

# ASSESSMENT OF FRAUD RISK PERFORMANCE: INTERACTION EFFECTS OF BRAINSTORMING AND TASK STRUCTURE OF GOVERNMENT AUDITORS

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## ABSTRACT

*The inability of the government auditor to detect misstatement, especially on fraud risk may expose the auditors to lawsuits which consequently lead to bad reputation. However, task structure may also affect the performance of fraud risk assessment. Fraud risk assessment task can be classified into structured, less structured and unstructured task. Fraud risk assessment in the structured task involves assessment of fraud risk using tests of control whilst less structure task used substantive test to identify fraud risk. In practice, auditors would perform both tasks and therefore, task structure becomes the within-subject in this study. This study examines the direct and interaction effects of brainstorming and task structure against fraud risk assessment performance. The 2 X 2 factorial design was employed, and a total of 151 government auditors participated in this study. The government auditors assessed the fraud risk based on individual or ongroup basis. The results show that brainstorming and task structure have a direct impact on fraud risk assessment performance. However, the results show no significant interaction between brainstorming and task structure. Although brainstorming improves fraud risk assessment performance, task structure proves otherwise. The findings in this study provide insights on the importance of brainstorming and task structure for government auditors.*

**Keywords:** *fraud risk assessment, fraud risk assessment performance, brainstorming, task structure*

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## INTRODUCTION

Any organizations including the government sectors are vulnerable to fraud. Fraud is social phenomenon and each fraud case possesses different characteristic depending on the type of industry (Francis, 2013). An organization is susceptible to fraud if a suitable and effective prevention action is not in place. Fraud is an intentional deception conducted by one or more individual to gain an advantage illegally (International Standard of Auditing 240 (ISA 240)). There are two types of fraud that are relevant to the auditors namely, management fraud and employee fraud. Both frauds may cause material misstatement in the financial statement, which may affect investors' decision. Usually, management's fraud delineates management's manipulation on the financial statement to show good financial performance. On the other hand, employee's fraud is more to the misappropriation of assets such as theft of cash, false claims and theft of inventory. Employee fraud occurs more often compared to management's fraud although it has been reported that the losses incurred due to management's fraud are higher than employee's fraud (Association of Certified Fraud Examiners, 2016). Arguably, performing fraud risk assessment is critical for the auditors, and this is supported by the standard requesting the auditors to have a professional skeptical mind when performing audit (International Standard of Auditing 240 (ISA 240)).

Due to time and cost constraint, an auditor performs fraud risk assessment and financial statement audit concurrently in which it might affect fraud risk assessment performance (Braun, 2000; Knapp & Knapp, 2001). Failure in detecting fraud risk may raised concerns from the public on the auditors' competency in performing fraud risk assessment (Chen, Kelly, & Salterio, 2012). Therefore, the auditors need to perform fraud risk assessment, which involves auditors' judgment in assessing the presence of the fraud risk in an organization. Auditors should maintain high quality of fraud risk assessment performance since low performance of fraud risk assessment would lead to loss of income and confidence crisis among the public. For example, the misappropriation of funds in one of the Ministries is an evidence of fraud that caused significant losses of the public money (Ahmad Tarmizi, 2016). From the case, the public have started querying the auditing process and questioning the government auditor's competency. Separating the fraud risk assessment and the financial statement audit

would increase the audit cost and might not resolve the performance issue. However, the auditors should understand the task characteristic involved in performing the audit procedure to assess fraud risk (Duh, Chang, & Chen, 2006). Perhaps, the task characteristic in relation to task structure may affect fraud risk assessment performance.

