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Perceived Learning Effectiveness and Actual Student Performance in an OBE-Based Management Information Systems Course

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Abstract

This study examines perceived learning effectiveness and actual student performance in an Outcome-Based Education (OBE)-based Management Information Systems course. The study used an evaluative quantitative design, complemented by thematic analysis of students' open-ended responses. The study involved 67 students enrolled in two parallel classes, with 53 complete questionnaire responses included in the perception analysis. Perceived learning effectiveness was measured across 11 dimensions, while actual performance was based on video-analysis assignments, group discussions and presentations, quizzes, the midterm examination, Project-Based Learning, and final grades. Data were analyzed using descriptive statistics, the Mann–Whitney U test, Spearman's rank correlation, and thematic coding. The findings show that all perception dimensions had mean scores above 4.00 on a five-point scale, indicating generally positive learning experiences. The highest ratings were found for the midterm examination, LMS support, and Project-Based Learning, while Learning Time Adequacy received the lowest mean. Actual student performance varied across assessment components, with the highest mean found in Project-Based Learning. Most perception dimensions did not differ significantly by class schedule or employment status. More importantly, all relationships between perceived learning effectiveness and corresponding actual performance were very weak and statistically non-significant. The findings indicate that perceived learning effectiveness and actual student performance represent distinct but complementary evidence for continuous improvement in OBE-based course management.

Keywords: Outcome-Based Education, Perceived Learning Effectiveness, Student Performance, Management Information Systems, Course Evaluation

JEL Codes: I21, I23, M15

1. Introduction

1.1 Background

Higher education increasingly emphasizes not only the delivery of academic content but also the extent to which students demonstrate measurable learning outcomes. This orientation is reflected in Outcome-Based Education (OBE), which places expected learning outcomes at the center of curriculum design, learning activities, and assessment. Under an OBE approach, the effectiveness of a course is therefore not determined solely by whether planned content has been delivered, but by whether students are able to demonstrate the knowledge, skills, and

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competencies specified in the course learning outcomes (Rao, 2020; Syeed et al., 2022). This orientation also requires learning activities, assessment methods, and supporting resources to be managed in a way that consistently supports student achievement.

At the course level, OBE implementation involves more than formulating learning outcomes. Lecturers are required to organize learning activities, provide appropriate assessment opportunities, manage learning resources, and monitor whether students are progressing toward the expected outcomes. Previous studies have shown that OBE implementation can involve challenges related to lecturers' understanding of measurable learning outcomes, assessment alignment, learning technologies, supporting systems, and continuous improvement mechanisms (Katawazai, 2021; Tungpalan & Antalan, 2021). In information systems and computing education, these challenges are particularly relevant because learning outcomes often include not only conceptual understanding but also analytical ability, problem solving, communication, collaboration, and the application of knowledge to organizational contexts (Almuhaideb & Saeed, 2020; Syeed et al., 2022).

The management of learning activities therefore becomes an important element in an OBE-based course. Learning Management Systems (LMS), classroom discussions, quizzes, case-based assignments, group presentations, project-based learning, and formal examinations represent different mechanisms through which students interact with course content and demonstrate their learning. Previous OBE studies have shown that course reform frequently combines instructional activities, digital support, practical tasks, and various forms of assessment in order to accommodate different types of learning outcomes (Bhat et al., 2022; Wu et al., 2021; Yang et al., 2022). More recent developments in OBE research have also emphasized experiential learning, project-based activities, authentic assessment, and technology-supported learning as important components of outcome-oriented education (Joseph et al., 2024; Mahrishi et al., 2025). These developments indicate that learning effectiveness must be understood not only through course design, but also through how students experience the learning process and how they perform on the assessments provided.

One important issue in evaluating learning effectiveness is the distinction between students' perceptions and their actual performance. Students may perceive certain learning activities as useful, engaging, or supportive, but these positive perceptions do not necessarily indicate higher levels of academic performance. In OBE evaluation, this distinction is commonly reflected in the use of indirect and direct assessment. Direct assessment uses evidence of actual student performance, such as quizzes, examinations, projects, assignments, presentations, or rubric-based tasks, whereas indirect assessment captures students' perceptions, reflections, or self-evaluations regarding their learning experience and perceived achievement. These two forms of evidence provide different types of information and should therefore not automatically be expected to produce identical conclusions.

The relationship between perceived learning effectiveness and actual performance remains an important concern because student perceptions are frequently used in course evaluation and quality improvement. Research on self-assessment has shown that students' judgments about their own learning can be associated with academic performance, but the strength and accuracy of this relationship vary across contexts and measurement approaches (Yan et al., 2023). A recent study in Indonesian higher education comparing direct and indirect OBE assessment also found agreement for some learning outcomes but discrepancies for others, suggesting that perception-based evidence cannot simply replace actual performance data (Kristianto et al., 2026). This distinction is important for classroom and learning management because decisions

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about instructional methods, assessment practices, workload, learning support, and course improvement may be misleading if they rely only on students' positive evaluations without considering corresponding performance evidence.

Despite the growing literature on OBE, much of the existing research has focused on curriculum design, program-level learning outcomes, institutional implementation, assessment systems, or the development of digital systems for monitoring outcomes. At the course level, fewer studies have examined students' perceptions of specific learning activities alongside the academic performance generated by those activities. Studies comparing direct and indirect assessment also tend to aggregate learning outcomes at the program level rather than examine whether perceived effectiveness of individual learning activities corresponds with student performance in those same activities. This leaves an important gap in understanding whether students who perceive a learning activity as effective also demonstrate stronger academic performance in that activity.

