

Factorial Components Affecting Students' Perceived Learning Outcomes and Satisfaction in Principles of Marketing Course: Implications for ASEAN Qualifications

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Abstract

This study aimed to examine the levels of personal factors related to teaching and learning in the Principles of Marketing course and to analyze the key components influencing students' perceived learning outcomes and satisfaction. A quantitative research design was employed, using a questionnaire as the primary data collection instrument. Convenience sampling was applied to select 400 undergraduate students enrolled in the Principles of Marketing course. The data were analyzed using descriptive statistics and Exploratory Factor Analysis (EFA), with Principal Component Analysis and Varimax rotation. The results of the data suitability test showed that the KMO value was .907 and Bartlett's Test was statistically significant, indicating the appropriateness of the dataset for factor analysis. The analysis extracted eight principal components: (1) teaching quality and learning environment; (2) motivation and learning skills; (3) support and prior knowledge; (4) learning outcomes and satisfaction; (5) assessment system; (6) active learning behaviors; (7) content quality and relevance; and (8) instructional media and educational technology. The findings highlight that successful learning in the Principles of Marketing course does not stem from a single factor but results from an interplay among teacher-related, learner-related, content-related, environmental, and technological dimensions. Among these, teaching quality and the learning environment emerged as the most influential components. The study provides valuable insights for enhancing instructional practices and strengthening course quality assurance in higher education.

Keywords: Principles of Marketing, Factor Analysis, Perceived Learning Outcomes, Learning Satisfaction, Learning Motivation, Teaching Quality, Educational Technology

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Introduction

The establishment of the ASEAN Economic Community (AEC) in 2015 has generated significant structural changes in the regional economy, particularly by promoting the free flow of skilled labor (ASEAN Secretariat, 2015; Kuroiwa, 2021). This development has led to the creation of a larger and more competitive labor market (Corong & Aguiar, 2019). In this context, marketing education plays a critical role in developing human resources with the competencies needed to drive business at the regional level. Consequently, graduate production can no longer focus solely on the demands of the domestic labor market; instead, it must take into account international standards and global recognition to support labor mobility and enhance the comparability and quality of education across countries (Bernardo, 2018; Jaweng, 2025).

ASEAN member states have jointly developed the ASEAN Qualifications Reference Framework (AQRF) as a regional mechanism emphasizing the assessment of learning outcomes. Thailand completed the referencing of its National Qualifications Framework (NQF) to the AQRF on January 31, 2020 (Office of the Education Council Secretariat, 2020). This achievement reflects the Thai government's strong commitment to improving the quality of national education in alignment with international standards and regional development directions. Critically, the AQRF is fundamentally structured around the assessment of learning outcomes across eight competency levels, emphasizing what learners are expected to know, understand, and be able to do upon completion of their studies (ASEAN Secretariat, 2015; Office of the Education Council Secretariat, 2020). This outcome-based orientation implies that the quality of higher education can no longer be evaluated solely through traditional metrics such as examination scores, but must also encompass learners' subjective perceptions of what they have gained — making Perceived Learning Outcomes (PLO) a directly relevant indicator for assessing alignment with AQRF standards.

Despite clear policy structures and qualification frameworks, curriculum development in practice continues to face substantial challenges. Carter (2016). This misalignment between curriculum design and regional standards is likely to affect not only graduates' labor market readiness, but also students' satisfaction with their learning experience — particularly when they perceive a disconnect between what is taught and what the regional economy demands (Choi & Lee, 2024)—critically observed that marketing curriculum development in Thailand tends to remain anchored in a nationalistic perspective and lacks concrete integration with the ASEAN Economic Community context. Such limitations raise important questions regarding students' readiness and their perceived value of the learning outcomes they acquire. Accordingly, this study aims to investigate the factors influencing students' decisions to study marketing, as well as their perceptions of learning outcomes and satisfaction with the Principles of Marketing course. The findings are intended to inform pedagogical reform and curriculum development that transcend existing limitations and better prepare students for opportunities and challenges in the ASEAN labor market.

In the context of business education, marketing is a fundamental discipline. The Principles of Marketing course is one of the core foundational subjects that students in business and management programs must understand, as it serves as a key mechanism for analyzing market needs and developing proactive strategic planning (Hair et al., 2019). Therefore, students enrolled in this course constitute an important target group for this research, as marketing knowledge is essential to effective management and customer value creation. However, teaching and learning

at the higher education level often face challenges arising from learner diversity, particularly students from different educational backgrounds (arts–languages and science–mathematics streams). Moreover, the majority of students—approximately 89.5% according to survey data—lack direct work or internship experience in marketing. These differences contribute to substantial variability in students’ perceptions of learning outcomes and satisfaction with the course (Choi & Lee, 2024).

