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# Does Brainstorming in Supervision Audit Fieldwork Can Improve Professional Auditor Judgement?

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#### ABSTRACT

This research was aimed to see supervision audit fieldwork using brainstorming approach can improve professional auditor judgment in assessing the risk of material misstatement. Method used was experiment with participants were 293 accounting students in 21 higher education institutions in Indonesia. Result of research indicated that Participant with verbal brainstorming treatment and Participant with written brainstorming treatment have better judgment to assess the risk of material misstatement than and with no brainstorming treatment. Professional Judgment increases because the auditor is given a better understanding of the probability and impact of risk. This study has implication for audit practices, audit supervision is needed by junior auditors to improve audit quality. Brainstorming can help the auditor assess the risk of material misstatement properly.

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#### 1. INTRODUCTION

Supervision is important in the audit assignment by the audit manager of the audit team members (Prawitt, 1995; Messier, 2011; Andiola, 2014). One way that audit managers do to supervise the work of the auditor team can be done through a brainstorming process. Brainstorming is a strategy or method of creative problem solving (Chen, Khalifa, Morgan, & Trotman, 2018). The brainstorming method emphasize on expression of ideas. Process of discussion and exchange of ideas in audit is necessary to produce good audit quality. Good audit quality is determined by a good audit planning process. In the audit planning phase, the auditor must use his professional judgment in determining the extent and scope of audit evidence. In determining the scope of the audit evidence, the auditor will assess the risk of material misstatement.

Process of assessing the risk of material misstatement is an important phase in audit process because if the risk is assessed greater than the actual condition, it will make the audit procedure inefficient due to wider range and greater amount of audit evidence collected. In contrary, if the risk is assessed is greater than the actual condition, it will cause audit quality to decline as the audit evidence collected is too little to draw conclusion on a condition (Elder, Allen, & Elder, 2003; Fukukawa & Mock, 2011; Mubako & O'Donnell, 2018; Trotman & Wright, 2012; Wedemeyer, 2010; Wright, 2016).

Internal control system is a set of procedures, policies or tools a company uses to protect its assets, increase the accuracy of financial report and increase compliance (Hanim, Haron& Jantan, 2005). Internal control system is considered to have weakness of not being able to detect fraud, and Assessment of the risk of material misstatement in audit process is conducted by assessing the internal control system and fraud awareness of the audited company therefore auditors are also required to be able to assess company's concern for the danger of fraud. The better the internal control system and fraud awareness are run by the company, the lower the risk of material misstatement (Norman, Rose &Rose,2010). In assessing the risk of material misstatement, auditors must consider probability of the risk of material misstatement to occur and effect of the loss suffered from the possible risk. There is potential risk of material misstatement with high occurrence rate but not causing great loss. However, there is also potential risk of material misstatement with low occurrence rate but causing great loss. Auditor understanding on the probabilities and effects of the risk of material misstatement is important to be delivered to auditor junior through brainstorming aproach.

Auditors, in conducting audit, often find the multiple client audit assignment (Bhattacharjee, Maletta, & Moreno, 2007). Process of assessing the risk of material misstatement on a client will be influenced by information obtained from the previous client. This can cause auditors' assessment become not independent as their assessment on current assignment is influenced by assessment on previous client. In a contrast condition, auditor who get audit assignment to client with good condition and client with bad condition simultaneously may assess the risk of material misstatement as being very bad. In a set of good objects, worse object will look very bad and, vice versa, in a set of bad objects, good object will look very good. The contrast effect causes assessment of the risk of material misstatement conducted by auditor to become inaccurate (Bhattacharjee, Maletta, & Moreno, 2007; Mubako & O'Donnell, 2018). For senior auditors, the contrast effect will not cause any significant mistake in assessing the risk of material misstatement because they generally have a lot of audit experience that it is easier for them to identify client. However, for junior auditors, it may cause inaccurate use of audit judgment in assessing the risk of

material misstatement. To reduce this, audit manager should be able to encourage team audit critical thinking skills in better assessing audit evidence. One of the efforts made is through a brainstorming process

Brainstorming, according to (Carpenter, 2007), can be done by (1) Nominal Group Discussion, this method is known with non-verbal approach that individual members of the group gather to express their ideas in written. (2) Verbal Brainstorming, this method provides opportunity to members of the group to express ideas verbally. Brainstorming process with verbal approach has more advantages compared to nominal method due to strong interaction between members in expressing their ideas. The disadvantages of nominal group discussion in capturing ideas are that the topics discussed are less varied and that there is no oral discussion, which is considered able to mediate other growing ideas. Verbal brainstorming process can increase literacy understanding in audit better than written brainstorming or no brainstorming, because there is intensive discussion on certain evidence spotted by someone but missed by others.

