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ASSESSING THE EFFECTS OF SELF-EFFICACY AND TASK COMPLEXITY ON INTERNAL CONTROL AUDIT JUDGMENT

Takiah Mohd Iskandar[1*] and Zuraidah Mohd Sanusi[2]

[1]School of Accounting, Faculty of Economics and Management
Universiti Kebangsaan Malaysia 43600 Bangi, Selangor, Malaysia
[2]Accounting Research Institute and Faculty of Accountancy
Universiti Teknologi MARA 40450 Shah Alam, Selangor, Malaysia

[*]Corrresponding author: takiah@ukm.my

ABSTRACT

This study examines the effects of self-efficacy and task complexity on audit judgment performance. Self-efficacy refers to the belief that a person has the capacity to organise and execute the course of action required to produce the desired outcome. The study employs a field experiment involving auditors from small and medium audit firms to evaluate internal control audit tasks. Using hierarchical regression analysis, the results indicate that auditors with high self-efficacy perform better audit judgments than those with low self-efficacy. The results also show the negative effects of task complexity on audit judgment performance. High self-efficacy contributes to better audit judgment performance when the tasks are simple. For complex tasks, however, high self-efficacy does not contribute to better audit judgment performance. This paper enhances the theoretical development of the concepts of audit judgment and decision-making by recognising the role of self-efficacy within the framework of social cognitive theory.

Keywords: Self-efficacy, task complexity, audit judgment performance, social cognitive theory

INTRODUCTION

Thus far, audit judgment research has focused on identifying important determinants that motivate auditors to improve their judgment performance (Bonner, 1999; Trotman, 1998; Laitinen, 2009). Motivation is an important factor of audit judgment performance (Libby & Luft, 1993; Bonner, 1994). Based on social cognitive theory, motivation represents an external event that is cognitively processed and synthesised in a judgment performance before any

action is taken (Bandura, 1986). The theory recognises the motivating role of self-efficacy as the central cognitive force that provides the sub-skill of self-regulation. Self-efficacy is defined as an individual's belief in his or her ability to organise and execute the course of action required to attain a certain level of achievement (Bandura, 1997).

Previous studies demonstrate that high self-efficacy improves performance in a wide range of work settings, including education, training, sports and management (Shea & Howell, 2000). An individual's belief that he or she has the ability to execute certain tasks contributes to better performance. Individuals with high self-efficacy tend to perform well on a variety of tasks (Bandura, 1997; Stajkovic & Luthans, 1998a). In contrast, low self-efficacy individuals tend to avoid tasks and situations that they believe exceed their capabilities.

In auditing, the work of an auditor is often evaluated based on his or her judgment performance. Auditors' judgment performance may vary in relation to the audit task complexity, which can range from simple and routine to extreme (Bonner, 1994). Task complexity may affect audit judgment performance negatively. The complexity of an audit tasks varies according to the number of audit procedures, the audit risks, and the level of uncertainty involved in performing the tasks successfully (Gist & Mitchell, 1992). A high level of task complexity is often associated with a low level of audit judgment performance (Abdolmohammadi & Wright, 1987; Chang, Ho, & Liao, 1997; Tan, Ng, & Mak, 2002). Based on the audit judgment model, when tasks are simple, task complexity interacts with the motivational factor and, in turn, improves performance (Bonner, 1994). In other words, highly motivated auditors only demonstrate a better audit judgment performance when the audit tasks are simple.

During an audit, reviews of internal controls are generally assigned to auditors with an average of 1.5 years of audit experience (Bonner & Pennington, 1991). Reviews of internal control require auditors to work independently with minimal supervision. In such an environment, it is useful to understand the motivational factors that differentiate individuals who can manage complex tasks from those who cannot. However, the extent to which self-efficacy may motivate auditors to improve their audit judgment performance remains unclear. In addition, limited studies have examined how the effect of self-efficacy on auditors' judgment performance is moderated by task complexity. This study attempts to fill the research gap by examining the moderating effect of task complexity on the relationship between self-efficacy and audit judgment performance. As Libby and Luft (1993) discussed, accounting researchers should consider more motivational factors in their studies of audit judgment and decision making. Thus, a clear understanding of the influence of self-efficacy on audit

judgment performance can provide audit management with useful information to develop motivation and training programmes for audit staff or to recruit auditors.

Although most of the evidence on the effects of motivational factors on audit judgment performance is obtained from studies in developed countries, such as the U.S. or the U.K., we do not expect to observe a significant difference between these earlier studies and the findings from data collected in Malaysia. Although cultural differences may influence auditors' judgments in these countries, the auditing professions in both regions are subject to stringent auditing standards as well as professional rules and regulations. Thus, the results of this study may be generalised to other countries. In addition, this study does not intend to examine the effect of culture on audit judgment performance.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Audit judgments refer to independent auditors' professional judgments in their auditing work (Gibbins, 1984). Professional judgments reflect collective judgments at all stages of audit work, including audit planning, the collection and evaluation of audit evidence and the formation of audit opinion. Examples of audit judgments include the determination of material cut-off points, the identification of audit objectives, the assessment of the sources and types of risks, and the determination of the appropriate audit opinions. Audit judgments play a key role in auditing (Hogarth, 1991).

