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Training on Multiple Regression Analysis Using EViews

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ABSTRACT

Background. The ability to conduct quantitative data analysis is essential for undergraduate students completing their final research projects. However, many economics students continue to struggle with understanding the concepts of multiple regression and with operating econometric software such as EViews. As a result, targeted training that aligns with learners' needs is required to improve their methodological competence.

Purpose. This study aimed to evaluate the effectiveness of a community service activity in the form of a training program on multiple regression analysis using EViews for final-year economics students. Specifically, it examined students' initial understanding, learning gains, and their ability to apply regression procedures independently after the training.

Method. The A total of 8 students participated in the training, which included a pre-test, theoretical instruction, software demonstration, hands-on practice, and a post-test. Data were collected through structured assessments and observations, and were analysed descriptively to measure students' progress.

Results. The findings show that the training significantly improved students' understanding of regression concepts, their skills in inputting and managing data, and their ability to run and interpret multiple regression analyses in EViews. Participants demonstrated higher confidence and accuracy in performing key analytical steps, including executing t-tests, F-tests, and interpreting R^2 values.

Conclusion. The program provides evidence that structured and practice-oriented training can effectively enhance students' quantitative research skills. These findings offer meaningful implications for economics lecturers and academic programs seeking to strengthen students' readiness for conducting empirical research.

KEYWORDS

Training, Multiple Regression, Data Analysis, Community Service

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INTRODUCTION

Writing an undergraduate thesis is an essential milestone for students, as it reflects their mastery of research methodology, their ability to process data, and their competence in drawing conclusions based on empirical evidence (Iuga, 2016). In the field of economics, multiple regression analysis is one of the most widely used analytical techniques because it allows researchers to

examine the simultaneous influence of several independent variables on a single dependent variable.

However, practical experience shows that many students still struggle to apply regression analysis, both in terms of conceptual understanding and technical skills when using statistical software (Haddad dkk., 2023). Some students grasp the theoretical foundations of regression but are unable to carry out data entry, run model estimations, or correctly interpret statistical outputs.

EViews, meanwhile, is a commonly used econometric software in economic research (Kumalo & Kaseeram, 2019). It offers a user-friendly interface, supports various types of data—including time series and panel data—and provides comprehensive analytical outputs (Cristina dkk., 2017). Nevertheless, mastering EViews requires hands-on practice so that students become familiar with each step of the analytical process.

In response to these needs, the community service team organized a specialized training program that integrates theoretical explanation and practical application (W. Wang dkk., 2010). This training aims to strengthen students' understanding of multiple regression analysis while ensuring they can apply it effectively using EViews (Emamgholipour dkk., 2021). Beyond improving students' technical abilities, the program is expected to enhance the quality of academic research and accelerate the completion of their theses.

RESEARCH METHODOLOGY

This community service activity was designed for final-year students of the Economics Study Program at UHO, with a total of eight participants (Shahraki, 2019). The students were selected because they were in the final stage of completing their undergraduate theses, which requires adequate quantitative data analysis skills. The training was conducted in person on 4 November 2025. The training activities were structured to help participants build their understanding gradually, starting from theoretical foundations and progressing to independent practice using EViews.

Participants completed a pretest to assess their: basic understanding of regression analysis, knowledge of statistical testing procedures, initial ability to operate EViews. The results indicated that most participants had not yet mastered the complete steps involved in data analysis. The theoretical component was delivered in an organized manner and covered: the concept of multiple regression, interpretation of coefficients, model significance testing, the importance of classical assumption tests, the structure and meaning of regression output. This stage ensured that learners grasped the conceptual foundation before moving on to technical application.

The instructor demonstrated each step of the process, including: creating a workfile, entering data, constructing a regression model, running the estimation, interpreting the output (W. Wang dkk., 2011). Participants observed the full workflow so they could replicate it during the hands-on session. Participants practiced the entire procedure independently, with guidance from the instructor when needed. During this stage, they: entered data, selected variables, executed the regression, performed t-tests, F-tests, and interpreted R^2 values, saved outputs for use in their theses. This practical component served as a crucial phase that enabled participants to understand EViews from a functional and applied perspective.