The potential risk and effect of material misstatement aspect can be thought by someone in detail and connected to other audit evidence due to better understanding and experience regarding audit evidence or due to missed by others. Therefore, all ideas can be collaborated to produce better literacy in audit when assessing the risk of material misstatement. Research by (Hunton & Gold, 2010) showed that different brainstorming procedure will bring different quantity and quality of ideas in planning audit procedure.

Research on link between brainstorming and judgment in audit process has been carried out by (Carpenter, 2007), suggesting that team brainstorming process can improve the quality of fraud risk assessments compared to conducting individual judgment before brainstorming. Other research carried out by (Hoffman & Zimbelman, 2009) proved that strategic reasoning and brainstorming can improve the accuracy of auditors' judgment in planning audit procedures. Research by (Brazel, Carpenter, & Jenkins, 2010) conducted modification by studying moderation effect of the quality of brainstorming on relationship between fraud risk assessment and fraud testing. Results of all three researches generally prove that brainstorming can increase the quality of auditor in making judgment.

Auditors will always be faced with diverse audit evidence. Each audit evidence will be linked by the auditor to produce the right audit conclusions (Arens, Elder, Beasley, & Hogan, 2017). The auditor can interpret it differently from the available evidence because certain audit evidence can be considered by an auditor but can escape the attention of other auditors (Hoffman & Patton, 1997; Shelton, 2012). This is known as selective attention (Lane, 2014). Therefore, a brainstorming process is needed that can connect the inter relationship of audit evidence, so that auditor need to be given a stimulus and assessed the response to audit evidence collected in order to provide a better understanding. Stimulus response theory developed by Edward L Thorndike (1874-1919). Thorndike argues that learning is a process of connecting in the nerves or known as connectionist, which is connected in the nervous system is a physical and mental event in the learning process (Thorndike, 2013). In practice, audit evidence collected is not easy and can be interpreted directly by auditor. For example, when auditor is asked to assess the integrity of management against possible fraudulent actions in the presentation of financial statements. Auditor must link various available evidence to conclude management's concern about the dangers of fraud. Auditors must be able to see the causes of fraud and management's actions in responding to fraud. Thus, auditor who are given a stimulus to assess the organization comprehensively (Such as prior test of fraud) will be better at understanding the organization than auditor who are not given the stimulus (Fay, Jenkins, & Popova, 2015).

This research specifically was aimed to seek the difference professional judgment between auditor who conduct brainstorming in written versus no brainstorming, oral versus no brainstorming and oral versus written brainstorming, oral versus and do not conduct brainstorming. Result of research indicated that students with verbal brainstorming treatment and students with written brainstorming treatment have better judgment to assess the risk of material misstatement than and with no brainstorming treatment

This research is a development of the three previous studies because this research also tries to see the type of brainstorming in assessing the risk of material misstatement as done by (Carpenter, 2007), then linking it to the digital era as it was done in the study by (Lynch, Murthy, & Engle, 2009). However, the current study focuses on supervision audit fieldwork to understand the probability and impact of risk. This research also complements the research by (Brazel et al., 2010) which explored more deeply the way auditor think when linking fraud risk factors and fraud risk responses in assessing the risk of material misstatement, while adding elements of probability and impact in the risk assessment process of material misstatement that has not been studied by previous researchers. Based on the description above, it is important to conduct a study on how the auditor in assessing the risk of material misstatement under conditions that use the brainstorming process and another that does not use it.

