

From Passive to Active: Examining the Pedagogical Effectiveness of Kahoot! in Undergraduate Management Accounting Education

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ABSTRACT

Traditional lecture-based teaching often fails to foster active student engagement in management accounting education, resulting in diminished motivation and superficial conceptual understanding. This study examines the pedagogical effectiveness of integrating Kahoot! as a technology-embedded learning platform in an undergraduate management accounting course at an Indonesian university. Specifically, it investigates changes in student engagement and perceived academic performance before and after Kahoot! integration. A quantitative quasi-experimental within-subjects design was employed with 153 students over one academic semester. Data were analyzed using the Wilcoxon Signed-Rank Test. The findings revealed statistically significant and large improvements in both student engagement ($Z = -10.797$, $p < 0.001$, $r = 0.87$) and perceived academic performance ($Z = -10.541$, $p < 0.001$, $r = 0.85$). This study contributes theoretically by extending the application of active learning theory to a management accounting context in a developing economy. Practically, the findings offer evidence-based guidance for accounting educators seeking to design technology-embedded learning environments that are effective, inclusive, and student-centered.

Keywords: Accounting Education; Active Learning; Game-Based Learning; Perceived Academic Performance; Student Engagement

JEL Classification: M40, M41

INTRODUCTION

Universities have spent recent years rethinking how teaching can hold students' attention and deepen their learning, and accounting education has been an active site of this experimentation (Churyk et al., 2024). The case for change is strong. As revealed by Kozanitis and Nenciovici (2023), a meta-analysis of 104 studies in the humanities and social sciences found that students taught through active methods outperformed those taught by traditional lecturing by almost half a standard deviation. The pressure is especially acute in accounting, where learners must master dense conceptual frameworks and technical standards while also building professional skills, a combination that many accounting students feel their studies do not yet deliver (Elo et al., 2024).

Accounting educators face several overlapping challenges. Students' attention in class is increasingly fragmented by digital devices, with consequences for their academic performance (Martin et al., 2025). Learners also need timely feedback to identify and correct errors, and feedback reliably raises achievement, including in technology-rich learning environments (Cai et al., 2023). At the same time, employers and professional bodies expect graduates to bring critical thinking, problem-solving and communication skills alongside technical knowledge (Nie & Mastor, 2024). Accounting students themselves perceive a gap between the skills the profession demands and those their studies develop (Elo et al., 2024), and this mismatch has strengthened calls for universities to rethink how accounting is taught (Nie & Mastor, 2024).

Game-based classroom response platforms such as Kahoot! offer one response to these challenges. Kahoot! turns lecture content into live quizzes and polls that students answer on their own devices, with scores displayed immediately and standings compared across the class (Ortiz-Martínez et al., 2023; Tandiono, 2024). Evidence for such tools is growing. Meta-analyses report that gamification improves students' academic performance (Zeng et al., 2024) and that Kahoot! in particular has a moderate positive effect on achievement and large effects on retention and motivation (Özdemir, 2025). Within accounting, students' Kahoot! results have been found to correspond with their official financial accounting marks (Ortiz-Martínez et al., 2023), and gamified instruction has increased classroom participation compared with conventional teaching (Ramesh et al., 2025). The immediacy of the game format can also capture students' attention, although one Indonesian study found its benefits to be stronger for surface-level than for deep engagement (Tandiono, 2024).

The mechanisms behind these effects are well established in cognitive psychology. Each Kahoot! question requires students to retrieve information from memory, and classroom research consistently shows that such retrieval practice strengthens long-term retention (Carpenter et al., 2022). These benefits are strengthened when retrieval is spaced over time and when learners receive feedback on their answers (Cai et al., 2023; Carpenter et al., 2022). Both features are relevant to accounting, where students grasp foundational procedures such as double entry in qualitatively different, and often incomplete, ways and later topics build directly on earlier ones (Culhane & O'Mahony, 2025).

Yet the evidence base has important limits. Accounting education research remains concentrated in North America, Europe and Australasia, with comparatively few studies from Asia and other emerging economies (Churyk et al., 2024, 2025). This matters for three reasons. First, research on educational technology has focused largely on why teachers and students accept a tool rather than on whether it improves learning, leaving educators with little evidence on which to base adoption decisions (Granić, 2022). Second, findings from general or cross-disciplinary samples may not transfer to accounting, whose cumulative, procedure-intensive content places particular demands

on students' precision and systematic reasoning (Culhane & O'Mahony, 2025). Third, students' responses to competitive, game-based learning may be shaped by the educational and cultural setting in which it occurs (Hofstede, 2011), so results obtained in Western classrooms cannot simply be assumed to hold elsewhere.