In making judgments, auditors may use a systematic and rigorous audit process that involves two basic activities, i.e., evidence search and evidence evaluation (Ashton, 1974). These activities help auditors determine the audit procedures to be performed and the standards to be applied. In evaluating audit evidence, auditors are expected to use their judgment to determine whether financial information contains material misstatements or significant inaccuracies. These audit judgments form the basis of an audit opinion on the client's financial statements. Thus, the opinion presented in the audit report reflects the results of auditors' judgments on the truth and fairness of the information presented in the client's financial statements (Shome, 1998).

Audit judgments are subjective in nature. Auditors are allowed to exercise discretion regarding the nature, extent and timing of the audit procedures. This discretion may lead to inaccurate or inconsistent audit judgments or may result in a lack of consensus or confidence among auditors in their judgments (Tan et al., 2002; Chung & Monroe, 2000; Leung & Trotman, 2005; Mohd-Sanusi & Iskandar, 2007). Thus, it is generally acknowledged that audit judgments may not always be of high quality (Bonner, 1999). The

inaccuracies, inconsistencies, or lack of consensus that may arise during audit work, such as in the determination of the materiality threshold or in the issuance of audit opinions (Iskandar & Iselin, 1999; Davis, Kennedy, & Maines, 2000), reflect a low-quality audit judgment performance. To ensure high quality audit services, it is important that auditors maintain a high-quality audit judgment performance. In extreme cases, low-quality judgments may result in audit failure (Cullinan, 2004).

Self-efficacy

Self-efficacy is a form of internal motivation; the individual believes that s/he is capable of organising and executing the required courses of action to achieve the expected level of performance (Bandura, 1997). Self-efficacy is a motivational construct that influences an individual's choice of activities, level of achievement, persistence, and performance in various contexts (Zhao, Seibert, & Hills, 2005). Social cognitive theory provides the basis for explaining how perceived self-efficacy operates as a central focus in a self-regulatory mechanism that governs human motivation and action (Bandura, 1986). According to social cognitive theory, an individual's performance is influenced not only by contingent rewards (i.e., an environmental factor) but also by personal self-efficacy (i.e., a motivational factor).

The effects of self-efficacy on work-related performance are well documented. Previous studies demonstrated a significant positive relationship between self-efficacy and some work-related performance variables, including job search, sales, research productivity, learning, task-related achievement, and career choice (Bandura, 1997). Stajkovic and Luthans (1998a) demonstrated the robustness of the positive relationship between self-efficacy and performance in a meta-analysis of 114 studies. Those authors found that self-efficacy accounts for approximately 28% of individuals' achievement in any work-related performance. Many studies have shown that self-efficacy significantly and positively affects task performance (e.g., Bandura, 1997; Gist, 1987; Stajkovic & Luthans, 1998a).

The Effect of Self-efficacy on Audit Judgment Performance

Although many studies have assessed the predictive strength of self-efficacy on various types of tasks such as education, training, sports and management, no studies have attempted to evaluate the effects of self-efficacy on the performance of audit tasks. Past studies provide support on the positive impact of motivational factors on the level of effort, which improves performance (Awasthi & Pratt, 1990; Becker, 1997). Based on the above discussions, it is argued that self-efficacy would also provide a similar positive effect on audit judgment performance. Because no study to date has fully addressed the issue, this study

identifies a gap in the literature concerning the relationship between self-efficacy and audit judgment performance. In addition, this study expects that similar positive relationships exist between self-efficacy and audit judgment performance.

It is argued that high self-efficacy will increase audit judgment performance. Individuals with high self-efficacy are able to cope and persist and will test and revise their strategies (Gist & Mitchell, 1992; Wood, Atkins, & Tabernero, 2000). High self-efficacy individuals tend to weigh, evaluate, and integrate their perceived capabilities before selecting their choices and initiating their efforts (Stajkovic & Luthans, 1998b). It is argued that auditors who perceive themselves as highly efficacious would exert sufficient effort to produce successful outcomes (Stajkovic & Luthans, 1998b). Thus, high self-efficacy leads to continuing improvements in job performance. In contrast, individuals who perceive themselves as having low self-efficacy are likely to cease their efforts prematurely and fail to perform the task (Stajkovic & Luthans, 1998b). In the context of audit judgments, auditors with high self-efficacy are therefore expected to perform better than auditors with low self-efficacy. The following hypothesis is proposed:

> H_1: Self-efficacy is positively related to audit judgment performance.