#### 2. METHODS

#### 2.1 Research Participants

This study uses the experimental method within subject with the study participants being accounting students in the 5th,6th and 7th semesters who have been and are currently following the audit course. The number of participants in this study was 293 people in 21 universities in Indonesia. Participant selection was done randomly. Process brainstorming with verbal and written brainstorming was done in groups with a maximum number of groups of 7 (seven) people and minimum number of group of 3(Three). Setting the maximum and minimum number of participants is done so that the brainstorming process can be observed properly. The experiment was carried out in the classroom and carried out in the hours of 08.00 am to 02.00 pm. This research was conducted during April 2018 to September 2018. This is done in an effort to avoid the existence of internal validity that occurs in students due to fatigue due to learning activities outside of this research.

#### 2.2 Instruments and Procedures

In this study students will be placed in classrooms and students will be given different treatments according to the purpose of this study. This study uses a 3x1 factorial design. So that there are 3 cells that compare the understanding of judgment auditor between Participant given verbal brainstorming treatment, written brainstorming and not given brainstorming. Participant in this research using between subject. Judgment auditor is shown by the accuracy of Participant to assess the risk of material misstatement. Case studies submitted to students are engineering information (sample companies). The cases used in the following experimental research are only illustrative cases (not the actual company). The case developed in this research instrument is the result of in-depth discussions and interviews conducted with experts in the field of audit, retail companies and risk management. In-depth discussions and interviews were conducted with the audit manager at one of the public accounting offices, supervisor accounting at one of the retail companies and risk management consultants. The following are the existing research procedures:

- 1. Students will be placed in a room and the placement of cells for participants is done randomly
- 2. Each student occupies 3 (cells) that exist with the process carried out separately.
- 3. The researcher will convey that students are auditors who carry out audit assignments at First Company and Second Company in the same audit year. At present students are asked to assess the risk of misstatements ranging from 1 to 3 if the risk of material misstatement is low. Range of 4 s.d 6 if the risk of material misstatement is moderate. Range 7 to 9 if the risk of material misstatement is high.
- 4. Students who get cell 1 (No-Brainstorming):
  - a. Reading the audit work paper in the form of information about fraud prevention system (Good Condition) in First Company and then students are asked to assess the risk of material misstatement First Company.
  - b. Read the audit work paper in the form of fraud prevention system information (Bad Condition) in Second Company and then students are asked to assess the risk of material misstatement for Second Company.
- 5. Students who get cell 2 (Written Brainstorming) have a maximum of 10 people and take the following steps:
  - a. Reading the audit work paper in the form of information about fraud prevention system (Good Condition) in First Company and then students are asked to assess the risk of material misstatement for First Company
  - b. Read the audit paperwork in the form of fraud prevention system information (Bad Condition) in Second Company.
  - c. Students are given information about the definition of fraud prevention systems, the probability and impact of fraud prevention systems on material misstatement in writing. Then students are asked to write down the possible misstatements that occurred at Second Company.
  - d. Students collect the results of the writing and the researcher will read the results of the analysis from all students.
  - e. Students are asked to write an assessment of Second Company material misstatement.
- 6. Students who get cell 3 (Verbal Brainstorming) have a maximum of 10 people and take the following steps:
  - a. Reading the audit work paper in the form of information about fraud prevention system (Good Condition) in first company and then students are asked to assess the risk of material misstatement for first company.
  - b. Read the audit paperwork in the form of fraud prevention system information (Bad Condition) second company.
  - c. Students are given information about the definition of fraud prevention systems, the probability and impact of fraud prevention systems on verbal material misstatement by researchers. Furthermore, students are asked to give opinions about the possible misstatements that occurred at second company.
  - d. Students are asked to write an assessment of risk material misstatement in second company.
- 7. Students are asked to write their identity in the form of GPA and gender.
- 8. Students leave the classroom.

#### 2.3 Data analysis

Data analysis was performed by Analysis of Variance (ANOVA) test, which is a hypothesis testing procedure used to evaluate mean differences between two or more treatments carried out. In order to improve the accuracy of the results of this study, the study design also pays attention to internal validity to prevent Deterrence History, Maturation Deterrence, Testing and Mortality Deterrence. Homogeneity of variance is done to test the similarity of variance of variables in two or more groups. This study uses a test to test the null hypothesis

#### 3. RESULTS AND DISCUSSION

#### 3.1 Description of Statistics

This study aims to look at differences in audit literacy skills in assessing the risk of material misstatement for students given audit learning with written brainstorming approaches, verbal brainstorming and those not given brainstorming. Participant characteristics data in this study are illustrated in table 1. In the table regarding the characteristics of participants, there were 293 total participants. 195 people are female and the remaining 98 are male. Participants in this study were dominated by students who had a GPA of> 3 as many as 271 people. Whereas those with a GPA of <3 were 22 people.

