

THE DEVELOPMENT OF PROBLEM-SOLVING ABILITY IN MANAGERIAL ECONOMICS THROUGH PROBLEM-BASED LEARNING

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### Abstract

This research examines the effectiveness of problem-based learning (PBL) in developing problem-solving abilities among undergraduate business students enrolled in a *Managerial Economics for Business* course. The study pursued three primary objectives: 1) to compare academic achievement before and after implementing PBL, 2) to assess problem-solving abilities developed through PBL, and 3) to evaluate student opinions regarding PBL as a teaching methodology. The sample consisted of 27 second-year management students enrolled in a Managerial Economics for Business course during the first semester of the 2023 academic year. The research instruments included a problem-based learning plan focused on demand, supply, and market equilibrium; pre- and post-achievement tests; a problem-solving ability assessment form; and a student opinion questionnaire on the PBL approach.

The results demonstrated that academic achievement scores after PBL implementation were significantly higher than pre-intervention scores at the .05 level of significance. Problem-solving abilities developed through PBL were rated at a good level. Additionally, students expressed highly positive opinions

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toward the PBL approach across all measured dimensions, including learning activities, classroom atmosphere, and perceived learning benefits. In summary, the findings confirm that problem-based learning (PBL) effectively enhances students' practical problem-solving skills and deep learning, while fostering a classroom environment conducive to active participation. It is therefore recommended that instructors of Managerial Economics adopt PBL as a core pedagogical approach and design learning activities that are closely connected to real-world business contexts.

**Keywords :** Problem-Based Learning, Cognitive Skills, Active Learning, Learning Achievement

## บทคัดย่อ

งานวิจัยนี้ศึกษาประสิทธิผลของการเรียนรู้แบบใช้ปัญหาเป็นฐาน (PBL) ในการพัฒนาความสามารถในการแก้ปัญหาของนักศึกษาระดับปริญญาตรีที่ศึกษาวิชาเศรษฐศาสตร์การจัดการสำหรับธุรกิจ มีวัตถุประสงค์หลัก 3 ประการ ได้แก่ 1) เพื่อเปรียบเทียบผลสัมฤทธิ์ทางการเรียนก่อนและหลังการใช้ PBL 2) เพื่อประเมินความสามารถในการแก้ปัญหาที่พัฒนาผ่าน PBL และ 3) เพื่อประเมินความคิดเห็นของนักศึกษาเกี่ยวกับ PBL ในการจัดการเรียนการสอน กลุ่มตัวอย่าง ได้แก่ นักศึกษาระดับปริญญาตรีชั้นปีที่ 2 จำนวน 27 คน ที่ลงทะเบียนเรียนในวิชาเศรษฐศาสตร์การจัดการสำหรับธุรกิจ ในภาคเรียนแรกของปีการศึกษา 2566 เครื่องมือที่ใช้ในการวิจัยประกอบด้วยแผนการเรียนรู้แบบใช้ปัญหาเป็นฐานที่เน้นอุปสงค์ อุปทาน และดุลยภาพของตลาด แบบทดสอบวัดผลสัมฤทธิ์ทางการเรียนก่อนและหลังการทดลอง แบบประเมินความสามารถในการแก้ปัญหา และแบบสอบถามความคิดเห็นของนักศึกษาเกี่ยวกับแนวทาง PBL ผลการวิจัยแสดงให้เห็นว่าคะแนนผลสัมฤทธิ์ทางการเรียนหลังการใช้ PBL สูงกว่าคะแนนก่อนการทดลองอย่างมีนัยสำคัญทางสถิติที่ระดับ .05 ความสามารถในการแก้ปัญหาที่พัฒนาผ่าน PBL ได้รับการประเมินอยู่ในระดับดี นอกจากนี้ นักศึกษายังแสดงความคิดเห็นเชิงบวกอย่างมากเกี่ยวกับ