This issue is particularly relevant in a Management Information Systems (MIS) course because the learning process typically combines conceptual understanding, case analysis, use of digital resources, collaborative activities, and application of knowledge to organizational settings. Such a course provides an appropriate context for examining both perceived learning effectiveness and actual student performance across different types of learning activities and assessments. In the present study, students' perceptions were examined across multiple dimensions of the learning process, while actual performance was obtained from individual assignments, group presentations, quizzes, the midterm examination, project-based learning, and final grades.

1.2 Research Objective and Research Questions

This study aims to examine perceived learning effectiveness and actual student performance in an Outcome-Based Education (OBE)-based Management Information Systems course. It integrates students' perceptions of learning support, instructional and assessment activities, actual academic performance, and open-ended feedback in order to provide a more comprehensive understanding of learning effectiveness and classroom improvement.

Specifically, the study addresses the following research questions:

- **RQ1.** How do students perceive learning support, instructional activities, assessment methods, and their learning outcomes in an OBE-based Management Information Systems course?
- **RQ2.** Do students' perceptions differ according to class schedule and employment status?
- **RQ3.** How do students perform across different academic assessment components?
- **RQ4.** To what extent do students' perceptions of learning effectiveness correspond with their actual academic performance?
- **RQ5.** What learning practices, constraints, and improvement needs are identified by students through open-ended feedback?

2. Literature Review

2.1 Outcome-Based Education

Outcome-Based Education (OBE) is an educational approach that places demonstrable learning outcomes at the center of curriculum design, instructional planning, and assessment (Rao, 2020;

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Syeed et al., 2022). Learning outcomes therefore need to be formulated in observable and measurable terms so that they can guide the selection of learning activities, assessment methods, and performance criteria.

In an OBE framework, instructional decisions are aligned with expected outcomes. Course content, classroom activities, assessment strategies, and quality assurance mechanisms are designed around the competencies that students are expected to demonstrate. OBE can therefore be viewed not only as an instructional approach but also as a management framework that connects planning, implementation, performance assessment, and continuous improvement (Almuhaideb & Saeed, 2020; Syeed et al., 2022).

The adoption of OBE also encourages a more student-centered learning environment. Students are expected to actively participate in learning activities, apply knowledge to relevant problems, communicate their understanding, and demonstrate achievement through different forms of assessment (Jadhav et al., 2020; Katawazai, 2021; Mahrishi et al., 2025; Yasmin & Yasmeen, 2021). This student-centered orientation is particularly important in higher education, where learning outcomes commonly include not only conceptual understanding but also problem solving, communication, collaboration, and the ability to apply knowledge in professional contexts.

At the program and course levels, OBE requires systematic alignment among learning outcomes, instructional activities, and assessment evidence. Learning outcomes are commonly structured hierarchically from program-level outcomes to course-level outcomes, which means that individual courses contribute to the development of broader graduate competencies (Kushari & Septiadi, 2022; Rao, 2020). Such alignment allows assessment results to be used not merely for assigning grades but also for identifying which outcomes have been achieved and which aspects of learning require improvement.

In information systems and computing education, OBE is especially relevant because student competence involves a combination of technical knowledge and broader professional abilities. Students are expected to understand information systems concepts while also developing analytical skills, problem-solving ability, communication, teamwork, and the capacity to apply knowledge to organizational problems (Almuhaideb & Saeed, 2020; Syeed et al., 2022). Therefore, OBE implementation in Management Information Systems education requires the integration of learning outcomes, classroom activities, assessment, technology support, and continuous evaluation of student performance.

2.2 Evaluation Methods in Outcome-Based Education

Evaluation is a central component of OBE because learning outcomes need to be supported by evidence showing whether students have actually achieved the expected competencies. Evaluation may be conducted at either the course or program level, but in both cases it requires a clear connection between expected outcomes and the assessment activities used to measure them (Ali, 2024; Amirtharaj et al., 2022; El Marsafawy et al., 2022). The resulting evidence can then be used for continuous improvement, including adjustments to course content, instructional strategies, assessment design, or supporting learning systems.

One important distinction in OBE evaluation is between direct and indirect assessment. Direct assessment is based on actual student performance demonstrated through quizzes, examinations, assignments, projects, presentations, portfolios, or other assessed activities. Indirect assessment, in contrast, captures students' perceptions, reflections, or self-evaluations

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regarding their learning experience and perceived achievement (Ali, 2024; El Marsafawy et al., 2022; Kristianto et al., 2026). These two forms of evidence do not measure exactly the same phenomenon and therefore may provide different conclusions about learning effectiveness.

Direct assessment provides objective evidence of what students are able to demonstrate under defined assessment conditions. Indirect assessment, however, provides information about how students perceive the usefulness of learning activities, the support they receive, and the extent to which they believe their competencies have developed. The distinction is important because positive perceptions of a learning activity do not necessarily indicate higher actual performance. Consequently, direct and indirect assessment are better interpreted as complementary rather than interchangeable sources of evidence.

OBE evaluation also involves both formative and summative assessment. Formative assessment is used during the learning process to provide feedback and support improvement, whereas summative assessment evaluates the level of achievement at the end of a learning period (Ali, 2024). Because different learning outcomes may represent different types of knowledge and skills, a single assessment method may not adequately capture conceptual understanding, practical application, communication, teamwork, and other competencies simultaneously (El Marsafawy et al., 2022; Gil-Jaurena et al., 2022). Therefore, assessment methods need to be matched to the specific nature of the intended learning outcomes.