In recent years, numerous studies have focused on identifying factors influencing academic achievement and students’ perceptions (Zhao & Zhang, 2022). The findings often indicate complex interrelationships among variables. In line with this, the present study examines multiple components, including Learning Motivation (LM), Learning Skills (LS), Learning Behavior (LB), Prior Knowledge (PK), and Support Systems (SS), which represent key internal factors contributing to active learning (Choi & Lee, 2024). At the same time, external factors such as content quality, Media and Technology (MT), Assessment Systems (AS), teaching quality, and the Learning Environment (LE) directly influence students’ perceptions (Sutthichai, 2023).

As established by the AQRF and Thailand’s aligned NQF, the benchmark for educational quality in the ASEAN context is anchored in demonstrable learning outcomes rather than procedural compliance alone (ASEAN Secretariat, 2015; Office of the Education Council Secretariat, 2020). Learning success, therefore, cannot be explained solely by quantitative indicators such as examination scores or academic achievement. Learning success, therefore, cannot be explained solely by quantitative indicators such as examination scores or academic achievement. Increasing emphasis is now placed on Perceived Learning Outcomes (PLO) and Learning Satisfaction (SAT), which reflect learners’ positive attitudes toward learning and the quality of instruction they receive (Kriengsak, 2022). The factors influencing these outcome variables are complex and multidimensional, encompassing both internal behavioral factors (e.g., motivation, skills, learning behaviors, and prior knowledge) and external environmental factors (e.g., content quality, instructional effectiveness, media and technology, and instructor support). Most previous studies have examined these relationships in isolation, leaving a gap in structural analyses that can systematically group and clarify the interrelationships among these complex factors (Smith & Jones, 2021).

To address this gap, the present study employs EFA, a statistical technique well-suited to organizing a large number of observed variables into theoretically meaningful latent constructs (Zhao & Zhang, 2022). The identification of eight significant underlying components, such as teaching quality, learning environment, instructional media, and technology, confirms that learning is not driven by any single factor, but rather by clusters of interrelated influences. Understanding this underlying factor structure enables the systematic identification of instructional dimensions that should be strategically improved in order to maximize their impact on students’ perceived learning outcomes and learning satisfaction (Bandura, 2020).

Objective

To analyze the principal components of factors associated with the teaching and learning processes in the Principles of Marketing course among undergraduate students.

Literature Review

This study aims to identify the underlying factor structure that influences students' learning outcomes and learning satisfaction. To achieve this objective, a comprehensive conceptual framework is required—one that integrates internal learner-related factors, external environmental factors, and key outcome variables, as described below.

Social Cognitive Theory

The primary theoretical framework used to explain the interaction among the variables in this study is Social Cognitive Theory, proposed by Bandura (2020). This theory posits that learning is not merely a passive response to external stimuli; rather, it is a dynamic process resulting from reciprocal interactions among three core components, referred to as Triadic Reciprocal Causation, namely:

Personal Factors: These include learners' beliefs, motivation, abilities, and internal skills. In the context of this study, personal factors are represented by variables such as MS, LM, LS, and PK.

Behavior: This component refers to learners' actions and response patterns, such as LB.

Environmental Factors: These encompass the physical and social environments that influence learners. In this study, environmental factors correspond to external variables such as instructional and content quality, MT, AS, LE, and SS.

Social Cognitive Theory provides a meaningful theoretical structure for categorizing the observed variables subjected to EFA. It emphasizes that learning outcomes and student satisfaction do not arise from a single factor but rather from the systematic interaction of multiple dimensions.

Higher Education Service Quality Model

Higher education is increasingly conceptualized as a form of service in which students are regarded as service recipients. Accordingly, the Higher Education Service Quality Model (Sutthichai, 2023) serves as an important framework for explaining external factors influencing student satisfaction. This model classifies the quality of the learning experience into two primary dimensions:

Technical Quality: Refers to what is taught—the core academic content of the course. This dimension is associated with the accuracy, relevance, and currency of course content, as well as the appropriateness of the AS.

Functional Quality: Refers to how the service is delivered, encompassing the instructional process itself. This dimension includes teaching quality, the use of Media and MT, SS, and LE. Perceived service quality in these dimensions is directly associated with Learning Satisfaction (SAT), as high-quality educational services are more likely to generate positive learning experiences that meet or exceed students' expectations.

Perceived Learning Outcomes and Learning Satisfaction

This study adopts outcome variables that emphasize qualitative dimensions beyond mere academic performance or numerical achievement.

PLO: According to Kriengsak (2022), PLO reflects students' subjective evaluations of the extent to which they have gained knowledge, understanding, or skills from a particular course. It serves as an important indicator of learning success, particularly regarding learners' sense of ownership and self-efficacy in the learning process.

SAT: As defined by Choi and Lee (2024), learning satisfaction represents an overall positive attitude formed through the comparison between students' expectations of the Principles of Marketing course and their actual learning experiences. The identified factor components function as key drivers of satisfaction. When these components—such as teaching quality or media and technology—meet or exceed learners' expectations, higher levels of learning satisfaction are likely to occur.

