The Effect of Technology Acceptance, Learning Strategies, and Cognitive Assessment on the E-Learning System Effectiveness in Accounting Department Students

[1,]Indriyanti Linting, [2,]Grace T. Pontoh, [3,]Syamsuddin

[1,2,3,]*Faculty of Economics and Business, Hasanuddin University*

ABSTRACT: The use of information systems in the world of education has grown in the last two years since the emergence Covid 19 virus outbreak, because all activities that involve large numbers of people must be limited to avoid the spread Covid-19 virus. The use of this information system is known effectiveness of the learning system for accounting subjects that is researched from the user side through the system e-learning. The purpose this study was to examine and analyze the effect of technology acceptance, learning strategies, and cognitive assessment on the effectiveness of the system e-learning. This research was conducted at Hasanuddin University with 295 students in the accounting department. Data analysis using structural equation modeling. The results show that the POU and challenges have positive effect on the effectiveness of the system e-learning, PEOU and deep learning does not have a positive effect on the effectiveness of the system e-learning, surface learning has no negative effect on the effectiveness of the system e-learning, and the threat has a negative effect on the effectiveness of the system e-learning. Based on this, the universities need to prepare training to increase the user's positive attitude in use system e-learning, and support facilities.

KEYWORDS: Technology acceptance, learning strategies, cognitive assessment, system effectiveness e-learning

I.   INTRODUCTION

Since the emergence of the Covid-19 virus phenomenon, the learning system in tertiary institutions is no longer carried out in the campus environment but is carried out online. This is a challenge for lecturers and students who are required to carry out a learning system online. It issues of learning systems online hoped that can provide a lot of time for lecturers in delivering material accompanied by training and developing discipline and providing facilities for strong interpersonal development and analytical skills to create sustainable learning outcomes for students. The use of systems e-learning during a pandemic is something that must be implemented. But in its implementation, there are many challenges faced by its users. The challenges faced start from the user's ability and knowledge as well as the emotional attitude of the user. This will affect the effectiveness of the e-learning system as a learning system online. Therefore, this study aims to determine the effect of technology acceptance, learning strategies, and cognitive assessments on the effectiveness of the system e-learning. The e-learning system makes the learning process more effective and efficient, especially during this pandemic. The results of a survey conducted with accounting lecturers throughout Indonesia show the importance of accounting lecturers in preparing accounting graduates who are ready for the 4.0 industrial revolution [1]. The highest skills based on survey results for accounting students are the ability to interpret and convey information, identify data to answer questions, and the ability to use appropriate data analysis techniques [1].Learning using e-learning is very necessary, but not all lecturers and students understand it. Some of them experienced technical difficulties and were unfamiliar with this system. This study aims to examine and analyze the effect of technology acceptance, learning strategies, and cognitive assessments on the effectiveness of the system *e-learning*.

The acceptance of technology in this study is related to perceived usefulness and perceived ease of use. According to the Technology Accepted Model (TAM) concept derived from the Theory of Reasoned Action (TRA), the more useful and easy a technology system is the greater acceptance of the technology. This is reinforced by the results of research by several previous studies [2]; [3]; [4]; [5].The learning strategy in this study is related to deep learning and surface learning. Deep learning results in higher quality learning and deep understanding. Conversely, surface learning does not care about deep understanding, the information obtained is usually lost after examination and there is no understanding or deep knowledge construction [6]. In her book also explains that deep learning is better at increasing learning effectiveness than surface learning. This is supported by the results of research [7]

Which found an increase in learning with approach deep learning and a decrease in learning with approach surface learning. Cognitive assessment in this study is related to challenge assessment and threat assessment. Assessment of challenges is an emotion of joy and confidence that is felt by a person when using an information system. Threat assessment is a depressed emotion and uncertainty felt by a person when using an information system. The model of Kuhlthau (1991) explains that during the process of seeking information, individuals experience emotions such as uncertainty, confusion, self-confidence, and satisfaction. This is reinforced by the results of research [9]. that there was an increase in challenges and a decrease in the threat that users felt in the learning system.