Indonesia offers a useful setting in which to address these gaps. As the economy grows and the accounting profession digitalizes, Indonesian accounting educators face mounting pressure to equip graduates with the competencies the profession now expects (Kusumawati et al., 2023; Sugeng & Suryani, 2024). Indonesian scholars have begun to study accounting pedagogy directly; for example, Sugeng and Suryani (2024) examined how accounting educators adapted their teaching strategies to online delivery, Warsono et al. (2023) evaluated a mathematics-based model for teaching financial accounting, and Andani et al. (2022) examined accounting students' confidence in adopting artificial intelligence. Prihatiningtias and Rahmat (2023) further showed that the format of online delivery shaped academic integrity among Indonesian accounting undergraduates. None of these studies, however, has examined game-based classroom response platforms. The closest Indonesian evidence comes from a broader university setting, where Tandiono (2024) studied Kahoot! in online classes; whether the platform supports learning in a discipline as cumulative and procedure-driven as accounting therefore remains an open question.

The objective of this study is therefore to investigate whether students' engagement and perceived academic performance change after Kahoot! is introduced into an Indonesian university's undergraduate management accounting course. Using a quasi-experimental within-subjects design, it compares the responses of 153 students collected before and after Kahoot! was used across one semester in 2023. The study addresses two research questions: (i) How do students' engagement levels change before and after the integration of Kahoot! into the accounting learning environment? (ii) How do students' perceived academic performance outcomes change before and after the integration of Kahoot! into the accounting learning environment?

The study's significance lies in its response to the three limitations outlined above, including the shortage of evidence to guide technology adoption, the lack of discipline-specific findings, and the narrow geographical base of existing research. Its novelty lies in bringing together a discipline-specific focus and an under-studied setting. To the authors' knowledge, it is among the earliest empirical studies of how a game-based classroom response platform works in accounting education in Indonesia, a topic that Indonesian pedagogical research has not yet addressed (Andani et al., 2022; Prihatiningtias & Rahmat, 2023; Sugeng & Suryani, 2024; Warsono et al., 2023). It also situates this evidence in management accounting, where cumulative, procedure-heavy content places high demands on students' accuracy, attention to detail, and systematic thinking.

The study makes three contributions. First, it adds to the accounting education literature by testing a gamified active-learning intervention outside the Western settings that dominate current research, informing debate about whether such interventions travel across educational and cultural contexts (Churyk et al., 2025; Hofstede, 2011). Second, it interprets the observed changes in engagement and perceived performance through retrieval practice and feedback theory (Carpenter et al., 2022), offering a theoretically grounded account of why frequent, low-stakes gamified quizzing may suit the cumulative structure of accounting content. Third, it gives accounting educators and program leaders in emerging economies practical evidence for deciding whether to adopt a free, low-cost platform, helping them make good use of limited teaching resources where preparing competent accounting graduates is a national priority.

LITERATURE REVIEW

Theoretical Foundation: Active Learning Theory

Active learning theory provides the theoretical foundation for this study, offering an explanation of how interactive digital tools can raise student engagement and perceived academic performance in accounting education. The theory holds that students learn more effectively when they take part in the learning process than when they receive information passively (Bonwell & Eison, 1991), a claim supported by recent meta-analytic evidence that active instruction yields higher achievement than traditional lecturing (Kozanitis & Nenciovici, 2023). On this view, meaningful learning arises from activities that require students to think about and use what they are learning, such as answering questions, interacting with peers, reflecting critically, and taking ownership of their progress. In accounting, where many concepts seem abstract and procedural, such approaches can turn lectures into dynamic, student-centered learning environments.

Active learning is thought to benefit students through two complementary mechanisms. The first operates through engagement. Engagement is commonly understood as having behavioral, emotional, and cognitive dimensions, and active learning activities are designed to strengthen all three by moving students from passively receiving content to attending to it, responding to it, and discussing it with others. The second operates through cognition. Retrieving knowledge from memory produces more durable learning than rereading or passive review, and this benefit, known as the testing effect, has been consistently demonstrated across many educational settings (Carpenter et al., 2022). Learning retention is further improved when retrieval practice is spaced over time instead of being concentrated within a single session (Carpenter et al., 2022). Feedback on each retrieval attempt then allows learners to recognize and correct errors before they become entrenched, which reliably improves achievement (Cai et al., 2023).

These two mechanisms frame the study's examination of Kahoot!. The engagement mechanism underpins the expected link between Kahoot! integration and student engagement, while the retrieval-practice mechanism underpins its expected link with perceived academic performance. The next section applies this framework to the specific features of Kahoot! in order to develop the study's hypotheses.

