COGNITIVE MODELING OF COMPANY AUDITORS

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CHAPTER ONE: INTRODUCTION
1.0. Introduction 1
1.1. Background of the study 1
   1.1.1. The legal background of the auditing profession 2
   1.1.2. The economic background 4
   1.1.3. The intellectual background 5
   1.1.4. The training background 6
   1.1.5. The research background 9
1.2. Problem Statement 10
1.3. Research Objectives 11
1.4. Research Questions 12
1.5. Significance of the study 12
1.6. Scope of study 13
1.7. Definition of terms 17
1.8. Summary 20

CHAPTER TWO: LITERATURE REVIEW
2.0. Introduction 21
2.1. Cognitive Modeling 21
2.2. Expertise and knowledge 24
2.3. The development of expertise 25
2.4. Cognitive skills 26
2.5. Information Processing Theory 28
2.6. Knowledge elicitation and cognitive task analysis
2.7. Empirical Gap
2.8. Practical Gap
2.9. Summary

CHAPTER THREE: METHODOLOGY

3.0. Introduction
3.1. Design of the study
3.2. Population of the study
3.3. Instrument of the study
3.4. Validity and reliability test
   3.4.1. Construct validity
   3.4.2. Internal validity
   3.4.3. External validity
   3.4.4. Reliability
3.5. Unit of analysis
3.6. Procedure for data collection
3.7. Pilot Study
3.8. Interpretation and analysis of data
3.9. Ethics of the research
3.10. Summary

CHAPTER FOUR: RESULT ANALYSIS

4.0. Introduction
4.1. Verbal data
4.2. Cognitive model construction
  4.2.1. Participant A
  4.2.2. Participant B
  4.2.3. Participant C
  4.2.4. Participant D
  4.2.5. Participant E

4.3. Consolidated cognitive model

4.4. From the models to the research questions
  4.4.1. Research Question One
  4.4.2. Research Question Two
  4.4.3. Research Question Three

4.5. Summary

CHAPTER FIVE: DISCUSSIONS AND CONCLUSION

5.0. Introduction

5.1. Cognitive modeling and expert knowledge elicitation
  5.1.1. Procedural knowledge
  5.1.2. Contextual knowledge
  5.1.3. Declarative knowledge

5.2. Cognitive skills
  5.2.1. Reasoning
  5.2.2. Decision making

5.3. Implications of the study

5.4. Limitations of the study

5.5. Further study
REFERENCES

APPENDICES:

Appendix One  Cognitive Task  91
Appendix Two  Background of participants  92
Appendix Three  Appointment of data collection  93
Appendix Four  Data Transcription  94
Appendix Five  Letter of Approval from the Faculty for Data collection  112
LIST OF FIGURES

Figure 1.1. Planning an audit and designing an audit approach 6
Figure 4.1. Conceptual map describing the relationship of changes
Revenue and costs, business activities and the audit tasks
Needed 49
Figure 4.2. Cognitive Model of Participant A 52
Figure 4.3. Cognitive Model of Participant B 55
Figure 4.4. Cognitive Model of Participant C 58
Figure 4.5. Cognitive Model of Participant D 61
Figure 4.6. Cognitive Model of Participant E 63
Figure 4.7. Consolidated Cognitive Model for expert auditors 65
ABSTRAK

Kajian Tugas Kognisi adalah sebahagian daripada proses reka-cipta program latihan. Tujuan kajian ini adalah menyiasat kognisi juru-audit syarikat dengan menggunakan teknik 'Think Aloud' untuk membuat Kajian Tugas Kognisi. Keputusan dari kajian tugas kognisi dapat membantu pakar jurulatih membina model kognisi juru-audit pakar. Dengan menggunakan model ini, program-program latihan yang sesuai dapat direka cipta untuk melatih juru-audit novis mencapai tahap pemikiran and pengetahuan juru-audit pakar. Matlamatnya ialah membantu juru-audit novis meningkatkan prestasi kepada tahap yang lebih bagus.
ABSTRACT