RESULT AND DISCUSSION

The implementation of the Multiple Regression Analysis Training using EViews for final-year students provides an in-depth overview of their methodological readiness in completing their undergraduate theses (Liu dkk., 2010). Although students have generally been introduced to

regression analysis during coursework, many still lack the practical skills needed to apply these concepts to real data (Mafruhah & Istiqomah, 2024). This indicates a clear gap between theoretical understanding and technical execution, which frequently becomes a major obstacle in conducting quantitative research.

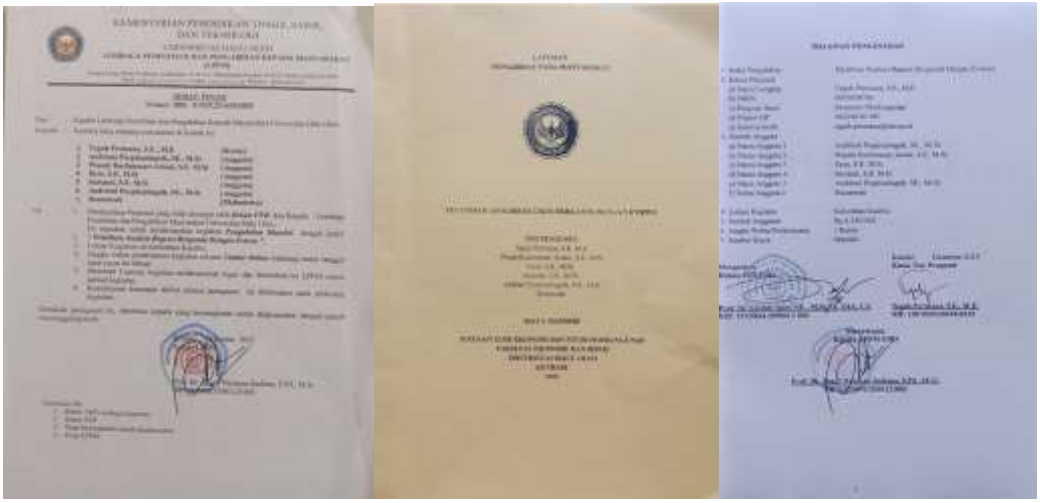

Figure 1. Assignment Letter, Community Service Report, Approval Page

At the beginning of the activity, field observations revealed that students faced various difficulties, such as identifying relevant variables, constructing appropriate regression models, and following the operational steps of econometric software (Y. Wang dkk., 2024). These challenges often prolong the thesis-writing process and increase the likelihood of methodological errors. Such findings reinforce Widarjono's (2017) argument that mastering analytical software remains one of the most prominent challenges for novice economics students engaging in empirical research.

The training integrated theoretical explanations, hands-on demonstrations, and guided practice, forming a well-sequenced and systematic learning structure. This approach allowed participants to first build a conceptual foundation before applying the knowledge in practical contexts. Such a model aligns with experiential learning theory, which emphasizes learning through direct experience and has been proven effective in enhancing comprehension and long-term retention (Sanjaya, 2021).

During the demonstration phase, the instructor presented detailed procedures for using EViews—from data preparation to the interpretation of regression outputs. This gave students a clear visualization of the entire workflow, enabling them to better perform the tasks independently during the practical session. This step-by-step approach also reflects the pedagogical concept of scaffolding, where support is gradually reduced as learners gain proficiency.

In the hands-on practice session, the participants showed noticeable progress in both their understanding of the analytical process and their technical command of EViews. They were able to input data, specify models, and carry out estimations with increasing confidence. This improvement highlights the effectiveness of practice-based learning in strengthening students' operational skills.