Technology also contributes to OBE evaluation by enabling learning activities and performance data to be documented and monitored more systematically. Learning Management Systems and specialized information systems can link course outcomes with student activities, assessment results, and performance records. Such systems may support decision making by identifying outcomes that have not been achieved and by providing evidence for subsequent course improvement. However, digital systems alone do not guarantee effective evaluation. The quality of OBE evaluation still depends on appropriate outcome mapping, assessment design, performance indicators, and interpretation of evidence (Almuhaideb & Saeed, 2020; El Marsafawy et al., 2022; Kushari & Septiadi, 2022).

Previous comparisons of direct and indirect assessment have shown that both methods may produce similar conclusions for some outcomes but different conclusions for others. Kristianto et al. (2026), for example, reported agreement between direct and indirect assessment for several learning outcomes but also identified discrepancies in others. Such findings indicate that student perceptions should not automatically be treated as substitutes for actual performance evidence. Instead, combining both sources may provide a more comprehensive understanding of learning effectiveness.

2.3 Key Factors in Successful OBE Implementation

Successful OBE implementation first depends on the clarity of learning outcomes and the consistency of alignment among outcomes, learning activities, and assessment methods. Learning outcomes should be expressed in observable and measurable terms so that appropriate performance evidence can be identified. When assessment activities do not adequately correspond with the intended outcomes, the resulting information may provide a misleading picture of student achievement (Gil-Jaurena et al., 2022; Rao, 2020; Syeed et al., 2022).

Lecturer readiness and competence are also critical. OBE requires lecturers to move beyond content delivery toward the management of student learning activities and achievement. This shift involves designing measurable outcomes, organizing appropriate learning activities,

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developing suitable assessment methods, and interpreting performance evidence for improvement. Previous studies indicate that lecturers may report familiarity with OBE while still experiencing difficulties in developing measurable outcomes, aligning assessments, preparing learning materials, and applying student-centered learning strategies (Jadhav et al., 2020; Mufanti et al., 2024).

The learning environment represents another important factor. Class size, lecturer workload, physical facilities, digital infrastructure, learning technologies, and access to supporting resources may influence the implementation of learning activities and assessment (Katawazai, 2021; Yasmin & Yasmeen, 2021). LMS platforms and other digital systems may support communication, access to materials, assignment management, and performance monitoring, but their effectiveness depends on how well they are integrated into the overall learning process.

Institutional support and quality assurance are also important because OBE requires continuous use of assessment evidence for improvement. Leadership commitment, coordination among stakeholders, clear responsibility for outcome monitoring, documentation, and follow-up actions all contribute to sustainable implementation (Almuhaideb & Saeed, 2020; Mufanti et al., 2024). Evaluation should therefore not end with reporting student achievement. Instead, the results need to be translated into decisions regarding learning activities, assessment practices, learning support, and course management in subsequent periods.

2.4 Previous Studies on OBE Evaluation

Previous research on OBE evaluation has used a variety of approaches, including studies of lecturer readiness, student perceptions, learning outcome achievement, assessment systems, quality assurance mechanisms, and comparisons of direct and indirect assessment (Kristianto et al., 2026; Kushari & Septiadi, 2022; Mufanti et al., 2024). This diversity indicates that OBE evaluation extends beyond measuring final academic achievement and also includes the quality of implementation, assessment alignment, learning support, student experience, and the use of evaluation results for improvement.

However, the literature also reveals several limitations. A substantial proportion of previous studies has focused on program-level implementation, lecturer readiness, institutional quality assurance, or systems for measuring aggregated learning outcomes. Research comparing direct and indirect assessment has also tended to examine student learning outcomes at the program level rather than assess whether students' perceptions of specific learning activities correspond with their actual performance in those same activities.

Another limitation is that studies of OBE evaluation do not always integrate structured perception measures with qualitative student feedback. Students may provide positive ratings of learning activities while simultaneously experiencing difficulties related to workload, time availability, group participation, language, feedback, or access to learning resources. Combining quantitative perception measures with open-ended responses may therefore provide a more complete understanding of how learning activities are experienced and why perceived effectiveness may differ from actual performance.

The present study addresses these gaps at the course level in a Management Information Systems context. It integrates three forms of evidence: students' perceptions of learning support and instructional activities, actual academic performance across multiple assessment components, and open-ended feedback concerning learning practices and constraints.

More specifically, the study focuses on the relationship between perception-based and

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performance-based evidence across corresponding learning activities, including quizzes, video-based assignments, group presentations, the midterm examination, project-based learning, and overall academic achievement.

3. Research Method

3.1 Research Design, Setting, and Participants

This study employed an evaluative quantitative design complemented by qualitative analysis of students' open-ended responses. The study was conducted in a Management Information Systems course in the Information Systems Study Program at a private university in Samarinda, Indonesia, during the second semester of the 2025/2026 academic year. Data were collected throughout the semester until July 2026.

The study population comprised 67 students officially enrolled in the Management Information Systems course during the second semester of the 2025/2026 academic year: 44 students in the morning class and 23 in the evening class. This course-specific population was identified from the official course enrollment records and should not be interpreted as representing the entire student population of the Information Systems Study Program. The researchers initially adopted a total sampling approach by considering all 67 enrolled students for participation. However, four students attended fewer than 50% of the 16 scheduled class meetings and were excluded from the academic performance analysis, leaving 63 students who met the attendance eligibility criterion.

