

Utilization of Case Study Learning Based on Data Analysis in Economics Subjects to Improve Students' Critical Thinking Skills: Article Review

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Abstract

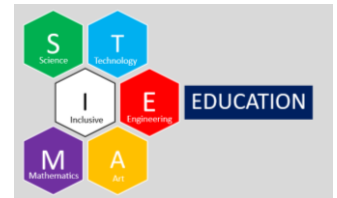
Economics subjects in the data-based era prepare students to be able to analyze economic trends and prepare for career levels in various industries. Economic concepts are not just memorizing but require critical thinking in making decisions using data. The use of case study-based learning media is considered capable of improving students' critical thinking skills. This study aims to analyze research trends in case study-based learning media, advanced economics education, and improving students' thinking skills. This research method uses Systematic Literature Review (SLR). Research data were obtained from 20 articles from the Eric and Google Scholar databases. The SLR method is used to identify, review, evaluate, and interpret all available research in the subject area of interest to a phenomenon involving certain related research questions. Based on the literature review that has been conducted, it can be concluded that research on the development of economic learning through a database analyst curriculum in advanced economics learning can be carried out with various considerations of previous research results.

Keywords: Learning, Data Analysis, Economics, Critical Thinking

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Introduction

Advanced economic education equips Senior High School (SMA) students to understand essential economic concepts (Laguna-Sánchez et al., 2021). Students delve into various disciplines, such as macroeconomics, microeconomics, econometrics, and other specialist fields in economics (Zheng et al., 2023). This knowledge is essential to comprehensively understand economic dynamics and prepare graduates who are competent in economic analysis. Although this topic of understanding has not been widely taught in schools, it introduces these basic concepts to provide students with an initial overview (Li et al., 2023). Advanced economics education offers significant benefits in supporting students' careers by equipping them with a deep understanding of economic principles, data analysis, and strategic decision-making skills (Xing et al., 2023). In an increasingly competitive world of work, graduates with an economic background have advantages in various fields, including finance, banking, public policy, and entrepreneurship. Understanding macroeconomics and microeconomics allows them to analyze market trends and understand the economic dynamics that affect businesses and industries (Sanchis et al., 2022).

The critical and analytical thinking skills obtained from economic education also benefit more mature decision-making (Seibert, 2021). Students who have studied economic concepts can better interpret data, understand the impact of economic policies, and develop sustainable business strategies (Daryanes et al., 2023). This ability is highly valued in various industries. It is an important factor in increasing the competitiveness of graduates in the job market. However, multiple studies show that conventional approaches to economic learning still focus on memorizing concepts without providing enough space for in-depth analysis and data-driven problem-solving (Jodoi et al., 2021). As a result, students tend to experience difficulties applying economic concepts in real situations and critically evaluating various economic information (Barta et al., 2022).

The case study-based learning approach has evolved as an effective method to improve students' critical thinking skills (Oyler & Romanelli, 2014). Case studies allow students to analyze real problems, evaluate various data sources, and make decisions based on empirical evidence (Abdurrahman et al., 2023). This approach aligns with the latest education developments that emphasize experiential learning and data-driven learning. Several studies have shown that using data in case studies can improve students' understanding of economic concepts and strengthen their ability to analyze problems systematically (Cortés Loyola et al., 2020). Although the case study-based learning approach has been widely applied in various disciplines, its application in data analysis-based economic education is still limited. Most

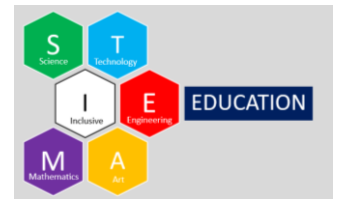
International Conference on Inclusive STEAM Education

Universitas Negeri Malang, 18 - 19 February 2025

Conference Proceedings, Published: April 2025, Volume 1 Number 1

DOI: <https://doi.org/10.57142/icteme.v1i1.xxx>

e-ISSN: xxxx-xxxx



existing studies focus more on the narrative aspect of case studies without providing enough space for quantitative analysis and in-depth data utilization. In addition, there is still a gap in research related to the effectiveness of this approach in improving students' critical thinking skills, especially in the context of economic education at the secondary level (Coppe et al., 2024).