Methodology

Population and Sample

The sample comprised 400 students, selected using convenience sampling. The sample size was determined using the criterion recommended by Hair et al. (2019), which suggests a minimum ratio of 5 to 10 observations per observed variable for factor analysis. The present study included 73 observed variables across 12 constructs; a ratio of approximately 5:1 yields a minimum requirement of 365 respondents. A sample of 400 was therefore deemed sufficient and appropriate, yielding an approximately 5.5:1 ratio of observations per variable, which satisfies the recommended threshold. The majority of respondents were between 17 and 22 years of age and had diverse secondary-level educational backgrounds, including both arts and science streams.

Research Instrument

The questionnaire items were developed with reference to established scales and conceptual frameworks from prior literature. Specifically, items measuring Learning Motivation (LM) and Learning Skills (LS) were adapted from Pintrich and De Groot (1990) and Zimmerman (2002). Learning Behavior (LB) items were grounded in self-regulated learning frameworks proposed by Pintrich (2003). Prior Knowledge (PK) items drew from constructivist learning principles outlined by Ausubel (1968) and Piaget (1970). Support Systems (SS) items were informed by Vygotsky's (1978) social development theory model of student persistence. Items related to Teaching Effectiveness (TE) and Content Quality (CQ) were adapted from Biggs and Tang (2011). Assessment System (AS) items were developed based on Black and Wiliam (2009) and Biggs and Tang (2011). Media and Technology (MT) items were derived from Mayer's (2009) Cognitive Theory of Multimedia Learning. Learning Environment (LE) items were informed by Sutthichai (2023). Finally, Perceived Learning Outcomes (PLO) items were based on Kriengsak (2022), and Learning Satisfaction (SAT) items were adapted from Choi and Lee (2024).

Section 1: Demographic and Background Information

This section collected general information about the students, including gender, age, secondary education background (field of study), prior work or internship experience in marketing, expected examination scores, expected course grade, midterm examination score, time spent on self-study, learning resources used outside the classroom, preferred learning methods, and topics perceived as most difficult in the course.

Section 2: Factors Related to Teaching and Learning

This section measured factors associated with content and curriculum quality, teaching effectiveness, instructional media and technology, assessment systems, learning environment, learning motivation and intention, learning skills and abilities, learning behavior and participation, prior knowledge, social support, learning satisfaction, and perceived learning outcomes.

Data Analysis

Data were analyzed using descriptive statistics, followed by EFA. The EFA was conducted using Principal Component Analysis (PCA) with Varimax rotation to classify observed variables into coherent factor structures based on their interrelationships.

The suitability of the data for factor analysis was confirmed by a Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy of 0.907, indicating an excellent level of adequacy. Additionally, Bartlett’s Test of Sphericity was statistically significant at the 0.05 level, demonstrating that the correlation matrix was appropriate for exploratory factor analysis.

Data Collection

Data were collected through an onsite field survey conducted between March 2025 and August 2025, corresponding to the instructional period of the Principles of Marketing course. The data were obtained from students enrolled in the course at a public university.

The research team administered the questionnaires to all students registered in the course. Completed questionnaires were subsequently screened for completeness and accuracy to ensure that the required sample size was met before proceeding to data analysis in the subsequent stages of the study.

Results**Personal Factors Related to Students’ Learning in Principles of Marketing**

A total of 400 students aged 17-22 years participated in the study, with an average age of 18.5 years, representing late adolescents or university students. The sample was predominantly female (79.8%), with males comprising 19.5% and 0.7% not reporting gender. Regarding educational background, most students completed a high school curriculum in Arts-Language (50.8%), followed by Science-Math (30.5%), Arts-Math (8.3%), Commerce-Accounting (4.3%), Vocational (3.5%), and Others (2.8%).

Students’ expected exam scores were mostly moderate to low, with 58.8% expecting 20–30 points, 14.5% expecting just passing, 11.5% expecting above 30 points, 8.3% expecting full/high scores, and 7.0% expecting below 20 points. Self-assessment analysis indicated that most students rated themselves as “Good,” with Science-Math students showing the highest proportion of “Very Good” ratings (12.3%), while Arts-Language students had the highest proportion of “Moderate” ratings (35.9%).

EFA identified ten key factors influencing learning in Principles of Marketing: Content Quality (CQ), Teaching Effectiveness (TE), M, AS, LE, LM, LS, LB, PK, and SS. Outcome variables included SAT and PLO. KMO and Bartlett’s Test confirmed sample adequacy, and Principal Component Analysis with Varimax rotation supported the identified factor structure.