II.   RESEARCH CONTEXT

Pontoh (2011) revealed that the *Technology Acceptance Model* (TAM) is a model that is considered very influential and is generally used to explain the individual acceptance of the use of information technology systems. The TAM theory is a development of the *Theory of Reasoned Reaction* (TRA). TRA explains that a person's beliefs can influence social attitudes and norms which will change the form of desire to behave either guided or just happen in individual behavior [10]. TAM theory [11] argues that individual acceptance of information technology systems is determined by these two constructs, namely perceived usefulness and perceived ease of use. The model of Kuhlthau (1991) examines the process of seeking information that emphasizes the emotional aspect. This theory further explains that at first, a person feels doubtful and uncertain when he feels he does not have sufficient knowledge. Conversely, a person will feel optimistic when he has the knowledge and is successful in achieving the desired goals [3].The learning strategy is a strategy used by students in different learning environments to understand the material effectively. The problem faced in the learning process is that students have different characteristics and abilities, so they have different learning strategies in understanding the material they receive. Deep learning is able to understand the material as a whole while surface learning is only needed to acquire knowledge in certain fields, certain studies, and in certain contexts [3].
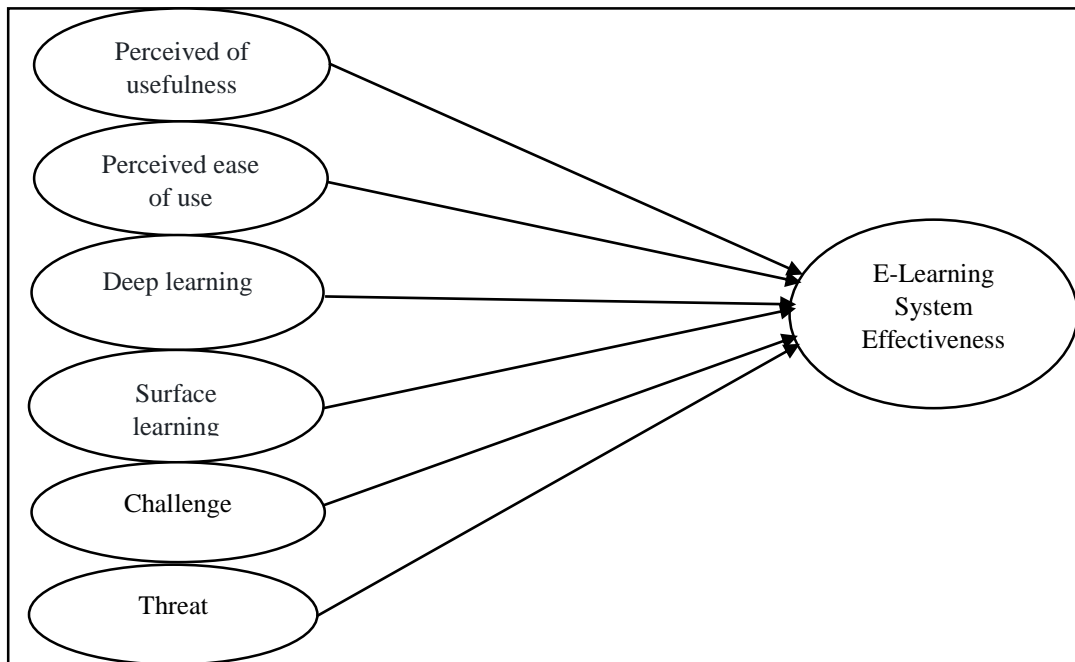
Cognitive assessment is an assessment that arises from a person's emotions or feelings towards an object. Cognitive assessment related to the assessment of challenges is an emotion of joy and a person's belief in a situation. Cognitive assessment related to threat assessment is a depressed emotion and uncertainty in dealing with a situation [3].The e-learning system is an electronic-based learning system, one of which is with the help of a computer network developed in the internet network [12]. The e-learning system is a learning system that represents the digital era because it is integrated with the internet so that it can be done anywhere and anytime. Users can access material freely and are required to learn independently because teaching materials are stored online. The effectiveness of the system e-learning is the level of success of an learning system online in achieving the desired goals.

III.   OBJECTIVES AND HYPOTHESIS

This study aims to examine and analyze user perceptions, especially in terms of students, regarding the effect of technology acceptance, learning strategies, and cognitive assessments on the effectiveness of the system e-learning. The acceptance of technology in this study is explained by perceived usefulness (POU) and perceived ease of use (PEOU). The learning strategy in this study is explained by deep learning and surface learning. Cognitive assessment in this study is explained by challenge assessment and threat assessment.