Some recent studies have proven the effectiveness of case study-based learning in improving students' critical thinking skills. Research by (Nungu et al., 2023) shows that the data-based case study approach can improve students' analytical and problem-solving skills in understanding global economic phenomena. Another study by (Tran & Herzig, 2023) revealed that students who engage in case-study-based learning are better able to interpret financial data than those who only use conventional methods. However, despite the proven benefits, this approach still faces challenges, such as lacking teacher skills in designing data-driven case studies and limited access to relevant and up-to-date economic data (Imjai et al., 2023).

Based on these challenges, more in-depth research is needed on how data-based case study-based learning can be optimized in economics subjects. The focus of this research is to identify the effectiveness of this method in improving students' critical thinking skills and exploring the factors that support its success (Raji, 2019). Thus, this study is expected to provide recommendations for educators and policymakers in developing more effective economic learning strategies (Annamalai et al., 2023).

Research Methods

This study uses a qualitative method through a literature review to analyze the development of case study-based learning supported by data analysis in economics subjects. The systematic review was carried out by adopting the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach, which consists of four stages, namely Identification, Screening, Eligibility, and Inclusion (Aljaber et al., 2023; Ibrahim et al., 2023; Mathieu, 2024).

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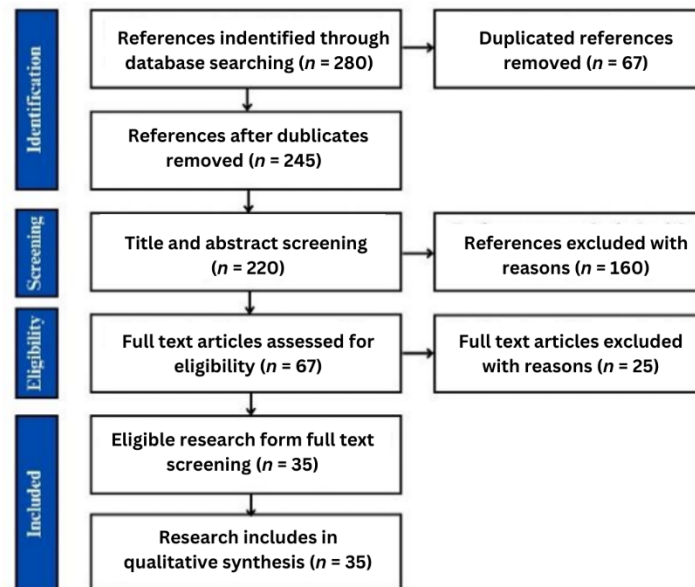
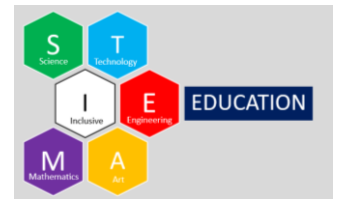
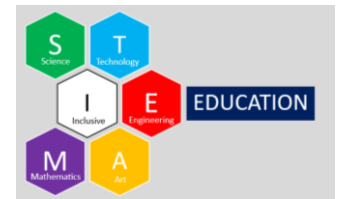


Figure 1. PRISMA Flow Diagram

The first stage is identification. The literature review was conducted by browsing various academic databases, including Scopus, Google Scholar, ERIC, and Crossref. The keywords used in the search include "case study learning", "data analysis in economics education", and "critical thinking in economics". From the search results, as many as 280 articles were found relevant to the research topic. After eliminating duplication, 245 articles are left to be further selected based on abstracts and titles.