Tasks characteristic is an attribute of every workflow, and it may influence the auditors' judgment (Duh, Chang, & Chen, 2006; Libby & Luft, 1993; Mohd Sanusi, Mohd Iskandar, & Poon, 2007). A task can be defined as an act by an individual or group of individuals to change the input to output (Goodhue & Thompson, 1995). Prior studies have shown that task characteristic may influence auditors' judgment (Duh, Chang, & Chen, 2006; Libby & Luft, 1993; Mohd Sanusi, Mohd Iskandar, & Poon, 2007). There are three determinants that influence auditor's judgment which are subjective in nature. One of the determinants is task (Bonner, 1999). Task characteristic can be divided into several types namely, intrinsic task, extrinsic task, task performer and the relationship of the task (Kim & Soergel, 2005). However, prior studies have mainly focused on task complexity as a proxy of task characteristic in understanding auditors' judgment. Therefore, there is a need to expand task characteristic in audit judgment apart from task complexity. Standards and guidelines have encouraged the implementation of brainstorming during fraud risk assessment. Studies have shown that brainstorming could assist auditors to improve audit quality. However, there is no indication on the type of task that provides better performance when performing brainstorming. In addition, even though brainstorming and task structure may affect performance of fraud risk, there is a lack of evidence on the interaction effect between brainstorming and task structure on fraud risk assessment performance.

The objective of the study is to examine the direct effect of brainstorming and task structure on fraud risk assessment performance. This study also examines the interaction effect of brainstorming and task structure on fraud risk assessment performance. The findings in this study would provide insight to the practitioners, especially the government auditors on the importance of brainstorming as a tool for knowledge transfer between auditors. This study could assist the government auditors to re-set their focus on the brainstorming when performing task structure, that may affect fraud risk assessment. The remainder of this study is structured as

follows. The next section, Section 2 provides a review of literature related to this study. Section 3 outlines the research methodology and Section 4 presents the results of this study. . The final section summarises and concludes this study.

## **LITERATURE REVIEW**

### **Fraud Risks Assessment**

The terms ‘fraud’ and ‘fraud risk’ are often being used interchangeably. However, fraud risk involves element of probability of the event occurred. Fraud and fraud risk are ontologically different (Power, 2013). Fraud is concern on the actuality of the event whilst fraud risk is concern on the possibility of the event. Specifically, fraud is an intentional act by one or more individuals using the deception to obtain an unjust or illegal advantage. On the other hand, fraud risk is a potential of fraud that could happen in an organization. For example: the management may manipulate earnings management of a business in order to obtain incentive gain. The management commits the fraud when the internal control of a business is breached due to weak internal control or in worst case scenario, the management overrides the control. However, fraud risk involves evaluation of the internal control effectiveness in mitigating fraud risk. Therefore, the approach to managing fraud and fraud risk could be different. Fraud deals with actuality and the approach to resolve fraud is by investigating the fraud event itself. On the other hand, fraud risk involves only the possibility of fraud that could happen and therefore, it must be governed by the organization (Power, 2013).

Fraud risk assessment is defined as an assessment of the potential fraud to affect an organization’s ability to maintain the operations and reputation (Association of Certified Fraud Examiners, 2016). Fraud risk assessment should also identify and address an organization’s vulnerability to internal and external fraud. The management or those charged with governance should take the initiative to perform fraud risk assessment in their respective jurisdiction. While the international standard of auditing and fraud guidelines by public sector, auditing requires the auditors to identify and assess risks of material misstatement due to fraud. In other words, the auditors need to continuously perform fraud risk assessment during the conduct of audit since

it is an ongoing process. The auditors have to perform fraud risk assessment during the engagement, planning of the audit, audit fieldwork, and in the final stage of the audit (Payne & Ramsay, 2005). Currently, fraud risk assessment is done concurrently with the financial statement as suggested by the fraud auditing guidelines. However, the concurrent practice of fraud risk assessment and financial statement auditing might be affected due to the different task and purpose of the task (Chui & Pike, 2013; Knapp & Knapp, 2001). The guidelines suggest that the brainstorming process used as a tool to improve performance of fraud risk and overcome the shortcoming of the concurrent practice. In addition, variety of task structure is also exists in the fraud risk assessment.