Task Complexity

Task complexity comprises three dimensions: component complexity, coordinative complexity, and dynamic complexity (Wood, 1986). Component complexity exists when the number of distinct acts and informational cues necessary for the completion of a certain task increases. Coordinative complexity is present when the pattern of relationships among informational cues, actions, and products is more complex. Dynamic complexity exists when the pattern of task complexity is less stable over time. Complex tasks involve multifaceted constructs that place greater behavioural and informational processing demands on the performer (Chen, Casper, & Cortina, 2001). Therefore, substantial resources, such as effort and persistent behaviours, are needed to accomplish complex tasks.

In auditing, auditors often face complex tasks, in terms of inconsistency and difficulty (Bonner, 1994). The complexity of audit tasks varies according to the nature of the tasks regarding factors, such as the type of account balance, the size of the balance, and the number of cues in the dataset (Chung & Monroe, 2001). Complex tasks are ambiguously defined and difficult to measure objectively. In performing complex tasks, auditors are required to execute

numerous distinct acts and process numerous cues (Wood, 1986). When performing audit tasks in these situations, auditors typically confront challenges and are rarely able to obtain clear and correct answers (Trotman, 1996).

In a complex task environment, auditors need to use a high degree of professional judgment (Abdolmohammadi & Wright, 1987). Due to the potential significant effect of task complexity on audit judgment performance, auditors must use improved decision aids and training techniques (Bonner, 1994). When the level of task complexity is clearly understood, audit jobs may be more effectively allocated to audit staff to match the various requirements of audit tasks and thus to improve performance (Bonner, 1994). Thus, it is important to understand the effect of task complexity, particularly when interpreting research results and appraising auditors' judgment performance on audit tasks (Bonner, 1994).

The Effect of Task Complexity on Audit Judgment Performance

In the process of audit judgment and decision-making, the level of complexity increases as the number of criteria specified by the auditing standards and the element of uncertainty in evaluating the appropriateness of the standards increase. Generally, auditing standards contain little or no guidance regarding the criteria to be considered for the appropriate course of action to be taken. As the number of alternative choices of action increases, the level of difficulty also increases. As a result, auditors tend to use the easier non-compensatory strategy, which motivates them to search for different information for each alternative (Bonner, 1994, p. 220).

Previous studies provide support for the association between a high level of task complexity and a low level of audit judgment performance (Abdolmohammadi & Wright, 1987; Chang et al., 1997; Tan et al., 2002). Auditors make poorer judgments for more complex audit tasks because they may involve interconnected information that is difficult to analyse or may require more data for analysis. Thus, it is expected that task complexity is negatively related to audit judgment performance. Although this relationship is well established in the literature, an understanding of the direct effect of task complexity is critical to further investigate the effects of its interaction with self-efficacy on audit judgment performance. Hence, the following hypothesis is proposed:

H_2: Task complexity is negatively related to audit judgment performance.

Effects of the Interaction between Self-efficacy and Task Complexity on Audit Judgment Performance

Performance is a function of both task complexity and the motivation of the decision-maker (Bonner, 1994). The interaction between task complexity and motivation proposes that as the audit task becomes more complex, the positive effect of motivation on audit judgment performance decreases. This proposition suggests that high motivation leads to higher performance when task complexity is low but not when task complexity is high (Bonner, 1994). However, low motivation does not lead to higher performance under either high or low task complexity (refer to Figure 1).

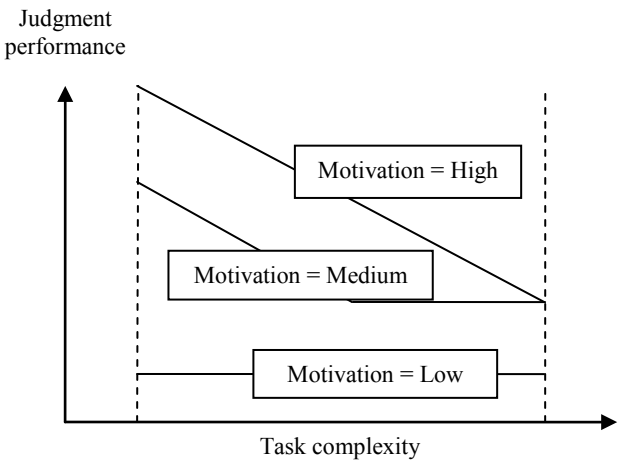

Figure 1. Interacting effects of motivation and task complexity on judgment performance (Bonner, 1994)

Similarly, in this study, self-efficacy represents a motivation that may inspire auditors to enhance their performance. Thus, when task complexity is high, the effect of self-efficacy on audit judgment performance is small. Conversely, when task complexity is low, the effect of self-efficacy on audit judgment performance is large. This proposition suggests that high self-efficacy leads to better audit judgment performance when task complexity is low, but not when the task complexity is high. Thus, it is argued that the effect of self-efficacy should be moderated by task complexity such that high self-efficacy increases audit judgment performance when audit tasks are simple but fails to do so when audit tasks are complex.