Hypotheses Development

Kahoot! is an interactive platform for running gamified quizzes in real time. Its combination of competition, immediate feedback, and whole-class participation puts the principles of active learning into practice (Özdemir, 2025). Rather than listening passively, students must recall accounting concepts, weigh alternative answers, and commit to a response under time pressure, and this repeated engagement encourages deeper processing and retention of course material. Kahoot! is therefore better understood as an instructional strategy aligned with active learning theory than simply as a technological tool. The subsections below develop hypotheses on its association with student engagement and with perceived academic performance.

Kahoot! and Student Engagement

Kahoot! illustrates the engagement mechanism of active learning by turning conventional lectures into interactive sessions that hold students' attention and invite a response. Studies of the platform in higher education report higher engagement, focus, and interaction among students and instructors (Anane, 2024; Özdemir, 2025), and in accounting courses, gamified instruction has increased classroom participation relative to traditional teaching, with particularly strong gains among female students (Ramesh et al., 2025). Discussion after each question can also help students clarify difficult concepts

and compare problem-solving strategies, especially when Kahoot! is combined with structured peer discussion and other interactive activities (Tandiono, 2024). For accounting students, the platform offers immediate feedback on calculations, repeated practice of procedural knowledge, and opportunities to learn from peers on complex topics. These benefits are not automatic, however. Evidence from Indonesia suggests that Kahoot! readily generates surface-level engagement but does less to foster deep learning or meaningful peer interaction unless it is combined with other interactive activities (Tandiono, 2024), and a systematic review of gamification in accounting education cautions that its generally positive effects depend on universities, lecturers, and students having the necessary resources in place (Almuntsr et al., 2024).

When implemented well, Kahoot! can also strengthen students' motivation to learn. Evidence from a meta-analysis of 43 studies indicates that Kahoot! has a substantial positive effect on student motivation and a moderate positive effect on students' attitudes (Özdemir, 2025). In an online university French course followed over three terms, most students reported looking forward to Kahoot! sessions, focusing on each question, and finding the platform helpful for their learning (Anane, 2024). Although this evidence does not come from accounting, the same principles apply to accounting students, who likewise benefit from discussing and clarifying complex financial concepts and procedural calculations with their peers.

Kahoot! may also create a psychologically safer learning environment. Because accounting demands precision, students can feel anxious about revealing errors in front of their peers. Kahoot! reduces this exposure by allowing anonymous participation and by shifting attention from individual mistakes to class-wide discussion (Ramesh, 2025). Meta-analytic evidence shows that Kahoot! is associated with a small reduction in student anxiety (Özdemir, 2025), and a controlled study of 176 university students found lower stress and anxiety, greater self-efficacy, and higher achievement among students taught with Kahoot! than among those taught through traditional instruction alone (Alsswey & Malak, 2024). Because academic stress is associated with lower academic performance among Southeast Asian university students (Li et al., 2023), reducing the anxiety of answering in public may also benefit attainment. By presenting mistakes as part of a game rather than a public failure, the platform helps to normalize error. Taken together, this evidence suggests that Kahoot! can strengthen the behavioral, emotional and cognitive dimensions of engagement by increasing participation, raising motivation and reducing the anxiety attached to demonstrating knowledge in public.

Drawing on this theoretical perspective and the literature reviewed above, the following hypothesis is proposed:

H1: Students' engagement levels are significantly higher following the integration of Kahoot! into the management accounting learning environment compared to before its integration.

Kahoot! and Student Perceived Academic Performance

Kahoot!'s repeated quizzing reflects the cognitive mechanism of active learning theory described above. Because retrieval practice produces better long-term retention than passive review (Carpenter et al., 2022), regular Kahoot! quizzes should help students consolidate their mastery of course content. This is especially valuable in accounting, where conceptual understanding must be combined with procedural skill, and students' understanding of foundational procedures such as double entry varies considerably in depth (Culhane & O'Mahony, 2025). Consistent with this reasoning, meta-analytic evidence shows that Kahoot! has a moderate positive effect on academic achievement

and a very large effect on retention (Özdemir, 2025), and that gamification more broadly improves students' academic performance (Zeng et al., 2024).

