

AI-Assisted Cost and Management Accounting Education: Redesigning Case-Based Learning for Decision-Making Competence

Shan Ling¹, Ting Sun¹, Cheng Lu²

¹Nanjing University of Science and Technology Zijin College, Nanjing 210000, Jiangsu, China

²Platform Operation Center of China Construction Bank, Hefei 230000, Anhui, China

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Abstract: Against the backdrop of the digital transformation of the accounting profession, this paper reports a teaching reform that integrates artificial intelligence (AI) into case-based learning in the undergraduate course Cost and Management Accounting. The reform addresses four persistent problems of traditional case teaching: static and outdated case resources, passive student participation, the absence of dynamic decision-making training, and a widening gap between curriculum training and industry demand. Drawing on constructivism, Kolb's experiential learning cycle and competency-based education, the course was redesigned around an "AI-optimised resources—AI-assisted processes—AI-enabled evaluation" framework, and decision-making competence was operationalized into five assessable dimensions: cost data analysis, variance interpretation, alternative evaluation, risk anticipation, and integrated managerial judgment. The redesigned model was implemented over one semester, and preliminary evidence based on classroom observation, case report analysis, and student feedback indicates broader classroom participation, improved case report quality, and positive student perceptions; a systematic evaluation of its effects on course achievement and decision-making competence is planned as the next step of this ongoing reform. The paper further discusses implementation challenges, including uneven AI literacy among teachers and students, academic integrity and assessment redesign, and proposes corresponding optimization strategies, offering a replicable paradigm for AI-enhanced accounting education in undergraduate programs.

Keywords: Artificial intelligence; Cost and management accounting; Case-based learning; Decision-making competence; Teaching reform

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1. Introduction

The accelerating digitalisation of the accounting profession has reshaped the competencies expected of graduates: as artificial intelligence (AI) takes over routine bookkeeping and data processing, professional value is shifting towards interpreting cost information, supporting managerial judgement, and participating in

business decisions^[1]. Business schools worldwide have responded by embedding AI into their curricula, and accounting education is widely seen as requiring systematic redesign^[1]. Within undergraduate programmes, Cost and Management Accounting is the course in which students first encounter the decision-oriented side of accounting, yet its traditional case teaching suffers from static and homogeneous case materials, passive classroom modes dominated by instructor explanation, an absence of dynamic decision-making training, and a widening distance between curriculum training and industry demand: graduates compute competently, yet remain underprepared for analytical judgement under uncertainty.

Recent advances in generative AI create both new possibilities and new tensions for accounting education. Empirical studies show that AI tools can already answer a substantial share of accounting assessment questions, but that performance varies systematically by task type, with explanation and evaluation handled far better than technical statement preparation^[2,3]. Structured use of AI can personalise learning and support higher-order engagement, whereas unstructured use raises concerns about cognitive dependency and academic integrity^[4]. The pedagogical question is therefore no longer whether AI should enter the classroom, but how to integrate it so that it strengthens, rather than substitutes, students' own decision-making.

Existing research, however, exhibits three gaps: AI studies concentrate on introductory accounting, information systems or analytics courses rather than on cost and management accounting; discussions tend to be technology-centred rather than embedded in a coherent instructional design linked to defined outcomes; and proposed reforms are rarely verified empirically against students' decision-making competence^[5]. This paper addresses these gaps by redesigning case-based learning in Cost and Management Accounting at a private university. Grounded in constructivism, Kolb's experiential learning cycle and competency-based education, the reform builds an AI-assisted case teaching system comprising AI-optimised case resources, AI-assisted classroom processes and AI-enabled evaluation, and operationalises decision-making competence into five assessable dimensions. The model was implemented over one semester. Theoretically, the study demonstrates how a discipline-specific, outcome-oriented integration of AI can be designed and assessed; practically, it offers a replicable paradigm for undergraduate institutions seeking to modernise accounting instruction.

2. Literature review

2.1. Traditional case-based learning in cost and management accounting

Case-based learning has long been regarded as a cornerstone methodology in management accounting education. By immersing students in realistic organisational contexts in which problems are ill-structured and solutions are rarely unique, cases offer what repetitive textbook exercises cannot: the opportunity to exercise judgement, weigh trade-offs and defend recommendations under uncertainty^[6]. Reviews of active learning in accounting further confirm that case studies, together with problem-based learning and flipped classrooms, are among the most widely adopted and consistently validated active methodologies in the discipline^[7].