The next stage is screening. The selection of the 245 available articles was done by considering suitability with the research topic. A total of 67 articles were selected to be read. After a thorough review process, 35 articles were obtained that met the inclusion criteria that had been set. The inclusion criteria in this study include: i) Research that focuses on the effectiveness of learning based on data-based case studies in economics subjects; ii) Articles published in Scopus-indexed international journals or national journals with a minimum of SINTA 2 accreditation; iii) Publications in the range of 2019-2024; and iv) Articles that have full and open access (Taylor et al., 2024).

The final step is to extract and synthesize data from the 35 selected articles. The synthesis process is carried out by examining various important aspects, including the effectiveness of data-based case study methods in improving students' critical thinking skills, the learning models used, and supporting factors and obstacles in implementing this method in economic education. The results of this study are



expected to contribute to developing more effective and data-based economic learning strategies based on case studies (Abbas et al., 2023).

Results and Discussion

Data Analysis in Economics Subjects

Data analysis in economics is a systematic approach used to understand, interpret, and evaluate economic phenomena based on empirical data. This method allows students to develop critical and analytical thinking skills in exploring various financial concepts, such as inflation, demand and supply, monetary policy, and the impact of economic policies on the business sector and society. Table 1 shows examples of economic learning topics from the results of the journal analysis.

Table 1. Detailed Search Results from Data Analysis in Economics Subjects

Category	Case Study Topic Examples	Economic Concept	References
Descriptive Case Study (Qualitative)	The Impact of the Minimum Wage Policy on MSME Business Decisions	Labor Market Theory, Demand Elasticity for Labor, and Cost of Production Theory	(Daryanes et al., 2023; Mošková et al., 2023; Tran & Herzig, 2023)
	Traditional Traders' Strategies in Facing Competition with Modern Retail	Market Structure and Competition, Product Differentiation Strategies, Demand and Supply Theory	(Hagen et al., 2024; Xing et al., 2023)
	The Impact of Changes in Public Consumption Patterns on the Sustainability of Local Culinary Businesses	Consumer Behavior and Market Preferences, Innovation Theory in Economics, Market Efficiency	(Annamalai et al., 2023; Yousaf & Xiucheng, 2018)
	Sustainability of the Creative Industry in the Digitalization Era: A Case Study of Local Fashion MSMEs	Digital Economy, Market Efficiency through Technology, Innovation-Based Business Models	(Asaithambi et al., 2024; Raji, 2019)
Analytical Studies (Quantitative)	Analysis of the Effect of Inflation on People's Purchasing Power in Urban Areas	Inflation Theory, Consumer Price Index (CPI), Purchasing Power and Real Income	(Coppe et al., 2024; Widiastuti et al., 2022)
	The Impact of Interest Rate Policy on Property	Interest Rate Theory, Investment and Market	(Barta et al., 2022; Wiroomrath et al., 2024)

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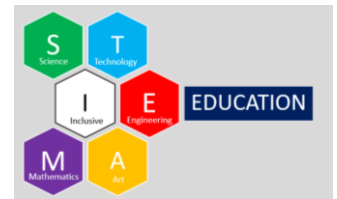
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Sector Investment in Capitalization, Monetary Policy	
The Influence of E-Digital Economy, (Zheng et al., 2023)	
Commerce on MSME Market Efficiency,	
Revenue Growth in Innovation and	
Indonesia Productivity Theory	
The Relationship Between Economic Growth (Laguna-Sánchez et al.,	
Government Spending in Theory, Public 2021)	
the Education Sector and Economy, Resource	
Economic Growth Allocation Efficiency	

Based on the tables that have been compiled, descriptive and analytical case studies in the field of economics provide in-depth insights into economic phenomena through qualitative and quantitative approaches. One of the topics of explanatory case studies that has been widely studied is the Impact of the Minimum Wage Policy on MSME Business Decisions. Related research shows minimum wage policies significantly impact business decisions, especially regarding labour costs and MSME adaptation strategies (Rauch & Brown, 2020). In the context of labour market theory, the elasticity of labour demand is the main factor determining how companies respond to changes in minimum wage policies (Shahzadi et al., 2023). Some MSMEs overcome this impact by adjusting product selling prices or improving production efficiency through innovation (Peter et al., 2020).