แนวทาง PBL ในทุกมิติที่วัดได้ ซึ่งรวมถึงกิจกรรมการเรียนรู้ บรรยายภาคในห้องเรียน และประโยชน์ที่รับรู้ โดยสรุป ผลการวิจัยยืนยันว่าการเรียนรู้โดยใช้ปัญหาเป็นฐาน (PBL) ช่วยเสริมสร้างทักษะการแก้ปัญหาเชิงปฏิบัติและการเรียนรู้เชิงลึกของนักศึกษา ทั้งยังส่งผลต่อบรรยากาศการเรียนรู้ที่เอื้อต่อการมีส่วนร่วมของผู้เรียน จึงควรส่งเสริมให้ผู้สอนรายวิชาเศรษฐศาสตร์การจัดการออกแบบกิจกรรมที่เชื่อมโยงกับสถานการณ์จริงในภาคธุรกิจต่อไป

**คำสำคัญ :** การเรียนรู้โดยใช้ปัญหาเป็นฐาน, ทักษะทางปัญญา, การจัดการเรียนรู้เชิงรุก, ผลสัมฤทธิ์ทางการเรียน

## Introduction

The Higher Education Commission has established the Guidelines for Implementing Higher Education Standards 2018, which provides a framework for higher education institutions to develop curricula that ensure graduates attain learning outcomes specified in qualification standards. According to the Ministry of Education, specifically aspect 1 concerning student outcomes, learners are required to develop comprehensive knowledge, skills, and expertise necessary for establishing successful careers while ensuring security and quality of life for themselves and society through lifelong learning capabilities. These standards emphasize the development of individuals with moral integrity, perseverance, and professional ethics who demonstrate innovation capabilities, 21st-century skills, interdisciplinary integration abilities, and entrepreneurial qualities. The standards further articulate that graduates should possess awareness of societal and global changes, contribute value to their communities, exhibit moral courage, preserve cultural identity, and participate in sustainable development initiatives at multiple societal levels (Ministry of Education, 2018).

Consequently, educational management must prioritize the acquisition of knowledge and skills aligned with established learning standards across various

domains, including ethics, intellectual capabilities, interpersonal competencies, and analytical skills in conjunction with communication, technological proficiency, and innovation within the 21st-century skills framework. This comprehensive approach enables students to navigate increasingly complex and rapidly evolving environments. For students in Bachelor of Business Administration programs, foundational knowledge in finance, business economics, and entrepreneurship is particularly critical as it provides an essential framework for interdisciplinary learning management (Wanasian, n.d.). Managerial Economics for Business constitutes a core requirement within the Bachelor of Business Administration curriculum. The course encompasses fundamental economic principles related to market equilibrium, elasticity concepts, demand estimation, production theory, cost analysis, market structures, pricing strategies, international trade, and governmental policy implications for business decision-making processes (Phuket Rajabhat University, 2022). The course enables students to apply theoretical knowledge to address business challenges in dynamic contexts.

However, in practice, many students perceive Managerial Economics as abstract and heavily formula-driven, focusing on mathematical computation rather than conceptual understanding or practical application. Such an approach often results in limited engagement, surface level learning, and difficulty in connecting economic principles with real-world business decision-making. Consequently, traditional lecture-based teaching methods may not sufficiently foster higher order thinking, analytical reasoning, or problem-solving skills that align with 21st-century workforce demands.

Although numerous studies have confirmed the effectiveness of Problem Based Learning (PBL) in enhancing learners' critical thinking, analytical reasoning, and problem-solving skills. Limited empirical studies have investigated its application within business and economics education, particularly in the Thai higher education context. Consequently, there is insufficient evidence

demonstrating how PBL can be systematically applied to economics-related courses such as Managerial Economics for Business to bridge the gap between theoretical understanding and real world business application. Addressing this research gap, the present study aims to evaluate the effectiveness of PBL in improving students' problem-solving ability and learning satisfaction within Managerial Economics for Business.

Given that economics examines resource allocation behavior to maximize utility under constraints, comprehension of managerial economics equips students with analytical reasoning capabilities for addressing economic and business problems. The development of problem-solving abilities in management economics education can be facilitated through problem-based learning (PBL) methodologies, which structure classroom activities to foster new knowledge creation through engagement with authentic problems while developing analytical thinking and problem-solving competencies. This learner-centered approach enhances student motivation, critical thinking, communication skills, information retention, adaptability, collaborative capabilities, self-directed learning, and lifelong learning orientations.

