

A REVIEW OF EXPERTISE IN AUDITING

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ABSTRACT

This paper reviews past studies on audit expertise, and discusses some important issues relating to it. Earlier studies in this area had mainly focused on the effects of experience on auditors' performance. These experiences were measured in terms of consensus, cue weighting, self-insight, and stability of auditors' judgments. However, results were inconclusive. Further developments in the research on audit judgments showed the need to differentiate auditors' expertise according to ability and knowledge. Given that audit work requires an understanding and knowledge of specific industry, auditors' expertise is specified in terms of industry specific knowledge. Studies show that auditors develop industry-based knowledge structure. As suggested by past studies, industry specialisation is an important characteristic in auditing practice that develops into an important component of audit expertise.

ABSTRAK

Artikel ini meninjau semula kajian lepas tentang kepakaran audit dan mengenengahkan beberapa isu penting yang berkaitan. Sebahagian besar kajian lepas dalam bidang ini difokuskan kepada penelitian kesan pengalaman terhadap prestasi juruaudit yang diukur melalui persetujuan, pemberatan kiu, wawasan sendiri dan kestabilan pertimbangan juruaudit. Walau bagaimana pun, hasil kajian tersebut kebanyakannya tidak begitu mantap. Perkembangan lanjut dalam penyelidikan pertimbangan juruaudit memperkenalkan keperluan membezakan kepakaran juruaudit mengikut kebolehan dan pengetahuan. Oleh sebab kerja audit memerlukan pemahaman dan pengetahuan industri secara spesifik, kepakaran juruaudit ditentukan berasaskan pengetahuan industri juruaudit tersebut. Kajian lepas menunjukkan bahawa juruaudit membentuk struktur ilmu berasaskan industri. Seperti yang dicadangkan dalam kajian tersebut, pengkhususan industri merupakan ciri penting dalam amalan pengauditan yang menjadi komponen utama kepakaran audit.

INTRODUCTION

Expertise is often defined in terms of performance, experience, knowledge, personality, and psychological characteristics of the decision makers (Bouwman & Bradley 1997). The concept of expertise is always perceived as related to the personal quality and ability of the experts themselves. An expert is expected to make accurate and effective decisions. According to Bouwman and Bradley (1997: 91), "experts are assumed to make superior decisions, and to do so quickly, smoothly and with confidence. Experts are assumed to be good at identifying relevant information and to have an eye for the unusual". To Bedard and Chi (1993), an individual is an expert as s/he performs better than another individual who is not an expert. This, in the views of Glaser and Chi (1988) and Bouwman and Bradley (1997), is because the expert has more knowledge and experience. The level of expertise may differ depending upon the amount of knowledge and experience, and ability of the expert.

The definition of an audit expert is, however, not clear. In Malaysia, for example, the Companies Act 1965 defines a company auditor as any person who has satisfied the Minister charged with the responsibility of finance, that s/he is of good character and competent to perform the duties of an auditor under the Act. The Accountant Act 1967, however, specifically states that an accountant is a person who is a member of the Malaysian Institute of Accountants (MIA). The membership is subject to a minimum qualification of a recognised accounting degree from certain local public universities, or a professional qualification with a minimum of a three-year working experience. Both Acts provide the minimum conditions that one must have to be accepted in the audit profession. Beyond this minimum qualification, the profession does not provide a definition for the so-called expert practising auditor. Although it is a requirement for an auditor to maintain a certain level of continuing professional education, there has been no benchmark for the profession to determine the level or area of expertise of any individual auditor.

Current developments in the global economy and international business do have, needless to say, serious implications for the auditing profession. The Enron and WorldCom debacles have already cast aspersions on the accounting profession (Kandiah, 2003). The collapse of both these business giants reflect poorly on the quality of audit services rendered by the parties concerned. Auditors are now perceived to be providing sub-standard audit services. Such a stigma poses a serious challenge to auditors, particularly the Big 5 (now known as Big 4) who have been performing the audit for most companies. As a

whole, the competency and integrity of auditors are now being questioned and scrutinized. As a result of the recent business tragedy involving these mammoth corporations, the global accounting landscape has changed resulting in the merger between Arthur Anderson and Ernst and Young on 1 July 2002, and the disappearance of the once reputable Arthur Andersen from the local accounting landscape.