Table 1 Presents the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity

KMO and Bartlett's Test	Statistics
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.907
Bartlett's Test of Sphericity	-
Approx. Chi-Square	11129.422
df	2628
Sig.	.000

Based on Table 1, The KMO value was .907, indicating excellent suitability of the data for factor analysis, as values above .9 are considered "marvelous" (Kaiser, 1974). Bartlett's Test of Sphericity yielded an approximate chi-square of 11,129.422 with 2,628 degrees of freedom and a significance level of 0.000 ($p < .05$), confirming that the correlation matrix was not an identity matrix and that the variables were sufficiently correlated for factor analysis.

Subsequently, PCA with Varimax rotation identified eight distinct components.

Table 2 Presents the Results of Principal Component Analysis (PCA) After Varimax Rotation

Variable	Element 1	Element 2	Element 3	Element 4	Element 5	Element 6	Element 7	Element 8
TE3	.690	-	-	-	-	-	-	-
LE3	.650	-	-	-	-	-	-	-
TE5	.648	-	-	-	-	-	-	-
TE1	.647	-	-	-	-	-	-	-
TE6	.640	-	-	-	-	-	-	-
TE2	.626	-	-	-	-	-	-	-
TE4	.622	-	-	-	-	-	-	-
TE7	.607	-	-	-	-	-	-	-
LE1	.590	-	-	-	-	-	-	-
LE4	.583	-	-	-	-	-	-	-
LE5	.565	-	-	-	-	-	-	-
LE2	.563	-	-	-	-	-	-	-

Table 2 Presents the Results of Principal Component Analysis (PCA) After Varimax Rotation (Con.)

Variable	Element 1	Element 2	Element 3	Element 4	Element 5	Element 6	Element 7	Element 8
LM5	-	.672	-	-	-	-	-	-
LM2	-	.670	-	-	-	-	-	-
LS4	-	.670	-	-	-	-	-	-
LM3	-	.658	-	-	-	-	-	-
LM1	-	.649	-	-	-	-	-	-
LM4	-	.617	-	-	-	-	-	-
LM6	-	.616	-	-	-	-	-	-
LM7	-	.598	-	-	-	-	-	-
LS3	-	.591	-	-	-	-	-	-
LS2	-	.582	-	-	-	-	-	-
LS1	-	.541	-	-	-	-	-	-
SS2	-	-	.718	-	-	-	-	-
PK5	-	-	.717	-	-	-	-	-
PK1	-	-	.694	-	-	-	-	-
SS1	-	-	.668	-	-	-	-	-
SS4	-	-	.659	-	-	-	-	-
PK2	-	-	.655	-	-	-	-	-
SS5	-	-	.641	-	-	-	-	-
SS3	-	-	.621	-	-	-	-	-
PK3	-	-	.603	-	-	-	-	-
PK4	-	-	.598	-	-	-	-	-
PLO3	-	-	-	.697	-	-	-	-
SAT2	-	-	-	.694	-	-	-	-
SAT5	-	-	-	.688	-	-	-	-
PLO2	-	-	-	.655	-	-	-	-
SAT4	-	-	-	.642	-	-	-	-

Table 2 Presents the Results of Principal Component Analysis (PCA) After Varimax Rotation (Con.)

Variable	Element 1	Element 2	Element 3	Element 4	Element 5	Element 6	Element 7	Element 8
SAT1	-	-	-	.615	-	-	-	-
SAT3	-	-	-	.615	-	-	-	-
PLO1	-	-	-	.581	-	-	-	-
PLO4	-	-	-	.528	-	-	-	-
PLO5	-	-	-	.508	-	-	-	-
AS1	-	-	-	-	.690	-	-	-
AS6	-	-	-	-	.677	-	-	-
AS3	-	-	-	-	.666	-	-	-
AS4	-	-	-	-	.659	-	-	-
AS5	-	-	-	-	.645	-	-	-
AS2	-	-	-	-	.635	-	-	-
AS7	-	-	-	-	.621	-	-	-
LB3	-	-	-	-	-	.671	-	-
LB4	-	-	-	-	-	.637	-	-
LB6	-	-	-	-	-	.633	-	-
LB5	-	-	-	-	-	.617	-	-
LB2	-	-	-	-	-	.605	-	-
LB7	-	-	-	-	-	.589	-	-
LB1	-	-	-	-	-	.561	-	-
CQ1	-	-	-	-	-	-	.676	-
CQ4	-	-	-	-	-	-	.657	-
CQ7	-	-	-	-	-	-	.647	-
CQ2	-	-	-	-	-	-	.637	-
CQ6	-	-	-	-	-	-	.632	-
CQ3	-	-	-	-	-	-	.584	-
CQ5	-	-	-	-	-	-	.568	-

Table 2 Presents the Results of Principal Component Analysis (PCA) After Varimax Rotation (Con.)

