# The Influence of Reasoning Ability, Cognitive Distortions, Self-Confidence and Adversity Quotient on The Problem-Solving Ability of Open Education Resources (OER)-Based Accounting Learning in Accounting Education Program Students, Faculty of Economics, Medan State University

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**Abstract.** Open Education Resources represent a significant development in modern-era learning media, with the primary goal of enhancing educational quality and simplifying the learning process. These resources are easily accessible to a wide spectrum of society, including students, educators, and various institutions, thanks to the internet network. The research population consisted of all students enrolled in the accounting education study program, with a sample size of 96 students. Data for the study were gathered through a questionnaire, which serves as a method for collecting the necessary information or data in research. The study's findings indicated that there was a positive and significant impact of reasoning abilities, self-confidence, and adversity quotient when considered individually. However, there was a negative and significant impact of cognitive distortions when examined individually. When taken together, these factors had a significant impact on problem-solving skills in accounting learning based on open education resources.

**Keywords:** open education resources, reasoning ability, cognitive distortion, self-confidence and adversity quotient

## 1 Introduction

The objective is to nurture students' potential, shaping them into individuals who hold faith in God, display noble character, prioritize good health, acquire knowledge, showcase creativity, independence, and evolve into responsible democratic citizens. To propel these educational

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goals forward, it is essential to employ cognitive strategies rooted in the constructivist paradigm and Jean Piaget's metacognition theory. Metacognition encompasses four essential skills: problem-solving, decision-making, critical thinking, and creative thinking.

The distinctive attributes of accounting education encompass qualities such as discipline, thoroughness, diligence, honesty, responsibility, and perseverance. These values hold significant relevance in the contemporary job market and are equally valuable in social interactions. Students can effectively address learning challenges if they possess strong reasoning skills for problem-solving. Additionally, cognitive distortions, which result from negative, intuition-based thinking lacking substantial evidence, can lead to erroneous reasoning. Cognitive distortions encompass misinterpretations of situations, including selective focus, overgeneralization, individualization, catastrophic thinking, and all-or-nothing thinking. These distortions substantially influence students' beliefs, affecting their perception of the impact of certain words and the reasons they provide to support warning-triggered usage. Cognitive distortions play a pivotal role in the development, maintenance, and treatment of various mental disorders. When students experience cognitive distortions, they often adopt a negative mindset and perceive accounting studies as unimportant.

Self-confidence plays a crucial role in the success of the teaching and learning process. It is defined as an individual's mental attitude, assessing their own capabilities, which in turn fosters the belief in their ability to accomplish tasks or solve problems. Self-confidence has a vital function in unlocking a person's potential, and a lack of self-confidence can give rise to various personal issues. In essence, self-confidence represents a positive attitude that can empower students to have faith in their capabilities. Indicators of self-confidence include believing in one's abilities, making independent decisions, maintaining a positive self-concept, and being willing to express one's opinions.

Open Education Resources represent a contemporary approach to learning materials development, with the aim of enhancing educational quality and simplifying the learning process. These resources are easily accessible to all members of society, including students, teachers, and educational institutions, via the internet. The effective utilization of open learning resources depends on the user's competence and their ability to make the most of these resources. In some cases, students may still face difficulties in solving accounting problems despite using Open Education Resources. This leads to a perception of difficulty and results in student complaints during the learning process. It also affects students' assignment completion and their overall enthusiasm for learning. Students tend to avoid solving questions when asked by educators, often due to low self-confidence.

Learning accounting presents challenges for all students, albeit to varying degrees. Some struggle with specific subjects, others with particular aspects of accounting, and some even find the entire accounting curriculum challenging. Problem-solving abilities in accounting are influenced by various factors, including Adversity Quotient (AQ), which measures a student's resilience when facing difficulties or failures. AQ is regarded as a form of intelligence that underpins a person's success in addressing challenges and setbacks.

Based on observations conducted by researchers among students, data suggests that problem-solving skills in accounting, particularly when utilizing Open Education Resources, may be influenced by factors such as reasoning ability, cognitive distortion, self-confidence, and adversity quotient.

## 2 Method

The data source employed in this research is primary data, which is data directly obtained from the research participants through the use of questionnaires. Data collection techniques refer to the methods employed to gather the information or data necessary for research purposes, and in this study, the chosen data collection technique is the administration of a questionnaire. The questionnaire will later be distributed to respondents who are the research sample. In this research, two important tests were conducted to assess the quality of the data used. The first was the validity test, which determined the accuracy and soundness of the data employed in the research. The second was the reliability test, which evaluated the consistency and dependability of the data. Additionally, multiple linear regression analysis was applied in this study. Specifically, the t test (partial) was used to assess the individual influence of the independent variables on the dependent variable. This test helped identify the significance of each independent variable's impact on the dependent variable. Furthermore, the research included a coefficient of determination test. This test aimed to measure the extent to which the independent variables collectively influenced the dependent variable. It assessed the overall explanatory power of the independent variables on the dependent variable, offering insight into the strength of their relationship.

