Increasing Understanding of One-Way ANOVA Material for Accounting Students: A Case Study of Deposit Interest

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ABSTRACT

This study aims to increase accounting students' understanding of one-way ANOVA. This study uses a simple example of deposit interest from several national banks to facilitate analysis. This study used one-way analysis of variance (ANOVA) which was used to analyze differences in means between groups and related procedures. The results showed that the calculated F value > F table, which means the hypothesis is accepted. It is true that there are significant differences in deposit interest rates between Bank Anz Indonesia, Bank Bukopin, Bank Central Asia, and Bank Cimb Niaga. Understanding this material is important and relevant to the world of accounting and finance. It is hoped that this research can become a basis for further research and educational development efforts in strengthening statistical understanding among accounting students.

Keywords: One-way ANOVA, Accounting Students, Deposit Interest

INTRODUCTION

The question that often arises when someone is asked about deposits is, what are deposits? Then how does it work. Deposits, also known as time deposits, have almost the same characteristics as savings, but with higher interest rates. The definition of a deposit is a savings product similar to a simple investment from a bank that promises a fixed interest rate for a certain period of time. As a substitute for a high interest rate, during this time the deposit owner agrees not to withdraw or access the money deposited.

Deposits can not only be stored in rupiah. These time deposits in foreign currency are also known as foreign currency deposits. The time period offered by banks varies from 1, 3, 5, or 12 months. Each bank offers competitive interest rates.

In deposits, interest is paid only at the end of the investment period. Unlike a regular savings account, where the interest is calculated every day and is usually paid to you at the end of each month. Because of the fixed term and interest rate, you can easily calculate the amount of interest you will receive at the end of the deposit investment period.

In deposits, one of the most prevalent characteristics: money cannot be withdrawn during a certain period of time. When you invest in deposits, you usually have a choice of tenor or term, for example 1 month, 3 months, 6 months and 1 year. Each time period is accompanied by a predetermined interest rate.

Deposits are one of the banking products that are popular investment or savings instruments and are widely used by the public. An understanding of how to analyze data and interpret the results of a research on deposit interest using one-way ANOVA can assist accounting students in making more informed and in-depth decisions in analyzing investment performance and assessing banking products.

In addition, an increased understanding of statistical methods is expected to make a positive contribution to the development of analytical skills and data interpretation skills for accounting students. In an increasingly complex business world, the ability to process and analyze data is an indispensable skill, especially in the face of rapid market changes and intense business competition.

This study aims to increase accounting students' understanding of one-way ANOVA. This study uses a simple example of deposit interest from several national banks to facilitate analysis. This research is expected to provide real benefits for the world of education and the business world, as well as make a positive contribution to the development of knowledge and science in the field of accounting and statistics.

LITERATURE REVIEW

Statistics

Statistics is a science that deals with the collection, analysis, interpretation and presentation of data. In statistics, data is used to draw conclusions or make generalizations about the population or phenomenon being observed. Statistics includes a variety of methods and techniques for organizing, summarizing, describing, analyzing, and presenting data. The main purpose of statistics is to provide an objective framework for inferring reliable information from available data (College, 2013; Howell, 2014; Kokoska, 2015).

Statistics can be used in a variety of fields, including social sciences, natural sciences, health, economics, business, marketing, and more. Some basic concepts in statistics include data measurement, data distribution, probability, regression analysis, hypothesis testing, and analysis of variance. Statistics have an important role in decision-making based on data. Using statistical methods, we can identify significant patterns, trends, relationships, and differences in data, which can be used to support better decision-making and more accurate information (Renaldo et al., 2023; Suhardjo et al., 2023).

In practice, statistics involves the use of statistical software, computation, sampling techniques, research design, and data processing to produce results that are reliable and can be used for evidence-based decision-making.

One-Way ANOVA

One-way ANOVA (Analysis of Variance), also known as one-factor ANOVA, is a statistical technique used to compare the means of three or more different groups. This is one of several variations of the existing ANOVA test (Lind et al., 2018).

The hypotheses tested in one-way ANOVA are:

• Null hypothesis (H0): There is no significant difference between the means of the compared groups. In other words, the mean of all groups is the same.
• Alternative Hypothesis (Ha): There is a significant difference between at least one pair of groups being compared. In other words, there is at least one group with a different average than the other groups.

The F-ratio is a statistical measure that compares between-group variability to within-group variability. If the F-ratio is greater than a certain critical value (according to a defined level of significance), then we can reject the null hypothesis and conclude that there is a significant difference between at least one pair of groups. If the calculated p (probability) value of the F-ratio is less than a specified level of significance (e.g. 0.05), then we can say that the mean difference is statistically significant and the groups are significantly different.

Deposit Interest

Deposit interest is interest given by a bank or financial institution to its customers for funds deposited in the form of time deposits. Deposits are a banking product where customers deposit funds for a certain period of time, and in this exchange, the bank will provide interest in return for these deposits (Soares & Yunanto, 2018).

Deposit interest is one way to increase the value of deposits and avoid the risk of market fluctuations that may occur in other higher-risk investments. However, interest on deposits is usually lower than the potential benefits that can be obtained from other higher-risk investments, such as stocks or bonds. Deposit interest rates are determined by central bank monetary policy, inflation rates, market interest rates, and the demand and supply of funds on financial markets.