Theory of Reasoned Action (TRA) is a theory that studies the role of a person's interest in determining whether a behavior will occur. This theory is then reduced to the *Technology Accepted Model* (TAM) which explains the perceived usefulness and perceived ease of information systems which will affect his attitude in determining the acceptance of the information system [11]. Several previous studies have found that e-learning systems are useful in learning systems [5], [3], and [14]. In addition, several studies have also found that the e-learning systems are easy to use, so that users are satisfied with using it [5], [3], and [4]. Learning strategies are related to user interest in learning. Aharony and Bar-ilan (2016) found that deep learning has no positive effect and surface learning has no negative effect on the use of learning systems with MOOCs. The research results of Dohlmans *et al*. (2016) found that there was an increase in the learning system using approach deep learning and a decrease in the effectiveness of the learning system using the approach surface learning.The model of Kuhlthau (1991) examines the process of seeking information that emphasizes the emotional aspect. This theory explains that in the process of seeking information, individuals can cause emotions related to happiness or anxiety that arise when using information systems [3]. Aharony and Bar-ilan (2016) found that challenges did not have a positive effect on the use of the learning system. Meanwhile, threats have a negative effect on the use of the learning system. Zilka *et*

al. (2018) found that there was an increase in challenges and a decrease in the threat that users felt in the learning system.

Based on the description above, the hypotheses that can be proposed in this study are as follows.

H1: *Perceived usefulness of* a positive influence on the effectiveness of system *e-learning*

H2: *Perceived ease of use* positively affects the effectiveness of system *e-learning*

H3: *Deep learning* positive influence on the effectiveness of systems *e-learning*

H4: *Surface learning* negatively affect the effectiveness of the system of *e-learning*

H5: Challenges has a positive effect on the effectiveness of the system. *e-learning*

H6: Threats has a negative effect on the effectiveness of the system *e-learning*

IV. METHODS

The purpose of this study was to test and analyze the effect of the independent variable on the dependent variable. The independent variables consist of technology acceptance (POU and PEOU), learning strategies (deep learning and surface learning), and cognitive assessments (challenges and threats). This study uses accounting students at Hasanuddin University as a sample with a *purposive sampling method*. Accounting students in research are students of Class 2017-2020 who are still active in e-learning systems.The research data used are primary data obtained through a questionnaire instrument. Data were collected by means of a questionnaire in the form of *google form* which was then distributed through the *WAG* which was measured and assessed on a 5-point Likert scale (1 = strongest disagreement; 5 = strongest agreement). The collected data were then analyzed using analytical techniques *Structure Equational Modeling* (SEM) with the help of software AMOS version 20.

V. RESULT

Data Description: The total number of students enrolled in the *WAG* is 570 respondents. The total number of returned questionnaires that have been filled in is 295 respondents. Based on the respondent's data, information was obtained about the respondent's profile related to class, gender, and the *platform* used in the system *e-learning*.

Table 1. Description of Respondents Class

No	Class	Total	Presentation
1	2017	37	13%
2	2018	66	22%
3	2019	56	19%
4	2020	136	46%
Total		**295**	**100%**

Based on table 1 that of the total respondents, 13% from the 2017 class and 22% from the 2018 class, 19% ty the 2019 class, while 46% of them were nominated by respondents from the 2020 class,
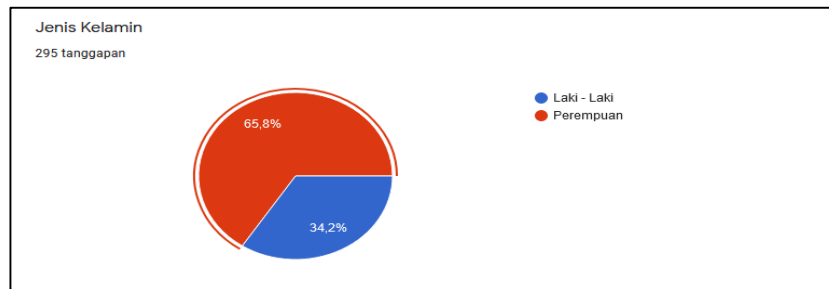