In addition, a study on Traditional Market Traders' Survival Strategies in Facing Competition with Modern Retail shows that market structure and competition are major challenges for traditional traders. Previous research has found that product differentiation strategies and customer loyalty are the main keys to maintaining traditional markets' competitiveness (Dimitrijević, 2023). This case study shows that the competition between modern retail and traditional markets is influenced by price factors and cultural and social aspects in consumer preferences (Setiawan et al., 2020).

Another relevant topic is the Impact of Interest Rate Policy on Property Sector Investment in Indonesia. Quantitative studies show that the increase in Bank Indonesia interest rates (BI Rate) has a negative relationship with investment in the property sector (Pishchukhina et al., 2024). This is in line with the interest rate theory, which states that an increase in interest rates leads to higher borrowing costs, thereby reducing investor interest in the property sector (Mensah et al., 2023). Descriptive and analytical case studies in economic research provide a broader understanding of monetary policy dynamics, consumer behaviour, and business adaptation strategies in the face of economic change. References from academic journals show that this approach is relevant in theory and has direct application in monetary policy and business decision-making.

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Data Analysis in Economics Integration In Study Case Learning

Learning in economics can be developed through various integrations, such as using learning models and approaches that support a deeper understanding of economic concepts. The learning model is a systematic design that describes the learning process from beginning to end with clear and distinctive steps in its application by teachers (Luz et al., 2022). In the context of economic learning, one of the approaches that can be used is integrating data analysis in economics into case study learning.

This approach allows students to analyze economic data directly in real case studies to understand economic patterns based on empirical data. Thus, learning not only focuses on theoretical concepts but also on applied analytical skills. This integration can be applied in various scenarios, such as the analysis of the impact of inflation on people's purchasing power or the relationship between interest rate policy and investment in the property sector. An example of integrating Data Analysis in Economics in case study-based learning can be seen in the illustration that supports data-based learning and evidence-based economic research (Troussas et al., 2020).

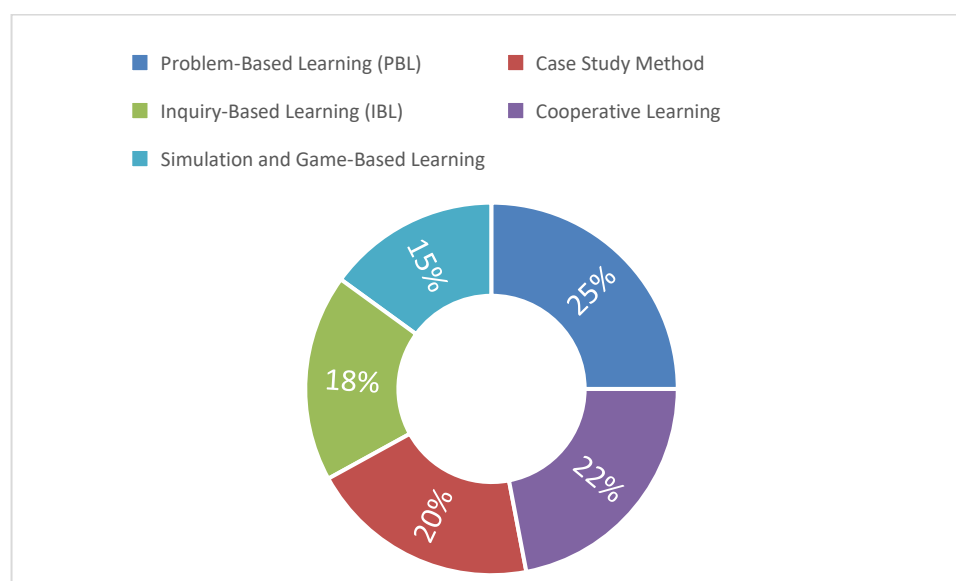


Figure 2. Data Analysis in Economics Subjects

Various learning methods in economic education have different effectiveness in improving student learning outcomes. Problem-based learning (PBL) is used in 25% of cases. It has been proven to increase student activities and learning outcomes from a scale of 2.6 to 3.1 and the completion rate from 60% to 88.6% (Tima & Sutrisno, 2020). Cooperative Learning, with a percentage of 22%, focuses on student cooperation and has increased learning activities from 54.16% to 83.33%, as well as learning outcomes