Among these 63 eligible students, 59 completed the Project-Based Learning assignment conducted as part of the final course assessment, while four students did not complete the project. Of the 59 students who completed the Project-Based Learning assignment, 53 also completed the perception questionnaire, whereas six did not provide questionnaire responses.

Consequently, the study employed different analytical sample sizes according to the availability of valid data for each assessment component. Academic performance analyses included 63 eligible students with complete records for the assessment components, while Project-Based Learning performance was analyzed for 59 students who submitted the final project assignment and received rubric-based assessment scores. Perceived learning effectiveness was assessed using 53 valid questionnaire responses. Analyses examining the relationship between perceived learning effectiveness and actual academic performance were restricted to students with matched and valid data for the corresponding variables.

The students represented different study and employment contexts. Some students attended morning classes, while others attended evening classes. In addition, the sample included students who were employed, either part-time or through self-employment, as well as students who were not employed. These characteristics were used as contextual grouping variables to examine whether perceptions of learning effectiveness differed across class schedule and employment status.

The perception questionnaire was administered toward the end of the semester after students had experienced the major learning activities and assessment components, but before final grades were announced. This timing was intended to reduce the possibility that students' responses would be directly influenced by knowledge of their final course grades. Academic performance data were obtained from assignments, quizzes, the midterm examination, project-based learning, and the final course grade. Attendance served as an eligibility criterion for the academic performance analysis, and students were required to attend at least 50% of the 16

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scheduled class meetings. Attendance was not treated as an independent research variable.

3.2 OBE-Based Learning and Assessment Implementation

The course was designed according to an Outcome-Based Education framework by aligning learning activities and assessment components with the Course Learning Outcomes and Sub-Course Learning Outcomes stated in the semester learning plan. Learning activities combined classroom interaction, technology-supported learning, formative assessment, collaborative learning, individual assessment, and project-based application.

The Learning Management System was prepared before the course began and provided students with the course contract, semester learning plan, presentation materials, assignments, learning guidelines, assessment information, and grading feedback. Classroom meetings combined lectures, question-and-answer sessions, and case discussions. The lecturer did not merely repeat presentation materials available in the LMS but used classroom time to clarify concepts, discuss examples, and relate course content to relevant organizational cases.

Quizzes were conducted online during class sessions as formative assessment activities. A total of ten quizzes were administered using Wayground. The questions were linked to Sub-Course Learning Outcomes and were based on LMS materials, video-analysis assignments, and classroom discussions. Anti-cheating features available on the platform were activated during quiz administration.

Students also completed ten individual video-analysis assignments. Each activity required students not only to watch the assigned video but also to analyze its content, compare it with the main reference chapters listed in the semester learning plan, and explain its relationship with course concepts. These activities were intended to strengthen analytical understanding and the ability to connect visual materials with theoretical references.

Collaborative learning was implemented through four group discussions and presentations based on case studies related to the Sub-Course Learning Outcomes. Students worked in groups to analyze cases, formulate their responses, and present the results in class. Performance was assessed using rubrics that had been communicated to students in advance.

The midterm examination was conducted individually using case-based questions. Students completed the examination in writing without access to laptops, mobile devices, the internet, or generative artificial intelligence tools. Assessment criteria were communicated through a scoring rubric prior to the examination.

The final assessment was implemented through Project-Based Learning. Students conducted field-based observations in legally established organizations and examined aspects such as data and information flows, technologies used, business processes, information requirements, network systems, decision-support systems, organizational information systems, and the use of artificial intelligence. Project reports were prepared gradually using predetermined guidelines, templates, and assessment rubrics.

Overall, the course combined multiple learning and assessment activities to capture different aspects of student learning and performance rather than relying on a single assessment method.

3.3 Data Collection and Measurement

3.3.1 Perceived Learning Effectiveness

Perceived learning effectiveness was measured through an indirect assessment questionnaire

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using a five-point Likert scale. Higher scores represented more positive perceptions of the learning process. The questionnaire covered 11 dimensions: LMS Support, Perceived Course Learning Outcome Achievement, Quizzes, Video Analysis, Classroom Discussion, Group Discussion and Presentation, Midterm Examination, Project-Based Learning, Perceived Skill Achievement, Learning Facilities, and Learning Time Adequacy.

To enhance the transparency of instrument operationalization, Table 1 presents the operational indicators and number of questionnaire items for each of the 11 dimensions of perceived learning effectiveness. The instrument comprised 67 Likert-scale items, with the dimensional structure corresponding to that used in the statistical analysis.

Table 1. Operational Indicators of Perceived Learning Effectiveness Dimensions

Dimension	Operational indicators	Number of items
LMS Support	Access to learning materials, course plans, assignment guidelines, assessment information, and learning resources	7
Perceived Course Learning Outcome Achievement	Perceived understanding and achievement of CPMK and Sub-CPMK	9
Quizzes	Support for conceptual understanding, knowledge recall, and formative evaluation	6
Video Analysis	Ability to connect audiovisual materials, course concepts, and reference materials	7
Classroom Discussion	Lecturer–student interaction, question-and-answer activities, and case-based conceptual understanding	6
Group Discussion and Presentation	Collaborative case analysis, exchange of ideas, and presentation activities	4
Midterm Examination	Relevance of case-based examinations, conceptual understanding, and application of knowledge	4
Project-Based Learning	Application of MIS concepts to actual organizational conditions and field-based analysis	6
Perceived Skill Achievement	Perceived analytical, application, understanding, and communication skills	5
Learning Facilities	Availability and adequacy of physical and technological learning facilities	6
Learning Time Adequacy	Adequacy of time for classes, independent study, and completing learning assignments	7
	Total	67

Source: *Authors' analysis, 2026*

3.3.2 Actual Student Performance

We measured actual student performance using academic scores from course assessment records. The performance components included individual video-analysis assignments, group discussion and presentation, quizzes, the midterm examination, Project-Based Learning, and the final course grade.