Cognitive task analysis is the preliminary stage in the design and development of a training programme. The purpose of this research is to carry out cognitive task analysis of expert company auditors using Think Aloud method. The results of the analysis will enable the construction of cognitive models of expert auditors. Utilising the models will enable training professionals to design effective training programmes for the novice auditors. The purpose is to provide an avenue for the novice auditors to understand the knowledge and cognitive processes of expert auditors and therefore to improve theirs for better performance.
CHAPTER ONE - INTRODUCTION

1.0. Introduction

This research described and modeled cognitive task analysis (CTA) to elicit the cognitive processes and knowledge involved for expert auditors when performing audit tasks. The audit task involved the performance of analytical review at the planning stage hence the assessment of risky areas for audit planning purpose. For this research, it was based on five expert auditors selected from a leading audit firm in Kuching. The outcome of this research has enabled that particular firm to design better staff training programmes to meet the need for more expert auditors. Expert auditors are vital in ensuring the proper audit work is performed on the financial statements prepared by directors of companies. This will prevent audit failure whereby the auditors gave the wrong audit opinion in their audit report presented to the shareholders. This chapter covers the background of the study, scope of the study, problem statement, research objectives and questions, significance of the study and the definitions of key terms used.

1.1. Background of the study

The background of the study offers insight into the background of the auditing profession, to what extent has this profession affects the economies of a country,
the intellectual resources needed for auditors and the training in auditing profession. Lastly, a brief research background was included.

1.1.1. The legal background of the auditing profession

Under Section 169(4) of the Malaysian Companies Act 1965, the financial statements of all limited liabilities companies, with minor exceptions, are subject to annual audit to be carried out by licensed company auditors (Arens, A.A., Elder, R.J., Beasley, M.S., Devi, S.S., Iskandar, T.M. & Isa, S., 2003; Messier & Boh, 2002). For the purpose of this statutory audit, a company auditor must be a member of the Malaysian Institute of Accountants (MIA) and holds a valid audit license issued by the Ministry of Finance under Section 8 of the Companies Act. MIA is a statutory body incorporated under the Accountants Act 1967. It has been empowered by the government to regulate and govern the accountants and auditors. MIA has to ensure all licensed company auditors meet high professional and technical standards in performing the audit jobs. Therefore, it is important for all auditors to possess necessary knowledge and skills in discharging this legal responsibility vested on them.

Over the past many decades, there have been many significant legal cases where auditors failed to carry out the audit work diligently. In some countries, these audit failures have resulted in substantial financial losses on the part of auditors due to claims of damages or negligence by the shareholders of the company. Messier and Boh (2002) reported some legal cases auditors faced in the United
States of America, Canada, United Kingdom, Australia and New Zealand and, surprisingly, these cases were related, either directly or indirectly, to the quality of the jobs done by the auditors and involved significant amount of financial claims. These phenomena re-emasphized the need for auditors to be competent on their jobs.

Under the Bye-Law A-3 of the MIA, it is required that all auditors must carry out their jobs with competence and due care. They have to maintain their professional knowledge and skills when undertaking audit jobs. To ensure the fulfillment of this requirement, it is mandatory for all auditors to undergo certain minimum hours of both structured and unstructured training every year. The training must cover both technical as well as other skills needed in carrying out their jobs. However, there is lack of evidence that the auditors’ training needs are being analyzed properly. In addition, audit firms seldom evaluate the effectiveness of the trainings provided to the auditors. This could be due to the nature of the audit work where the traditional task analysis cannot be applied. This is because audit work involves more cognitive abilities rather than behavioral outcome.

The Malaysian Institute of Accountants has published an article in its June 2009 monthly magazine, Accountants Today (p.8-12), reported that the Institute has set up two new standard boards, namely the Audit and Assurance Standards Board and the Ethics Standards Board with the aim of raising the bar on audit quality and professional behavior. Any violation of these standards, a member may be subjected to disciplinary actions. These may include suspension and expel from
MIA. All these phenomena have necessitates the company auditors to always maintain high standard of knowledge and competences when carrying out the audit tasks.