The effectiveness of case-based learning, however, depends heavily on the quality and currency of the case resources themselves, and here traditional practice falls short. Cases in mainstream textbooks cluster around conventional manufacturing settings and standardised datasets, offering little exposure to the service industries, platform businesses and digitally transformed enterprises where much of contemporary cost management now occurs. The data also age quickly: fixed at the time of publication, they cannot reflect

fluctuating input prices, shifting demand or evolving cost structures, and students soon discover that the “answers” circulate among successive cohorts, eroding the authenticity of the exercise. The deeper problem lies in the prevailing classroom mode of teacher explanation followed by group presentation, which reduces cases to calculation drills: students compute the required figures but are seldom pushed to iterate when conditions change, to confront the consequences of their recommendations, or to integrate quantitative results with qualitative managerial considerations. In its traditional form, then, the case method cultivates procedural proficiency more reliably than decision-making competence, a gap that has grown more visible as the profession’s expectations have shifted towards analytical and advisory roles ^[1].

2.2. AI technology in accounting education

Research on AI in accounting education has expanded rapidly, propelled by the capabilities of large language models and intelligent tutoring technologies. Empirical work has mapped the technical frontier: ChatGPT achieves moderate accuracy on accounting assessment questions, with performance varying systematically by task type, handling explanation, rule application and ethical evaluation considerably better than journal entries, statement preparation or software operation ^[2,3]. Beyond question answering, studies report applications spanning intelligent question banks, automated feedback, personalised learning paths, scenario simulation and AI-generated instructional content; emerging evidence suggests that structured AI use can enhance engagement and support improved course outcomes ^[5].

The same literature also converges on a set of consistent caveats. AI outputs require verification, since plausible but incorrect reasoning is a documented failure mode ^[3]; unstructured reliance on AI raises concerns about cognitive dependency, assessment integrity and the erosion of independent judgement ^[4]; and effective integration demands deliberate instructional design rather than ad hoc tool adoption. Most recently, pedagogical frameworks have begun to appear that assign students an active verification role (requiring them to reperform and critique AI-generated solutions), which both safeguards learning and cultivates professional scepticism ^[8]. However, the empirical record remains thin for discipline-specific integration: published reform studies in cost and management accounting exist ^[5], but they typically describe blended-learning arrangements and platform-level tool adoption rather than a design in which AI is systematically woven into the case-based learning cycle and evaluated against explicitly defined competence outcomes. The question of how AI should reshape case-based learning in this particular course, therefore, remains largely open.

2.3. Cultivation of students’ decision-making competence in accounting teaching

Calls to reorient accounting education from technical coverage towards professional competence have a long history, and decision-making competence sits at the centre of these calls. In the context of cost and management accounting, prior work and professional frameworks suggest that the construct comprises several interrelated dimensions: the ability to analyse and structure cost data; to interpret variances and trace them to operational causes; to formulate and compare alternative courses of action; to anticipate business and market risks; and to integrate quantitative and qualitative evidence into a defensible managerial recommendation. These dimensions map naturally onto the higher-order levels of revised Bloom’s taxonomy (analysing, evaluating and creating) ^[9], and thus represent the capabilities that lecture-dominated instruction struggles to develop.

Existing cultivation models, however, display persistent limitations. Traditional lecture-plus-exercise instruction addresses primarily the lower levels of the taxonomy; standard case teaching, as discussed in

Section 2.1, engages higher-order skills only episodically and without systematic assessment; and active-learning reforms, while promising, are frequently evaluated through generic satisfaction surveys or aggregate grades rather than through direct measures of the target competencies^[7]. What is missing is a design in which the competence construct is explicitly defined, embedded in each stage of the learning cycle, and measured with criteria-referenced instruments; the present reform is designed to satisfy these conditions.