**Table 1. Characteristics of Participants** 

Total Responden
195
98
293
271
22
293

Table 1 illustrates the dominance of female participants compared to male participants. The number of female participants was 66 percent of the total 292 people. While the number of male participants only reached 34 percent. Students who become participants in this study are dominated by students who have a GPA range> 3. The number of participants who have GPA more than 3 as many as 75 percent of the total participants as many as 292 people, while the number of participants who have GPA under 3 is 25%. It can be interpreted that most participants are considered to understand the audit course well so that it is expected to follow a series of experiments well too.

Specifically, this study aims to see the auditor's different judgment in assessing the risk of material misstatement between 1) auditors who do written brainstorming versus no brainstorming; 2) auditors who do oral brainstorming versus no brainstorming and 3) auditors who do written brainstorming versus oral brainstorming. Based on the objectives of the study, the data analysis was obtained as follows

## Analysis of Differences in Judgment Auditor through Written Brainstorming and No Brainstorming Approaches

Auditors who get audit assignments to clients who have contrasting conditions (good conditions and bad conditions) will cause difficult to understand because the assessment of a

client will be influenced by the assessment of the previous client. This causes the assessment to be conducted not to be independent because it does not reflect the actual conditions. Through the brainstorming process, accounting students who are prospective auditors can better understand audit evidence.

Auditor who do brainstorming in writing will gain an understanding of the understanding of fraud prevention systems and link the elements of fraud prevention systems with their impact on material misstatement. Auditor who do not do written brainstorming will tend to judge something bad that will directly affect the misstatement directly, even though this is not the case. The thinking process of auditor will be increasingly sharp towards audit evidence because they get a variety of perspectives related to audit evidence because certain audit evidence can be clearly seen by someone and is not clearly visible to others. Hypothesis (H<sub>1</sub>) predicts that auditor who have written brainstorming will assess the risk of misappropriation lower in auditors who do not brainstorming. The following is a table of research results for problem identification 1.

Experiment	N	Mean	Std.Dev	Std.Error	Lower	Upper	Min	Max
Scenario					Bound	Bound		
No	211	7.0569	1.54507	0.10637	6.8472	7.2666	1	9
Brainstorming								
Written	34	6.1471	187701	0.32190	5,4921	6,8020	2	9
Brainstorming								
	245	6.9306	1.62185	0.10362	6.7265	7.1347	1	0

Table 2. Descriptive Statistics (1)

Table 2 shows that auditor who do not brainstorm in writing on contrasting company conditions (Good-Bad) will tend to assess the risk of higher misstatement (7.0569) than auditor who brainstorm in writing (6.1471). The minimum value of participants in the No brainstorming experimental group is 1 and the maximal value is 9. While the minimum value of participants in the experimental group written brainstorming was 2 and the maximal value was 9. In contrasting audit assignment conditions, participants in the group given brainstorming treatment assessed lower risk than those who did not brainstorming. The risk range 1 to 3 shows a low risk, while the risks of 4 to 6 show a moderate risk and risks of 7 to 9 show a high risk. Based on table 2 it can be concluded that participants were given treatment no brainstorming was in the range of high risk, while participants were given treatment verbal brainstorming was in the range of medium risk. The results of this study indicate that when multiple client auditors who experience auditee conditions that have a system of contrast fraud prevention (good and bad), the tendency to overestimate the risk of misstatement in companies with poor fraud prevention system conditions will decrease because auditors gain new knowledge based on the results of a written discussion with the audit manager and fellow auditors regarding the client's risk profile. The auditor's new knowledge in assessing risk is closely related to the auditor's ability to see the deviations that exist within a company associated with the probability and impact of material misstatement. Poor information will not all directly affect the material misstatement in a large and significant way, so through written brainstorm the auditor will understand the risk assessment of material misstatement better.