Thus, self-efficacy is a crucial self-regulatory factor that influences performance. Self-efficacy is expected to influence initiating behaviour, the effort

exerted to attain the outcome, and the level of persistence in the face of difficulties and setbacks (Bandura, 1997). This is consistent with the argument that individuals with high self-efficacy are more likely to engage in goal-directed behaviour (such as seeking task-relevant information) than individuals with low self-efficacy (Seijts, Latham, Tasa, & Latham, 2004). Individuals who perceive themselves as efficacious exert substantially more effort to successfully complete tasks than those who perceive themselves as inefficacious (Krishnan, Netermeyer, & Boles, 2002). Hence, when dealing with less complex tasks, auditors with high self-efficacy are expected to improve their audit judgment performance more than those with low self-efficacy.

When faced with difficult tasks, individuals with low self-efficacy become self-preoccupied with evaluative concerns (Wood & Bandura, 1989). They tend to avoid tasks and situations that they believe exceed their capabilities and to confidently perform activities that they judge themselves capable of handling (Bandura, 1986, p. 393). Individuals with low self-efficacy are more likely to cease their efforts prematurely and to fail to complete the given tasks (Bandura, 1986). However, high self-efficacy individuals may not perform better when tasks are complex due to the high cognitive processing activities that are required to perform these tasks (Wood et al., 2000).

This argument is consistent with a meta-analysis by Stajkovik and Luthans (1998a), which demonstrates that task complexity moderates the effect of self-efficacy on audit judgment performance. Stajkovik and Luthans (1998a) conclude that the relationship between self-efficacy and judgment performance is much stronger for simple tasks than for complex tasks. It can be expected that for complex tasks, auditors with high self-efficacy may not perform better audit judgments than those with low self-efficacy. Hence, the following hypothesis is proposed:

> H_3: Task complexity moderates the relationship between self-efficacy and audit judgment performance such that the positive relationship between self-efficacy and audit judgment performance is significantly stronger when the level of task complexity is low than when the level of task complexity is high.

RESEARCH METHODOLOGY

Participants

The sample comprises auditors working in small and medium audit firms in Malaysia. The firms were randomly selected from the Malaysian Institute of Accountants' (MIA) list of audit firms. The selected firms were contacted to volunteer their audit staff for the research project. A total of 600 auditors participated in the study. The participating auditors included audit assistants (55%), audit seniors (32%), and audit supervisors (13%). The age of the participants ranged from 22 to 30 years, with an average of 2.91 years of audit experience. Approximately two-thirds of the participants were female. Of the participants, 53% held a basic degree in accounting and 38% held professional qualifications.

Research Instrument

The research instrument contained three main sections. The first section contained items concerning self-efficacy. The self-efficacy measures were administered just after the task instructions but prior to the actual task engagement. The second section presented the audit cases for the experiment. The cases related to internal control audit tasks with two levels of complexity: high and low. Participants performed either the high complexity audit task or the low complexity audit task. The last section concerned subjects' demographic characteristics.

This study used an internal control audit task because internal control is an important aspect of the audit process prior to forming an audit opinion (O'Leary, Iselin, & Sharma, 2006). Auditors need to examine various aspects of internal controls to assess the effectiveness of the internal control system. Auditors' performance in assessing the internal control system is therefore likely to be affected by the level of difficulty of the task. In assessing an internal control system, the audit programme normally only specifies the related audit objectives that auditors need to accomplish and the desired level of assurance they have to maintain without specifying the tests they need to conduct to discover any misstatements (Asare & McDaniel, 1996). Auditors must use their own judgment to execute the tasks. Thus, auditors' judgments in the examination of internal control systems are expected to be susceptible to the negative effects of task complexity.

The instrument was placed in a booklet together with a cover letter and prepaid envelope. Prior to the actual survey, the contents of the audit cases that were to be used as the experimental instrument were validated by experts

comprising six auditors and five senior accounting lecturers. The objective of the validation was to ensure that the information and statements contained in the instrument were realistic and relevant to the audit tasks. Based on the feedback, improvements were made in both cases with respect to word choice, sentence structure and case format. The participating experts agreed that the two cases differ in their level of complexity, indicating that auditors need to exert more cognitive effort to audit the more complex task than to audit the simple task.

Procedure

Booklets containing the research instrument were distributed to 600 participating auditors. Half of the booklets contained the less complex task and the other half contained the more complex task. Of the distributed booklets, 171 completed instruments (i.e., a 28.5% response rate) were returned, comprising 81 less complex task instruments and 89 more complex task instruments. The response rate is consistent with the 24% response rate obtained by Smith, Omar, Sayd-Idris and Baharuddin (2005) in their study of auditors in Malaysia. Results of a test for potential non-response bias show no significant difference at $p < 0.05$ between the early and the late responses. Hence, non-response bias is not an issue in this study.

Operationalisation of Variables

Audit judgment performance

Audit judgment performance was measured by the number of correct responses on the audit tasks. Judgment performance on the less complex task is evaluated on the basis of the percentage of correct answers to questions on the audit objectives task. Judgment performance on the more complex task is determined based on the percentage of correct answers to questions the substantive task and the compliance tests. The total scores for each task were pre-determined based on answers developed following a series of discussions with professionals and senior academics.