Evidence from accounting and other university settings points in the same direction. Ortiz-Martínez et al. (2023) found a significant positive relationship between students' Kahoot! scores and their official marks in university financial accounting courses, covering continuous assessment, final examinations, and overall subject results. In a randomized comparison in Jordan, university students taught with Kahoot! alongside conventional teaching achieved higher academic performance than peers taught through conventional methods alone (Alsswey & Malak, 2024). In Indonesian higher education, the quality of the learning environment and its supporting technology has likewise been shown to shape students' academic performance (Waluyowati & Riandi, 2025). Together, these findings suggest that the benefits of Kahoot! extend beyond simple recall to students' performance on formal assessments.

These cumulative benefits are consistent with the spacing effect (Carpenter et al., 2022). Because Kahoot! sessions recur throughout the semester, they spread retrieval practice over time rather than concentrating it in the period before examinations, which is particularly useful in accounting, where students must retain and apply knowledge across many interrelated topics. Although most of the evidence reviewed above concerns objectively measured marks, repeated retrieval accompanied by immediate confirmation of correct answers is also likely to build students' confidence in their mastery of the material, a link consistent with the higher self-efficacy observed among students learning with Kahoot! (Alsswey & Malak, 2024). Students who retrieve content regularly and receive immediate feedback can therefore be expected to judge their own academic performance more favorably.

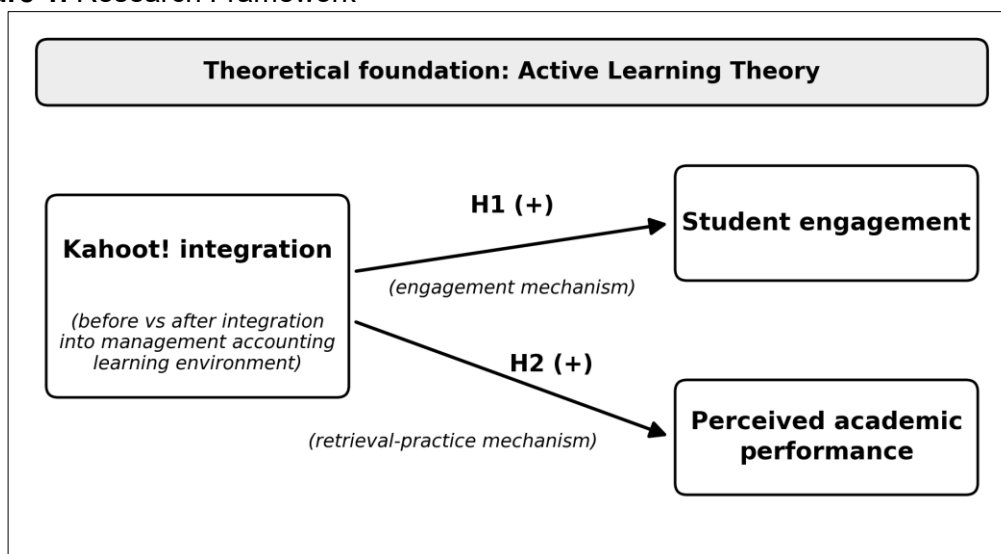
Drawing on this theoretical perspective and the literature reviewed above, the following hypothesis is proposed:

H2: Students' perceived academic performance is significantly higher following the integration of Kahoot! into the management accounting learning environment compared to before its integration.

Conceptual Framework

The study's research model is shown in Figure 1. Drawing on active learning theory, it treats the introduction of Kahoot! into the management accounting course as the intervention, and it captures the intervention's effect by comparing students' responses after Kahoot! was adopted against their responses beforehand. Two distinct theoretical routes link the intervention to the outcomes. The first is engagement: competition, anonymous answering, and discussion among peers are expected to lift students' engagement (H1). The second is retrieval practice: frequent, low-stakes quizzes that give instant feedback are expected to consolidate what students remember and to increase their confidence in what they know, raising their perceived academic performance (H2). Because the design is within-subjects, each hypothesis is tested on the same group of students, whose engagement and perceived academic performance are compared across the two periods.

Figure 1. Research Framework



RESEARCH METHOD

Research Design

This study employed a quantitative, quasi-experimental research design in addressing the two hypotheses. Using the same cohort of students across both instructional modes, traditional and Kahoot!-enhanced seminars, enabled direct within-group comparisons of student engagement and perceived academic performance. This design follows the precedent set by Warsono et al. (2023), who used a quasi-experimental within-subjects approach to evaluate an innovative teaching model in Indonesian accounting education. A within-subjects design is particularly suitable where random assignment of students to parallel classes is administratively infeasible, because each student serves as their own point of comparison.