Variable	Element 1	Element 2	Element 3	Element 4	Element 5	Element 6	Element 7	Element 8
MT3	-	-	-	-	-	-	-	.686
MT1	-	-	-	-	-	-	-	.679
MT2	-	-	-	-	-	-	-	.659
MT4	-	-	-	-	-	-	-	.657
MT6	-	-	-	-	-	-	-	.640

Based on Table 2, all factor loadings were .508 or higher, exceeding the recommended threshold of 0.5 (Hair et al., 2019), indicating acceptable levels for interpretation.

The eight components were named according to their underlying constructs, reflecting the key factors influencing students' learning outcomes in the Principles of Marketing course.

Table 3 Presents the Results of the Item Selection for Component 1

No.	Var	Observe	Component Weight
1	TE3	The instructor organizes diverse learning activities.	.690
2	LE3	Classmates actively cooperate in learning activities.	.650
3	TE5	The instructor encourages student participation in learning.	.648
4	TE1	The instructor explains the content in an easily understandable way language.	.647
5	TE6	The instructor treats all students equally.	.640
6	TE2	The instructor uses real-life examples to support teaching.	.626
7	TE4	The instructor responds to students' questions thoroughly.	.622
8	TE7	The instructor summarizes key points in each session.	.607
9	LE1	The classroom atmosphere supports learning.	.590
10	LE4	Students exchange opinions with one another.	.583
11	LE5	Students can easily access learning resources.	.565
12	LE2	The classroom is adequately equipped with facilities.	.563

Based on Table 3, the highest loading was for “The instructor organizes diverse learning activities” (.690), highlighting the importance of designing varied and learner-appropriate activities. This was followed by “Classmates actively cooperate in learning activities” (.650) and “The instructor encourages student participation” (.648), showing that both teaching and social factors significantly influence perceived learning environment quality.

Other instructor-related items, such as “The instructor explains content in an easily understandable language” (.647), “The instructor treats all students equally” (.640), and “The instructor uses real-life examples” (.626), align with learner-centered teaching and authentic learning approaches (Biggs & Tang, 2011).

Variables related to physical and supportive learning environments, including “The classroom atmosphere supports learning” (.590), “Students exchange opinions” (.583), “Students can easily access learning resources” (.565), and “The classroom is adequately equipped” (.563), had slightly lower loadings but were still acceptable (Hair et al., 2019).

Overall, Component 1 represents the dimension of classroom learning environment and instructional management, encompassing the instructor’s role, student interactions, and the overall learning atmosphere in a systematic manner.

Table 4 Presents the Results of Item Selection for Component 2

No.	Var	Observe	Component Weight
1	LM5	I try to understand rather than just memorize	.672
2	LM2	I am interested in the content of the Principles of Marketing course	.670
3	LS4	I can summarize the key points of the content	.670
4	LM3	I want to learn more about marketing	.658
5	LM1	I recognize the relevance of this course to my future career	.649
6	LM4	I have clear learning goals for this course	.617
7	LM6	I am willing to put effort into learning this course	.616
8	LM7	I feel challenged when learning new content	.598
9	LS3	I can relate new knowledge to prior knowledge	.591
10	LS2	I can distinguish main points from minor details	.582
11	LS1	I can take effective notes while listening to lectures	.541

Based on Table 4, the items in Component 2 primarily reflect the dimension of “learning motivation combined with students’ learning process skills.” The highest loading was for “I try to understand rather than just memorize” (.672), indicating students’ tendency toward deep learning. This was followed by “I am interested in the content of the Principles of Marketing course” and “I can summarize the key points of the content,” both with loadings of 0.670, reflecting intrinsic motivation and the ability to process core content.

Items such as “I want to learn more about marketing” (.658) and “I recognize the relevance of this course to my future career” (.649) indicate long-term goal-oriented motivation, while

“I have clear learning goals for this course” (.617) and “I am willing to put effort into learning this course” (.616) reflect self-regulation and commitment. “I feel challenged when learning new content” (.598) highlights a positive attitude toward learning difficulties, a key factor in student development.

Regarding learning skills, “I can relate new knowledge to prior knowledge” (.591) and “I can distinguish main points from minor details” (.582) indicate analytical and integrative thinking, whereas “I can take effective notes while listening to lectures” (.541), though the lowest loading, remains acceptable (Hair et al., 2019).

Thus, Component 2 can be labeled “Learning Motivation and Learning Skills,” encompassing intrinsic motivation, goal clarity, effort, challenge orientation, and cognitive processing skills, consistent with theories linking learning motivation to deep learning strategies (Pintrich & De Groot, 1990; Zimmerman, 2002).