Self-efficacy

Self-efficacy was measured using a four-item instrument adapted from Kozlowski, Gully, Brown, Salas, Smith and Nelson (2001). The instrument measures individuals' ability to cope and to develop methods to effectively resolve challenges when performing a task. Bell and Kozlowski (2002) used a similar measure to evaluate the effects of interactions between goal orientation and ability on task-specific self-efficacy. However, for the purpose of this study,

the term 'task' is replaced by 'audit task' to suit the nature of the audit work that was performed by the participants.

The four items require participants to self-rate their confidence that they can solve the audit task successfully, their ability to cope with the challenges in the audit task, the capability to manage the requirements for the audit task, and the belief that they will perform well on the audit task even if the task becomes more complex. Participants were requested to provide their response on a 7-point Likert scale that ranged from 1 (strongly disagree) to 7 (strongly agree). The self-efficacy scale reports a high degree of reliability with a Cronbach's alpha reliability coefficient of 0.954. This coefficient compares favourably with the recommended alpha > 0.8 (Nunnally, 1967).

Task complexity

Task complexity is manipulated as a between-subject variable. Half of the participating auditors were given booklets that contained the less complex task and the other half were given booklets that contained the more complex task. In this study, task complexity is a dichotomous variable whereby a high level of task complexity is coded as 1 and a low level of task complexity is coded as 0.

For the high complexity task, participants were required to select from several alternative audit procedures that were deemed appropriate to verify the specified misstatements. Participants could identify more than one audit procedure to verify each misstatement. To respond to the high complexity task, participants were expected to examine various cues and to exert cognitive effort in selecting the specific audit procedures that would be considered appropriate for the misstatements. The participants' choices of audit procedures contribute to the quality of the audit performance (Cormier & Lapointe-Antunes, 2006).

For the low complexity task, participants were required to state the appropriate audit objective of internal controls for certain cash-collections audit procedures. The less complex task required relatively simple cognitive thinking with only a few factors to consider. To respond to the low complexity task, participants could choose from a list of six alternative audit objectives provided in the instrument.

Control variables

This study includes gender, experience and familiarity with the task as control variables. Previous studies show that these variables are significantly related to audit judgment performance (Chung & Monroe, 2001; Abdolmohammadi & Wright, 1987). Gender is a dichotomous variable whereby female is coded as 1

and male is coded as 0. Experience is measured by the number of years and months that the participants worked as auditors before the study (Abdolmohammadi & Wright, 1987; Carpenter & Dirsmith, 1992; Chung & Monroe, 2000). Familiarity with an audit task is measured using a three-item measure developed by Maynard and Hakel (1997) that assesses whether the participant performed similar tasks in the past, is familiar with the task, and has sufficient related past experience to perform the task. Participants were requested to respond to each item on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Manipulation check

The manipulation check on task complexity is measured by three different questions on whether the task requires coordination among different activities, whether the task is complex, and whether the task is mentally demanding. These items were adapted from Maynard and Hakel (1997). Upon completion of the task, participants were requested to rate each of the questions on a 7-point Likert-scale (e.g., 1 = strongly disagree; 7 = strongly agree). The results of the reliability test and factor analysis show that the relevance of constructs is not problematic.

Model of the Study

This study uses a hierarchical regression analysis to evaluate the direct and interaction effects of self-efficacy and task complexity on audit judgment performance. The predictor variable (self-efficacy), the moderator variable (task complexity), and the product of self-efficacy and task complexity are simultaneously regressed on the criterion variable (audit judgment performance). Three equations were constructed and tested by estimating the regression equations as follows:

$$Y_1 = b0 + b1X_1 + b2X_2 + b3X_3 + e \ldots \quad (1)$$

$$Y_1 = b0 + \ldots\ldots\ldots\ldots\ldots\ldots + b4X_4 + b5X_5 + e \ldots \quad (2)$$

$$Y_1 = b0 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots + b6X_4X_5 + e \ldots \quad (3)$$

Equation (1) measures the effect of the control variables, where Y_1 denotes audit judgment performance, X_1 indicates gender, X_2 corresponds to experience, and X_3 represents familiarity. Equation (2) tests the main effects of X_4, self-efficacy, and X_5, task complexity, on audit judgment performance. Finally, equation (3) incorporates the multiplicative interaction between self-efficacy and task complexity (X_4X_5). The proposed moderator will be shown to moderate the

relationship between the predictor and criterion variables if the interaction (i.e., the product of the predictor and the moderator) yields a significant value.