## **Brainstorming**

The auditing standards and guidelines have encouraged the implementation of brainstorming during fraud risk assessment. Studies in the auditing literature have supported the notion that brainstorming process leads to better performance (Alon & Dwyer, 2010; Carpenter, 2007; O'Donnell, Arnold, & Sutton, 2000). However, it is difficult for the auditors to conduct proper brainstorming due to the time and cost constraints. As a result, the identification of fraud risk might be jeopardized due to improper brainstorming process. Brainstorming should be emphasized to the auditors as it can improve fraud risk assessment performance with the support of decision aids compared to performing individually (Alon & Dwyer, 2010). Studies in the information system literature have also suggested that brainstorming improves fraud risk assessment performance (O'Donnell, Arnold, & Sutton, 2000). Carpenter (2007) found that auditors during a group interaction of brainstorming produce more quality ideas and information compared to individual. Thus, the availability of technology has made it possible for the auditors to perform fraud risk assessment individually although the quality of ideas maybe less compared to a group of auditors performing fraud risk assessment in brainstorming (Alon & Dwyer, 2010). Therefore, the standards have emphasized on the importance of brainstorming in performing fraud risk assessment.

Brainstorming is a process to ensure the idea, information and experience is shared among the team members. Information such as element of fraud triangle, anti-fraud measure and the element of frauds discussed

in the brainstorming session (Trompeter, Carpenter, Desai, Jones, & Riley, 2013). However, the process losses may lead the brainstorming session to not generate more ideas (Dennis & Valacich, 1993). The reduction of contribution in the brainstorming session could be attributed to several reasons such as a junior auditor having low confidence in throwing the idea in the present of a senior auditor or manager. Another reason could be that only one auditor are given the chance to talk at one time. This will make the idea from other members to be lost because of the inappropriateness of the idea to be discussed or the idea has already been discussed by the talking auditor, which is commonly known as block production. In the group discussion, free riding or social loafing is one of the main concerns during brainstorming session because some of the auditors might prefer to become a free rider during the discussion (Diehl & Stroebe, 1987). Findings in the psychology literature have also provided mixed findings on the effect of brainstorming on performance. Therefore, the first hypothesis is developed as follows:

**H<sub>1</sub>:** The government auditors in brainstorming groups perform better than individual auditors in fraud risk assessment.

### **Type of Task Structure**

Prior studies have concentrated more on the effect of task complexity on audit judgment (Bonner, 1994; Liu & Li, 2012; Mohd Sanusi, Mohd Iskandar, & Poon, 2007). Mohd Sanusi, Mohd Iskandar and Poon (2007) found that auditors performed better on a simple task compared to a complex task. However, the audit task can also be structured or less structured depending on the type of test available. In other words, task difficulty is related to the amount of information whereas task structure is related to information clarity (Bonner, 1994). Auditors often classify a test of control as a structured task due to the nature of the test. Performing tests of control often involve performing a walk through the internal control set by the management. Therefore, fraud risk assessment using tests of control have clarified the steps on how the test should be performed. By understanding the task structure, the auditors would perform better in fraud risk assessment. Furthermore, when a task becomes more complex and unstructured, the auditors may need more effort in completing the task (Mohd Sanusi, Mohd Iskandar, & Poon, 2007). However, there is a lack of study that has examined the effect of task structure on fraud risk assessment performance. Therefore, the second hypothesis is developed as follows:

- H<sub>2</sub>:** The government auditors perform better in the structure task compared in the less structured task in fraud risk assessment.

### **Interaction between Brainstorming and Task Structure**

The brainstorming session might alter the direction and strength of the relation between task structure and fraud risk assessment performance. Often, the auditors would perform better in fraud risk assessment in a structured task compared to less structured task. Such notation is consistent with previous studies that found brainstorming could alter the direction and strength of the relation between task structure and fraud risk assessment performance in a less structured task (Mohd Sanusi, Mohd Iskandar, & Poon, 2007; Shirani, Tafti, & Affisco, 1999). A less structured task involves the decision-makers' insight, evaluation, judgment that do not have definite boundaries or well establish procedures. This is because less structured task has lack of information that allows information exchange among the auditors. Therefore, brainstorming is an appropriate tool for the auditors to discuss for information exchange in order to reduce the impact of lack of information (Carpenter, 2007; Hoffman & Zimbelman, 2009). The psychology literature have noted that brainstorming may not generate quality ideas due to block production and social loafing (Dennis & Valacich, 1993; Diehl & Stroebe, 1987). However, in the auditing literature, there is evidence that brainstorming improves performance of the auditors in fraud risk assessment (Carpenter, 2007; Hoffman & Zimbelman, 2009; Mohd Nassir, Mohd Sanusi, & Ghani, 2015). Therefore, the third hypothesis is developed as follows:

- H<sub>3</sub>:** The interaction of brainstorming and task structure affect fraud risk assessment performance, in such a way that the government auditors performance improve when performing brainstorming session in the less structured task.