Table 5 Presents the Results of Item Selection for Component 3

No.	Var	Observe	Component Weight
1	SS2	I have classmates who help each other and share knowledge	.718
2	PK5	I can relate prior knowledge to new content	.717
3	PK1	I have prior knowledge about business	.694
4	SS1	I receive support from my family for learning	.668
5	SS4	The university provides sufficient additional learning resources	.659
6	PK2	I have studied marketing on my own before	.655
7	SS5	I can access help when I encounter learning problems	.641
8	SS3	The instructor provides consultation outside class when needed	.621
9	PK3	I have work or business experience	.603
10	PK4	I understand basic business terminology	.598

Based on Table 5, all items in Component 3 exhibited relatively high factor loadings ranging from .598 to .718, indicating a clear and well-defined component. The highest loading was SS2, “I have classmates who help each other and share knowledge” (.718), followed by PK5, “I can relate prior knowledge to new content” (.717), and PK1, “I have prior knowledge about business” (.694), highlighting the importance of peer learning and prior knowledge in enhancing learning effectiveness in the Principles of Marketing course.

Items related to support from the learning environment, such as SS1, “I receive support from my family for learning” (.668), SS4, “The university provides sufficient additional learning resources” (.659), and SS3, “The instructor provides consultation outside class when needed” (.621), indicate that this component encompasses social support from family, peers, and the institution. This aligns with the concept of social support and learning environment, which emphasizes the role of social networks in motivation and academic success.

Furthermore, items representing prior knowledge (PK2, PK3, PK4) with loadings between .603 and .655 reflect the academic foundation that enables students to comprehend new content

effectively, consistent with constructivist theories emphasizing learning through connection to existing knowledge structures (Piaget, 1970; Ausubel, 1968).

Overall, Component 3 can be interpreted as “Support and Prior Knowledge,” highlighting its critical role in students’ preparedness and learning potential. This component should be strategically fostered in higher education, particularly in courses emphasizing analytical thinking and knowledge application, such as Principles of Marketing.

Table 6 Presents the Results of Item Selection for Component 4

No.	Var	Observe	Component Weight
1	PLO3	I can analyze marketing case studies	.697
2	SAT2	I feel that I have learned useful new knowledge	.694
3	SAT5	I am confident in the knowledge gained from this course	.688
4	PLO2	I can explain key marketing concepts	.655
5	SAT4	I would recommend this course to junior students	.642
6	SAT1	Overall, I am satisfied with the teaching methods of this course	.615
7	SAT3	I feel that my learning time is well-spent	.615
8	PLO1	I understand the fundamental principles of marketing well	.581
9	PLO4	I can apply the knowledge in practice	.528
10	PLO5	I am willing to take more advanced marketing courses	.508

Based on Table 6, all items in Component 4 exhibited factor loadings ranging from .508 to .697, indicating moderate to relatively high levels and meeting commonly accepted criteria for exploratory factor analysis (Hair et al., 2019).

The highest loading was PLO3, “I can analyze marketing case studies” (.697), followed by SAT2, “I feel that I have learned useful new knowledge” (.694), and SAT5, “I am confident in the knowledge gained from this course” (.688), reflecting both higher-order cognitive learning outcomes and students’ satisfaction/self-confidence as a result of their learning experience.

Items PLO2 and PLO1, with loadings of .655 and .581, respectively, indicate understanding of key marketing concepts and fundamental principles, while PLO4 and PLO5, though slightly lower (.528 and .508), reflect the ability to apply knowledge and readiness for advanced study. This aligns with Outcomes-Based Education (OBE) and Bloom’s Taxonomy, progressing from “understanding” to “analysis” and “application” (Anderson & Krathwohl, 2001).

Satisfaction-related items (SAT1, SAT3, SAT4), with loadings between .615-.642, show that perceived satisfaction, the value of learning experiences, and the intention to recommend the course are integrated with cognitive learning outcomes, consistent with previous research highlighting the impact of learning experience quality on academic achievement and students’ attitudes (Astin, 1993; Biggs & Tang, 2011).

Therefore, Component 4 can be interpreted as “Learning Outcomes and Satisfaction,” reflecting both students’ academic abilities in marketing and their positive perceptions of the course’s value and benefits, indicating the direct effectiveness of instructional practices.

Table 7 Presents the Results of Item Selection for Component 5

No.	Var	Observe	Component Weight
1	AS1	The exams reflect the course content comprehensively	.690
2	AS6	The instructor provides feedback on learning outcomes	.677
3	AS3	The number of exam questions is appropriate for the allocated time	.666
4	AS4	The grading criteria are fair	.659
5	AS5	Multiple assessment methods are used (tests, assignments, participation)	.645
6	AS2	The difficulty level of the exams is appropriate for the students	.635
7	AS7	Assessments promote student learning	.621

Based on Table 7, the items in Component 5 primarily reflect the “quality, appropriateness, and fairness of learning assessment.”

The highest loading was “The exams reflect the course content comprehensively” (.690), indicating that students place strong importance on alignment between instruction and assessment. This was followed by “The instructor provides feedback on learning outcomes” (.677) and “The number of exam questions is appropriate for the allocated time” (.666), highlighting the role of feedback and context-appropriate assessment design.