RESULTS

Descriptive Statistics

Table 1 presents descriptive statistics on audit judgment performance and self-efficacy for high and low task complexity. The mean value of audit judgment performance is the percentage of total scores of the correct answers obtained by each participant over the overall scores assigned to each task. The overall mean value of audit judgment performance is 57.9%. The mean value of audit judgment performance for the low task complexity is 66% ranging from 49% to 84%. The mean value of audit judgment performance for the high task complexity is 50.5% ranging from 37% to 64%. The lower score value for high task complexity reflects that the task is more difficult to perform because effort is required to integrate the cues. With respect to self-efficacy, the descriptive statistics show an overall mean value of 5.475. The mean value of self-efficacy for the low task complexity group (i.e., 5.466) is almost the same as that of the high task complexity group (i.e., 5.483).

Table 1
Descriptive statistics

Variables	Low Task Complexity $N = 82$			High Task Complexity $N = 89$			Overall $N = 171$		
	Mean	Std. Dev.	Std. Error	Mean	Std. Dev.	Std. Error	Mean	Std. Dev.	Std. Error
Audit Judgment Performance	0.660	0.175	0.019	0.505	0.135	0.014	0.579	0.173	0.013
Self-efficacy	5.466	0.972	0.107	5.483	0.993	0.105	5.475	0.981	0.075

The Analysis of Correlations

Table 2 shows the correlations between all variables. The table shows that the correlation coefficients between independent variables are relatively low, with a maximum of 0.39. Hence, the issue of multicollinearity is not a major concern in this study (Judge et al., 1988). The correlations also provide initial support for the expected directions of relationships between independent variables and the

dependent variable. Self-efficacy is positively correlated with audit judgment performance ($r = 0.29$, $p < 0.01$). Task complexity is negatively correlated with audit judgment performance ($r = –0.45$, $p < 0.01$).

Table 2
Analysis of correlations (N = 171)

Variables	Audit judgment performance	Gender	Experience	Familiarity	Self-efficacy	Task complexity
Audit judgment performance	1					
Gender	–0.17*	1				
Experience	0.31**	–0.17*	1			
Familiarity	0.06	–0.15*	0.29**	1		
Self-efficacy	0.29**	–0.10*	0.31**	0.39**	1	
Task complexity	–0.45**	–0.01	–0.13	–0.06	0.01	1

Notes: ** Correlation is significant at the 0.01 level (2-*tailed*).
* Correlation is significant at the 0.05 level (2-*tailed*).

Regression Analyses: Direct Effects

Results of the hierarchical regression analysis on audit judgment performance are presented in Table 3. As the first step, the three control variables (gender, experience and familiarity) are entered into the regression equation. In the second step, both independent variables, self-efficacy and task complexity, are entered into the regression equation simultaneously. The interaction term between self-efficacy and task complexity is entered into the regression formula in the final step.

Table 3
Results of regression analyses

Predictor	Audit Judgment Performance		
	Step 1	Step 2	Step 3
Constant	0.54***	0.35***	0.33***
Control variables: Gender	0.04	0.04*	0.05**
Experience	0.02***	0.01***	0.01**
Familiarity	–0.01	–0.02**	–0.02*

(*continued*)

Table 3 (*continued*)

Predictor	Audit Judgment Performance		
	Step 1	Step 2	Step 3
Main variables: Self-efficacy (SE)		0.05***	0.05***
Task complexity (TC)		–0.08***	0.06
Interaction SE × TC			–0.03**
Change in R^2	0.11	0.23	0.02
R^2	0.11	0.34	0.36
Adj. R^2	0.09	0.32	0.34
F-statistics change	6.81***	29.64***	4.78**
df	167,3	165,5	164,6

Note: *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$, $N = 171$

The results of the regression analysis on equation (1) in Table 3 show that audit judgment performance is significantly related to experience but insignificantly related to gender and familiarity at $p < 0.01$. The results indicate that more experienced auditors show better audit judgment than less experienced auditors. The results also show no significant differences in judgment performance related to gender or job familiarity. The first regression model contributes 11 % of the variance (R^2) and is significant at $p < 0.01$.

Results of the regression analysis on equation (2) indicate that self-efficacy and task complexity both contribute significantly to the variance in audit judgment performance, i.e., an increase of 23% in the value of R^2 ($\Delta F = 29.64$, $p < 0.01$). The change in the variance indicates that self-efficacy and task complexity are important determinants of audit judgment performance because they explain an additional 23% of judgment performance. The results show that self-efficacy has a significant positive relationship with audit judgment performance at $p < 0.01$. The positive coefficient ($\beta = 0.05$) indicates that auditors with high self-efficacy show better audit judgment performance. The results suggest that auditors who are confident in completing the tasks perform better than those who are not confident. As hypothesised, the results also demonstrate a significant negative relationship between task complexity and audit judgment performance at $p < 0.01$. This indicates that as the level of task complexity increases, auditors' judgment performance decreases. In performing complex tasks, auditors may have difficulty coordinating various cues simultaneously or understanding ambiguous situations, thus reducing their judgment performance. Hence, high task complexity leads to lower audit judgment performance.