Consequently, this research examines whether problem-based learning implementation in Managerial Economics for Business, specifically addressing demand, supply, and market equilibrium concepts, can effectively enhance students' economic problem-solving capabilities and to what extent, while additionally assessing student satisfaction with the pedagogical approach. The research benefits include the development of economic problem-solving competencies among the study participants and the establishment of instructional guidelines for Business Economics educators.

## Objective of the research

**The research encompasses three primary objectives:**

- 1) To conduct a comparative analysis of academic achievement in Managerial Economics for Business, specifically focusing on demand, supply, and market equilibrium concepts, before and after the implementation of problem-based learning methodology;
- 2) To investigate the development of problem-solving capabilities in Managerial Economics for Business regarding demand, supply, and market equilibrium through the application of problem-based learning approaches; and
- 3) To evaluate student perceptions and attitudes toward problem-based learning as an instructional methodology.

## Review of Literature

### **Theoretical Framework and Literature Review on Problem-Based Learning**

Khammanee (2018 : 137–138) defines problem-based learning (PBL) as a student-centered approach that uses real or simulated problems as the primary vehicle for achieving learning objectives. Through collaborative inquiry and solution development, learners deepen conceptual understanding, broaden perspectives, and enhance analytical and problem-solving abilities.

The Office of the Secretary-General of the Education Council, Ministry of Education (2007 : 3–4) emphasizes that the effectiveness of PBL relies on well-constructed problems that trigger inquiry and engagement. Effective problems are authentic, relevant, open-ended, and sufficiently complex to stimulate curiosity and reflection. They encourage investigation, challenge prior assumptions, allow multiple solution pathways, and align with curricular

goals. PBL is particularly suitable for disciplines such as science, social studies, cultural and vocational education, and technology—fields that require learners to apply theory to real-world contexts and think creatively (Office of the Secretary-General of the Education Council, 2007 : 13–14).

Implementation typically follows six phases: (1) problem definition, (2) problem comprehension, (3) research execution, (4) knowledge synthesis, (5) solution evaluation, and (6) presentation and assessment (Office of the Secretary-General of the Education Council, 2007 : 2–3).

Meanwhile, Allen et al. (1996, p. 47) suggest that well-designed problems should (1) connect theory and practice through meaningful contexts, (2) remain open-ended and justify reasoning, (3) provoke debate and multiple perspectives, and (4) maintain a level of complexity appropriate to learners' cognitive capacities.

## Research Methodology

This investigation into the development of problem-solving capabilities in managerial economics for business through problem-based learning implementation, with specific focus on supply, demand, and market equilibrium concepts, employed a systematic methodological approach comprising three essential procedural elements:

### 1. Population Parameters and Sampling Protocol

The research established precise criteria for population definition and implemented a rigorous sample selection process to ensure appropriate representation and methodological validity.

## 2. Research Design Construction

The investigation utilized a carefully structured research design to facilitate systematic data collection and analysis, enabling meaningful assessment of the relationships between the independent and dependent variables.

## 3. Instrumentation Development

Multiple research instruments were developed and validated to measure the variables under investigation, ensuring comprehensive data collection and reliable assessment of problem-based learning outcomes.

# Population Definition and Sample Selection

## Population Parameters

The study population comprised second-year undergraduate students enrolled in the Business Administration Program with Management specialization who were undertaking the Managerial Economics for Business course during the first semester of the 2023 academic year. This population consisted of two distinct cohorts (BA.656 and BA.657), with a cumulative enrollment of 55 students.

## Sampling Methodology

The research employed cluster random sampling methodology, with intact classrooms serving as the sampling units. Through random selection via lottery procedure, one classroom (BA.657) was identified for participation, yielding a sample of 27 second-year Management students concurrently enrolled in the Managerial Economics for Business course during the specified academic period. This sampling approach-maintained group integrity while providing a representative subset of the target population for investigation.



## Research Design

The research methodology employed in this study utilized a One-Group Pretest-Posttest Design, which facilitated the measurement of participant outcomes before and after the intervention, thereby enabling the assessment of potential changes attributable to the experimental treatment. This quasi-experimental approach allowed for within-subject comparisons while acknowledging the inherent limitations regarding internal validity due to the absence of a control group.