Other items, such as “The grading criteria are fair” (.659) and “Multiple assessment methods are used (tests, assignments, participation)” (.645), emphasize transparency and diversity in assessment methods, consistent with the concept of Assessment for Learning. Additionally, “The difficulty level of the exams is appropriate for the students” (.635) and “Assessments promote student learning” (.621) indicate that students perceive assessment as a tool for learning development, not merely for evaluating achievement.

Therefore, Component 5 can be labeled “Assessment System,” aligning with Constructive Alignment principles that emphasize the connection between learning objectives, teaching activities, and assessment (Biggs & Tang, 2011), as well as the Assessment for Learning approach, which promotes continuous learner development (Black & Wiliam, 2009).

Table 8 Presents the Results of Item Selection for Component 6

No.	Var	Observe	Component Weight
1	LB3	I prepare before attending class each time	.671
2	LB4	I regularly review the lessons after class	.637
3	LB6	I cooperate in group activities	.633
4	LB5	I ask questions when I have doubts	.617
5	LB2	I pay attention during lectures	.605
6	LB7	I submit assignments on time	.589
7	LB1	I attend classes regularly	.561

Based on Table 8, the items in Component 6 primarily reflect “students’ learning behaviors and responsibility” before, during, and after class.

The highest loading was “I prepare before attending class each time” (.671), indicating that prior preparation is a key behavior that enhances learning effectiveness. This was followed by “I regularly review the lessons after class” (.637) and “I cooperate in group activities” (.633), reflecting self-discipline and active participation in collaborative learning, which are essential 21st-century skills.

Items such as “I ask questions when I have doubts” (.617) and “I pay attention during lectures” (.605) indicate active learning behaviors, while “I submit assignments on time” (.589) and “I attend classes regularly” (.561) reflect responsibility and self-management in ongoing learning. Although these latter loadings are slightly lower, they remain acceptable according to exploratory factor analysis criteria (Hair et al., 2019).

Therefore, Component 6 can be labeled “Proactive Learning Behavior,” encompassing preparation, participation, responsibility, and self-management in a systematic learning process. This aligns with Self-Regulated Learning theories, which suggest that such behaviors are positively associated with academic achievement (Zimmerman, 2002; Pintrich, 2003).

Table 9 Presents the Results of Item Selection for Component 7

No.	Var	Observe	Component Weight
1	CQ1	The content of the Principles of Marketing course is up-to-date and current	.676
2	CQ4	Each chapter is clearly connected to the others	.657
3	CQ7	The content can be applied in daily life	.647
4	CQ2	The content aligns with labor market needs	.637
5	CQ6	The content includes diverse examples and case studies	.632
6	CQ3	The topics are organized in a proper and logical sequence	.584
7	CQ5	The amount of content is appropriate for the allocated classtime	.568

Based on Table 9, the items in Component 7 primarily reflect the “quality and appropriateness of course content,” including aspects of currency, coherence, connectivity, and practical applicability (Pichit, 2024).

The highest loading was “The content of the Principles of Marketing course is up-to-date and current” (.676), indicating that students perceive the importance of content aligned with current contexts and changes in the business environment. This was followed by “Each chapter is clearly connected to the others” (.657) and “The content can be applied in daily life” (.647), reflecting the systematic structure of the course and the ability to apply knowledge in practice—key features of effective course design and development.

Other items, such as “The content aligns with labor market needs” (.637) and “The content includes diverse examples and case studies” (.632), highlight the connection between classroom learning and real-world work contexts, consistent with competency-based learning and Outcome-Based Education (OBE) principles that emphasize learner readiness for professional practice (Biggs & Tang, 2011). Although “The topics are organized in a proper and logical sequence” (.584) and “The amount of content is appropriate for the allocated class time” (.568) have slightly lower loadings, they remain acceptable and reflect the balance and appropriateness of course content structure, which is critical for effective learning management (Reigeluth & Carr-Chellman, 2009; Hair et al., 2019).

Therefore, Component 7 can be labeled “Content Quality and Appropriateness,” encompassing content currency, alignment with labor market demands, systematic structure, and the potential for practical application in daily life and future professional contexts.

Table 10 Presents the Results of Item Selection for Component 8

No.	Var	Observe	Component Weight
1	MT3	The use of videos and visual media helps to understand the content effectively	.686
2	MT1	Teaching materials are clear and complete	.679
3	MT2	Presentation slides are appropriately designed and easy to follow	.659
4	MT4	The technology used in teaching generates student interest	.657
5	MT6	Learning media are appropriate for the content	.640

Based on Table 10, the items in Component 8 primarily reflect the “quality and effectiveness of media and technology in teaching and learning.”

The highest loading was “The use of videos and visual media helps to understand the content effectively” (.686), indicating that students recognize the role of visual and multimedia resources in enhancing understanding of complex content. This was followed by “Teaching materials are clear and complete” (.679) and “Presentation slides are appropriately designed and easy to follow” (.659), reflecting the importance of instructional media quality in terms of content clarity and structured information aligned with learning principles.