Analysis on the Interaction Effect

This study also examines the moderating effect of task complexity on the relationship between self-efficacy and audit judgment performance (H_3). The regression equation in the third step demonstrates the significant effect of the interaction between self-efficacy and task complexity on audit judgment performance at $p < 0.05$. The negative sign of the standardised beta coefficient ($b = –0.03$) of the interaction term between the two variables indicates that high self-efficacy does not lead to higher audit judgment performance as strongly under complex tasks as it does under simple tasks. The interaction marginally improves the variance by an additional two percent, with an adjusted R^2 of 34%. Hence, H_3 is supported. This result shows that task complexity, an environment within which auditors carry out audit work may moderate the effect of self-efficacy on audit judgment performance. In other words, the positive effect of self-efficacy on audit judgment performance may depend on the level of complexity of the task that is performed by auditors.

The effects of the control variables and self-efficacy on audit judgment performance are analysed separately for the simple task and for the complex task. The objective is to demonstrate the specific relationship of the control variables and self-efficacy on audit judgment performance for tasks with different levels of complexity. The results in Table 4 show that two of the control variables, gender and experience, are significantly related to audit judgment performance (at $p = 0.1$). For complex tasks, male auditors perform better than female auditors. However, they do not perform significantly different for simple tasks. The results also indicate that more experienced auditors perform significantly better (at $p = 0.1$) than less experienced auditors for simple tasks, but their performance does not differ significantly for complex tasks.

The results in Table 4 show that self-efficacy has a significant and positive relationship with audit judgment performance for the simple task but not for the complex task at $p < 0.01$. The results indicate that high self-efficacy does not improve audit judgment performance for complex tasks to the same extent as it does for simple tasks. Participants who have a strong belief (high self-efficacy) that they will perform well perform better on the audit task than those who do not. However, the influence of self-efficacy on audit judgment performance is not strong for the complex task.

The effect of the interaction between self-efficacy and task complexity on audit judgment performance is presented graphically in Figure 2 in accordance with Frazier, Tix and Barron (2004). Simple slopes are plotted using the values of one standard deviation below and one standard deviation above the mean of self-efficacy for the different levels of task complexity.

Table 4
Results of regression analyses on audit judgment performance by level of complexity

Predictor	Simple task		Complex task	
	B	Std. Error	B	Std. Error
Constant	19.90	9.65	39.48	8.06
Gender	1.37	3.24	6.98*	3.05
Experience	0.80*	0.41	0.63	0.85
Familiarity	0.27	1.43	–1.23	1.29
Self-efficacy (SE)	6.12***	1.67	2.34	1.76
R^2		0.26		0.11
Adj. R^2		0.22		0.07–
F-statistics change		6.63***		2.67*
df		77,4		84,4

Note: *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$, $N = 171$

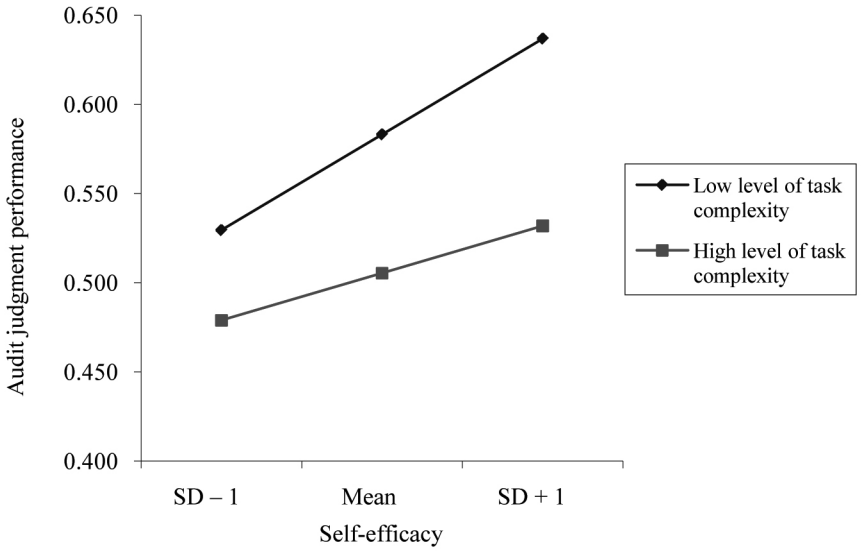

Figure 2. Interacting effects of self-efficacy and task complexity on audit judgment performance

Figure 2 shows that the positive relationship between self-efficacy and audit judgment performance is stronger (i.e., the slope is steeper) at the lower level of task complexity than at the higher level of task complexity. The results show that auditors with high self-efficacy only perform significantly better than those with low self-efficacy when performing simple audit tasks. Similar significant

relationships do not occur between self-efficacy and audit judgment performance in a complex task environment. When carrying out complex tasks, highly self-efficacious auditors may not show significantly better audit judgment than low self-efficacious auditors.