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To examine correspondence between perceived learning effectiveness and actual performance, selected perception dimensions were paired with the corresponding academic performance indicators. Perceptions of Video Analysis were compared with Video Analysis assignment scores; perceptions of Quizzes with quiz scores; perceptions of Group Discussion and Presentation with group discussion and presentation scores; perceptions of the Midterm Examination with midterm scores; and perceptions of Project-Based Learning with project scores.

Perceived Course Learning Outcome Achievement and Perceived Skill Achievement were compared with the final course grade as an overall academic performance indicator. The final grade was treated as a composite measure of overall course performance rather than as a direct measure of one specific learning outcome or skill.

3.4 Instrument Testing and Data Analysis

Internal consistency of the perception instrument was examined using Corrected Item–Total Correlation, while the reliability of each dimension was evaluated using Cronbach's Alpha. Composite scores for each dimension were calculated as the average of retained items to keep the scores on the original one-to-five scale.

Data analysis was conducted using IBM SPSS Statistics version 23. Descriptive statistics were used to summarize students' perceptions and actual academic performance. The Shapiro–Wilk test was used to examine the distribution of perception scores.

Because most perception dimensions did not meet normality assumptions, the Mann–Whitney U test was used to compare perceptions between morning and evening classes and between employed and non-employed students. Spearman's rank correlation was used to examine the correspondence between perceived learning effectiveness and actual student performance. The level of statistical significance was set at $\alpha = 0.05$. The analytical sample size varied according to the assessment component and the availability of valid observations. Academic performance analyses included 63 students who met the attendance eligibility criterion, except for Project-Based Learning, which included 59 students who submitted the final project assignment and received rubric-based assessment scores. Perception-based analyses were conducted using 53 valid questionnaire responses. Spearman's rank correlation analyses were based on matched observations with valid data for both the perception dimension and its corresponding academic performance measure.

Open-ended responses were analyzed using simple thematic coding. Responses with similar meanings were grouped into common categories and themes, after which the frequency of each theme was calculated. Responses unrelated to the substantive question were excluded from the thematic count. The qualitative findings provided contextual explanations for the quantitative results rather than serving as a separate qualitative study.

4. Findings and Discussions

This section presents and discusses the empirical findings of the study in relation to the research objectives and the literature reviewed in the previous sections. The analysis begins with the characteristics of the respondents and students' actual academic performance, followed by the evaluation of perceived learning effectiveness, group differences based on class schedule and employment status, and the relationship between perceived learning effectiveness and actual student performance. The section also incorporates students' open-ended feedback to provide contextual explanations for the quantitative findings and concludes with a synthesis of the main

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results and their managerial implications for classroom learning and continuous improvement in an OBE-based Management Information Systems course.

4.1 Respondent Characteristics

The study involved students enrolled in two parallel Management Information Systems classes. Of the 67 registered students, 53 completed the perception questionnaire and were included in the perceived learning effectiveness analysis. Based on class schedule, 36 students (67.9%) attended the morning class and 17 students (32.1%) attended the evening class.

By employment status, 28 students were employed, including those working part-time or running their own business, while 21 were not employed. Four students could not be clearly classified and were therefore excluded from the comparison based on employment status. Consequently, the employment-status comparison involved 49 respondents.

The presence of both morning and evening students, as well as employed and non-employed students, provided a useful contextual basis for examining whether perceived learning effectiveness varied across different student conditions. However, these characteristics were treated as contextual grouping variables rather than as the main explanatory factors in the study.

4.2 Actual Student Performance

Actual student performance was represented by scores obtained from several assessment components administered throughout the semester. These included individual video-analysis assignments, group discussion and presentation, quizzes, the midterm examination, Project-Based Learning, and the final course grade.

Table 2. Descriptive Statistics of Actual Student Performance

Assessment Component	N	Minimum	Maximum	Mean	Standard Deviation (SD)
Individual Assignment/Video Analysis	63	62.00	78.20	72.38	3.98
Group Discussion and Presentation	63	23.00	87.80	64.50	15.91
Quizzes	63	10.00	100.00	67.73	26.03
Midterm Examination	63	30.00	95.00	74.06	9.82
Project-Based Learning	59	10.00	86.00	76.25	12.86
Final Grade	63	34.50	89.40	71.24	13.73

Source: *Authors' analysis, 2026*

Note. N represents the number of valid observations for each academic assessment component. The analyses included 63 students who met the minimum attendance criterion, except for Project-Based Learning, which included 59 students who submitted the final project assignment and received rubric-based assessment scores. We conducted perception-based analyses separately using 53 valid questionnaire responses.

Project-Based Learning had the highest mean performance (Mean = 76.25), followed by the midterm examination (Mean = 74.06) and individual video-analysis assignments (Mean = 72.38). The lowest mean was observed in Group Discussion and Presentation (Mean = 64.50),

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followed by Quizzes (Mean = 67.73).