2.4. Research gaps summary

Read together, the three streams point to gaps at three levels. At the resource level, traditional case teaching lacks dynamic, updatable and contextually rich case materials, and no established mechanism exists for using AI to sustain a living case library for cost and management accounting. At the process level, research has demonstrated AI's technical feasibility in accounting education but has paid far less attention to how AI can be embedded within the specific pedagogy of case-based learning, before, during and after class, in a way that preserves student ownership of judgement while exploiting AI's analytical and simulation capabilities. At the outcome level, few studies operationalise decision-making competence as a measurable construct or provide empirical evidence that an AI-assisted redesign improves it. The present study responds with a "tool–pedagogy–outcome" integrated design: AI as the enabling instrument, case-based learning as the pedagogical carrier, and decision-making competence as both the organising principle of the redesign and the criterion of its evaluation. The theoretical foundation for this design is developed in the next section.

3. Theoretical foundation

3.1. Constructivism: Students as active knowledge builders

Grounded in constructivist learning theory, the redesigned course positions students as active constructors of cost and management accounting knowledge rather than passive recipients of lecture content. In AI-assisted case activities, students interrogate dynamically generated cost data, negotiate alternative solutions with peers, and articulate the reasoning behind their decisions, while the teacher acts as a facilitator and scaffold rather than a transmitter. AI tools extend this scaffolding by providing just-in-time hints and differentiated questioning calibrated to each group's current level of understanding, keeping learning tasks within students' zone of proximal development.

3.2. Experiential learning: The Kolb Cycle as the design spine

Kolb's experiential learning cycle provides the design spine of the reform^[10]. Concrete experience occurs when students receive AI-generated case scenarios built on continuously updated, real-world cost data; reflective observation takes place as groups compare simulated market feedback with their initial predictions; abstract conceptualisation occurs when students distill cost–volume–profit logic, variance analysis and relevant-cost reasoning from the experience; and active experimentation is realised when revised decision schemes are re-simulated and iterated. The pre-class, in-class and after-class stages of the teaching design presented in Section 5 are mapped explicitly onto these four phases, ensuring that AI use deepens rather than shortcuts the learning cycle.

3.3. Competency-based education: Outcome-oriented assessment

Competency-based education (CBE) orients the reform towards observable decision-making outcomes

rather than coverage of content. Drawing on the revised taxonomy of Anderson and Krathwohl^[9], the course defines five measurable dimensions of decision-making competence (cost data analysis, variance interpretation, alternative evaluation, risk anticipation and integrated managerial judgement), each anchored to explicit performance criteria and scoring weights (see **Table 1**). Assessment is therefore criterion-referenced, formative and outcome-based, replacing the traditional single final examination.

Table 1: Decision-Making Competence Assessment Rubric

Dimension	Weight	Excellent (85–100)	Adequate (70–84)	Needs Improvement (below 70)
Cost data analysis	25%	Accurately extracts and structures relevant cost information; correctly applies CVP, standard costing or ABC tools; distinguishes relevant from irrelevant data	Applies tools correctly but with minor computational or selection errors	Misreads cost behaviour or applies tools mechanically; data processing errors affect conclusions
Variance interpretation	20%	Decomposes variances correctly and traces them to behavioural and operational causes; links variances to managerial actions	Decomposes variances correctly but offers limited causal interpretation	Merely reports variance figures without interpretation
Alternative evaluation	20%	Constructs and compares multiple decision schemes with explicit assumptions and trade-offs; recommendation follows logically from the analysis	Compares alternatives but analysis is partial or assumptions implicit	Considers a single option or reaches a recommendation unsupported by analysis
Risk anticipation	15%	Identifies material business, market and data risks; conducts sensitivity or scenario analysis; proposes mitigation measures	Identifies obvious risks without systematic analysis	Ignores risk or treats assumptions as certain
Integrated managerial judgement	20%	Integrates quantitative and qualitative evidence into a coherent managerial recommendation; communicates clearly with a professional structure and tone	Integrates evidence unevenly; communication is understandable but loosely organised	Recommendation is disconnected from evidence or the report lacks structure

3.4. An integrated theoretical framework

The three theories are integrated rather than juxtaposed: constructivism explains why students must make and defend decisions themselves; experiential learning specifies the process through which AI-supported cases convert experience into transferable professional judgement; and CBE defines the outcomes by which the reform is evaluated. The AI tools themselves are integrated at increasing depths: they first substitute and augment resource preparation and personalised practice, and then move towards redefining classroom processes and evaluation when they enable multi-scenario decision simulation and dynamic risk feedback that traditional case teaching could not deliver. This integrated framework directly guides the teaching redesign presented in Section 5.