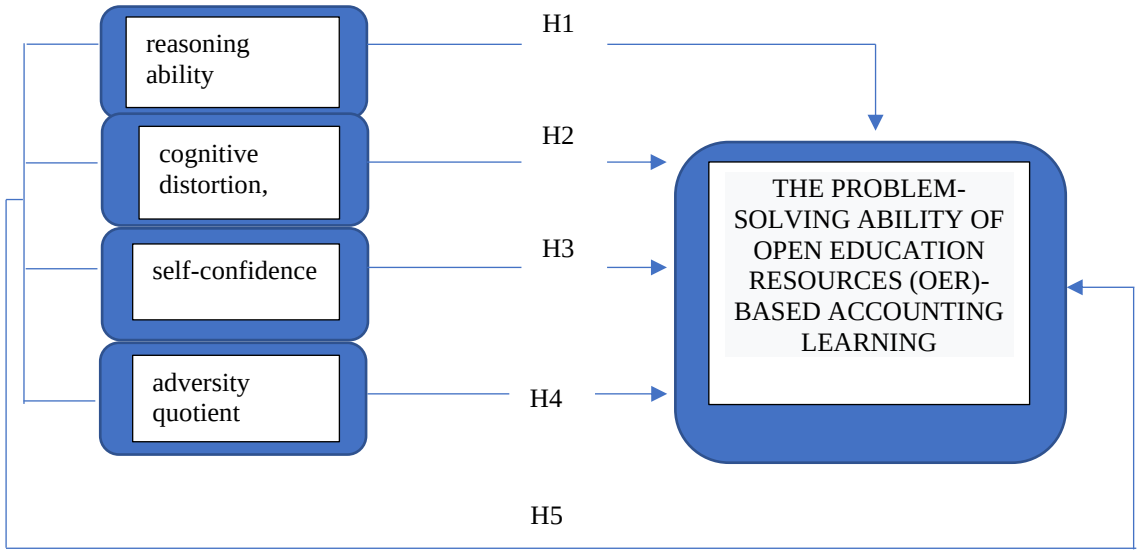


Figure 1. Research Model

The process of data collection in research involves employing a variety of techniques, such as questionnaires, observations, and documentation, in conjunction with an extensive review of the existing literature. Usually, these three methods are utilized simultaneously and complement each other. A questionnaire functions as a tool for data gathering, consisting of a set of questions or statements that respondents are expected to answer. (Mulyatiningsih, 2013).

### 2.1 Validity Test

The validity test was carried out on 40 students majoring in Accounting who had the same characteristics as Accounting Education Students. To test the level of validity of the instrument, researchers used the Product Moment formula, namely:

$$r_{xy} = \frac{N\sum XY - (\sum X)(\sum Y)}{\left\{N\sum X^2 - (\sum X)^2\right\}\{N\sum Y^2 - (\sum Y)^2\}} \quad (1)$$

Information :
Rxy = Correlation coefficient between X and Y
N = Number of subjects/respondents
ΣXY = Number of products of X and
Y ΣX = Total score of statement items
ΣY = Total score of statements
ΣX2 = Sum of squares of statement item scores
ΣY2 = Sum of squares of total statement scores (Suharsimi, 2013: 213)

The calculated r results will then be consulted with the r table at a significance level of 5%. If the calculated r value is equal to or greater than rtable then the item from the instrument in question is valid. On the other hand, if it is found that rcount is smaller than rtable then the instrument in question is invalid. Sugiyono (2017: 130) defines reliability testing as the degree to which repeated measurements on the same subject produce consistent data. To assess reliability, a test was conducted on 40 respondents using questions that had previously been confirmed as valid in the validity test. This test aimed to determine the consistency of the data obtained. Using the SPSS 22.0 for Windows program, variables declared reliable with the following criteria:
1. If r-alpha is positive and greater than r-table then the statement reliable.
2. If r-alpha is negative and smaller than r-table then the statementunreliable.
a. If the Cronbach's Alpha value is > 0.6 then it is reliable
b. If the Cronbach's Alpha value is <0.6 then it is not reliable
A variable is said to be good if it has a Cronbach's Alpha value > than
0.6 (Priyatno, 2013: 30).

## 3 Results and Discussion

### 3.1 Data Feasibility Testing

Data feasibility testing is one of the mandatory tests for non-parametric data which will be continued into influence/regression testing. There are two feasibility tests in this research, namely validity and reliability. The results of the validity and reliability tests found that the data were valid and reliable. In the reliability testing table above the Cronbach Alpha value, all variables have a value > 0.6 so that all question items for these variables are declared reliable.

T testing variable validity, all question items have a value > 0.3 so that all variable question items are declared valid.Pada tabel pengujian realibilitas di atas nilai Cronbach Alpha semua variabel memiliki nilai > 0,6 so that all the variable question items are declared reliable.

### 3.2 Classical assumption testing

The results of classical assumption testing were found to be normally distributed. heteroscedasticity testing using a scatterplot shows that the data/dots are distributed spread out and do not accumulate in the universe. This shows that the data is free from homoscedasticity (passes the heteroscedasticity test)

### 3.3 Hypothesis test

Data feasibility testing is one of the mandatory tests for non-parametric data which will be

*a. Hypothesis test*

A research equation is a form of mathematical formula that summarizes the results of the research conducted.