The dispersion of scores also differed substantially across assessment types. Quizzes showed the largest variability (SD = 26.03), followed by Group Discussion and Presentation (SD = 15.91), while Video Analysis showed the smallest variability (SD = 3.98). This pattern suggests that student performance was not uniform across assessment formats. Different assessment activities appear to capture different dimensions of learning performance, ranging from individual conceptual understanding to collaborative work and practical application.

From an OBE perspective, this variation is expected because a single assessment method is unlikely to capture conceptual understanding, communication, collaboration, analytical ability, and practical application equally well. The relatively high mean for Project-Based Learning may reflect the opportunity for students to apply Management Information Systems concepts to actual organizational contexts, while the larger variability in quizzes and group presentations may indicate greater differences in individual preparation and group participation.

The final grade had a mean of 71.24 (SD = 13.73), with scores ranging from 34.50 to 89.40. Because the final grade was a weighted aggregate of several course assessments, it was treated as an indicator of overall academic performance rather than as a direct measure of any single learning outcome.

4.3 Perceived Learning Effectiveness

Perceived learning effectiveness was assessed through 11 questionnaire dimensions covering learning support, instructional activities, assessment practices, perceived learning outcomes, learning facilities, and time adequacy.

4.3.1 Internal Consistency and Reliability

The internal consistency of the questionnaire was examined using Corrected Item–Total Correlation (CITC), while reliability was assessed using Cronbach's Alpha.

Table 3. Internal Consistency and Reliability of Perceived Learning Effectiveness Dimensions

Dimension	Items	CITC Range	Cronbach's Alpha
LMS Support	7	0.396–0.759	0.849
Perceived Course Learning Outcome Achievement	9	0.481–0.748	0.870
Quizzes	6	0.710–0.827	0.912
Video Analysis	7	0.636–0.895	0.953
Classroom Discussion	6	0.538–0.856	0.903
Group Discussion and Presentation	4	0.727–0.831	0.906
Midterm Examination	4	0.763–0.868	0.928
Project-Based Learning	6	0.736–0.851	0.937
Perceived Skill Achievement	5	0.709–0.857	0.904
Learning Facilities	6	0.529–0.781	0.873
Learning Time Adequacy	7	0.292–0.735	0.784

Source: Authors' analysis, 2026

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Overall, all dimensions demonstrated acceptable to very high reliability, with Cronbach's Alpha ranging from 0.784 to 0.953. Video Analysis showed the highest reliability, while Learning Time Adequacy showed the lowest, although still acceptable.

One item in the Learning Time Adequacy dimension had a CITC value of 0.292, slightly below the commonly used practical threshold of 0.30. The item was retained because it represented an important aspect of time adequacy and its removal produced only a limited increase in Cronbach's Alpha. This decision preserved the substantive coverage of the dimension without materially weakening reliability.

4.3.2 Descriptive Results of Perceived Learning Effectiveness

All perception dimensions obtained mean scores above 4.00 on the five-point scale, indicating generally positive evaluations of the learning process.

Table 4. Descriptive Statistics of Perceived Learning Effectiveness

Dimension	N	Minimum	Maximum	Mean	Standard Deviation (SD)
LMS Support	53	3.00	5.00	4.45	0.51
Perceived Course Learning Outcome Achievement	53	3.11	5.00	4.35	0.51
Quizzes	53	2.33	5.00	4.39	0.65
Video Analysis	53	1.29	5.00	4.15	0.78
Classroom Discussion	53	2.50	5.00	4.37	0.60
Group Discussion and Presentation	53	2.75	5.00	4.31	0.63
Midterm Examination	53	3.00	5.00	4.50	0.59
Project-Based Learning	53	3.00	5.00	4.44	0.59
Perceived Skill Achievement	53	2.60	5.00	4.20	0.66
Learning Facilities	53	3.00	5.00	4.21	0.60
Learning Time Adequacy	53	2.00	5.00	4.02	0.67

Source: *Authors' analysis, 2026*

The highest mean was found for the Midterm Examination (Mean = 4.50), followed by LMS Support (Mean = 4.45) and Project-Based Learning (Mean = 4.44). These results suggest that students rated both structured individual assessment and LMS learning support positively, while also valuing project-based activities that connected course concepts to real organizational contexts.

Classroom Discussion also received a relatively high mean score (Mean = 4.37), indicating that lecturer explanations, question-and-answer interaction, and case discussions were viewed positively. Group Discussion and Presentation obtained a mean of 4.31, suggesting that collaborative activities were also generally perceived as useful.

Perceived Course Learning Outcome Achievement reached a mean of 4.35, while Perceived Skill Achievement reached 4.20. These findings indicate that students generally felt that the course supported both achievement of expected learning outcomes and development of relevant skills. However, these scores represent perceived achievement and should not be interpreted as

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direct evidence of actual academic performance.

Learning Time Adequacy had the lowest mean score among the 11 dimensions (Mean = 4.02), although it remained within the positive range. Scores ranged from 2.00 to 5.00, indicating that while most students perceived the available learning time as adequate, some students experienced substantially greater time constraints. This finding suggests that time availability was a relatively more challenging aspect of the learning process compared with other dimensions.

Video Analysis also showed a comparatively lower mean (Mean = 4.15) and the greatest variability among the perception dimensions. Together, these findings suggest that activities requiring additional independent effort may generate more heterogeneous student experiences, particularly in relation to available time and the effort required to complete the learning tasks.