Sampling Method

The study involved 172 undergraduate accounting students enrolled in a management accounting course at an Indonesian university during a single academic semester in 2023. Both the pre- and post-intervention questionnaires were administered on an identified rather than anonymous basis, with each student recording their student identification number on both instruments. This enabled every post-intervention response to be matched to the same respondent's pre-intervention response, yielding 153 complete matched pairs and satisfying the paired-data requirement of the Wilcoxon Signed-Rank Test. Only students who completed both questionnaires were retained in the analysis, and no substitution or imputation of missing responses was undertaken.

Data Collection Method

A structured questionnaire was developed to measure changes in student engagement and perceived academic performance using a five-point Likert scale. Engagement was assessed through student participation, focus, motivation, and levels of anxiety during class discussions. Perceived academic performance was measured in terms of analytical thinking, problem-solving ability, application of accounting knowledge to real-world contexts, and preparedness for the final examination. The pre-intervention questionnaire also included a single screening item asking students whether they had previously participated in game-based or gamified classroom response activities in any prior course at the institution. All 153 respondents indicated that they did not, confirming that the intervention represented their first exposure to this form of technology-embedded learning.

Ethical approval was obtained, and informed consent was secured through a participation information sheet. Students were informed that their responses would be used solely for research purposes, that participation would not affect their assessment outcomes, and that identifying information would be removed once the pre- and post-intervention responses had been matched, after which the dataset was analyzed in de-identified form. The survey instrument was pilot tested before dissemination. All participants experienced both instructional phases: a traditional teaching approach during Weeks 1–7, followed by a mid-semester test in Week 8, and the integration of Kahoot! during Weeks 9–15. The pre-intervention survey was disseminated at the end of Week 7 and the post-intervention survey at the end of Week 15.

Data Analysis Method

The collected data were analyzed using IBM SPSS Statistics. The internal consistency of engagement and perceived performance constructs was verified using Cronbach's alpha coefficients. Given the non-normal distribution of the data, the Wilcoxon signed-rank test was used to compare pre- and post-intervention scores (Pallant, 2026). Effect sizes were calculated as $r = Z/\sqrt{N}$ and interpreted against conventional benchmarks of .10, .30, and .50 for small, medium, and large effects, respectively (Pallant, 2026), where N denotes the number of participants (N = 153). Because conventions differ as to whether N represents participants or total observations, both are reported in Table 4.

RESULTS

Respondents' Profile

Table 1. Respondents' Profile (N = 153)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Female	70	45.8
	Male	83	54.2
Prior exposure to game-based classroom response platforms	Yes	0	0
	No	153	100
Participation	Enrolled in the course	172	–
	Completed pre- and post-intervention questionnaires (matched pairs)	153	89 ^a

Note: Percentages are based on the matched sample (N = 153). ^a Response rate, calculated on course enrollment (153/172).

Of the 172 students enrolled in this course, 153 students (46% female, 54% male) completed both the pre- and post-intervention questionnaires, yielding a matched-pair response rate of 89 percent. Table 1 summarizes the available characteristics of these respondents. The matched sample comprised 70 female (45.8%) and 83 male (54.2%) students. None of the respondents reported prior exposure to game-based classroom response platforms in their accounting studies, indicating that the intervention constituted their first experience of this form of technology-embedded learning. The sample was therefore homogeneous in its baseline familiarity with the tool, so the pre–post changes reported below are unlikely to reflect differences in respondents' prior experience with game-based platforms.

Descriptive Statistics

Table 2. Descriptive Statistics (N = 153)

Construct	Min	Max	Mean	Std. Deviation	Median	IQR
Engagement_Pre	1.50	4.25	2.6830	0.62369	2.5000	1.00
Engagement_Post	2.75	5.00	4.0310	0.51882	4.2500	0.75
Performance_Pre	1.75	3.75	2.8203	0.49459	3.0000	1.00
Performance_Post	2.50	4.75	3.8121	0.52431	3.7500	0.88

Note: All constructs are composite means of four items measured on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). N = 153. Mdn = median; IQR = interquartile range.

Table 2 reveals that prior to the intervention, both constructs sat at or below the scale midpoint of 3.00. Engagement recorded a median of 2.50 (IQR = 1.00, M = 2.68, SD = 0.62) and perceived academic performance a median of 3.00 (IQR = 1.00, M = 2.82, SD = 0.49), indicating that students rated their participation, focus, and self-assessed analytical capability as modest under traditional lecture-based instruction. Following the integration of Kahoot!, both distributions shifted upward: engagement rose to a median of 4.25 (IQR = 0.75, M = 4.03, SD = 0.52) and perceived academic performance to a median of 3.75 (IQR = 0.88, M = 3.81, SD = 0.52). The median increase of 1.75 scale points for engagement and 0.75 points for perceived academic performance places both constructs well above the midpoint following the intervention.