Additionally, “The technology used in teaching generates student interest” (.657) and “Learning media are appropriate for the content” (.640) highlight that selecting suitable technologies and instructional media can stimulate motivation and engagement in the learning process. This aligns with the Cognitive Theory of Multimedia Learning, which posits that properly designed multimedia enhances learners’ information processing and understanding (Mayer, 2009), as well as principles of Active Learning through digital technology integration (Reigeluth & Carr-Chellman, 2009).

Therefore, Component 8 can be labeled “Media and Instructional Technology,” encompassing the quality of instructional media, appropriateness of technology, and the role of media in promoting understanding and engagement in a systematic learning process.

Discussion

The results of the Exploratory Factor Analysis (EFA) indicate that the factors influencing academic achievement in the course Principles of Marketing for logistics students can be classified into eight principal components. Among these, Factor 1, “Teaching Quality and Learning Environment,” contains the largest number of observed variables (12 items), underscoring the critical importance of instructional effectiveness and a learning environment conducive to student engagement and understanding. This is followed by Factor 2, “Learning Motivation and Learning Skills” (11 items), which highlights the significance of internal student-related factors. The emergence of these eight factors is consistent with learning theories that conceptualize academic success as the interaction between external factors, such as teaching quality, educational technology, and assessment systems, and internal factors, including motivation, learning skills, and learning behaviors. These findings suggest that achievement in the Principles of Marketing course does not result from any single factor in isolation, but rather from the combined influence of multiple dimensions involving instructors, learners, course content, pedagogical approaches, support systems, and technology.

Notably, the factor comprising the greatest number of variables—Teaching Quality and Classroom Learning Environment—demonstrates the pivotal role of instructors and the overall learning atmosphere in shaping students’ perceptions of understanding, engagement, and psychological safety in the learning process. At the same time, the factor Learning Motivation and Learning Skills reflects the importance of internal learner attributes, particularly deep motivation and analytical thinking skills, which form the foundation of sustainable and meaningful learning. Furthermore, the finding that PLO and SAT load onto the same factor provides empirical support for the notion that meaningful learning experiences foster positive long-term attitudes toward both the course and the academic discipline. This result aligns with the theoretical perspectives of Biggs and Tang (2011) and Astin (1993), who argue that high-quality learning experiences simultaneously enhance academic achievement and learner satisfaction.

The identification of PLO as a key factor is also directly aligned with the core principles of the AQRF, which emphasize learning outcomes as the primary basis for the comparability of qualifications across countries. Students’ perceptions that they have acquired the expected knowledge and skills, therefore, serve as an important indicator of educational effectiveness in meeting regional standards. However, given that Thailand has already aligned its National Qualifications Framework with the AQRF, an important question arises: Do current curricula produce the learning outcomes sufficient to ensure graduates’ competitiveness in the ASEAN labor market?

Moreover, the finding that Teaching Quality and Learning Environment exerts the strongest influence on students' perceived learning outcomes and satisfaction should be considered within a broader ASEAN context. As noted by Carter (2016), the development of marketing curricula in Thailand remains largely constrained by a nationalistic perspective. While teaching quality may be satisfactory within the domestic context, it may not be adequate to prepare graduates for competition at the international level. Consequently, learning environments should be designed to foster students' understanding of cultural diversity and market dynamics across ASEAN countries, thereby equipping them with the competencies required to operate effectively in cross-cultural environments, which are a defining characteristic of the ASEAN Economic Community.

Conclusion

This study provides empirical evidence on the structural factors influencing learning outcomes in the Principles of Marketing course in higher education. The findings identify eight key components that collectively explain students' learning outcomes and perceptions, reflecting a comprehensive view of instructional quality, learning environment, learning motivation, instructional design, and assessment practices. These components are consistent with learner-centered and outcome-based education frameworks.

The results highlight that effective learning outcomes are achieved through a holistic instructional approach that integrates faculty competency development, appropriate use of instructional media and technology, active learning strategies, and assessment systems aligned with intended learning outcomes. The proposed framework offers practical implications for curriculum administrators and educators in improving course design, instructional practices, and internal quality assurance processes in higher education institutions.

From an academic perspective, the identified components provide a conceptual foundation for future empirical studies. Further research is recommended to validate the proposed model using Confirmatory Factor Analysis (CFA) and to examine causal relationships among instructional factors, learning outcomes, and student satisfaction through Structural Equation Modeling (SEM). Expanding the scope of investigation to other academic disciplines and institutions would enhance the generalizability of the findings.

In the context of the ASEAN Economic Community, the findings also offer implications for regional curriculum development. Comparative studies across ASEAN higher education institutions, investigations into regional labor market demands, and curriculum evaluation aligned with the AQRF would contribute to strengthening graduate competencies, supporting labor mobility, and enhancing the international competitiveness of higher education graduates.

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