4.4 Differences in Perceived Learning Effectiveness by Class Schedule and Employment Status

Because most perception dimensions were not normally distributed, differences between groups were examined using the Mann–Whitney U test. Comparisons were conducted between morning and evening classes and between employed and non-employed students.

Table 5. Differences in Perceived Learning Effectiveness by Class Schedule and Employment Status

Dimension	**Morning vs Evening (*p*)**	**Employed vs Non-employed (*p*)**	**Interpretation**
LMS Support	0.356	0.420	Not significant
Perceived Course Learning Outcome Achievement	0.276	0.490	Not significant
Quizzes	0.445	0.821	Not significant
Video Analysis	0.708	0.521	Not significant
Classroom Discussion	0.736	0.105	Not significant
Group Discussion and Presentation	0.527	0.737	Not significant
Midterm Examination	0.937	0.686	Not significant
Project-Based Learning	0.170	0.288	Not significant
Perceived Skill Achievement	0.248	0.253	Not significant
Learning Facilities	0.707	0.870	Not significant
Learning Time Adequacy	0.040	0.378	Difference by class only at conventional α

Source: Authors' analysis, 2026

Ten of the 11 dimensions showed no significant differences between morning and evening classes. The only conventional-level difference occurred for Learning Time Adequacy ($p = 0.040$), with students in the morning class reporting higher perceived adequacy of learning time.

However, because 11 simultaneous comparisons were conducted, a conservative Bonferroni-adjusted threshold would be approximately 0.0045. Under this threshold, the difference in Learning Time Adequacy would no longer be considered statistically significant. Accordingly,

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this finding should be interpreted as exploratory rather than conclusive.

No significant differences were found between employed and non-employed students across any of the 11 dimensions. This indicates that employment status alone did not systematically differentiate students' perceptions of the course. The result also suggests that differences in perceived time adequacy may depend on more complex factors such as work flexibility, daily workload, other responsibilities, and individual time-management strategies rather than simply whether a student is employed.

From a classroom management perspective, the overall similarity across groups is important. It suggests that the learning design, LMS support, assessment structure, and instructional activities were perceived relatively consistently across different student contexts. At the same time, the indication concerning time adequacy highlights the need for lecturers to remain attentive to workload and scheduling, particularly for students attending evening classes.

4.5 Relationship Between Perceived Learning Effectiveness and Actual Student Performance

The central analysis examined whether students who perceived learning activities more positively also demonstrated stronger actual performance in the corresponding activities.

Table 6. Correlation Between Perceived Learning Effectiveness and Actual Student Performance

Perceived Learning Effectiveness	**Actual Performance**	**N**	**Spearman's *ρ***	***p***	**Interpretation**
Video Analysis	Video Analysis Assignment Score	53	-0.017	0.905	Not significant
Group Discussion and Presentation	Group Discussion/ Presentation Score	53	-0.013	0.924	Not significant
Quizzes	Quiz Score	53	0.079	0.574	Not significant
Midterm Examination	Midterm Score	53	-0.035	0.802	Not significant
Project-Based Learning	Project Score	53	0.019	0.892	Not significant
Perceived Course Learning Outcome Achievement	Final Grade	53	0.052	0.714	Not significant
Perceived Skill Achievement	Final Grade	53	-0.094	0.501	Not significant

Source: Authors' analysis, 2026

All correlations were very weak and statistically non-significant, with absolute Spearman coefficients ranging only from 0.013 to 0.094.

The results indicate that students who rated particular learning activities more positively did not necessarily obtain higher academic scores in those same activities. This pattern appeared consistently across Video Analysis, Group Discussion and Presentation, Quizzes, the Midterm Examination, and Project-Based Learning. Similarly, perceived achievement of course learning outcomes and perceived skill development showed virtually no association with the final grade.

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This finding represents the most important result of the study. Students' evaluations of learning activities were generally very positive, while actual academic performance displayed much greater variation. The two forms of evidence therefore appear to capture different aspects of learning effectiveness.

Perceived learning effectiveness reflects how students experience learning activities, including usefulness, support, engagement, clarity, and perceived development. Actual performance, in contrast, reflects what students are able to demonstrate under specific assessment conditions. A positive learning experience may therefore coexist with moderate or even low academic performance.

The result is consistent with the distinction between indirect and direct assessment in OBE. Perception-based measures should not be treated as substitutes for performance evidence. Instead, both forms of information provide complementary perspectives. For course management, this distinction is particularly important because relying only on positive student perceptions could lead to an overly optimistic evaluation of learning effectiveness, while relying only on grades would provide limited insight into how students experienced the learning process.

4.6 Open-Ended Student Feedback on Learning Management

Five open-ended questions were used to provide contextual information concerning helpful learning methods, difficult or less effective activities, supporting factors, inhibiting factors, and suggestions for improvement.

The thematic analysis identified several recurring themes. Lecturer explanations and classroom interaction were among the most frequently mentioned supporting elements. Students particularly valued clear explanations, question-and-answer interaction, examples, and direct discussion of cases. Classroom discussion or lecturer explanation was mentioned by 25 students as especially helpful, while lecturer support was also identified by 25 students as an important factor supporting achievement.

Quizzes were mentioned by 14 students as helpful for understanding and reviewing course material, although seven students also described quizzes as challenging. This pattern indicates that activities perceived as useful are not necessarily experienced as easy. Students may recognize the learning value of an activity while simultaneously experiencing difficulty in completing it.