The shape of the distributions also changed. Pre-intervention engagement was positively skewed, with the mean (2.68) exceeding the median (2.50), indicating that most students clustered at the lower end of the scale with a smaller number reporting higher engagement. Post-intervention, this pattern reversed: the mean (4.03) fell below the median (4.25), consistent with a leftward-skewed distribution in which the majority of students reported high engagement. The interquartile range for engagement narrowed correspondingly from 1.00 to 0.75, indicating that post-intervention responses were more tightly concentrated and that the gains were distributed across the cohort rather than confined to a subset of students. A comparable, though more modest, narrowing occurred for perceived academic performance (IQR from 1.00 to 0.88).

The observed ranges of the pre- and post-intervention distributions overlap only narrowly. For engagement, no pre-intervention score exceeded 4.25 while no post-intervention score fell below 2.75; the corresponding boundaries for perceived academic performance were 3.75 and 2.50. This limited overlap is consistent with a near-uniform direction of change across participants and anticipates the magnitude of the differences subsequently identified by the Wilcoxon Signed-Rank Test.

Reliability and Normality Tests

Table 3. Reliability and Normality Tests

Construct	No. of Items	Cronbach's α	Kolmogorov–Smirnov (p)	Shapiro–Wilk (p)
Engagement_Pre	4	0.732	<0.001	<0.001
Engagement_Post	4	0.718	<0.001	<0.001
Performance_Pre	4	0.724	<0.001	<0.001
Performance_Post	4	0.726	<0.001	<0.001

Note: Engagement and performance constructs were measured via self-report Likert-scale items; the performance construct reflects students' perceived academic performance rather than objective grades or examination scores.

Instrument reliability was first assessed for the four composite constructs representing pre- and post-intervention measures of student engagement and perceived academic performance. As presented in **Table 3**, all composite constructs demonstrated

satisfactory internal consistency, with Cronbach's α coefficients ranging from 0.718 to 0.732, exceeding the 0.70 benchmark recommended for exploratory educational research (Nunnally & Bernstein, 1994). Normality tests were then performed using both Kolmogorov–Smirnov and Shapiro–Wilk procedures. The results indicated that all variables were non-normally distributed ($p < .001$ for each), justifying the use of non-parametric analysis through the Wilcoxon Signed-Rank Test (Pallant, 2026).

Hypothesis Testing

Table 4. Wilcoxon Signed-Rank Test Results for H1 and H2 (N = 153)

	Hypothesis (pre–post)	Ranks: Negative / Positive / Ties (n)	Mean Rank: Negative / Positive	Z	p- value	Effect size (r)	Decision
H1	Engagement	0 / 153 / 0	0.00 / 77.00	–10.797	<0.001	0.87	Supported
H2	Perceived academic performance	3 / 145 / 5	10.83 / 75.82	–10.541	<0.001	0.85	Supported

Note: Negative ranks denote participants whose post-intervention score was lower than their pre-intervention score; positive ranks denote participants whose score increased; ties denote no change. Effect sizes are calculated as $r = Z/\sqrt{N}$ (Pallant, 2026), where N is the number of participants (N = 153), and interpreted against conventional benchmarks of 0.10, 0.30, and 0.50 for small, medium, and large effects. Where N is instead taken as the total number of observations ($2 \times 153 = 306$), the corresponding values are $r = 0.62$ and $r = 0.60$; both conventions indicate a large effect.

Since the data were non-normally distributed, the Wilcoxon Signed-Rank Test was used to examine pre- and post-differences in student engagement and perceived academic performance (Pallant, 2026). The results, summarized in Table 4, reveal statistically significant improvements for both constructs following the Kahoot! intervention. H1 predicted that students' engagement would be higher after Kahoot! integration than before it. All 153 students recorded a higher engagement score after the intervention, with no negative ranks or ties ($Z = -10.797$, $p < 0.001$, $r = 0.87$); H1 is therefore supported. H2 predicted that students' perceived academic performance would be higher after integration. Of the 153 students, 145 reported higher perceived performance, three reported lower scores, and five reported no change ($Z = -10.541$, $p < 0.001$, $r = 0.85$); H2 is therefore also supported. Both effect sizes exceed the 0.50 threshold for a large effect.