4. Current teaching problems of cost and management accounting

The problems summarised in the literature are not abstract possibilities but concrete, recurring features of everyday teaching. Drawing on our course-level surveys, classroom observation and an analysis of student work in recent cohorts, this section characterises four interrelated problems that jointly motivate the redesign presented in Section 5.

4.1. Rigid and outdated case teaching resources

The cases currently used in the course derive almost entirely from textbook appendix materials, and their limitations surface repeatedly in classroom use. Most are set in traditional manufacturing contexts with static, standardised datasets published years earlier; few reflect service industries, platform enterprises or digitally transformed firms where cost management challenges are now most salient. Because the data are frozen at publication, cases cannot accommodate what-if exploration: when students ask how a recommendation would fare under a 10% input-price increase or a demand shock, the material simply has no answer. Case staleness also undermines engagement, as solutions to textbook cases circulate across cohorts. The absence of a mechanism for updating, localising and extending cases means that even motivated teachers spend disproportionate time re-authoring materials, and the resulting case library remains small, homogeneous and poorly matched to the decision scenarios graduates will actually face.

4.2. Single teaching mode and passive student learning

Classroom practice remains dominated by a “teacher explains—students calculate—groups report” sequence. In this mode, the analytical path through a case is largely pre-determined by the instructor, and students’ cognitive work is confined to executing computations and presenting results, rather than framing the problem, generating alternatives or defending a choice under challenge. Classroom observation shows that discussion participation concentrates in a few confident students, while the majority remain passive recipients. Assessment reinforces this passivity: because the graded artefact is a written report checked against standard answers, students are rewarded for reproducing expected calculations rather than for the quality of their managerial reasoning. This is the pattern that the active learning literature predicts: a recognisable case format without the student ownership of judgement on which the method’s effectiveness depends ^[6,7].

4.3. Lack of dynamic decision-making simulation training

The core of management accounting is decision-making under changing conditions, yet the traditional teaching sequence offers almost no opportunity to experience such dynamics. Students rarely iterate: a recommendation, once submitted, is neither stress-tested against new information nor revisited in light of its consequences. There is no multi-scheme comparison in which alternatives are evaluated side by side under common assumptions, no simulated market feedback revealing how a chosen pricing or budgeting decision performs, and no exposure to risk in a form that makes sensitivity analysis intuitively meaningful rather than formulaic. Consequently, even students who master variance computations in isolation struggle to connect analysis to action, a gap our examination data confirm, with error rates concentrating not in calculation but in the interpretation and decision steps that follow it. Decision-making competence cannot be exercised, let alone assessed, in a teaching environment that never lets a decision play out.

4.4. Disconnection between curriculum teaching and industry demand

Finally, a widening gap has opened between what the course trains and what employers require. Industry surveys and professional frameworks indicate that entry-level accounting roles increasingly emphasise data analysis, intelligent cost control and the ability to support business decisions, with routine processing progressively automated ^[1]. Our graduates, however, are still trained mainly at the computation level: they can allocate overheads and compute variances, but report low confidence in using cost information to evaluate alternatives or advise on operational choices. This mismatch is particularly consequential for private

universities, whose institutional positioning depends on applied talent cultivation and graduate employability. These four problems together define the design brief for the reform: case resources must become dynamic and current; the classroom must transfer ownership of judgement to students; the learning environment must allow decisions to be simulated and iterated; and the capability targets must be realigned with industry demand.