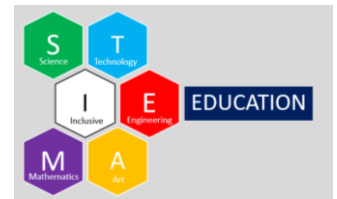
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from 66.66% to 91.66% in a study at SMA Negeri 1 Bengkayang (Jurkowski et al., 2024). The Case Study Method, which is used in 20% of cases, allows students to understand economic concepts through real-life situational analysis even though the percentage-specific data is limited. Inquiry-based learning (IBL) is used in 18% of cases. It has improved students' critical thinking skills compared to varied lecture methods (Khan et al., 2019). Meanwhile, Simulation and Game-Based Learning, which account for 15% of usage, are growing in popularity because they provide an interactive learning experience by modelling real economic situations in a controlled environment. Combining various learning methods can improve students' financial understanding (Saastamoinen et al., 2024).

Learning Tools Related to Data Analysis In Economics Integration In Study Case Learning

Integrating data analysis in economic case study learning requires various learning media that can help students understand and analyze data more deeply. This learning medium serves as a tool to explain economic theories and involve students in a more interactive and applicable learning process. Case-study-based learning that integrates data analysis also prioritizes student collaboration (Lan & Huang, 2023). Media such as discussion forums, work groups, or online brainstorming sessions can enrich the learning process by providing a space for students to share their findings, discuss data analysis, and criticize approaches taken by fellow students. This collaborative approach improves students' understanding of the material and develops their communication and critical thinking skills (Mishra et al., 2020). Here are some relevant learning media in the application of data analysis in economic case study learning:

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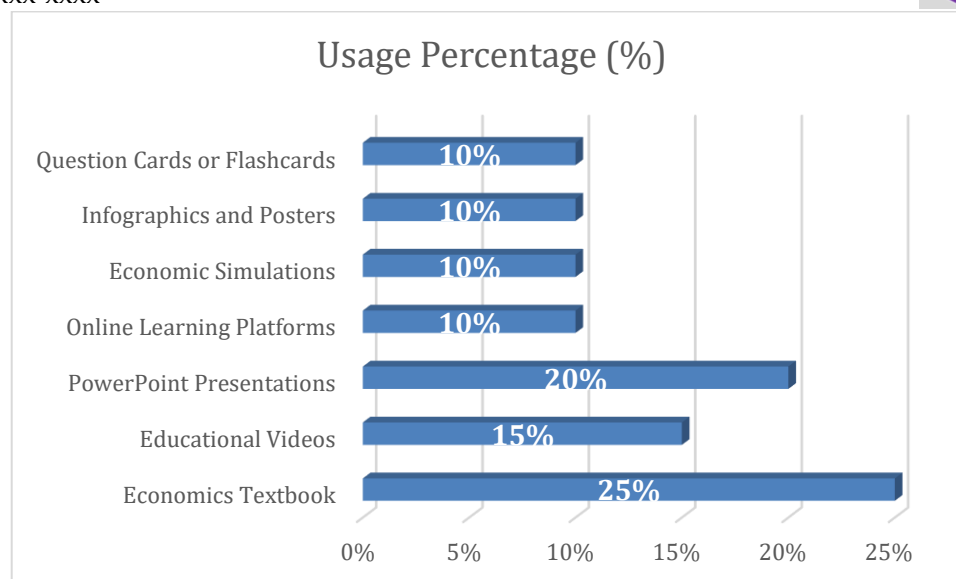
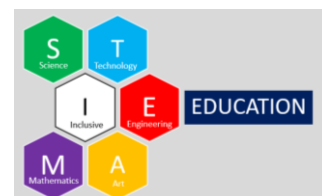
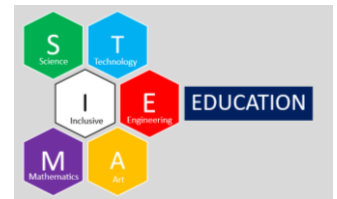