1.1.2. The economic background

Auditors are required to audit the financial statements of limited liability companies and report on its truth and fairness in presenting the financial performance and position of the companies. The audited financial statements will then be made available through the Companies Commissioner Malaysia (CCM). Most listed companies even place their audited financial statements on the company websites and potential investors can download it freely. In the essence, potential investors are relying on the audited financial statements as one of the sources of information to make their investing decisions. Apart from potential investors, financial institutions are relying on the audited financial statements as one of the basis for credit rating and loan approval. The government, particularly the Inland Revenue Board, is assessing the income generated by the companies by using the audited financial statements for income tax calculation. In addition, the companies’ financial results are compiled by the Statistics Department in order to provide useful information for the formulation of economic policies, etc (Arcus, et al, 2003). Therefore, it can be claimed that the works of the auditors affect the society in many aspects and virtually all have financial significance.
1.1.3. The intellectual background

Auditing is a process of gathering evidence in order to express an audit opinion, addressed to the shareholders, on the financial statements prepared by company directors. The process involves detailed planning, accumulating and evaluating of relevant evidence sufficient for the auditors to form suitable audit opinion (Messier & Boh, 2002). The evidence is collected through carefully designed audit tasks. To carry out audit tasks, one needs to have proper planning. Auditors need to have sound technical knowledge as well as the cognitive capability when planning an audit. Having a vast amount of knowledge is not sufficient. Auditors need to organize and use the knowledge in context and exercise their judgment (Bonner, 1990; Choo & Trotman, 1991; Davis, 1997; Hunt & Ellis, 2004), make justifiable professional decisions (Nelson & Tan, 2005) and solving problems (Bedard, Jean, Moek & Boritz, 1992). Auditors need to have proper thinking skills encompassing induction, deduction, inference as well as intuition. In addition, these thinking skills must be applied in the audit methods used by auditors (Hirzel, 2004). So it is obvious that the audit tasks require high level of intellectual capability of the auditors and in order to be expert in auditing, suitable and extensive training is of essence (Palmer, Ziegenfuss & Pinsker, 2004). There are numerous accounting and auditing standards governing the work of auditors (Arens, et al, 2003) and it is crucial for all auditors to be well-versed with all these standards. Apart from these standards, auditors need to have full knowledge of the company law as well as other related legislations that may affect their audit. Hence, the need of knowledge by auditors is critical and significant. In addition to
technical knowledge on accounting and auditing, auditors need to have good knowledge of client's business as well as the internal control (see Figure 1.1).

![Diagram](image)

**Figure 1.1.** Planning an audit and designing an audit approach

Adapted from Arens, Elder, Beasley, Devi, Skandar, Isa & Haron (2003), Petaling Jaya: Prentice Hall. Page 188.

1.1.4. The Training background

The training of auditors can be traced back as far as eighteenth century. The oldest chartered accountancy body in the world, the Institute of Chartered Accountants in Scotland was formed in 1853. This was followed by the Institute of Chartered
Accountants in England and Wales in 1880. As part of the conditions of admission as members, applicants must have practical experience (Brown, 2004; Parker & Yamey, 1994). In addition, the members must have regular training on practical issues as well as, at that time, on laws. This is because accountants and auditors were involved in the administration of public financial affairs, in particular, taxes. Hence, accountants and auditors must have a good knowledge of revenue law. Towards the early of nineteenth century where the business community faced industrial revolution, corporate and company law became essential. Accountants and auditors, at that time, need to equip themselves with these knowledge. Hence, the training needs for accountants and auditors are iterative with a strong relation to the macro-environment they work.

According to Swanson and Holton III (2001), training and development is one of the key components in human resource development. The purpose of training and development is to develop and unleash the human potential and expertise in organizations. According to them, training and development is the largest component of human resource development activity. The ultimate objective of training and development is to improve the performance of the employees. Swanson and Holton III produced a Five-stage model of training and development (p.210). The five stages start with analyzing. This emphasizes the importance of analysis in the process and training and development. At this stage, the current work flow will be analyzed and assess the need of expert requirements needed (p.214). This procedure is also known as Needs Assessment. Needs assessment is referring to the process of identifying the areas where training is critically needed.
(Noe, 2008). The scope of needs assessment covers organizational analysis, person analysis and task analysis. However, this research is only focusing on task analysis.