**Table 1 Research design**

| Group | Pre-intervention assessment | Test | Post-intervention assessment |
|-------|-----------------------------|------|------------------------------|
| E     | T <sub>1</sub>              | X    | T <sub>2</sub>               |

*Source : Adapted from Phonsri, P. (2010: 93)*

The representation of the experimental design employs the following symbolic notation:

E = Experimental group

X = Problem-based learning intervention

T<sub>1</sub> = Pre-intervention assessment

T<sub>2</sub> = Post-intervention assessment

This symbolic framework delineates the quasi-experimental methodology, wherein a single cohort (E) was subjected to baseline measurement (T<sub>1</sub>), followed by exposure to the problem-based learning intervention (X), and subsequently evaluated (T<sub>2</sub>) to determine intervention effects. Such notation adheres to standard conventions in educational research methodology literature.

## Problem-Based Learning (PBL) Intervention

The problem-based learning (PBL) intervention was implemented within the Managerial Economics for Business course, focusing on three central topics: demand, supply, and market equilibrium. Real-world business contexts were employed to situate each topic in authentic economic situations, such as analyzing rising chicken prices and evaluating production decisions of small-scale manufacturers.

The PBL process implemented in this study consisted of six sequential steps:

**Define the problem:** Students were introduced to real-life situations related to the course content to stimulate curiosity and motivation.

**Understand the problem:** Students collaboratively identified learning objectives, analyzed key variables, and planned their research approach. The instructor provided guiding questions and recommended relevant data sources.

**Conduct research:** Students gathered additional information through textbooks, online resources, and data collection to deepen their understanding.

**Synthesize knowledge:** Groups exchanged research findings and synthesized them into coherent explanations of the problem.

**Summarize and evaluate answers:** Each group summarized their findings and assessed the adequacy and validity of their proposed solutions.

**Present and evaluate:** Students presented their solutions, engaged in peer evaluation, and reflected on their learning outcomes.

Throughout the process, the instructor acted as a facilitator, encouraging analytical reasoning and collaborative problem-solving rather than direct instruction. The activities were designed to align with the course learning outcomes (CLOs), emphasizing analytical reasoning, teamwork, and practical problem-solving skills.

## Instrumentation for Research Implementation

The empirical investigation utilized multiple measurement and instructional instruments designed to facilitate implementation and assessment:

1. Problem-based learning instructional protocol, specifically developed for Business Management Economics curriculum focusing on demand, supply, and market equilibrium conceptual frameworks.

2. Achievement assessment instrument measuring cognitive comprehension and application of Business Management Economics principles, with particular emphasis on demand, supply, and market equilibrium constructs.

3. Performance-based assessment protocol evaluating participants' problem-solving capabilities within the domain of management economics, specifically examining competencies related to demand, supply, and market equilibrium analytical scenarios.

4. Attitudinal measurement instrument employing Likert-scale responses to evaluate participants' perceptions regarding the problem-based learning pedagogical approach as implemented in the demand, supply, and market equilibrium instructional modules.

## Results and Discussion

### 1. Results

#### **Comparative Analysis of Academic Achievement in Managerial Economics for Business: Demand, Supply and Market Equilibrium**

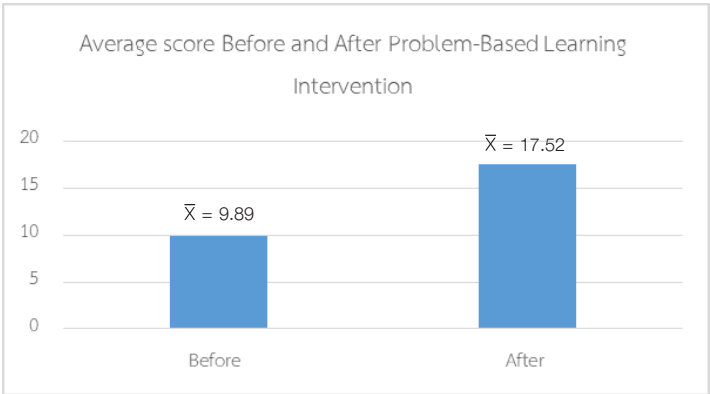
A pre-post intervention analysis was conducted to examine the differential effects of problem-based learning methodology on student achievement in Managerial Economics for Business, specifically focusing on demand, supply, and market equilibrium concepts. The sample comprised 27 second-year undergraduate students enrolled in the Bachelor of Business Administration program (Management concentration, cohort DGM.657).