Moreover, participants gained a clearer understanding of key statistical tests such as the t-test, F-test, and the coefficient of determination (R^2). Previously, students tended to memorize statistical definitions without comprehending their practical implications. The training enabled them to observe how these values appear in the software output and how they influence the interpretation of research findings. As a result, their analytical interpretation skills improved substantially.

Interactive discussions during the training revealed that students frequently misunderstood regression results—for instance, misinterpreting coefficients or overlooking statistical significance. Through guided feedback, participants were able to correct these misconceptions and strengthen

their analytical reasoning. This improvement indicates that the training successfully cultivated more critical thinking in data analysis.

Compared to similar community service programs at other universities, this training is more specialized because it focuses deeply on one high-demand methodological skill (Chinthapalli, 2021). Many institutions tend to offer broader workshops on academic writing or basic data processing using tools like Microsoft Excel. Although useful, such programs do not provide the level of econometric software specialization that EViews training offers for economics research.

For instance, a program at Universitas Negeri Malang concentrates on improving students' proposal writing skills, while a program at Universitas Padjadjaran emphasizes qualitative research methodology (Azmi & Putri, 2022). In contrast, the training provided in this study directly enhances students' technical competence in regression analysis—a core component of quantitative research in economics.

Figur 2. documentation of the activity

Another strength of this activity is the relatively small number of participants. With only eight students, the training environment allowed for more personalized interaction between the instructor and each participant. Previous research supports that small-group technical training tends to be more effective, as it facilitates focused consultation and more intensive learning (Ghozali, 2018).

The training also demonstrated that students with minimal prior understanding can make significant progress when given appropriate guidance. Several participants who initially struggled even with basic tasks such as entering data into EViews were able to conduct a complete regression analysis independently by the end of the session (Behzadifar dkk., 2015). This proves that hands-on technical instruction can substantially enhance student competencies.

Beyond improving technical skills, the training positively affected students' motivation and confidence. With a clearer grasp of the analytical process, they felt more prepared to tackle the data analysis portions of their theses (Jiang dkk., 2018). This is crucial, as many students experience anxiety when dealing with statistics or software-based assignments, particularly those who are less comfortable with quantitative subjects.

The training also addressed many of the recurring difficulties that students face in the research process, particularly during data analysis (Moradi, 2015). The ability to operate EViews effectively becomes a valuable asset not only for completing their thesis but also for future professional roles involving data-driven decision-making (Sun dkk., 2021). Nevertheless, there remains room for further development. Future training could incorporate broader topics such as panel data analysis, a comprehensive review of classical assumption tests, or more advanced econometric models such as

logistic regression, ECM, or VAR. These enhancements would better match the growing complexity of student research topics.

To ensure sustainability, it is recommended that this training be institutionalized as a recurring program held every semester (Valerie dkk., 2025). This would enable students from various cohorts to gain equal access to methodological reinforcement. Moreover, the content can be updated according to curricular developments or advances in analytical software (Săvoiu dkk., 2014). Overall, this activity has made a substantial contribution to improving students' research quality, strengthening their methodological competence, and fostering a stronger culture of data literacy within the academic environment. Programs of this nature are highly relevant and should be expanded to meet the increasing demands for strong analytical skills in higher education.

CONCLUSION

The Training on Multiple Regression Analysis Using EViews has had a positive impact on improving the knowledge and skills of final-year students. Participants gained a stronger conceptual understanding as well as practical competence in using EViews for data analysis required in their theses. The training was conducted effectively and successfully enhanced students' readiness to carry out independent empirical research. Similar activities are highly recommended for future implementation, as they offer clear benefits in strengthening the quality of students' academic work. Additionally, advanced training on topics such as panel data analysis, classical assumption testing, or other econometric models should be considered as part of ongoing capacity-building programs.

AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.
Author 3: Data curation; Investigation.
Author 4: Formal analysis; Methodology; Writing - original draft.
Author 5: Supervision; Validation.

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