5. AI-assisted case-based learning teaching redesign

5.1. Teaching reform principles

Five principles govern the redesign. First, student-centredness: every AI function is assigned to expand, not replace, students' own analytical work, echoing evidence that AI supports learning most when it scaffolds rather than substitutes judgement ^[4]. Second, outcome orientation: all design decisions are anchored to the five dimensions of decision-making competence defined in Section 3.3 and assessed through the rubric in **Table 1**, following competency-based education logic ^[9]. Third, AI empowerment with boundaries, under which the division of labour among AI, teacher and students is made explicit: AI generates data, simulations and feedback; the teacher frames problems, guides discussion and makes final evaluative judgements; students analyse, decide and defend. Fourth, theory–practice integration: each unit connects cost accounting techniques to a simulated managerial decision, consistent with the experiential learning cycle ^[10]. Fifth, undergraduate-level appropriateness: the model requires no programming or proprietary platforms, acknowledging the realistic resource constraints of private universities ^[5].

5.2. The construction of the AI-assisted case teaching system

The reform is organised as a three-component system (AI-optimised case resources, AI-assisted classroom processes and AI-enabled intelligent evaluation) in which the depth of AI integration increases progressively from resource optimisation to the redefinition of classroom processes and evaluation.

(1) AI optimises case resources.

Large language models are used to build and continuously refresh a course-specific case library covering the core syllabus modules of variable costing, standard costing, activity-based costing, budgeting and operational decision-making. The generated cases supplement a jointly developed library of nine real-company cases, featuring manufacturers such as Sumec and XCMG, which grounds the AI-generated settings in authentic business practice. AI performs three resource functions: updating, by generating current, industry-diverse case settings (service, e-commerce, new energy) with realistic parameters; dynamising, by producing parameterised datasets that can be perturbed on demand so that every group works with slightly different figures and every scenario can be re-run under changed conditions; and diversifying, by creating parallel difficulty levels so that cases can be differentiated across student ability. Each AI-generated case is verified by the teaching team before classroom use, reflecting evidence that unverified AI content carries material error risks ^[3].

(2) AI assists classroom teaching processes.

AI is embedded at each stage of the learning cycle rather than used as a one-off tool. Before class, the system delivers the case, background readings and a short diagnostic quiz, and answers students' preliminary questions, giving the teacher a data-based picture of preparation levels ^[5]. In class, students query AI as an analytical assistant to structure cost data, run sensitivity checks on their own hypotheses and generate

counterarguments for emerging recommendations, while group discussion, teacher questioning and cross-team critique remain the primary vehicles of learning. The centrepiece is multi-scheme decision simulation: teams submit competing decision schemes (e.g., pricing, outsourcing, budget allocation), AI simulates the market and cost consequences of each scheme under specified conditions, and teams revise their recommendations through one or more iteration rounds, thereby converting the case from a static exercise into an experience of decision-making under changing conditions ^[10]. After class, AI generates personalised practice sets targeting each student's demonstrated weaknesses and supports the revision of case reports.

(3) AI realises intelligent teaching evaluation.

Evaluation is upgraded from a single final examination to a multidimensional, process-oriented system. Four evidence streams are combined: process performance (preparation, participation and iteration behaviour recorded on the platform); case analysis quality, scored with the decision-making competence rubric in **Table 1** by two raters working double-blind; decision-scheme quality, judged on the reasoning, sensitivity analysis and risk treatment embodied in each team's submission; and innovative thinking, credited for original problem framings and well-supported unconventional recommendations. AI supports the system by aggregating behavioural data, drafting feedback comments for teacher review, and flagging discrepancies between self-reported and observed engagement, while all consequential judgements remain with the teacher, consistent with the verification-centred roles recommended in recent frameworks ^[8].

5.3. Specific implementation steps in the cost and management accounting course

The system is operationalised in three stages per teaching unit.

- (1) Stage 1: Pre-class preparation (AI case delivery and autonomous preview). One week before class, students receive the AI-generated case, a parameterised dataset and guiding questions; the AI assistant responds to clarification queries at any time before class, and a short diagnostic quiz feeds readiness data to the teacher. Students arrive having already attempted an initial analysis, shifting classroom time from exposition to decision work.
- (2) Stage 2: In-class implementation (AI data analysis, multi-scheme decision simulation, group discussion and teacher guidance). The 90-minute session (two consecutive 45-minute periods) follows a fixed rhythm: problem framing and assumption-setting (10 minutes); team analysis with AI-assisted data interrogation (25 minutes); submission of competing decision schemes and AI-simulated consequence feedback (20 minutes); revision and re-simulation (15 minutes); and a whole-class debrief in which teams defend their final recommendations, the teacher surfaces the underlying cost management principles, and AI-generated outliers are jointly diagnosed (20 minutes). Throughout, the teacher enforces explicit AI boundary rules: AI may inform analysis, but it must not make the decision. Every recommendation must be owned, explained and defensible by the team without AI support.
- (3) Stage 3: After-class expansion (AI personalised training, case report optimisation and competence feedback). Students finalise individual case reports, which are rubric-scored as the unit's competence assessment; AI generates targeted practice on each student's weak dimensions; and the aggregated results feed both formative feedback to students and the teacher's adjustment of subsequent cases and pacing.