Figure 3. Learning tools related to Data Analysis in Economics integration in study case learning

Economics textbooks (25%) remain the main source of theoretical content in economics education, providing a comprehensive overview of the economic principles, models, and theories on which learning is based in schools. Despite the increasing use of other media, textbooks are still considered a reliable and systematic resource, often used for homework, exams, and class discussions (Muzdalifah et al., 2021). Learning videos (15%) are increasingly popular because they can simplify abstract concepts such as supply and demand or inflation visually and engagingly, making it easier for students to understand (Flegr et al., 2023). PowerPoint presentations (20%) effectively summarize key points and present data in a structured manner, enabling dynamic teaching with text, visuals, and diagrams that can be customized in real time (Wirawan & Gading, 2022). Online learning platforms (10%), such as Google Classroom or Moodle, provide access to learning materials, communication between students and teachers, and assignment collection, allowing flexibility in asynchronous learning and supporting a variety of learning styles (Biancolin & Rotaris, 2024). Economic simulations (10%) are used to model real-world scenarios such as market behaviour or the impact of government policies, providing in-depth, hands-on experience and encouraging students' critical thinking skills (Rente et al., 2022).

Research Instrument related to Data Analysis in Economics Integration in Study Case Learning

In integrating data analysis into case study learning in economics education, research instruments play an important role in assessing the process and outcomes of learning experiences. The instrument collects data on how well students engage with the content, understand economic concepts, and apply data



analysis techniques to solve real-world financial problems (Mishra et al., 2020). The following are some of the main research instruments that can be used:

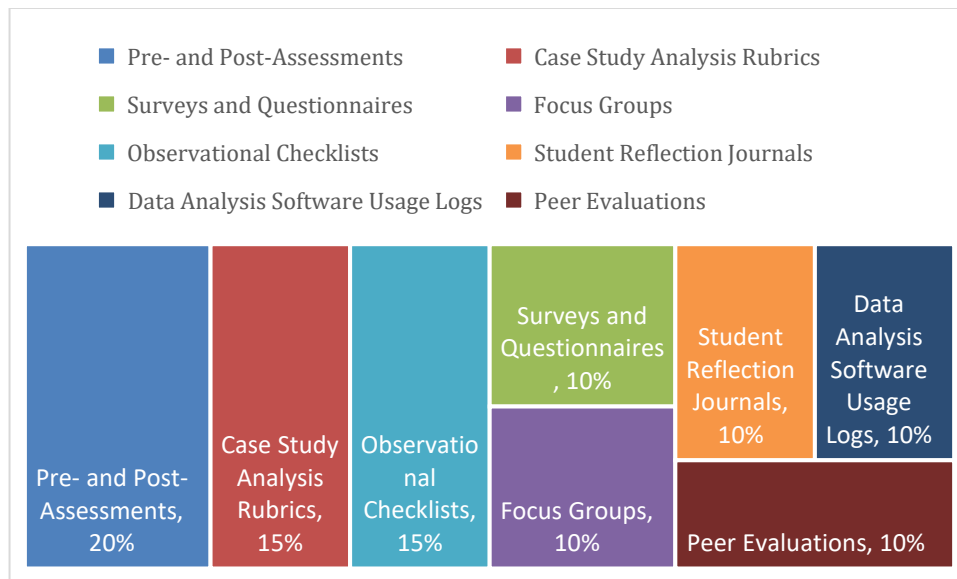
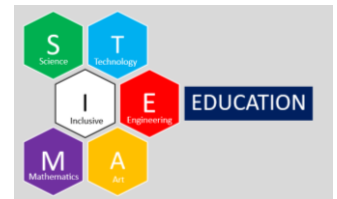