DISCUSSION

Kahoot! and Student Engagement (H1)

The findings show that the Wilcoxon signed-rank test for student engagement was significant, providing strong support for H1: students' engagement was significantly and substantially higher after Kahoot! was integrated than before. Students reported participating more, concentrating better, and feeling more motivated, and they described less anxiety about sharing answers during class discussion, indicating that the gamified format raised both behavioral and emotional engagement. These results agree with recent evidence that Kahoot! and related gamified tools increase engagement in higher education (Anane, 2024; Özdemir, 2025), including in accounting courses (Ramesh et al., 2025), and with meta-analytic evidence that Kahoot! is associated with lower student anxiety (Özdemir, 2025). The size of the effect ($r = 0.87$) indicates that the change in how students experienced the learning environment was substantial rather than marginal. This is notable in management accounting, which students often regard as abstract, procedural, and hard to engage with actively.

The pattern of results is consistent with the active learning account developed earlier. Kahoot! requires students to retrieve and apply knowledge in real time rather than absorb it passively, and its countdowns, leaderboards and instant feedback create conditions in which students are prompted to attend, think and respond. Because engagement spans behavioral, emotional and cognitive dimensions, a tool that increases participation, sustains attention and lowers the social risk of answering can be expected to strengthen all three. The finding should nonetheless be read alongside Indonesian evidence that Kahoot!'s engagement benefits can remain at the surface unless the platform is combined with other interactive activities (Tandiono, 2024). The present measures capture students' reported engagement and do not establish whether it translated into deeper learning.

Kahoot! and Student Perceived Academic Performance (H2)

The results for perceived academic performance followed the same pattern, supporting H2: students rated their academic performance significantly and substantially higher after Kahoot! was integrated. This finding is in line with evidence linking gamified learning to academic attainment. In university financial accounting courses, students' Kahoot! scores have been positively associated with their official marks (Ortiz-Martínez et al., 2023), and meta-analyses report that Kahoot! has a moderate positive effect on achievement (Özdemir, 2025) and that gamification improves academic performance across disciplines (Zeng et al., 2024). By examining undergraduate management accounting in Indonesia, the present study extends this evidence to a setting outside the Western contexts in which most accounting education research is conducted (Churyk et al., 2025).

Retrieval practice offers a plausible explanation for this result. Repeatedly retrieving information under quiz conditions produces stronger and more durable learning than passive review, an effect well documented across educational settings (Carpenter et al., 2022). Such practice is particularly valuable in management accounting, where students must apply principles such as cost–volume–profit (CVP) analysis, variance calculations, and budgeting techniques to unfamiliar scenarios rather than simply recall definitions. Kahoot! embeds retrieval practice in a low-stakes, game-based format, which may increase both how often students practice and how willing they are to do so. Because the outcome measured here is perceived rather than actual performance, the result is best interpreted as greater confidence in mastery of the material, an interpretation consistent with evidence that Kahoot! raises students' self-efficacy (Alsswey & Malak, 2024).

Implications

Theoretical Implications

The study contributes to theory on gamified learning in accounting education in two ways. First, it offers evidence specific to management accounting in Indonesian higher education that supports the application of active learning theory (Bonwell & Eison, 1991) to technology-enhanced instruction. The effect sizes are large ($r = 0.87$ and $r = 0.85$), although they must be interpreted within the limits of a within-subjects design, as discussed in the Limitation Section. Second, the study extends research on gamified learning to Indonesia, a developing economy, helping to address a geographical imbalance in a literature that remains concentrated in North America, Europe, and Australasia (Churyk et al., 2024, 2025).

Practical Implications

The findings point to three recommendations for accounting educators. First, Kahoot! works best as a regular formative-assessment activity built into existing lectures, not as a replacement for teaching. The improvements reported here followed weekly use over

seven consecutive teaching weeks, a pattern consistent with the benefits of spaced retrieval practice (Carpenter et al., 2022), although evidence from introductory university courses shows that these benefits can vary considerably from course to course (Bego et al., 2024). Occasional or one-off use should not be expected to produce comparable gains.

Second, quiz design should reflect the cognitive demands of the material. Kahoot!'s countdown format rewards quick recognition, so it suits definitions and recall-based content, whereas analytically demanding management accounting topics such as CVP and variance analysis may need longer time limits or team-based modes. This recommendation draws on the platform's design and on prior work stressing that gamified activities must be aligned with learning objectives and combined with other interactive methods (Almuntsr et al., 2024; Tandiono, 2024), rather than on the present data, and it warrants direct empirical testing.

Third, institutions in developing economies should check students' access to devices and reliable internet before adopting synchronous, device-dependent platforms, and should plan for network failures. Technical and connectivity problems are among the drawbacks students report when using Kahoot! (Anane, 2024), and poor connectivity has been a major barrier to online learning for Indonesian university students, particularly outside urban areas (Andries & Lengkoan, 2023). Where access is uneven, such platforms risk disadvantaging under-resourced students and turning an inclusive teaching tool into a source of inequity.