5.4. Orientation of students' decision-making competence cultivation

The redesign is ultimately oriented towards five competence outcomes, each anchored to specific course activities and to the assessment rubric (**Table 1**): cost data analysis (developed through AI-assisted data interrogation in Stages 1–2); variance interpretation (developed in the simulation debrief, where variance signals must be traced to causes); alternative evaluation (developed through multi-scheme comparison and cross-team critique); risk anticipation (developed through sensitivity re-simulation and scenario perturbation); and integrated managerial judgement (developed and assessed through the defended final recommendation and individual report). Mapping every design element onto a named, measured outcome ensures that the reform's claim that AI-assisted case learning improves decision-making competence is not merely rhetorical but empirically testable: the rubric in **Table 1** anchors the evaluation, and preliminary implementation evidence is reported in Section 6.

6. Teaching practice and preliminary observations

6.1. Practice implementation

The redesigned model was implemented over one semester in the undergraduate course Cost and Management Accounting, covering the core teaching units from cost behaviour and cost–volume–profit analysis through standard costing, budgeting and operational decision-making. The module is a compulsory three-credit course (48 contact hours) for third-year accounting majors, and the implementation cohort covered the full year group of 355 students. Teaching proceeded through the three-stage rhythm described in Section 5.3: AI-generated cases and diagnostic quizzes before class, multi-scheme decision simulation and teacher-guided debriefing in class, and personalised practice together with individual case reports after class. Case reports were scored with the decision-making competence rubric in **Table 1** and counted towards the course's formative assessment, while platform records, classroom observation and student feedback were collected by the teaching team as naturalistic evidence of implementation.

6.2. Preliminary observations

Three patterns recur across the teaching units. Classroom participation has broadened: the simulation-and-revision cycle requires every team to submit and defend competing schemes, and observation records indicate that discussion is no longer concentrated in a few confident students, while preparedness before class has risen visibly since AI-generated cases and diagnostic quizzes were introduced. The quality of student work has also shifted in kind, not merely in degree: case reports increasingly move beyond correct computation to explicit assumption-setting, multi-scheme comparison and risk discussion, and the most common weaknesses now lie in variance interpretation and the integration of qualitative considerations, the hardest dimensions of the rubric, rather than in calculation errors. Students' feedback, finally, distinguishes sharply between AI functions: the multi-scheme decision simulation and personalised after-class practice are consistently identified as the most valuable elements, while several students initially struggled to calibrate how much to rely on AI, confirming that the Stage 2 boundary rules function as substantive learning supports rather than procedural formality ^[4]. These observations are consistent with prior evidence that structured, verification-oriented AI use supports higher-order learning ^[8]. External competition outcomes offer tentative validation beyond the classroom: student teams supervised by the course group have won provincial first prizes or above in the IMA Management Accounting Case Competition for five consecutive years, suggesting that

the emphasis on decision-oriented case work is being recognised externally. A systematic evaluation of the model's effects on course achievement and decision-making competence, using the rubric in **Table 1**, course assessment data and student surveys, is planned as the next step of this ongoing reform.