Figure 4. Research Instrument Related to Data Analysis in Economics Integration In Study Case Learning

Pre- and post-assessments (20%) were used to measure the improvement of students' knowledge and skills in understanding economic concepts and applying data analysis in case studies. Pre-assessment provides an initial overview of student understanding, while post-assessment evaluates changes after learning. Case study analysis rubrics (15%) assess students' ability to identify economic problems, apply data analysis, and draw appropriate conclusions, by ensuring objective and consistent assessments (Wang & Huo, 2018). Surveys and questionnaires (10%) were used to collect data on students' perceptions and experiences of case study-based learning and their level of satisfaction with the methods used. Focus groups (10%) explore students' experiences and opinions in more depth about the challenges in understanding economic concepts and the effectiveness of learning methods (Imjai et al., 2023). Observational checklists (15%) allow researchers to monitor student involvement directly using data analysis tools and the application of economic theory, providing a clear picture of student interactions with learning materials (Namara et al., 2023). Finally, student reflection journals (10%) collect students' thoughts and experiences regarding their challenges in understanding economic data, supporting a reflective learning process that improves material understanding and retention (Marnewick, 2023).



Variables influenced by Data Analysis in Economics Integration In Study Case Learning

Integrating data analysis in economic case study learning affects several variables that are very important in student's learning process and skill development. These variables include students' ability to think critically, understand economic concepts, develop analytical skills, and apply financial knowledge in real-world situations (Biancolin & Rotaris, 2024). Here are some of the key variables that are influenced by the integration of data analysis in economic case study learning:

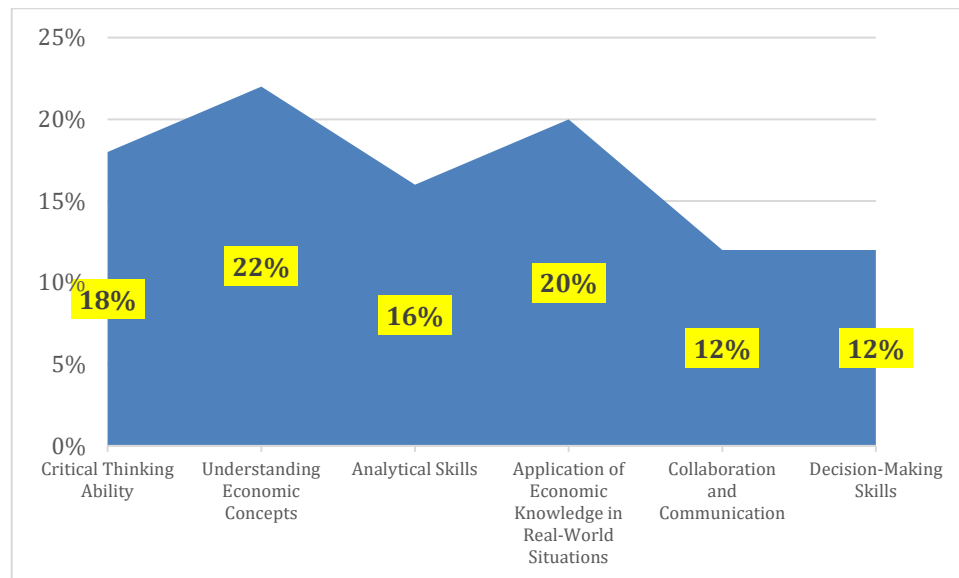


Figure 5. Variables Influenced by Data Analysis in Economics Integration In Study Case Learning

Learning that integrates data analysis in economic case studies significantly impacts various important student abilities. Critical thinking ability was recorded at 18%, indicating that students could better evaluate in-depth information through data analysis (Luz et al., 2022). Understanding economic concepts obtained the largest percentage (22%) because real data in case studies strengthened the understanding of economic theory (Disli et al., 2023). Analytical ability of 16% reflects the development of skills in identifying patterns and trends in financial data (Almusharraf & Khahro, 2020). The application of economic knowledge in real-world situations reaches 20%, as data-driven learning allows students to see the relevance of theory in practical contexts (del Val Núñez et al., 2024). Collaboration and communication at the 12% level reflect the importance of interaction between students in analyzing data together (Ali et al., 2022), while decision-making skills also gain 12%, as students are trained to make data-driven decisions (Dreyweish et al., 2024). Overall, integrating data analysis in case studies strengthens essential skills in economics education.