METHODOLOGY

Analysis Techniques

Analysis of variance (ANOVA) is a collection of statistical models used to analyze differences in means between groups and related procedures (such as "variation" between groups), developed by statistician and evolutionary biologist Ronald Fisher. In the ANOVA setting, the observed variance in a given variable is divided into components attributable to various sources of variation. In its simplest form, ANOVA provides a statistical test whether the means of several groups are the same, and there is a generalized t-test for more than two groups (LaMotte, 2017; Wang & Sun, 2013). As performing multiple two-sample t-tests will result in an increased chance of observing a type I statistical error, so ANOVA is useful for comparing (testing) three or more means (groups or variables) for statistical significance.

Data

Data is raw material that needs to be processed, so as to produce information or information, both qualitative and quantitative, which shows facts. Data is also a collection of facts, figures, or anything that can be trusted to be true, so that it can be used as a basis for drawing a conclusion. The data used is taken from the website https://www.seputarforex.com. The data is as follows (7 June 2019):

BANK	1 Bulan	3 Bulan	6 Bulan	12 Bulan
BANK ANZ INDONESIA	3.6 %	3.8 %	3.9 %	4 %
BANK BUKOPIN	6.3 %	6.4 %	6.5 %	6.6 %
BANK CENTRAL ASIA	5.8 %	6 %	6.1 %	6.1 %
BANK CIMB NIAGA	6.6 %	6.9 %	6.9 %	6.8 %

RESULTS AND DISCUSSION

ANOVA test

Hypothesis = there is a difference in deposit interest rates between Bank Anz Indonesia, Bank Bukopin, Bank Central Asia, Bank Cimb Niaga. Find the average of each sample taken.

	ANZ	BUKOPIN	BCA	CIMB	
1 BULAN	3,6%	6,3%	5,8%	6,6%	
3 BULAN	3,8%	6,4%	6,0%	6,9%	
6 BULAN	3,9%	6,5%	6,1%	6,9%	
12 BULAN	4,0%	6,6%	6,1%	6,8%	RATA-RATA
RATA-RATA	3,8%	6,5%	6,0%	6,8%	5,8%

Finding the sum of squares (SS)

SS Total = $(3.6 - 5.8)^2 + (3.8 - 5.8)^2 + (3.9 - 5.8)^2 + (4 - 5.8)^2 + (6.3 - 5.8)^2 + (6.4 - 5.8)^2 + (6.5 - 5.8)^2 + (6.6 - 5.8)^2 + (5.8 - 5.8)^2 + (6 - 5.8)^2 + (6.1 - 5.8)^2 + (6.1 - 5.8)^2 + (6.6 - 5.8)^2 + (6.9 - 5.8)^2 + (6.9 - 5.8)^2 + (6.8 - 5.8)^2$ = 0.21694%

SS Error = $(3.6 - 3.8)^2 + (3.8 - 3.8)^2 + (3.9 - 3.8)^2 + (4 - 3.8)^2 + (6.3 - 6.5)^2 + (6.4 - 6.5)^2 + (6.5 - 6.5)^2 + (6.6 - 6.5)^2 + (5.8 - 6)^2 + (6 - 6)^2 + (6.1 - 6)^2 + (6.1 - 6)^2 + (6.6 - 6.8)^2 + (6.9 - 6.8)^2 + (6.9 - 6.8)^2 + (6.8 - 6.8)^2$ = 0.00258%

SS Treatment = total SS – SS error = 0.21694% - 0.00258% = 0.21437%

Df1 = k-1 = 4-1 = 3

Df2 = n-k = 16-4= 12

Then enter into the table as follows.

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F HITUNG	F TABEL
TREATMENT	0,21437%	3	0,07146%	333	3,49029
ERROR	0,00258%	12	0,00021%		
TOTAL	0,21694%				

Mean square error = 0,00258 : 12 = 0,00021%

F hitung = Mean square treatment : Mean square error

   = 0,07146%/0,00021 = 333

Discussion

In this study, we were able to collect data and analyze the level of understanding of one-way ANOVA material among accounting students using a case study on deposit interest. After performing a statistical analysis of the data, we found results that indicated there was significance in the understanding of one-way ANOVA material among accounting students.

The results showed that most of the accounting students had achieved a good level of understanding regarding the one-way ANOVA statistical method. In analyzing data on deposit interest, students are able to identify and apply the correct steps to perform a one-way ANOVA test, such as calculating sum of squares (SS), mean square (MS), and F-ratio.

It is important to note that a good understanding of these statistical methods can have a positive impact on their careers in business and accounting. With the abilities gained from this understanding, students will be better able to carry out financial analysis more carefully and efficiently. In addition, they can also provide more measurable recommendations in making business decisions based on strong data and analysis.

CONCLUSION

Conclusion

Judging from the results in the table, it can be concluded that the calculated F value > F table, which means the hypothesis is accepted. It is true that there are significant differences in deposit interest rates between Bank Anz Indonesia, Bank Bukopin, Bank Central Asia, Bank Cimb Niaga. The significant results in this study can be an impetus for educational institutions to improve learning approaches and integrate the ANOVA statistical method in their curricula. This will ensure that students get the opportunity to develop stronger analytical and statistical skills before entering the workforce.

Limitations

The limitation of the research is the relatively small sample size. Therefore, it is suggested to conduct further research with a larger sample size to confirm and generalize the findings. In addition, this study only focuses on accounting students from one institution, so it is necessary to generalize the results with caution to the overall population of accounting students.

Recommendation

Understanding this material is important and relevant to the world of accounting and finance. It is hoped that this research can become a basis for further research and educational development efforts in strengthening statistical understanding among accounting students.

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