7. Teaching challenges and optimisation strategies

7.1. Existing challenges

The implementation experience also surfaced four challenges. The first is that AI literacy is uneven on both sides of the classroom. A subset of teachers, particularly those with limited experience of large language models, struggled to design high-quality prompts, verify AI-generated case content efficiently, or diagnose AI-produced errors in real time; similarly, some students either over-trusted AI outputs or used them superficially as answer machines, the twin risks of over-reliance and superficial use documented in the business education literature ^[4]. A related problem is that AI-generated case resources lack standardisation. The quality, difficulty and data plausibility of generated cases varied across topics and sessions, and the verification workload borne by the teaching team grew noticeably as the case library expanded, with no shared template governing what a “production-ready” AI case must contain. Classroom pacing, meanwhile, became harder to control: the simulation-and-revision cycle is time-hungry, and sessions in which teams' schemes diverged widely or AI feedback was ambiguous ran over time, compressing the debrief in which the most important generalisation work occurs. Finally, the assessment system, though upgraded, remains incomplete: rubric scoring is labour-intensive, the platform's behavioural data capture engagement only partially, and the weighting among the four evidence streams in the AI-enabled evaluation component of Section 5.2 still rests largely on professional judgement rather than validated calibration.

7.2. Optimisation countermeasures

Four countermeasures respond to these challenges in turn. To build teacher and student AI capability, the teaching team now conducts regular AI-pedagogy workshops covering prompt design, output verification and error diagnosis, and students receive a short structured training module at the start of the semester, an approach consistent with evidence that structured guidance improves productive AI use ^[5]. The AI case production pipeline is also being standardised: a case template has been introduced specifying required elements (scenario background, parameterised dataset, decision points, difficulty tier, verification checklist), together with a two-stage review (automated plausibility checks by AI, followed by human confirmation by the teaching team) so that the case library can grow without quality drift ^[3]. To protect classroom pacing, the in-class rhythm in Section 5.3 has been made elastic by design, capping simulation iterations at two rounds, assigning ambiguous AI-feedback cases to after-class follow-up, and protecting the final debrief as non-negotiable time, since it is where experience is converted into transferable principles ^[10]. The evaluation system, lastly, is being refined: future iterations will calibrate rubric weights through expert consultation and pilot scoring, expand the platform's behavioural indicators, and progressively shift the assessment emphasis towards whole-process, evidence-based judgement, consistent with the multidimensional evaluation direction of recent AI-empowered teaching reforms ^[5].

8. Conclusion

8.1. Summary and contributions

This paper reported the design and implementation of an AI-assisted redesign of case-based learning in the undergraduate course Cost and Management Accounting. Responding to the four problems identified in Section 4, the reform constructed a three-component teaching system in which AI optimises case resources, assists classroom processes and enables multidimensional evaluation, and it operationalised decision-making competence into five assessable dimensions anchored to a criterion-referenced rubric. Implementation experience over one semester indicates that the redesigned model broadens classroom participation, shifts case report quality from correct computation towards assumption-setting, multi-scheme comparison and risk discussion, and is positively received by students, with the most visible improvements occurring in the higher-order dimensions of alternative evaluation and risk anticipation, which traditional teaching struggles to develop. The findings affirm that AI can serve as a genuine enabler of competence-oriented accounting education when explicit pedagogical boundaries discipline its integration, a clear division of labour between AI, teacher and students, and outcome-based assessment.

The study also carries practical value beyond the single course. Because the model relies on widely accessible tools, a standardised case production pipeline and a replicable three-stage implementation rhythm, it offers a low-threshold paradigm that other undergraduate institutions, particularly private universities with an applied talent cultivation mission, can adapt to their own finance and economics courses. The challenges encountered and the countermeasures adopted, documented explicitly in Section 7, are themselves part of this transferable knowledge.

8.2. Limitations and future directions

Several limitations qualify the conclusions. The evidence comes from a single university and a single semester and is observational rather than quantitative, so no causal claims are made; part of the perception data is self-reported; and the observation window is too short to determine whether competence gains persist in subsequent courses or internships. Future research will therefore conduct systematic evaluations with comparison classes and appropriate statistical controls, and track cohorts across multiple semesters and institutions to examine the durability of competence gains. Learning-analytics data may further support finer-grained modelling of how AI use patterns relate to outcomes, and emerging agentic AI capabilities might reshape the case-based learning cycle, provided that student ownership of judgement is preserved. As the accounting profession continues its digital transformation, the central lesson of this reform is likely to hold: the task of accounting education is not to teach students to compete with AI, but to design learning experiences in which they learn to direct it.

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