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Global Trends in SPSS Training for Students: A Step Towards Improved Research Competence

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A B S T R A C T

The statistics training using the SPSS application in the Management Department, Faculty of Economics and Business, Universitas Pattimura aims to enhance students' understanding and skills in analyzing quantitative research data. In today's era of technological advancement, proficiency in statistics and its applications is crucial for students to produce competent and high-quality research. This training involved 22 students and was conducted in the Marketing and Business Laboratory through lectures, discussions, and hands-on practice. The speaker, a lecturer from La Trobe University, Australia, provided insights into using SPSS for both descriptive and inferential data analysis. The step-by-step application of SPSS for descriptive and inferential statistics was demonstrated with practical examples, making it easier for students to understand.

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INTRODUCTION

Statistics is a crucial discipline in decision-making across various fields, including business. In the context of the Faculty of Economics and Business at Universitas Pattimura, particularly in the Management Department, a deep understanding of statistics and its role in data analysis is essential (Pattiruhu, Jozef R; Tabelessy, 2024). With the advancement of information technology, data analysis applications such as SPSS (Statistical Package for the Social Sciences) have become widely used by researchers and professionals worldwide. Statistics training using SPSS not only provides technical skills but also equips Management students with a better understanding of relevant research methodologies. As globalization continues to evolve, statistics training with SPSS is not only relevant for students in Indonesia but also internationally (Rahman & Muktadir, 2021). Therefore, internationally oriented statistics training using SPSS is essential in preparing Management students to enter the global market and produce competent research. As members of the intellectual community, Management students have an obligation to conduct high-quality research that contributes to the advancement of knowledge (Tabelessy & Pattiruhu, 2022).

Statistics is the science of collecting, analyzing, interpreting, presenting, and processing data (Bilal Zorić, 2021). In research, statistics play a vital role since raw data cannot be used directly. Instead, it must be systematically and objectively analyzed to draw accurate conclusions. Scientific research in management heavily relies on statistics to test hypotheses, identify data patterns, and predict future trends. For example, in marketing decision-making, managers need to analyze sales data, consumer behavior, and market trends. In research, two primary branches of statistics are commonly used: descriptive statistics and inferential statistics. Descriptive statistic summarize the fundamental characteristics of data, such as measures of central tendency and dispersion, while inferential statistics allow researchers to make predictions or draw conclusions about a population based on a data sample (Wallace & Van Fleet, 2024). The appropriate use of statistics heavily depends on the research methodology employed.

Research methods are systematic steps taken to collect and analyze data (Christensen et al., 2015). In the context of statistics, research methods are divided into two main categories: quantitative research and qualitative research. Quantitative research focuses on numerical data collection and statistical analysis (Lim, 2024b; Tabelessy & Pattiruhu, 2024), while qualitative research aims to understand social phenomena through non-numeric data (Lim, 2024a). In this training, Management students will be introduced to both methods and how SPSS can be used to analyze data from quantitative research.

SPSS is one of the most widely used statistical applications among researchers worldwide for data analysis (Sarker et al., 2024). It is well known for its user-friendly interface, ability to handle various types of data, and capability to perform complex statistical analyses (Tabelessy & Batkunde, Adonia, 2022). With SPSS, users can conduct a wide range of analyses, including regression analysis, analysis of variance (ANOVA), hypothesis testing, multivariate analysis, and large-scale data analysis (Hanafi Azman Ong et al., 2017). SPSS also simplifies the process of importing data, managing variables, and executing various commands without requiring complex coding. Additionally, it excels in performing statistical analyses in a relatively short time with high accuracy and provides data visualization features. Because of these advantages, SPSS is a preferred choice for many universities and research institutions for statistics training.