## **RESEARCH METHODOLOGY**

The study examines the direct and interaction effects between brainstorming and task structure on fraud risk assessment assessment. The study employs a factorial experimental design of 2 X 2. The participants chosen in this

study are government auditors under the employment of the National Audit Department. Government auditors are selected because the public sector is susceptible to fraud occurrence (ACFE, 2016). 151 government auditors of various levels of job ranks participated in this study. Manipulation of brainstorming was conducted at two levels namely, by group or by individual during fraud risk assessment. Government auditor needs to perform fraud risk assessment task. For government auditor in the group, they are allowed to have a discussion which is a brainstorming session to complete fraud risk assessment task. While another group of government auditor performing fraud risk assessment task individually.

The manipulation of the task structure was also given to the participants at two levels namely, structured and less structured. The fraud risk assessment using tests of controls is classified as a structured task whereas fraud risk using substantive test is classified as a less structured task (Abdolmohammadi, 1999; Duh, Chang, & Chen, 2006). For test of controls, the number of correct responses for fraud risk represents a transaction that has the same signatory as an authenticator and approver of payment voucher. For the substantive test, a fraud risk represents a transaction that has improper procurement method. The performance of fraud risk assessment is measured using scores of the percentage of correct responses. The scores are calculated based on the number of correct responses divided by the total scores and multiplied by hundred.

## **RESULTS**

### **Demographics of Participants**

151 government auditors are between the age of 25 - 56 years old with a mean score age of 35.36 years old. Meanwhile, the length of services for the 151 government auditors is between 1 to 34 years and the mean score of length of services is 9.86 years. Out of the 151 government auditors, 47 (31.1%) of the participants is male, and 104 (68.9%) participants is female. 97 (64.2%) of the government auditors come from the support groups (grade 27 - 36) whilst 54 (35.8%) of government auditors come from the management and professional group (grade 41 - 54). For academic qualification, 8 (5.3%) government auditors hold a postgraduate degree, 10

(6.6%) government auditor hold a professional qualification and 4 (2.6%) government auditors hold a certificate. Majority of the government auditors which is 61 (40.4%) of them hold a bachelor degree and 68 (45.%) hold a diploma. Government auditors can either be an external auditor or an internal auditor. Out of the 151 government auditors, 110 (72.8%) function as an external auditor and 41 (27.2%) function as an internal auditor. There is no significant difference in performance among the external and internal auditors as government auditors often receive the same amount and level of training (Moyes & Hasan, 1996). Majority of the participants do not have any professional membership. Only 28 (18.5%) government auditors hold professional membership such as MIA, IIA and ACCA memberships.

### **Descriptive Statistics**

The mean score for fraud risk assessment performance in the structured task is 64.83 whilst the mean score for fraud risk assessment performance in the less structured task is 49.57, resulting in a mean score difference of 15.26. The government auditors that performed fraud risk assessment in structured task individually have a mean score of 56.52. Meanwhile, the government auditors that performed fraud risk assessment in the less structured task individually have a mean score of 44.57. The government auditors performing the fraud risk assessment in the structured task as a group have a mean score of 71.83 whilst 53.78 represents the mean score of the government auditors' fraud risk assessment performance in the less structured task. Overall, the government auditors in a group that performed brainstorming during the fraud risk assessment have better performance compared to the government auditors that performed fraud risk assessment individually. In relation to the types of task structure, the government auditors have better performance in the structured task compared to the government auditors' performance using the less structured task. However, fraud risk assessment in the less structured task between group and individual condition does not have much different in term of performance. Table 1 presents the means scores for the descriptive statistics.