Do auditors have the expertise to conduct audit on big companies whose nature of business is diverse? Currently, the big audit firms dominate a large proportion of the audit market among listed companies. In Malaysia, for example, the Big 6 firms dominate about 70% of audit services for companies in the Kuala Lumpur Stock Exchange (KLSE) (Iskandar, Aman & Maelah, 2000; Rahmat & Iskandar 2002). In the US, the audit market share of the Big 8 firms among the NYSE listed companies was more than 90% (Zeff & Fossum, 1967; Rhode, Whitsell & Kelsey, 1974; Schiff & Fried, 1976; Eichenseher & Danos, 1981; Danos & Eichenseher, 1982), while in Australia the share is about 80% (Craswel, Francis & Taylor 1994).

As a result of the failure of Arthur Anderson to detect symptoms of the Enron and Worldcom collapses, the competency and credibility of the Big 5 have become questionable. Audit reports, it would seem no longer assure correct and accurate information reflecting the true financial condition of the company. In this context, this paper attempts to provide insightful information about the issue of expertise in the audit profession within the framework of audit practice. The objective of this paper is to provide some information on the concept of audit expertise, an understanding of some factors influencing the development of audit expertise and a review of some past research in this area. This paper provides an understanding of this concept within the context of Malaysia, and also based on the experience of other more advanced countries.

AUDIT EXPERTISE

The literature on audit expertise often relates the quality of audit to the audit services provided by big audit firms, which are often used as the surrogate of good quality audit. With current developments facing the profession, more research has been focused on the quality of audit offered by the Big 8/Big 6. Early studies of human information processing in accounting examined the effect of experience on performance of audit tasks. The notion implicit in the research is that

experience represents a primary determinant of improved expertise. It is argued that auditors gain knowledge through experience, and they use it to perform audit tasks, many of which are knowledge-intensive (Bonner & Lewis, 1990). Most of the early studies divided subjects into groups of experts and novices to examine the effects of experience on auditors' performance. The grouping was made on the basis of years of experience or tenure-based titles.

Effects of Experience on Auditors' Performance

Effects of experience on auditors' performance have been tested on auditors' judgments of different accounting and auditing tasks such as internal control evaluation, materiality judgments, analytical review and sequential belief revision. In addition, recall experiment and protocol analysis were also applied as research techniques.

Auditors' performance on internal control judgments was evaluated based on some measures of expertise, which are consensus of judgments, stability of judgments, relative weighting of information cues, and degree of self-insight into relative utilisation of information. Early studies of auditors' judgments on the strength of internal control of payroll subsystem used as subjects, practising auditors from US public accounting firms and have two and one half to three years audit experience (Ashton, 1974). Results indicate that auditors exhibit a fairly high level of consensus and stability within firms or experience levels, and between firms or experience levels. A significant relationship exists between the level of experience and each of the four judgment measures (Ashton & Kramer, 1980). Effects of experience on auditors' performance is evident when a comparison of internal control judgments was made between undergraduate students who had had no auditing experience and auditors who had had one to three years of experience (Ashton & Kramer, 1980). It is apparent that the judgment insight, instability, and consensus among auditors are high (Ashton & Brown, 1980). Among auditors with different levels of experience, the difference in consensus on internal control evaluations is found to be not significant.

A positive association between self-insight and experience, however, is found among auditors with a much broader range of experience levels although unrelated to judgment stability (Hamilton & Wright 1982). In contradiction, a negative relationship was found between years of experience and consensus on internal control evaluation. This conflicting result is consistent with the study by Joyce (1976), which

showed a negative relationship between experience and level of consensus of auditors' judgments of internal control during the audit program planning. In the study, no significant correlation was found between self-insight and experience.