**Table 2** Comparative Analysis of Academic Achievement in Managerial Economics for Business: Demand, Supply, and Market Equilibrium Before and After Problem-Based Learning Intervention

| Score        | Number of students | Full score | Average score ( $\bar{X}$ ) | Standard deviation (S.D.) | t      | P     |
|--------------|--------------------|------------|-----------------------------|---------------------------|--------|-------|
| Before study | 27                 | 20         | 9.89                        | 2.22                      | 18.59* | .000* |
| After study  | 27                 | 20         | 17.52                       | 1.91                      |        |       |

*Note.* Statistical significance established at  $\alpha = .05$

The data presented in Table 2 demonstrate a statistically significant differential in academic achievement between pre-intervention and post-intervention assessment phases ( $p < .05$ ). Post-intervention achievement scores ( $\bar{X}= 17.52$ , S.D. = 1.91) were substantially higher than pre-intervention achievement scores ( $\bar{X}= 9.89$ , S.D. = 2.22), suggesting a significant positive effect of the problem-based learning intervention on students’ conceptual understanding and application of demand, supply, and market equilibrium principles. This improvement represents a substantial gain in subject mastery following exposure to the problem-based learning pedagogical approach. As shown in Figure 1



**Figure 1** Average score Before and After Problem-Based Learning Intervention

### Assessment of problem-solving abilities in Managerial Economics for Business, specifically focusing on demand, supply, and market equilibrium through problem-based learning approaches

An empirical analysis was conducted to evaluate students' problem-solving abilities in management economics, specifically examining competencies related to demand, supply, and market equilibrium constructs. This assessment followed the implementation of a problem-based learning intervention with undergraduate business administration students ( $n = 27$ ) specializing in management (cohort DGM.657, second year).

**Table 3** Problem-Solving Competency Assessment in Managerial Economics for Business: Demand, Supply, and Market Equilibrium Domains Following Problem-Based Learning Intervention

| List of assessed behaviors            | Full score | Average score ( $\bar{X}$ ) | Standard deviation (S.D.) | Percentage of average score | meaning     |
|---------------------------------------|------------|-----------------------------|---------------------------|-----------------------------|-------------|
| <b>Situation 1</b>                    |            |                             |                           |                             |             |
| 1. Problem definition                 | 3          | 2.19                        | 0.40                      | 73.00                       | good        |
| 2. Understanding the problem          | 3          | 2.37                        | 0.49                      | 79.00                       | good        |
| 3. Conducting research studies        | 3          | 2.52                        | 0.51                      | 84.00                       | good        |
| 4. Knowledge synthesis                | 3          | 2.37                        | 0.49                      | 79.00                       | good        |
| 5. Summarizing and evaluating answers | 3          | 2.37                        | 0.49                      | 79.00                       | good        |
| 6. Presentation and evaluation        | 3          | 2.81                        | 0.40                      | 93.67                       | good        |
| <b>Total situation 1</b>              | <b>18</b>  | <b>14.63</b>                | <b>2.34</b>               | <b>81.28</b>                | <b>good</b> |
| <b>Situation 2</b>                    |            |                             |                           |                             |             |
| 1. Problem definition                 | 3          | 2.19                        | 0.40                      | 73.00                       | good        |
| 2. Understanding the problem          | 3          | 2.19                        | 0.40                      | 73.00                       | good        |
| 3. Conducting research studies        | 3          | 2.37                        | 0.49                      | 79.00                       | good        |