These recommendations are especially relevant to Indonesia's supply of future accountants. Andani et al. (2022) show that Indonesian accounting students' readiness to work with artificial intelligence is linked to the AI-related content of their curricula, and Sondakh and Tulung (2024) find that final-year Indonesian accounting students' intention to pursue an accounting career is driven by their self-efficacy, which they argue accounting courses can help to strengthen, while Kusumawati et al. (2023) show that practicum activities and teaching methods underpin Indonesian accounting students' professional competencies. Technology-embedded active learning of the kind examined here is inexpensive, needs no specialist infrastructure beyond reliable connectivity, and may therefore give Indonesian accounting programs a practical way to strengthen both classroom engagement and students' longer-term professional development.

CONCLUSION

This study examined whether integrating Kahoot! into an undergraduate management accounting course at an Indonesian university was associated with changes in student engagement and perceived academic performance. The findings support both hypotheses. After Kahoot! was integrated, students reported substantially higher engagement and more favorable perceptions of their academic performance, and these improvements were shared broadly across the cohort rather than confined to students who were already engaged or high-performing. The results suggest that regular, low-stakes gamified quizzing can meaningfully change how students participate in, and judge their command of, a subject often regarded as abstract and procedurally demanding.

The study makes three contributions. Theoretically, it supports active learning theory as a lens for understanding technology-embedded instruction in accounting, showing that the engagement and retrieval-practice mechanisms associated with gamified quizzing operate in a management accounting setting. Contextually, it extends evidence on gamified learning to a non-Western, emerging-economy setting that has received little prior attention, and it is among the first studies of a game-based classroom response

platform in Indonesian accounting education. Practically, it gives accounting educators, particularly those working with limited resources, evidence that a free and readily implementable tool can strengthen student engagement and confidence without major investment in infrastructure or curriculum redesign.

Because the study used a within-subjects design without a parallel control group, its results should be read as strong preliminary evidence rather than definitive proof of a causal effect. Future research could therefore adopt controlled or quasi-experimental designs with comparison groups, use objective measures such as examination marks alongside students' self-perceptions, and follow cohorts over longer periods to establish whether the gains persist. Replication across other accounting subjects, institutions, and emerging economies would test the generalizability of these findings, and further work could examine the mechanisms involved, including whether higher engagement explains improvements in perceived performance, and how the frequency and design of Kahoot! activities shape their effectiveness.

LIMITATION

Five limitations of this study should be acknowledged. First, the quasi-experimental within-subjects design lacks a parallel control group, meaning that observed improvements cannot be attributed exclusively to Kahoot!; future research employing randomized assignment to parallel sections would strengthen causal inference. Second, and relatedly, because the pre- and post-intervention measures were separated by eight teaching weeks, several time-related influences are confounded with the intervention itself. The post-intervention survey was administered at the end of Week 15, immediately prior to the final examination, at a point when students' motivation and self-assessed examination readiness would be expected to rise irrespective of instructional method. This is particularly relevant given that examination preparedness constitutes one of the four items in the perceived performance construct. In addition, students sat a mid-semester test in Week 8 and received feedback on their performance before the second measurement, and feedback of this kind is itself an established driver of engagement and self-assessed competence. Future research should administer measures at multiple points across the semester, or employ a staggered implementation design, in order to separate intervention effects from maturation and assessment-cycle effects.

Third, students were aware that their lecturer had introduced Kahoot! and that the survey was evaluating it, and because responses were identified rather than anonymous, the scope for demand characteristics is heightened. Data collection by an independent party, or the use of unobtrusive behavioral indicators, would mitigate this concern. Fourth, the single-institution, single-course sample limits generalizability. Moreover, because no participant had previously encountered a game-based classroom response platform, part of the observed gain may reflect the novelty of the format rather than a durable pedagogical benefit; longitudinal designs tracking engagement across repeated semesters and multi-site studies would address both concerns.

Finally, engagement and performance were assessed using self-report measures, which may have been influenced by social desirability bias, and the performance construct captures students' perceptions rather than objective attainment. This concern is not merely theoretical in the Indonesian setting; for example, [Prihatiningtias and Rahmat \(2023\)](#) show that Indonesian accounting students' academic conduct is shaped by the pressures and opportunities of the learning environment, reinforcing the case for triangulating self-report measures against objective indicators such as examination scores and learning management system engagement data.

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DECLARATION OF CONFLICTING INTERESTS

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