In materiality/disclosure decisions, Messier (1983) provided further insight into the issue of whether experience in an audit task improves the quality of professional judgment criteria (consensus, cue weighting, self-insight and stability). Based on the response from subjects with three levels of experience, the results indicated that the less experienced group had less intra-group agreement than the more experienced groups. Results also indicated that auditors with more experience had a better understanding of the decision-making process. The significant effect of experience in terms of consensus in this study is the opposite of that reported by Hamilton and Wright (1982). Messier (1983) suggested that the difference may be due to the nature of the materiality/disclosure decision task, which was considered more complex than an evaluation of the payroll internal control system.

Abdolmohammadi and Wright (1987) offered a similar suggestion in concluding that experience plays a greater role when the judgment is not well structured. They argued that experience might be vital for complex judgments, but unimportant for routine structured decisions. Hence, auditors' experience would result in significant decision-making differences in audit judgments between experienced and inexperienced auditors across tasks of varying complexity when task complexity is explicitly considered. The study relied on the number of years of audit experience for the classification of the two experimental groups. It was concluded that the expertise variable should be properly defined to reflect task complexity and auditor skill/knowledge base (Abdolmohammadi & Wright, 1987, p. 12).

According to Krogstad *et al.* (1984) and Carpenter and Dirsmith (1992) auditors would exhibit greater consensus, consistency and self-insight than the novice, and no significant difference should be observed in the degree of consensus between partners and seniors. In these studies, experience effects were analysed in the context of assessments for a proposed adjustment to the allowance for bad debts of a hypothetical company by using the hierarchy of positions in the accounting profession (i.e. staff, senior, manager, partner) as the framework. Hence, it was suggested that the different functional role and decision-making context at each of the professional levels might lead to corresponding differences in the tasks. The inexperienced would focus on a greater

number of cues, place more reliance on contextual cues and display a greater incidence of significant effects. They exhibited stricter materiality thresholds than less experienced auditors (Carpenter & Dirsmith, 1992).

Effects of experience on auditors' judgments were also examined in respect of different types of analytical review of audit seniors and managers from the Big 8 audit firms and a large national accounting firm in the US (Cohen & Kida, 1989). The mean number of years of auditing experience was 3.0 years for seniors and 6.3 years for managers. The study involved a case study on the sales and collection cycle of a company. The study found that, in analytical review, experience had a greater impact on audit managers' judgments. Audit managers would significantly increase the hours when analytical review signals error. The seniors would utilise results of analytical review to a lesser extent relative to the managers.

The judgments research on experience effects discussed above, however, does not produce consistent results. Differences between experienced and inexperienced auditors seem to exist in some studies on auditors' judgments involving materiality, analytical review and sequential belief revision. These findings provide support for the notion of experience effects on auditors' judgments. This is consistent with the suggestion that the effect of experience exists, depending on the complexity of the judgment task. For internal control judgments, however, effects of experience on the judgments are mixed. This may be because internal control would normally involve, as Messier (1983) described it, more routine judgments. Hence, a high level of expertise may not be required. In summary, no conclusive results can be drawn from these studies on the extent of experience in the development of auditors' expertise.

Besides audit judgments, a recall technique was also used to investigate effects of experience on EDP auditors' recall of computer controls under a free recall situation (Weber, 1980). During a free recall experiment the researcher read the subjects a list of items and asked them to recall the controls in the way in which they occurred to them. The results showed that the experimental group (experienced auditors) recalled controls better than the control group. The inexperienced group's recall protocols contained a higher percentage of irrelevant intrusions. Auditors differed in the kind of controls they recalled depending upon the nature of the work they performed. It was argued that the technological knowledge gained by auditors through experi-

ence determined the categories of controls that were recalled. Experienced auditors recalls were more clustered, indicating the use of knowledge bases.