| List of assessed behaviors            | Full score | Average score ( $\bar{X}$ ) | Standard deviation (S.D.) | Percentage of average score | meaning     |
|---------------------------------------|------------|-----------------------------|---------------------------|-----------------------------|-------------|
| 4. Knowledge synthesis                | 3          | 2.19                        | 0.40                      | 73.00                       | good        |
| 5. Summarizing and evaluating answers | 3          | 2.19                        | 0.40                      | 73.00                       | good        |
| 6. Presentation and evaluation        | 3          | 2.81                        | 0.40                      | 93.67                       | good        |
| <b>Total situation 2</b>              | <b>18</b>  | <b>13.93</b>                | <b>1.77</b>               | <b>77.39</b>                | <b>good</b> |
| <b>Together</b>                       | <b>36</b>  | <b>28.56</b>                | <b>4.08</b>               | <b>79.33</b>                | <b>good</b> |

The analysis of data presented in Table 3 indicates that participants demonstrated substantial problem-solving proficiency in management economics concepts following exposure to the problem-based learning intervention. The aggregate performance across both assessment scenarios revealed a high level of competency ( $\bar{X}$  = 28.56, S.D. = 4.08), with participants achieving 79.33% of the maximum possible score.

Disaggregated analysis by assessment scenario yielded additional insights. In the first scenario, participants exhibited notably strong problem-solving capabilities ( $\bar{X}$  = 14.63, S.D. = 2.34), attaining 81.28% of the maximum possible score. The second scenario assessment similarly demonstrated robust problem-solving competencies ( $\bar{X}$  = 13.93, S.D. = 1.77), with participants achieving 77.39% of the maximum possible score.

These findings suggest that the problem-based learning methodology effectively facilitated the development of advanced problem-solving skills within the specific domain of management economics, particularly regarding concepts of demand, supply, and market equilibrium.

## Results of the evaluation of students' opinions of problem-based learning as an instructional methodology

An assessment of students' opinions of the problem-based learning pedagogical approach was conducted following the intervention. All participants (n = 27) from the second-year Bachelor of Business Administration program (Management concentration, cohort DGM.657) completed the attitudinal measurement instrument.

**Table 4** Results of evaluation of student participants' opinions on problem-based learning as an instructional methodology.

| Evaluation list                                                                                                                                                            | Average score ( $\bar{X}$ ) | Standard deviation (S.D.) | Opinion level |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------------------|---------------|
| <b>In terms of organizing learning activities</b>                                                                                                                          |                             |                           |               |
| 1. Problem-based learning management has clear steps and helps to create effective learning.                                                                               | 4.48                        | 0.58                      | High          |
| 2. Problem-based learning management Help students develop the ability to solve management economic problems for business, such as demand , supply and market equilibrium. | 4.19                        | 0.68                      | High          |
| 3. Problem-based learning helps students develop group work skills.                                                                                                        | 4.56                        | 0.75                      | Very High     |
| 4. Problem-based learning helps promote student participation in learning.                                                                                                 | 4.33                        | 0.78                      | High          |
| 5. Problem-based learning helps students to find additional information.                                                                                                   | 4.11                        | 0.32                      | High          |
| <b>Overview of learning activities</b>                                                                                                                                     | <b>4.33</b>                 | <b>0.66</b>               | <b>High</b>   |
| <b>In terms of learning atmosphere</b>                                                                                                                                     |                             |                           |               |
| 6. Problem-based learning helps to promote a good environment, making students enthusiastic about learning.                                                                | 4.30                        | 0.82                      | High          |