DISCUSSION AND CONCLUSIONS

This study extends research on audit judgment by identifying self-efficacy as an additional determinant of audit judgment performance. The results support the contention that an increase in the level of self-efficacy may improve audit judgment performance. Self-efficacy is found to be highly related to audit judgment performance. The results suggest that an auditor who has high self-efficacy is likely to show better audit judgment than an auditor with low self-efficacy. This result is consistent with past research in academic settings that connect self-efficacy to task performance (e.g., Chen, Gully, Whiteman, & Kilcullen, 2000; Phillips & Gully, 1997; Seijts et al., 2004). These studies show that high self-efficacy is associated with better task performance. The findings concerning the significant effect of self-efficacy in research in the area of audit judgment and decision-making enhance our understanding of the importance of motivation factors to improving audit judgment performance (Libby & Luft, 1993; Phusavat, Kanchana, & Lin, 2009).

The results on the significant effect of task complexity on audit judgment are consistent with past findings (Abdolmohammadi & Wright, 1987; Asare & McDaniel, 1996; Chang et al., 1997; Tan et al., 2002). Participants perform better on less complex tasks than they do on more complex tasks. As argued by Bonner (1994), more complex tasks that involve more information on each alternative lower the quality of audit judgment and decisions.

This study demonstrates that the important role of self-efficacy in audit judgment performance is moderated by the effect of task complexity. The findings suggest that the effect of self-efficacy on audit judgment performance depends on the level of task complexity. When given a simple task, participants with higher self-efficacy can perform better audit judgments than those with lower self-efficacy. When the task is complex, self-efficacy does not lead to higher audit judgment performance. A similar result is also demonstrated by Stajkovic and Luthan (1998a) in their meta-analysis of self-efficacy. This study demonstrates that the drive to improve audit judgment performance among auditors with high self-efficacy only exists when managing simple tasks. When performing more complex tasks, auditors are not sufficiently motivated by their high self-efficacy to work harder or to show better audit judgment performance.

This finding implies that auditors may need more experience to enhance their self-perception of their ability to handle complex tasks as compared to simple tasks. The results of this study suggest the need for the human resource managers of audit firms to design a training programme that helps auditors espouse higher self-efficacy, which will in turn improve their judgment performance. It also appears that the environment of the actual work setting, such as task complexity, tends to influence the effects of self-efficacy on task performance. Thus, managers need to provide clear and concise descriptions of tasks to fully prepare auditors for their work. Managers should refrain from assigning heavier task burdens to only the most capable auditors because doing so may negate the advantages that make these auditors highly productive (Brown, Jones, & Leigh, 2005).

LIMITATIONS AND CONTRIBUTION

This study has several limitations. First, the use of an audit case in an experimental setting limits the external validity of the study. This limitation has been acknowledged in other studies that used an internal control audit case to evaluate audit judgment (Bonner & Lewis, 1990; Tan et al., 2002; Mohd-Sanusi & Iskandar, 2007). Another limitation of this study relates to the subjective input of the researchers in the manipulation of the level of task complexity when the audit cases were developed. Task complexity was manipulated by varying the number of input cues and the processing required for judgment in other similar audit areas. The use of self-report instruments that were adopted from Kozlowski et al. (2001) to assess self-efficacy may also pose a limitation to the study.

Drawing on social cognitive theory to explain the role of self-efficacy in the area of audit judgments and decision-making, this study contributes to the theoretical development of audit judgment and decision-making. The significance of self-efficacy as a factor of motivation that enhances auditors' performance in this study is consistent with research in many other fields, such as education, sports, psychology and medicine (Bandura, 1986; 1997).

This study also makes an important contribution to the literature by identifying the circumstances (task complexity) in which self-efficacy has a beneficial effect on performing audit tasks. The relationship between self-efficacy and task complexity in auditors' judgment and decision-making has received limited attention in the accounting literature. An understanding of the effect of these variables is necessary to further comprehend how perceptions of self-efficacy operate in a complex audit task environment to optimise audit judgment performance.

Certain audit tasks require auditors to be proactive and responsive to problems. Auditors are usually required to perform audit tasks with creativity and to be open to new ideas due to differences in clients' systems of operation. Auditors are likely to be exposed to different environments that require them to adapt quickly. Hence, it is important for audit managers to provide a clear and concise description of tasks and guidelines for audit members to perform the tasks. Otherwise, the benefits of high self-efficacy on audit judgment performance may not be realised due to a lack of understanding concerning the effect of the varying levels of task complexity.

Future research may investigate further how self-efficacy can be improved under high task complexity. Researchers may replicate this study using audit tasks with multiple levels of complexity. The use of multiple complexity levels in the research design would enable comparisons of personality influence and motivational factors on audit judgment performance. The effects of individual characteristics and task complexity on audit judgment performance are of interest because auditors constantly face challenging audit tasks (Abdolmohammadi & Shantaeu, 1992). Future research should also explore other possible moderating variables that may influence audit judgment performance, such as audit structure. Future research may examine how auditors' self-efficacy interacts with audit structure to affect auditors' judgment performance.

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