Tab		2	A 8	10	١/٨	111
Idl	nе	3	ΑI	VU	VA	(1)

					(-/			
Risk	Of	Material	Sum	of	df	Mean	F	Sig
Misstat	ement	Squares			Square			
Betwee	n Group	os	26.627		1	26.627	10.494	0.001
Within Groups			614.045		242	2.537		
Total			640.672		243			

Table 3 shows a significance of 0.001 which means there are significant differences in the process of assessing the risk of material misstatement between groups. This happens because Participant who do written brainstorming get a better understanding of the meaning of probability and the impact on risk. Information about something bad about the company does not directly impact the assessment of the risk of misstatement. The results of the study provide an understanding that assessing the risk of material misstatement will be better if Participant do the brainstorming process. This study supports the results of previous studies which explain that brainstorming can improve better quality of judgment audit (Carpenter, 2007); (Hoffman & Zimbelman, 2009) dan (Brazel et al., 2010). The results of this study prove that the brainstorming process can provide an understanding of the process of assessing the risk of material misstatement. An understanding of the assessment of the risk of material misstatement will be better because the auditor obtains information about the probabilities and effects of a lack of fraud prevention systems that can result in misstatement of financial statements.

### Analysis of Differences in Judgment Auditor through Verbal Brainstorming and No BrainstormingApproaches

Brainstorming through verbal brainstorming encourages Participant to get used to convey ideas and reveal audit findings. One type of audit evidence is analyzing a review that is comparing company data with auditor expectations. Brainstorming can be useful to increase auditor' caution in assessing audit evidence because auditor will get a different perspective on the risk of misstatement from other students who might not have thought of it beforehand. This can increase professional skepticism. The second hypothesis (H<sub>2</sub>) predicts that participants who get contrasting manipulation of audit engagements (good-bad) and carry out verbal brainstorming will assess the risk of lower material misstatements than those who do not brainstorm. The following is a table of research results for problem identification 2:

Table 4. Descriptive Research Results (2)

					,	,		
Experiment	N	Mean	Std.Dev	Std.Error	Lower	Upper	Min	Max
Scenario					Bound	Bound		
No	211	7.0569	1.54507	0.10637	6.8472	7.2666	1	9
Brainstorming								
Verbal	47	5.9574	1.53166	0.22342	5.5077	6.4072	3	9
Brainstorming								
	258	6.8566	1.59729	0.09944	6.6608	7.0524	1	9

Table 4 shows that the average group that received contrast manipulation and verbal brainstorming would assess the risk of a much lower misstatement of 5.9574 compared to those who received contrast manipulation and did not get a brainstorm that is equal to 7.0569. Both of these risk assessments have different ranges where the value of 5.9574 shows

medium risk while 7.0569 shows high risk. This difference can prove that through the brainstorming process it will encourage participants to think critically about audit evidence so that they will better understand and interpret that bad information will not all have a major effect on material misstatement. Through the process of interaction between auditors in an audit assignment group and auditor manager, it will provide new knowledge for auditors in assessing audit evidence better. The risk difference in range between the two groups proves that the auditor's judgment can be biased because of the contrast effect. This will indirectly cause the auditor to fail to make an effective and efficient audit plan. However, the failure of the audit in assessing the risk of material misstatement can be reduced if the auditor manager always encourages team members to conduct discussions on each audit problem they face. The discussion process can encourage team members to think critically about the audit evidence they have obtained.

Participants who get verbal brainstorming manipulation on first company audit assignment will assess the risk of direct material misstatement. While the audit assignment at second company prior to assessing the risk of material misstatement will first obtain information from the audit manager and discuss the risk profile of the fraud prevention system element. Through the verbal brainstorming process, the group will understand that bad information does not necessarily have a major effect on material misstatement. Understanding the risk profile of the fraud prevention system will make the auditor more appropriate in assessing the risk of material misstatement. Whereas participants in groups that do not get manipulation will be affected by the assessment of previous clients who have a good fraud prevention system, so that when assessing the risk of misstatement in bad companies, the previous situation becomes a comparison to assess current conditions without considering the risk profile there so that it will assess higher risk.