| Evaluation list                                                                                                   | Average score ( $\bar{X}$ ) | Standard deviation (S.D.) | Opinion level |
|-------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------------------|---------------|
| 7. Problem-based learning allows students to exchange knowledge with teachers and group members.                  | 4.22                        | 0.80                      | High          |
| 8. Problem-based learning helps to promote good relationships among group members.                                | 4.15                        | 0.66                      | High          |
| 9. Problem-based learning helps students enjoy learning activities.                                               | 4.11                        | 0.32                      | High          |
| 10. Problem-based learning provides students with an opportunity to do activities freely.                         | 4.81                        | 0.48                      | Very High     |
| <b>Overview of learning atmosphere</b>                                                                            | <b>4.32</b>                 | <b>0.69</b>               | <b>High</b>   |
| <b>In terms of benefits received</b>                                                                              |                             |                           |               |
| 11. Problem-based learning helps students understand the content more easily.                                     | 4.15                        | 0.36                      | High          |
| 12. Problem-based learning helps students apply their knowledge and problem-solving methods to their daily lives. | 4.22                        | 0.58                      | High          |
| 13. Problem-based learning helps students to have a sequential thinking process.                                  | 4.33                        | 0.62                      | High          |
| 14. Problem-based learning helps students to ask questions and seek answers by themselves.                        | 4.44                        | 0.85                      | High          |
| 15. Problem-based learning helps students to be more courageous in presenting their problem-solving skills.       | 4.11                        | 0.32                      | High          |
| <b>Overview of benefits received</b>                                                                              | <b>4.25</b>                 | <b>0.58</b>               | <b>High</b>   |
| <b>Overview</b>                                                                                                   | <b>4.30</b>                 | <b>0.64</b>               | <b>High</b>   |

The data analysis presented in Table 4 reveals that participants expressed predominantly favorable perceptions toward the problem-based learning methodology ( $\bar{X}$  = 4.30, S.D. = 0.64). Among the evaluated dimensions,



instructional organization received the highest composite rating ( $\bar{X}$  = 4.33, S.D. = 0.66), followed closely by learning atmosphere ( $\bar{X}$  = 4.32, S.D. = 0.69), with perceived benefits rated marginally lower though still substantially positive ( $\bar{X}$  = 4.25, S.D. = 0.58).

Within the instructional organization dimension, participants particularly valued the methodology's efficacy in developing collaborative competencies ( $\bar{X}$  = 4.56, S.D. = 0.75). The structured procedural framework ( $\bar{X}$  = 4.48, S.D. = 0.58) and facilitation of active engagement ( $\bar{X}$  = 4.33, S.D. = 0.78) were also highly regarded.

Analysis of the learning atmosphere dimension revealed that intellectual autonomy received the highest individual item rating across all dimensions ( $\bar{X}$  = 4.81, S.D. = 0.48). Additionally, participants positively evaluated the methodology's capacity to foster an engaging learning environment ( $\bar{X}$  = 4.30, S.D. = 0.82) and facilitate knowledge exchange ( $\bar{X}$  = 4.22, S.D. = 0.80).

Regarding perceived benefits, participants most strongly endorsed the methodology's capacity to promote self-directed inquiry ( $\bar{X}$  = 4.44, S.D. = 0.85). Sequential cognitive development ( $\bar{X}$  = 4.33, S.D. = 0.62) and knowledge transfer to extracurricular contexts ( $\bar{X}$  = 4.22, S.D. = 0.58) were also positively evaluated.

These findings suggest that the implementation effectively embodied the theoretical foundations of problem-based learning, particularly regarding the balance between structured guidance and intellectual autonomy within a collaborative framework.

## 2. Discussion

Research on the Development of Managerial Economics Problem-Solving Ability Through Problem-Based Learning: Supply, Demand, and Market Equilibrium The results of this research can be discussed as follows:

### 1. Learning Achievement

The learning achievement in Managerial Economics for Business, specifically on the topics of demand, supply, and market equilibrium, after implementing Problem-Based Learning (PBL) was significantly higher than before instruction at the 0.05 level of significance. This improvement can be attributed to the structured and learner-centered nature of PBL, which enhanced students' active participation, motivation, and engagement in economic reasoning. Through analyzing authentic business situations such as changes in market prices and production decisions students were able to connect theoretical concepts to real-world contexts, thereby strengthening both conceptual understanding and application skills.

Furthermore, PBL encouraged learners to take ownership of their learning process by identifying relevant problems, conducting independent research, synthesizing knowledge collaboratively, and presenting their findings for peer evaluation. This iterative learning cycle fostered deeper cognitive processing, self-reflection, and critical analysis, which contributed to sustained improvement in learning outcomes.