**Table 1: Descriptive Statistic**

Variables	Brainstorming		Overall ( <i>n</i> )
	Individual ( <i>n</i> )	Group ( <i>n</i> )	
Performance of fraud risks assessment in structured task	56.52 (69)	71.83 (82)	64.83 (151)
Performance of fraud risk assessment in less structured task	44.57 (69)	53.78 (82)	49.57 (151)

### **The Direct Effect of Brainstorming and Task Structure against the Fraud Risk Assessment Performance**

This study examines the direct effect of brainstorming on fraud risk assessment performance. The multivariate analysis of variance (MANOVA) was conducted to compare fraud risk assessment performance between the brainstorming and individual group. The fraud risk assessment performance has a 5% statistically significant difference between the brainstorming and individual group (Wilks' Lambda = 0.927;  $F(2, 148) = 5.804$ ;  $p = 0.004$ ). Even though the fraud risk assessment performance has 5% significant difference, only 7.3% (partial eta squared = 0.073) variance of the fraud risk assessment performance is explained by the brainstorming. Separation of the fraud risk assessment performance between the structured task and the less structured task found the brainstorming reaches 5% statistical significance in the fraud risk assessment structured task performance ( $F(1, 149) = 8.769$ ;  $p = 0.004$ ; partial eta squared = 0.056) and only 5.6% variance of the fraud risk assessment performance is explained by the brainstorming. Meanwhile, a fraud risk assessment performance in the less structured task does not reach statistically significant difference ( $F(1, 149) = 3.616$ ;  $p = 0.059$ ). Therefore, hypothesis one namely the government auditors in brainstorming groups perform better than individual auditors in fraud risk assessment is supported.

This study also examines the direct effects of task structure on fraud risk assessment performance. The repeated measure multivariate analysis of variance (MANOVA) was conducted to compare the performance of fraud risk assessment between the structured task and less structured task. Task structure is a within-subject variable, indicating that the government auditors performed both tasks. The fraud risk assessment performance

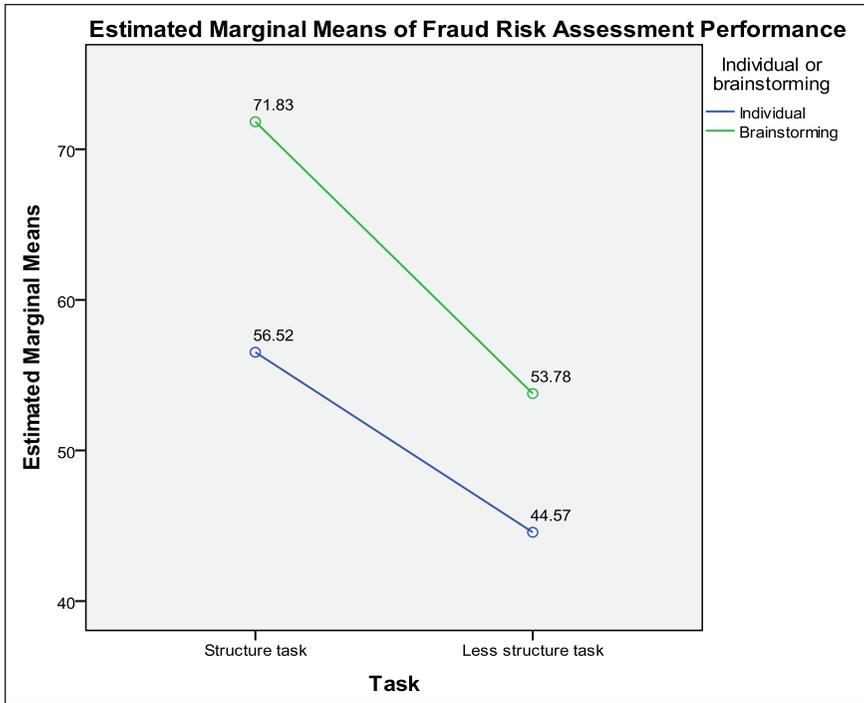
has a 5% statistically significant difference between structured and less structured task (Wilks' Lambda = 0.882;  $F(2,148) = 20.065$ ;  $p = 0.000$ ). The government auditors have a better performance in the structured task ( $M = 64.83$ ) compared to when they performed the less structured task ( $M = 49.57$ ). Therefore, hypothesis two namely the government auditors perform better in the structure task compared in the less structured task in fraud risk assessment is supported. The results of the direct effect are shown in Table 2.