Fig. 2. Genre of Respondents

Based on Figure 1, that the respondents were dominated by female respondents as much as 65.8%, the rest were male respondents as many as 34.2%.
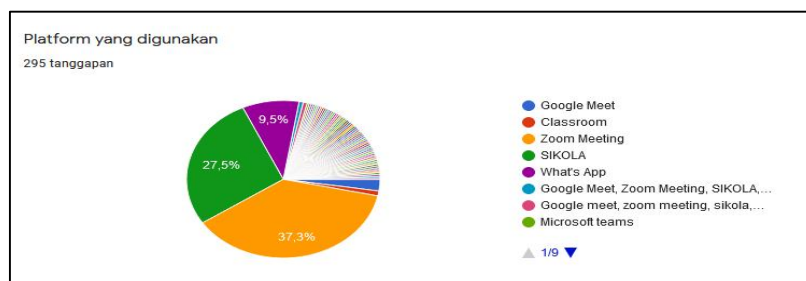

Fig. 3. Platform Used by Respondents

Based on Figure 2, that the *platform* used by respondents was nominated by *Zoom Meeting* as much as 37.3%, Sikola as much as 27.5%, *WhatsApp* as much as 9.5%, while the rest is a combination of various *platforms* as much as 25.7%.

Goodness of Fit Test: Goodness of fit test is done using three measurement criteria: Absolute Fit Measured, Incremental Fit Measured, and Measured Fit Parsimonious. A model is said to be good if it meets the value *cut off* of the goodness of fit index. The following values show cut-off to meet the criteria for a good model.

Table 2. Goodness of Fit Index

Goodness of Fit Index	*Cut-Off Value*
Absolute Fit Measured	
Chi-Square	More less
Significant Probability	> 0,05
CMIN/DF	< 2,00
RMSEA	< 0,08
GFI	> 0,90
Incremental Fit Measured	
AGFI	> 0,90
TLI	> 0,90
CFI	> 0,90
Parsimonious Fit Measured	
PNFI	0,60-0,90

Modification of the model is carried out. If the model shows a value that is less fit by looking at the value of the largest *modification indices* (MI) then draws the correlation line. After modifying the model, the proposed model

can be accepted because it meets the value *cut off* of the goodness of fit index so that the analysis can proceed to the next stage.

Hypothesis Test: Hypothesis test is analyzed using the results of the path coefficient test by looking at the probability of the Critical Ratio (CR) value compared to the value of $\alpha = 5\%$. If standardized The coefficient is positive and the probability value is less than the value of $\alpha = 5\%$, it can be concluded that the research hypothesis is significantly proven. The results of testing the direct effect hypothesis can be seen in table 3 and table 4.

Table 3. Regression Weights

Variable	Estimate	S.E.	C.R.	P
POU	0.373	0.182	2.048	0.041
PEOU	0.032	0.110	0.294	0.769
DL	0.093	0.070	1.332	0.183
SF	0.211	0.066	3.212	0.001
TTGN	0.753	0.188	4.010	0.000
ANCM	-0.111	0.050	-2.237	0.025

Table 4. Standardized Regression Weights

Variable	Estimate
POU	0.373
PEOU	0.032
DL	0.093
SF	0.211
TTGN	0.753
ANCM	-0.111

VI.   DISCUSSION

H1: Perceived Usefulness Has a Positive Effect on the E-Learning System Effectiveness
The test results show that the *standardized regression* value is positive and the probability value is less than 0.05. This shows that if the POU has increased, it will be followed by an increase in the effectiveness of the system e-learning by 0.373. So, the hypothesis (H1) which states that perceived usefulness has a positive effect on the effectiveness of the system e-learning can be accepted. These results are also in line with the *Technology Acceptance Model* [11] study of user acceptance of information systems. The more useful a system is, the higher the effectiveness of the system. The results of this study are consistent with the results of previous studies. Aharony and Bar-ilan (2016) found that perceived usefulness has a positive effect on the use of systems e-learning using the *platform* MOOCs. Heggart and Yoo (2018) show that Google classroom is useful in increasing student participation and learning and increasing class dynamics. Goyal and Tambe (2015) found that students felt the benefits of the system e-learning with Moodle.

The use of systems e-learning in accounting courses is important. The results of this study indicate that accounting students benefit from the system e-learning such as being able to make assignments faster, increase learning effectiveness so that they are able to become competent graduates with the use of technology systems. Accounting graduates are expected to be more competent in using technology systems to produce financial information. Therefore, universities need to increase the use of systems *e-learning* on campus to equip and train graduates to be more familiar with information systems.