These findings align with Bureenok and Worapun (2023) research on the development of economics learning management using problem-based learning for Mathayom 4 students, which found that problem-solving ability improved significantly after learning, with statistical significance at the .01 level. Similarly, Khumkrong (2018: 67) studied the development of problem-based learning activities in economics for Mathayom 5 students and found that

learning management with problem-based learning activities yielded higher achievement than traditional teaching methods at a statistical significance level of .05. This improvement occurs because learners actively engage with problems in constructed situations, collaboratively search for solutions, and find answers independently in contexts that reflect real-life conditions.

## 2. Problem-Solving Ability

The ability to solve management economic problems related to demand, supply, and market equilibrium through problem-based learning was assessed at a good level. This positive outcome results from a learning process where students construct knowledge from interesting problems or situations through group work, research, understanding, and rational problem-solving processes. The problems are connected to real life and serve as the starting point for the learning process, with teachers primarily providing guidance and creating a supportive learning environment.

This approach aligns with the problem-based learning characteristics outlined by the Office of the Secretary of the Education Council, Ministry of Education (2007: 2-3), which emphasizes that problem situations should stimulate the learning process and reflect real-life scenarios that learners might encounter. Learners engage in self-directed learning by independently searching for knowledge and answers, planning their learning, managing their time, selecting learning methods and experiences, and evaluating their own learning outcomes. Furthermore, small-group learning benefits students by facilitating collaborative information gathering, developing communication skills, recognizing individual differences, and practicing self-organization to enhance teamwork capabilities.

### 3. Student Opinions

Students' opinions regarding problem-based learning management were highly positive overall. When examined by specific aspects learning activity organization, learning atmosphere, and benefits received the average opinion remained at a very high level of agreement. This positive reception stems from problem-based learning's ability to promote student engagement through a clear sequence of steps that facilitates effective learning, develops teamwork skills, and provides students with freedom to pursue activities independently.

These findings correspond with Khammanee's (2018: 137-138) description of problem-based learning as an arrangement of teaching and learning situations that utilize problems as tools to help learners achieve their goals. This approach encourages the practice of analytical processes and collaborative problem-solving, helps learners clearly understand problems, identifies various solution options and methods, fosters eagerness to learn, and develops thinking processes and problem-solving skills.

The results also align with Khumkrong's (2018: 67) research, which found that students expressed high satisfaction with problem-based learning activities. Students particularly appreciated the opportunities to work in groups, ask teachers questions when they didn't understand content, and engage in self-directed learning.

## Conclusions and Recommendations

### 1. Conclusions

This study confirmed that applying Problem-Based Learning (PBL) in Managerial Economics for Business significantly strengthened students' ability to interpret and solve economic problems related to demand, supply, and market equilibrium. By engaging with authentic case scenario such as

local price fluctuations and production decision students practiced analytical reasoning, teamwork, and self-directed inquiry. The process encouraged them to connect abstract economic theories to practical business situations, thereby enhancing their conceptual understanding and application skills. Overall, PBL in this context demonstrated multidimensional learning gains encompassing cognitive comprehension, applied problem-solving, and positive learning attitudes consistent with the intended course outcomes.

## **2. Recommendations**

### **General Recommendations**

1) Strengthen Time Management within PBL Activities. Some student groups faced difficulty completing the problem-solving tasks within the designated time. Future instructional plans should provide clearer guidance on time allocation and incorporate progressive task scheduling to support equitable learning progress among groups.

2) Enhance Classroom Support and Participation. Instructors should cultivate a psychologically safe and interactive classroom climate that encourages students to express diverse viewpoints, engage in debate, and participate more actively in group and plenary discussions.

3) Scale Up PBL Implementation across Business Courses. Given the positive learning outcomes in Managerial Economics particularly in developing analytical reasoning and self-directed inquiry this instructional model should be expanded to other business and management subjects that emphasize applied decision-making and problem-solving competencies.

### **Recommendations for Further Research**

1) Future studies should explore the effects of PBL implementation across other components of the Managerial Economics or Business Administration curriculum, such as cost analysis, market structure, or strategic pricing, to evaluate transferability and content-specific impacts.

2) Comparative research between PBL and other learner-centered methods (e.g., case-based learning, project-based learning, or simulation-based instruction) is recommended to identify the most effective approach for fostering analytical and problem-solving skills in economics education.

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