However, despite its advantages, many Management students struggle with statistical analysis due to a lack of understanding of fundamental concepts and SPSS techniques. This lack of proficiency not only hinders accurate data processing but also significantly affects the quality of research findings. Insufficient skills in using SPSS optimally can reduce students' ability to analyze data effectively, preventing them from achieving valid and reliable research outcomes. The statistics training using SPSS aims to provide an in-depth understanding of fundamental statistical concepts, data analysis techniques, and the practical application of SPSS in research. Furthermore, this training is designed to equip Management students with the practical skills needed to conduct data analysis in their academic research. By strengthening their analytical skills, Management students will gain valuable expertise that will be highly beneficial in the field of management.

IMPLEMENTATION AND METHODS

The SPSS training was conducted in the Marketing and Business Laboratory of the Management Department, Faculty of Economics and Business, on Friday, November 29, 2024. A total of 22 students participated in the event. The training utilized a combination of lecture presentations, interactive discussions, and hands-on practice using SPSS on All-In-One (AIO) computers and laptops. The instructional materials included comprehensive PowerPoint (PPT) slides on SPSS and three SPSS data files (.sav), which were prepared by the speaker and distributed to the students.

RESULTS AND DISCUSSION

The statistics training using the SPSS application was officially opened by the Head of the Management Department. In their remarks, the Head emphasized the importance of statistical analysis skills for students and researchers. They also expressed high hopes that this training would enhance the understanding and skills of Management Department students in utilizing SPSS for data analysis, whether for research purposes or practical applications in the professional world.

Figure 1. Opening Remarks by the Head of the Management Department

After the opening ceremony, the trainer was introduced to the students participating in the training. The trainer is a Senior Lecturer in Marketing at La Trobe Business School, La Trobe University, Bendigo, Australia. With extensive experience teaching Marketing Research (MKT3MRE) and conducting research using SPSS, the trainer has exceptional expertise in applying the software to marketing cases and business decision-making.

The trainer expressed enthusiasm for sharing knowledge and experience in using SPSS, emphasizing its effectiveness for data analysis. They also outlined the training agenda and encouraged students to actively participate. The session began with the trainer explaining the relationship between research methods and statistics. Participants were instructed to follow the prepared materials, which were presented via a PowerPoint presentation. The topics included: an introduction to SPSS, preparing and entering data, descriptive statistics, and inferential statistics (Nanere, 2024). The trainer highlighted how SPSS simplifies data processing for researchers, even without in-depth programming knowledge. Additionally, the software enables various data analyses, such as hypothesis testing, difference testing, and other statistical tests.

After briefly explaining SPSS, the trainer began to demonstrate and introduce its key components, such as Data View, Variable View, and Output Viewer. The following functionalities were explained:

a. Data View: Used to view and manage data entered into the application.
b. Variable View: Used to define and manage variables within the dataset.
c. Output Viewer: Displays the results of statistical analyses performed.

Next, participants were instructed to open the provided SPSS data file (.sav). They were guided to determine the types and categories of data to be entered, such as variables for age, gender, or income. The trainer emphasized the importance of identifying the correct measurement scale for each variable nominal, ordinal, interval, or ratio to ensure the analysis would yield accurate and meaningful results.

Participants were then asked to name variables, specify data types, and adjust other related options in the Variable View menu. They were also instructed to switch to Data View to view the data in alignment with the variables previously defined.

The next step involved conducting a descriptive statistical analysis. Participants were guided through the following process:

a. Navigate to the Analyze menu.
b. Select Descriptive Statistics and click on Descriptives.
c. Choose the variables to be analyzed (e.g., age) and adjust the statistical options, such as mean, median, and standard deviation.
d. Once the settings matched the researcher's needs, click OK to execute the analysis.

The results of the analysis were displayed in the Output Viewer, where participants were encouraged to interpret the findings.