Project-based and case-based learning were also regarded positively because they allowed students to connect Management Information Systems concepts with organizational practice. This supports the relatively high perception score obtained by Project-Based Learning in the quantitative analysis.

At the same time, students identified several constraints. Time limitations and competing activities were recurring concerns. Video Analysis was perceived as useful by many students but was also associated with difficulties related to language and the time required to analyze the material and compare it with reference sources. Group Discussion and Presentation were generally evaluated positively, yet unequal participation among group members emerged as an important challenge.

Overall, students did not indicate a need for fundamental changes to the course design. Instead, their suggestions emphasized improvements in implementation, including stronger lecturer–

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student interaction, more practical cases, more consistent feedback, better workload and time management, and greater individual accountability in group assignments. These qualitative findings help explain why positive overall perceptions can coexist with heterogeneous performance across students.

4.7 Synthesis of Findings and Managerial Implications for Classroom Learning

Taken together, the findings show that the OBE-based Management Information Systems course was perceived positively across all dimensions of learning effectiveness, yet actual student performance showed substantial variation across assessment components. In particular, quizzes and group-based assessments displayed relatively wide differences in performance, whereas perceptions of the corresponding learning activities remained generally positive.

The absence of meaningful correlations between perceived learning effectiveness and actual performance has an important managerial implication: student perceptions and academic scores should not be treated as interchangeable indicators of course effectiveness. Classroom learning should instead be managed using multiple forms of evidence.

First, perception data are useful for identifying how students experience learning support, teaching methods, assessment activities, workload, and classroom interaction. Second, actual performance data provide evidence of what students are able to demonstrate academically. Third, open-ended feedback provides contextual information that helps explain why particular learning activities are experienced as useful or challenging.

For classroom management, several practical implications emerge. LMS support should be maintained as a structured source of course information, learning materials, assessment guidance, and feedback. Project-based and case-based activities should also be retained because students perceive them as valuable for connecting course concepts with actual organizational contexts.

However, group-based learning requires stronger mechanisms for individual accountability because unequal contribution was identified as a recurring concern. Feedback on assignments and assessments should also be provided consistently so that students can better understand the relationship between their perceived progress and actual performance.

Time and workload management deserve particular attention. Although the statistical comparison did not provide strong evidence of systematic group differences after adjustment for multiple testing, time adequacy received the lowest perception mean and emerged repeatedly in open-ended responses. Therefore, assignment workload, deadlines, and the expected duration of learning activities should be considered explicitly in course planning.

Finally, the findings support the use of direct assessment, indirect assessment, and qualitative feedback as complementary sources for continuous improvement. Academic scores alone cannot explain students' learning experiences, while positive perceptions alone cannot establish that students have achieved stronger performance. Integrating these sources provides a more balanced basis for managing classroom learning and improving OBE implementation.

5. Conclusion

This study examined perceived learning effectiveness and actual student performance in an Outcome-Based Education (OBE)-based Management Information Systems course by integrating perception-based evidence, actual academic performance, and students' open-ended feedback. Overall, students reported positive perceptions of the learning process across all

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measured dimensions. The highest ratings were found for the midterm examination, LMS support, and Project-Based Learning, while Learning Time Adequacy received the lowest mean, although it remained within the positive range. Actual academic performance, however, showed greater variation across assessment components, with the highest mean achieved in Project-Based Learning and the lowest in Group Discussion and Presentation.

The most important finding is that perceived learning effectiveness was not significantly associated with actual student performance. All correlations between perception-based measures and the corresponding academic performance indicators were very weak and statistically non-significant. This pattern was found across Video Analysis, Group Discussion and Presentation, Quizzes, the Midterm Examination, and Project-Based Learning, as well as between perceived course learning outcome achievement, perceived skill achievement, and the final course grade. These results indicate that positive student perceptions do not necessarily correspond with higher academic performance. Perception-based evidence and performance-based evidence therefore capture different aspects of learning effectiveness and should be treated as complementary rather than interchangeable indicators.

The findings also show that students' perceptions were generally consistent across class schedules and employment status. Most dimensions did not differ significantly between morning and evening classes or between employed and non-employed students. Learning Time Adequacy showed a difference between morning and evening classes at the conventional significance level, but this result did not remain significant after adjustment for multiple comparisons and should therefore be interpreted cautiously. Open-ended feedback further indicated that lecturer explanations, classroom interaction, case-based learning, quizzes, and applied learning activities supported students' learning experiences, while limited time, difficulties in completing video-analysis tasks, and unequal contribution in group work remained notable challenges.

From a course management perspective, these findings suggest that OBE-based classroom evaluation should incorporate multiple sources of evidence. Student perceptions are valuable for understanding the quality of learning experiences and instructional support, whereas academic performance provides direct evidence of what students are able to demonstrate. Open-ended feedback adds contextual information that helps explain both positive experiences and learning constraints. Integrating these sources can provide a more balanced basis for continuous improvement in instructional activities, assessment design, workload management, feedback practices, and student participation.

This study has several limitations. It was conducted in a single Management Information Systems course with a relatively small number of students, limiting the generalizability of the findings. In addition, the final grade was used as an overall performance indicator and was not intended to represent achievement of a single specific course learning outcome or skill. Future studies should involve larger samples, multiple courses or institutions, and more explicit mapping between individual assessment components and specific Course Learning Outcomes or Sub-Course Learning Outcomes. Such designs would allow a more precise examination of the relationship between perceived learning effectiveness and actual outcome achievement.

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