Table 5. ANOVA (2)									
Risk of Material	Sum of	df	Mean	F	Sig				
Misstatement	Squares		Square						
Between Groups	46.461	1	46.461	19.523	0.000				
Within Groups	609.232	256	2.38						
Total	655.694	257							

Table 5 shows the significance of 0,000 which means there are significant differences in the process of assessing the risk of material misstatement between groups. Auditor who do not brainstorm tend to make judgments influenced by previous assessments of companies in good condition, so companies with bad information will be judged poorly without noting that not all bad information can have a direct impact on the assessment of the risk of misstatement. An understanding of the probability and impact of risk will be obtained by auditor who brainstorm verbally. The results of this study can improve better quality of judgment audit (Carpenter, 2007; Hoffman,2009; Lynch,Murthy & Engle,2009; Carpenter, Reimers & Fretwell, 2011; Hoffman & Zimbelmen,2012; Chen Khalifa&Trotman,2015; Hamilton, 2016; Giesell & Johnstone,2016). The results of this study prove that the brainstorming process can provide an understanding of the process of assessing the risk of material misstatement. An understanding of the assessment of the risk of material misstatement will be better because the auditor obtains information about the probabilities and effects of a lack of fraud prevention systems that can result in misstatement of financial statements.

### Analysis of Differences in Judgment Auditor through Written Brainstorming Approach and Oral Brainstorming

Auditors are required to be able to understand audit evidence both verbally and in writing. Brainstorming processes both verbally and in writing can improve auditor understanding of the risk aspects of misstatement better, so that the existence of contrasting audit assignments will not cause the auditor to misjudge the risk of misstatement because the assessment carried out is based on the company's condition without being affected by assessing the previous audit assignment. The results showed that there was no significant difference in assessing the risk of misstatement between students who did written brainstorming and verbal brainstorming. The hypothesis prediction (H3) states that multiple client auditors in contrasting auditee environment conditions (good-bad) and verbal brainstorming will assess the risk of misstatement lower than auditors who conduct nominal group discussions. The following is a table of research results for problem identification 3:

Table 6. Descriptive Research Results (3)

	1 and 10									
Experiment	N	Mean	Std.Dev	Std.Error	Lower	Upper	Min	Max		
Scenario					Bound	Bound				
Written	34	6.1471	1.87701	0.32190	5.4921	6.8020	2.00	9		
Brainstorming										
Verbal	47	5.9574	1.53166	0.22342	5.5077	6.4072	3.00	9		
Brainstorming										
	80	6,0125	1,67252	0,18699	5,6403	6,3847	1	9		

The results from 6 show that the group that received contrast manipulation and verbal brainstorming rate was lower at 5.9574 while the group that received contrast manipulation and written brainstorming at 6.1471, but in Table 7 show no significant amount of 0.728 so that means there is no difference in the assessment of the risk of material misstatement in the group that carries out brainstorming in writing and verbal brainstorming causes auditor assessment of risk using probablity and impact considerations. Auditor will tend to assess the risk of misstatement in the medium risk range. There is no proven prediction that in contrast conditions, groups that get verbal brainstorming manipulation will understand the system of prevention of client fraud better so that it will assess the risk of misstatement smaller than the group that gets nominal group discussion manipulation. This is due to the intensity of the use of written language in discussions on electronic media such as whatsapp, line and other media groups are more often used by most people compared to face-to-face discussions. Therefore, the transfer of knowledge from the audit manager to the audit team conducted with written media can provide an equally effective understanding by using verbal discussions (verbal brainstorming).

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Table 7. ANOVA (3)									
Risk	Of	Sum	of	df	Mean	F	Sig		
Material		Square	S		Square				
Misstatem	ent								
Between		0,345		1	0.345	0.122	0.728		
Groups									
Within		220.642	2	78	2.829				
Groups									
Total		220.98	7	79		•			

#### 4. CONCLUSION

This study proves that professional judgment auditor in assessing the risk of material misstatement will be better done for auditor who conduct brainstorming approach. However, this study cannot prove that there are differences in judgments between auditors who do written brainstorming and those who verbally conduct methods. This study has limitations in measuring professional judgment which is only devoted to the assessment of the risk of material misstatement. Future studies can carry out more comprehensive audit judgment such as the ability to disclose information in financial statements.

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