**Table 1**. Coefficient

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 6.030 | 2.142 | | 2.815 | .006 |
| | Accounting Reasoning Ability | .259 | .067 | .356 | 3.840 | .000 |
| | Cognitive Distortions | -.027 | .082 | -.028 | -.331 | .741 |
| | Self-Confidence | .211 | .109 | .238 | 1.943 | .055 |
| | Adversity Quotient | .232 | .105 | .241 | 2.202 | .030 |

a. Dependent Variable: OER-based accounting learning problem solving skills
b. Predictors: (Constant), Adversity Quotient, Cognitive Distortion, Accounting Reasoning Ability, Self-Confidence
*Sumber: Researcher (2023)*

The table above shows the equation for this research in formula form:
$Y = 6{,}030 + 0{,}259X_1 – 0{,}027X_2 + 0{,}211X_3 + 0{,}232X_4$
From this equation it can be concluded:
1. If all variables increase by one unit then the OER skill is 6.706.
   $Y = 6.030 + 0.259(1) – 0.027(1) + 0.211(1) + 0.232(1) = 6.706$
2. Negative distortion gives a negative value to the equation.
3. The biggest influence on OER is Accounting Reasoning Ability.

*b. Partial testing*

Partial testing is carried out to test the influence of each independent research variable on the dependent. This research used 96 respondents, 4 independent variables and a degree of freedom at level 92 with a Ttable value = 1.986 and significance = 0.05, so the decisions taken were as follows:

1. Accounting Reasoning Ability has a positive (3.840 > 1.986) and significant effect on OER-Based Accounting Learning Problem Solving Skills (0.00 < 0.05)
2. Cognitive Distortion has no effect (-0.331 > 1.986) and is not significant on OER-Based Accounting Learning Problem Solving Skills (0.741 > 0.05)
3. Self-confidence has no effect (1.943 > 1.986) and is not significant on OER-based Accounting Learning Problem Solving Skills (0.55 > 0.05)
4. Accounting Reasoning Ability has a positive (2.202 > 1.986) and significant effect on OER-Based Accounting Learning Problem Solving Skills (0.30 < 0.05)

*c. Simultaneous Testing*

Simultaneous testing is carried out to jointly test the influence of independent research variables on the dependent. This research used 96 respondents, 4 independent variables and a degree of freedom at level 96 with a Ftable value = 2.47 and significance = 0.05, so the decisions taken were as follows:

**Tabel 2**. ANOVA

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 381.237 | 4 | 95.309 | 20.836 | .000[b] |
| | Residual | 416.252 | 91 | 4.574 | | |
| | Total | 797.490 | 95 | | | |

a. Dependent Variable: OER-based accounting learning problem solving skills
b. Predictors: (Constant), Adversity Quotient, Cognitive Distortion, Accounting Reasoning Ability, Self-Confidence
*Sumber: Researcher (2023)*

Simultaneous testing in this research can be seen in the table above with the decision: Accounting Reasoning Ability, Cognitive Distortion, Self-Confidence and Adversity Question variables have a positive (20.836 > 2.47) and significant (0.00 < 0.05) influence on problem solving skills. OER-Based Accounting Learning.

*d. Coefficient of Determination*

The coefficient of determination shows the extent to which the contribution of the independent variable in the regression model is able to explain variations in the dependent variable.

**Table 3.**1 Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .691[a] | .478 | .455 | 2.139 |

a. Dependent Variable: OER-based accounting learning problem solving skills
b. Predictors: (Constant), Adversity Quotient, Cognitive Distortion, Accounting Reasoning Ability, Self-Confidence
*Resource: Researcher (2023)*

In this study, the coefficient of determination was found to be 0.455 or 45%. This value was selected due to specific conditions within the study. Notably, there were two invalid items in variable X2, and two variables, namely Negative Distortion and Self-Confidence, were

identified as having no significant impact on the study's findings. The coefficient of determination, which accounts for 45% of the variance, signifies the research's capability to elucidate and explain the problem-solving skills related to OER-based accounting learning. The remaining 55% of the variance is attributed to other variables not examined within the scope of this research.

## 4 Conclusion

The conclusion in this research is: There is a positive and significant influence between reasoning ability on problem solving ability in accounting learning based on open education resources; There is a negative and significant influence between cognitive distortions on problem solving abilities in accounting learning based on open education resources;
There is a positive and insignificant influence between self-confidence on problem-solving abilities in open education resources-based accounting learning; There is a positive and insignificant influence between the adversity quotient on the ability to solve problems in accounting learning based on open education resources. There is a positive and significant influence between reasoning ability, cognitive distortion, self-confidence and adversity quotient together on the ability to solve problems in accounting learning based on open education resources.

Based on the results of this research, the researcher recommends that future lecturers and researchers:

1. Designing lessons that hone students' skills in learning accounting
2. Provide direction to students learning OER-based accounting so that references are targeted at achieving learning objectives.

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