Task analysis involves the findings of a better way in performing a task (Barbata, 2006; Noe, 2008; Werner & DeSimone, 2006). A task is part of a job where an employee is carrying out. Task analysis is part of the training need assessment for performance improvement. To accomplish a task, employees need a certain level of knowledge, skill, ability and other characteristics. This research is about the cognitive processes any expert auditors should perform when carrying out audit tasks. Discovery of the knowledge needed will aid the firm in identifying the training needs for the novice auditors. A cognitive model of expert auditors can be constructed and training programs can be built by incorporating the features of expert auditor from this cognitive model. The knowledge needed may not be visible and the tasks carried out are merely a reflection of the knowledge in the mind of the auditors. Hence, in order to provide training for novice auditors, telling them the audit tasks to perform is not sufficient. The novice auditors need to understand the cognitive processes and content that underlie the tasks (Dubios, Shalin, Levi & Borman, 1995). So traditional task analysis, which focuses on behavioral performance, is not suitable. It requires the use of CTA.

According to Crandall, Klein and Hoffman (2006), CTA can capture, *inter alia*, the knowledge and the process of reasoning and decision making of a person in carrying out a task. Training professionals can utilize the CTA results by
comparing with an expert model. Through the comparison, any deficiency of knowledge as well as other related cognitive functions can be identified. This deficiency will constitute training needs and appropriate training programs must be drawn to address this performance gap.

1.1.5. The research background

There have been many studies and research using CTA, inter alia, to elicit knowledge for training purposes as well as system design. Specifically, there was CTA exercise being applied in the field of aviation. Seasmster, Redding and Kaempf (1997) published the work of CTA in aviation detailing all the procedures and analysis of the CTA results. Using CTA approach, Peterson, Stine and Darken (2000) researched into the process and representation for modeling expert navigators for training purpose. Hassebrock and Prietula (1992) used CTA in the analysis of medical reasoning where verbal protocol was being used. In this research, one of the objectives was the training of expertise in medical reasoning and problem solving. Burke (1997) used CTA to assess the competence of London Fire Brigade for the purpose of training more competent firefighters. Fackler, Watts, Grome, Miller, Crandall and Pronovost (2009) used CTA to understand the work of critical care providers in the Intensive Care Unit in one of the university hospitals in the United States of America. The objective was to improve the workflow of the medical professionals which, in turn, is the input for training. Kober, Segall, Green, Entzian and Junginger (2006) had used CTA to design supervisory control interface in high-throughput biological screening.
processes. Hoffman, Neville and Fowkes (2009) used CTA to explore issues in the procurement of intelligent decision support systems. Roth, Malseh and Multer (2001) used CTA to understand the work of train dispatchers manage and control trains. The objective of this research was to understand the cognitive demand on the dispatchers and how this affects their performance.

Even though there have been many cases of CTA previously, however, there has been no research being carried out using CTA on the knowledge needed of company auditors. From the legal background discussed above, we know that company auditors are involved in tasks that are of critical importance where the impact can be exponential affecting many stakeholders. Also, the auditors need to possess strong technical knowledge and cognitive skills in carrying out their work. All these features are fit for research using CTA. Therefore, all these contribute to the interest for me to carry out CTA on the knowledge of auditors.

1.2. Problem Statement

The Malaysian Institute of Accountants has published an article in its June 2009 monthly magazine, Accountants Today, emphasizing the importance for company auditors to provide quality auditing not only to ensure good accountability to shareholders, but to provide good value-added services to their clients and at the same time minimizing the ever-increasing litigations against auditors (p.18-19).
Based on the current regulatory environment, it seems very crucial for auditors to maintain high competence standards in order to meet the stringent standards set by the Malaysian Institute of Accountants (MIA). Therefore, training and development is of high importance to auditors. As auditing is an exercise that requires many facets of knowledge as well as skills (Arens, et al, 2003), continuous training to ensure auditors' capability to cope with the knowledge needed is crucial in ensuring audit failures are kept to a minimum.

Based on traditional task analysis, it is difficult to understand the knowledge of expert auditors when performing an audit task. Hence it will be difficult for training professionals to model their knowledge in order to train the novice auditors. This is because the knowledge of expert auditors are not reflected on the behavior and it is usually implicit in their work conduct. Therefore CTA needs to be used in order to elicit the knowledge for the purpose of training novice auditors.

1.3. Research objectives

General objective:

The research objective is to identify the knowledge of expert auditors when carrying out risk assessment at the planning stage. This will enable the firm to provide training to novice auditors in those specific areas.