**Table 2: Result for Direct and Interaction Effect of Brainstorming and Task Structure against the Fraud Risk Assessment Performance**

Independent Variables	Wilks' Lambda Value	F	Sig.	Independent Variables
Brainstorming	0.927	5.804	0.004	0.073
Task Structure	0.882	20.065	0.000	0.118
Brainstorming * Task Structure	0.995	0.792	0.375	-

### Interaction between Brainstorming, Task Structure against the Fraud Risk Assessment Performance

Instead of direct effect, this study also examines the interaction effect of brainstorming and task structure on fraud risk assessment performance. The mixed between-within multivariate analysis of variance (MANOVA) was conducted to explore the interaction effect between brainstorming and task structure on fraud risk assessment performance. The results show that brainstorming and task structure interaction effect is not statistically significant (Wilks' Lambda = 0.995,  $F(2,148) = 0.792$ ,  $p = 0.375$ ). Therefore, hypothesis three namely the interaction of brainstorming and task structure affect fraud risk assessment performance, in such a way that the government auditors performance improve when performing brainstorming session in the less structured task is not supported. Table 1 shows that the brainstorming group (mean score = 71.83) have a better performance compared to the individuals (mean score = 56.52) when performing structured fraud risk assessment task, resulting in a mean difference of 15.31. In the less structured task of fraud risk assessment, the brainstorming group (mean score = 53.78) also have a better performance compared to the individuals (mean score = 44.57), resulting in a mean difference of 9.21. However the mean difference for the less structured task of fraud risk assessment not significantly difference.



**Figure 1: Two-Way Interaction Effects between Task Structure and Brainstorming on Fraud Risk Assessment Performance by the Government Auditors**

## DISCUSSION AND LIMITATION

This study investigates fraud risk assessment performance of auditors when performing brainstorming in a structured task and a less structured task. The results show that there is a significant direct effect on the task structure with fraud risk assessment performance and brainstorming on fraud risk assessment performance. However, this study shows no statistically significant interaction effect between task structure and brainstorming session. The findings in this study consistent with the findings in the psychology literature that brainstorming does not necessarily produce quality ideas or effective information exchange due to the block production or social loafing (Dennis & Valacich, 1993; Diehl & Stroebe, 1987). Although Figure 1 shows that the brainstorming group has a better performance compared

to the individual group that performed a less structured task; the interaction effect is not statistically significant. Therefore, brainstorming does not alter the direction and strength of the relation between task structure and the performance of fraud risk assessment, especially in the less structured task. Even though, brainstorming improve performance when applying in auditing field less study to understand the type of task with brainstorming (Carpenter, 2007; Hoffman & Zimbelman, 2009). As a conclusion, the government auditor should not rely solely on brainstorming when performing the less structured fraud risk assessment task.

This study has limitations as well. First, the study not designed to identified the details of explanation on why brainstorming does not alter and strength the relationship of the less structured task with fraud risk assessment performance of government auditors. Therefore, future study should incorporate the research design to identify the explanation on why the brainstorming does not strengthen the relationship between less structured task and fraud risk assessment performance. From this identification of reason, it will help to facilitate the brainstorming better in the less structured fraud risk assessment task. Secondly, some evidence suggests the expertise of government auditor might influence the fraud risk assessment performance. Mohd Nassir, Mohd Sanusi, & Ghani (2016) found brainstorming improve less expert government auditor in fraud risk assessment performance. Even though, the study collects the information of government auditor rank. It is not enough to identify the expertise of the government auditor according to the Theory of Expert Competence (Shanteau, 1992). Therefore, the future study might measure the effect of auditor expertise for further explanation on the effect of fraud risk assessment performance.

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