H2: Perceived Ease of Use has a positive effect on the effectiveness of the e-learning system.
The test results show that the *standardized regression* value is positive and the probability value is greater than 0.05. The value *standardized regression* positive indicates that if the PEOU has increased, it will be followed by an increase in the effectiveness of the system e-learning by 0.032. Meanwhile, a probability greater than 0.05 indicates that the effect is not significant. So, the hypothesis (H2) which states that perceived ease of use has a positive effect on the effectiveness of the system e-learning is rejected.

These results are not in line with the *Technology Acceptance Model* [11] study of user acceptance of information systems that the easier a system is, the higher the effectiveness of the system. The results of this study are inconsistent with the results of previous studies. Aharony and Bar-ilan (2016) found that perceived ease of use has a positive effect on the use of systems e-learning using the *platform* MOOCs. Shaharanee *et al.* (2016) also found that most students were satisfied with Google classroom tools because of their ease of access. Goyal and Tambe (2015) found that most students found it easy to use the Moodle system because 91% had experience using it.

The results showed that the effect was not significant. This shows that accounting students do not feel significant ease of using the system e-learning. The data description shows that *the platforms* most used are Zoom meetings and Sikola. The two *platforms* can be categorized as new. Meanwhile, the results of the description show that 46% of respondents are dominated by Class 2020. Based on this, the majority of accounting students do not find it easy in the system e-learning because they have no previous experience. The use of systems e-learning in accounting courses needs to be done. The results showed that accounting students did not find it easy to use the system e-learning. Based on this, you should consistently account for faculty and sustainable use of the *platform* in the system e-learning so that users feel familiar and experienced in using it.

H3: Deep Learning Has a Positive Effect on the E-Learning System Effectiveness
The test results show that the *standardized regression* value is positive and the probability value is greater than 0.05. The value *standardized regression* positive indicates that if deep learning has increased, it will be followed by an increase in the effectiveness of the system e-learning by 0.093. Meanwhile, a probability greater than 0.05 indicates that the effect is not significant. So, the hypothesis (H3) which states that deep learning has a positive effect on the effectiveness of the system e-learning is rejected. The results of this study are inconsistent with the results of the study conducted by Dohlmans *et al.* (2016) which shows an increase in the learning system using approach *deep learning*. Meanwhile, the results of this study are consistent with the results of research conducted by Aharony and Bar-ilan (2016) which state that deep learning does not have a positive effect on the use of learning systems with MOOCs.

Deep learning is important to increase the effectiveness of the learning system used. Accounting students need to train themselves to thoroughly understand the information or material provided so that they are able to produce accurate solutions. Lecturers are expected to be more active in providing the material that emphasizes case studies so that accounting graduates are trained in solving problems to improve skills in making decisions in the accounting field.

H4: Surface learning has a negative effect on the effectiveness of the e-learning system.
The test results show that the *standardized regression* value is positive and the probability value is less than 0.05. The value *standardized regression* positive indicates that if the surface learning has increased it will be followed by an increase in the effectiveness of the system *e-learning* by 0.211. Meanwhile, a probability smaller than 0.05 indicates that the effect is significant. So, the hypothesis (H4) which states that surface learning has a negative effect on the effectiveness of the system e-learning is rejected. The results of this study are consistent with the results of research conducted by Aharony and Bar-ilan (2016) which state that surface learning has no negative effect on the use of learning systems with MOOCs. This result is also in line with the results of research by Hermida (2015) which states that most students currently prefer the approach to surface learning. The results of this study do not support the results of the study by Dohlmans *et al.* (2016) which shows that there is a decrease in the effectiveness of the learning system using the approach surface learning.Surface learning is needed only to understand a certain context and is essential but does not make a deep understanding. The results showed that the majority of accounting students preferred surface learning. Higher education institutions need to ensure that the *e-learning* system used can be positively accepted by all accounting students. Therefore, a continuous evaluation is needed by conducting a survey of the system used so that it generates input for universities to make improvements in the learning system.

H5: Challenges Have a Positive Effect on the E-Learning System Effectiveness
The test results show that the *standardized regression* value is positive and the probability value is smaller than 0.05. The value *standardized regression* positive indicates that if it is a challenge experiencing an increase it will be followed by an increase in the effectiveness of the system e-learning of 0.753. Meanwhile, the probability is smaller than 0.05, indicating that the effect is significant. So, the hypothesis (H5) which states that challenges have a positive effect on the effectiveness of the system e-learning is acceptable.

