) and Ciudad-Gómez and Valverde-Berrocoso (2014), the study confirms the effectiveness of rubrics and structured competency-based assessment in accounting programs. Nonetheless, an important difference emerges: while international studies focus on the reliability and validity of rubrics, the present research shows that rubrics are either absent or inconsistently designed at the institutional level. This indicates that the primary challenge is not the effectiveness of rubrics, but rather the lack of systematic institutional adoption – an issue particularly relevant to regional universities in developing contexts.

Third, the literature widely recognizes the growing importance of simulation-based assessment and virtual learning environments in enhancing students' decision-making and professional competence (Apostolou et al., 2017; Jackling & De Lange, 2009). The findings of this study support this perspective, especially regarding the potential of the virtual accounting office model. However, unlike the global trend where simulation is increasingly embedded into assessment systems, Tay Bac University has not yet transformed its virtual accounting office into a fully functioning assessment ecosystem. This highlights a unique contextual barrier: although digital infrastructure exists, the alignment between digital tools and OBA remains fragmented.

Furthermore, previous research has shown that successful OBA implementation requires standardized exam blueprints, digital question banks, systematic CLO alignment, and feedback analytics (Gibbs & Simpson, 2005; Brown & Knight, 1994). The present findings reveal that these elements are still missing or only partially implemented, creating a misalignment between intended learning outcomes and actual assessment practices. This contrasts with studies conducted in more digitally mature systems, where such structures are already institutionalized.

Finally, while the global literature often focuses on the pedagogical benefits of digital tools, this study identifies an additional dimension: institutional and managerial challenges that hinder digital OBA, including the lack of metadata-tagged question banks, low faculty digital competencies, and limited integration between LMS data and quality assurance processes.

These differences may stem from contextual factors such as limited infrastructure, staff IT capacity, and early-stage digital transformation efforts, which distinguish Vietnamese regional universities from better-resourced institutions that have been studied in previous literature. The findings of this study provide new evidence that complements international research, particularly relevant to regional universities undergoing early-stage digital transformation. This study contributes a context-specific perspective, showing that the effectiveness of digital tools in OBA depends not only on technology availability but also on organizational processes, staff capabilities, and quality assurance frameworks—factors that have remained underexplored in previous studies.

6. Conclusions

In the context of the dynamic shift of Vietnamese Higher Education towards OBA and digital transformation, this study investigated the integration of existing digital tools into OBA courses for Accounting at Tay Bac University. The findings confirm that although digital tools such as MISA and LMS are used for practical teaching, their application currently lacks systematic integration into the formal OBA process. Specifically, there are significant shortcomings related to alignment control, standardized feedback mechanisms, and systematic storage of digital evidence required for robust quality assurance (AUN-QA compliance). To effectively address this gap, we proposed a structured, evidence-based model, which includes standardizing digital exam syllabi, developing metadata-rich question banks, and applying the Virtual Accounting Office model for authentic simulation-based assessment. This systematic approach is essential to move universities from fragmented digital

adoption to a comprehensive digital competency assessment framework.

This study contributes to the international OBA literature by empirically illustrating the challenges of implementing OBA in the context of regional Higher Education in a developing economy, providing a practical framework that links digital PLO with formal assessment tools and the AUN-QA PDCA cycle. Furthermore, the model contributes to the body of knowledge in accounting education by moving the discussion beyond general educational technology adoption to domain-specific, competency-based digital assessment models.

The model proposes a concrete, actionable solution for higher education institutions facing similar structural and technological challenges in implementing OBA. Lecturers and quality assurance officers can take advantage of the recommendations regarding the design of digital test plans, the development of metadata-rich question banks, and the full exploitation of the advanced assessment features of the LMS and Virtual Accounting Office. These interventions are important to enhance the validity and reliability of assessment results, improve lecturer assessment competencies, and generate the digital evidence needed for successful national and international quality accreditation (AUN-QA).

This study has two main limitations. First, the study focused only on the Accounting program at a regional university, which may limit the ability to generalize the research results to different disciplines or larger national universities. Second, the study mainly applied qualitative methods to analyze the current situation and propose solutions. Therefore, the effectiveness and long-term impact of the proposed solutions still need to be demonstrated empirically. Therefore, future research should focus on a longitudinal study to quantitatively evaluate the impact of the proposed digital OBA model on student achievement indicators, assessment validity scores (e.g., reliability, discrimination index), and institutional quality assurance outcomes after the model is systematically implemented.

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