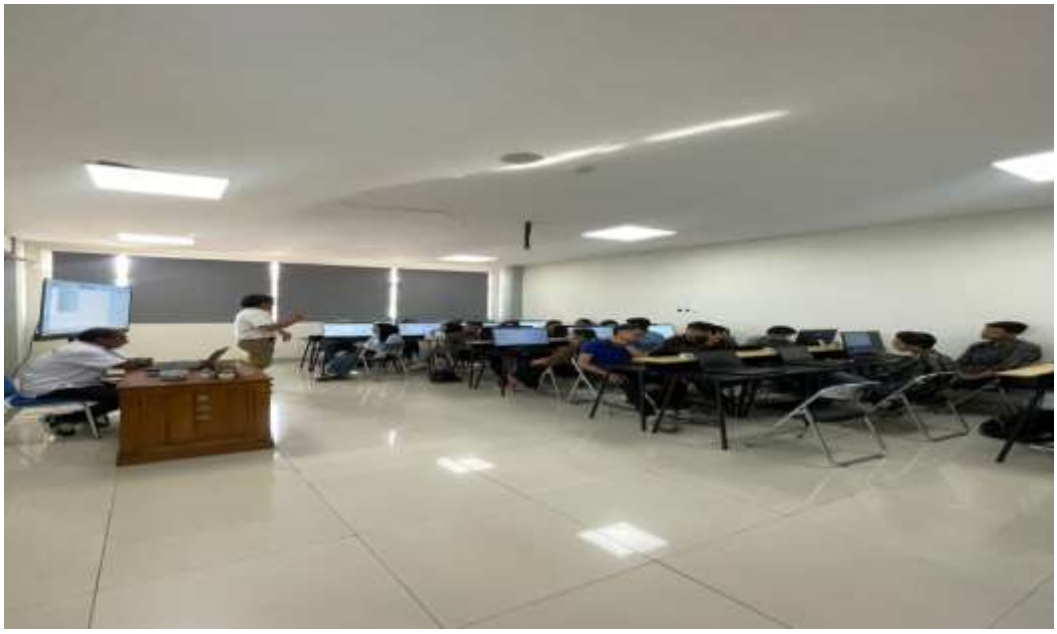

Figure 2. Presentation of Materials by the Trainer

The next topic covered in the training was difference testing. The first step in this analysis is to ensure the data is correctly entered, with one column for the variable to be tested and another for the group variable.

For a T-Test, using the Independent Samples T-Test, participants were guided through the following steps:

a. Go to the Analyze menu, select Compare Means, and choose Independent Samples T-Test.
b. Input the dependent variable into Test Variable(s) and the group variable into Grouping Variable.
c. Click Define Groups to specify the groups for comparison, then click OK to proceed.

After running the analysis, participants were instructed to interpret the SPSS output, focusing on the significance value. This value indicates whether there is a statistically significant difference between groups. If the significance value $p < 0.05$, the difference is considered significant; otherwise, it is not. The session was designed to be interactive, encouraging participants to engage in discussions, share their thoughts, and ask questions. While the training was constrained by time, this did not dampen the students' enthusiasm for learning.

To reinforce their understanding, students were provided with the PowerPoint materials and SPSS data files (.sav). They were encouraged to practice independently, applying what they had learned to become more proficient in using SPSS for producing competent research.

Figure 3. Group Selfie with the Trainer

The training was successfully completed, with the trainer providing ample motivation to students to continue learning for academic self-development, including gaining knowledge and improving English language skills. To conclude the entire training program, the participants, along with the Head of the Management Department and a faculty staff member, took a group selfie with the trainer. In addition to serving as a keepsake, the selfie symbolizes the camaraderie and collaborative spirit fostered throughout the training.

CONCLUSIONS AND RECOMMENDATIONS

The statistics training using the SPSS application, organized by the Department of Management at the Faculty of Economics and Business, Universitas Pattimura, is a strategic step toward enhancing students' data analysis skills. Through this training, students not only gain knowledge and understanding of fundamental statistical concepts but also learn how to apply SPSS in the context of quantitative research. With guidance from an internationally renowned expert, students can better understand how to process and analyze data accurately, a critical skill for producing competent scientific research.

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