The results of this study support the theory of Kuhthau (1991) which studies the information-seeking process that emphasizes emotional aspects. This shows that the higher a person's feelings of challenge, the more effective the system will be in e-learning. The results of this study are inconsistent with the results of research conducted by Aharony and Bar-ilan (2016) which state that challenges do not have a positive effect on the use of learning systems with MOOCs. Meanwhile, the results of this study are consistent with the results of research by Zilka *et al*. (2018) which shows that there is an increase in the feeling of challenges that are felt by users in the learning system. The assessment of the challenges that users perceive is related to the feelings that a person experiences when using the system e-learning. The results showed that accounting students felt more challenged when faced with system e-learning. This shows that students feel confident and excited about using the system e-learning. Based on this, universities need to make continuous efforts to improve the positive attitude of system users e-learning by holding seminars on the importance of using systems e-learning in the world of education.

H6: Threats have a negative effect on the effectiveness of the e-learning system.
The test results show that the *standardized regression* value is negative and the probability value is less than 0.05. The value *standardized regression* negative indicates that if a threat decreased, it will be followed by an increase in the effectiveness of the system e-learning by 0.111. Meanwhile, the probability is smaller than 0.05, indicating that the effect is significant. So, the hypothesis (H6) which states that threats have a negative effect on the effectiveness of the system e-learning is acceptable. The results of this study support the theory of Kuhthau (1991) which studies the information-seeking process that emphasizes emotional aspects. This shows that the smaller the feeling of a person's threat, the more effective the system will be e-learning. The results of the research by Aharony and Bar-ilan (2016) that threats has a negative effect on the use of learning systems with MOOCs. The results of this study are also consistent with the results of research by Zilka *et al*. (2018) which shows that there is a decrease in the feeling of threat that is felt by users in the learning system.Threat assessment is related to the negative feelings that someone feels when faced with system e-learning. The results of this study indicate that the threat assessment will reduce the effectiveness of the system e-learning. Based on this, universities need to use system e-learning that has easy-to-understand design features so that users find it easy to operate. Lecturers are expected to be willing to help if students have difficulty using the system e-learning as well the need for adequate support facilities such as the provision of free quotas in the implementation of the system e-learning.

VII.   CONCLUSION

Perceived usefulness has a positive effect on the effectiveness of the system e-learning. The higher the perceived usefulness, the system e-learning more effective will be. This proves that accounting students benefit from using the system e-learning. Perceived ease of use has no positive effect on the effectiveness of the system e-learning. This shows that accounting students do not feel easy in the system e-learning. The use of *platforms* of different makes students unaccustomed to using them. Based on these conditions, real continuous efforts are needed to ensure that systems e-learning *are* in demand and easy to use. Higher education institutions need to improve training on the use of the system e-learning with various *platforms* available and consistently use the system so that users feel familiar with the system being used. Deep learning has no positive effect on the effectiveness of the system e-learning. Meanwhile, surface learning is not has a negative effect on the effectiveness of the system e-learning. This shows that the majority of accounting students prefer the approach of surface learning in finding information with the system e-learning. Based on this condition, lecturers need to improve the positive attitude of accounting students by emphasizing case study learning to practice overall thinking and problem-solving skills. Challenge has a positive effect on the effectiveness of the system e-learning. Meanwhile, threats has a negative effect on the effectiveness of the system e-learning. This shows that accounting students feel happy and do not find major obstacles in using the system e-learning. Based on this condition, the system e-learning needs to be equipped with a *platform* that is easy for users to understand and operate. Support facilities such as free quotas are available and lecturers are willing to help if users experience technical difficulties. Apart from this, it requires a positive attitude and motivation from users to take advantage of the system e-learning.

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BIOGRAPHIES AND PHOTOGRAPHS

Indriyanti Linting, born in Ujung Pandang on September 9, 1990. I am is the 2nd of 4 childrens. The address of the residential hill of the equatorial hill F 12A, Makassar. Has completed 4 years (2009-2013) of undergraduate education in the Accounting program at Hasanuddin University. Then, in 2019 studied Masters's in Accounting at Hasanuddin University. Since 2014 until 2015 was a general cashier at the largest printing media company in Makassar. Then, 2015-now worked in the airport hospitality at Accounting departement. The research In 2014, have examined internal auditors at BRI Inspectorate Makassar bank related to competence, objectivity, independence, and the performance of internal auditors on audit quality. Other research experience is carried out on the Hasanuddin University campus about the use of system e-learning.