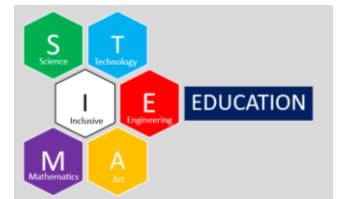
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The purpose of the results and discussion is to state your findings and make a interpretations and/or opinions, explain the implications of your findings, and make suggestions for future research. Its main function is to answer the questions posed in the introduction, explain how the results support the answers and, how the answers fit in with existing knowledge on the topic. The discussion is considered the heart of the paper and usually requires several writing attempts.

Conclusions

The results of this study show that integrating data analysis in learning economic case studies significantly impacts students' understanding of economic concepts, critical thinking skills, and analytical skills. In case study-based learning, students not only gain an understanding of economic theory but also develop the ability to apply their knowledge to real-world situations, such as the analysis of the impact of inflation on people's purchasing power or the relationship between interest rate policy and property sector investment. Various learning instruments and media, such as textbooks, learning videos, economic simulations, and online learning platforms, have proven effective in deepening students' understanding. In addition, learning methods such as Problem-Based Learning (PBL) and Cooperative Learning significantly increased student learning outcomes. Using research instruments, such as pre-and post-assessments and case study analysis rubrics, allows for objective and in-depth assessments of student development in applying economic data analysis. These results underscore the integration of data analysis in economic learning to improve students' skills in facing real and profound economic challenges.

Acknowledgments

We thank the Institute for Research and Community Service of the State University of Malang for providing funds through the Central Superior Research scheme with contract number 24.2.386/UN32.14.1/LT/2025.

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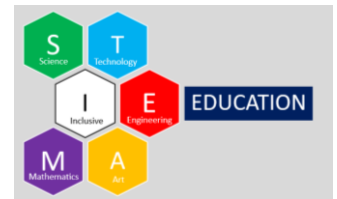
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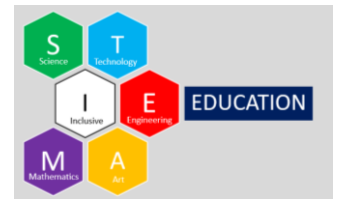
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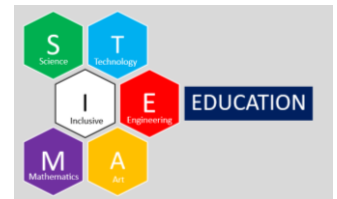
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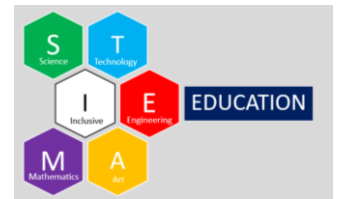
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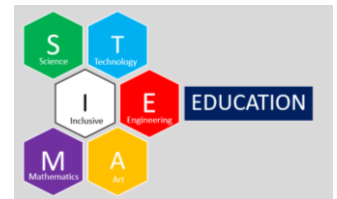
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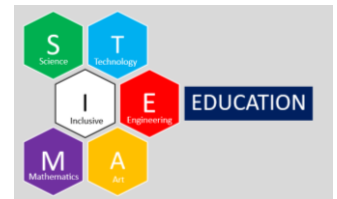
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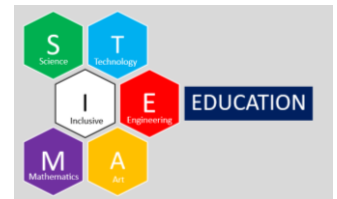
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