During audit work, auditors receive a large amount of information upon which they make judgments. It is argued that the order of information received would be influenced by the amount of experience an auditor has. A study on sequential belief among auditors involved a role-play of audit managers confronted with an inventory obsolescence issue (Krull *et al.*, 1993). Subjects received pieces of information about the inventory issue in either of two different orders. They were formed into 2 groups of audit managers: one group with less than 4 years experience; and the other group with 4 or more years of experience. The study showed that experienced and inexperienced managers' judgments were affected differently by the order in which they received evidence. Experienced managers gave weight to last pieces of evidence more heavily than the inexperienced managers. The findings suggest that experienced managers may respond more to new evidence than less experienced managers.

The decision-making behaviour of experts and novices has also been studied using the protocol analysis approach. Bouwman (1982) used protocol analysis to identify the specific strategies and processes they used in analysing financial statements. The analysis of subjects' protocols demonstrated that novices followed a simple undirected sequential information search. Novices examined information on the basis of a simple trend and lacked diagnostic reasoning processes. In contrast, the experts relied on hypotheses, prototypes and standard lists of questions to organise and direct information search. Experts analysed the data in terms of complex trends and searched for contradictory evidence by first building an overall picture of the firm.

Bouwman (1984) conducted a follow-up study to analyse protocols of a novice group and an expert group in the evaluation of a firm's position and identification of the underlying problem areas. The study showed that novices and experts followed similar decision-making processes but they used a different process mix in analysing the financial information and in selecting the data for evaluation. They differ significantly in their focus when integrating observations, and findings showed differences in behaviour during the reasoning phase (i.e. the formation of the final decision). Experts developed a "picture of what is going on" and summarised groups of related findings, formulated hypotheses and used a list of typical problems. Novices did not use these tools.

The studies discussed above classify subjects into experts and novices. The expert-novice difference was evaluated by comparing their performance on a specific task given to them. In these studies the level of general experience was used as the basis of the classification. The results would seem to suggest that differences between experienced and inexperienced auditors exist only in the performance of tasks requiring certain levels of specific knowledge. The type of skill/knowledge forms a distinct characteristic of the experienced auditors. The findings thus, support the suggestion that the effect of experience on auditors' judgments exists when audit tasks are more complex and unstructured. As such, differences between novice and expert should relate to the concept of expert knowledge rather than to that of expert experience only. The focus of these studies discussed above was mainly on the input, process, or output of human information processing (Choo, 1989). In those studies, the underlying cognitive structure causing the differences between experts and novices was not examined.

Domain-Specific Knowledge Research

The focus of studies on decision-making performance has shifted from general cognitive abilities to the characteristics and impact of domain-specific knowledge acquired over years of training and experience (Libby & Frederick, 1990: 349). In recent years, more attention has been directed towards issues of memory and knowledge in accounting. The focus is now on examining expert knowledge. An understanding of the role of expertise in auditors' judgments requires a more detailed analysis of the nature of audit knowledge and the basic memory processes in learning and retrieving. Expertise is a kind of knowledge that is used to perform a task (Johnson, Zualkernan & Garber, 1987). As individuals gain experience, certain basic changes in the knowledge content and structure could have important audit consequences (Libby & Frederick, 1990: 351). Knowledge changes take place over the years as auditors become involved in technical tasks. Auditors' knowledge to complete the test would provide an explanation for the mixed results of previous studies concerning experience effects in audit judgments.

As Bonner and Lewis (1990) asserted, there is a distinction between general experience and expertise in the performance of information-processing tasks. They argued that the use of experience to measure expertise had some limitations. Firstly, the theoretical link between experience and performance was equivocal. Auditors with the same level of general audit experience were likely to have different knowledge and different innate abilities. This difference led to the mixed

evidence regarding the empirical relation between experience and performance. Secondly, using experience to indicate expertise allowed no conceptual basis for differentiating among auditors with the same level of experience. Some audit managers were likely to be more expert than others at specific audit tasks. The rest of this section reviews some of the studies of knowledge structure in accounting and auditing.

A number of studies have attempted to examine how knowledge structure helps auditors to perform their audit work. These studies have used different audit tasks to gain an understanding on auditors' knowledge structure and its effect on performance. Libby (1985) examined auditors' prior knowledge of financial statement errors and the effect of frequency and recency of experience on accessing the memory for these errors. He also examined how auditors organised financial statement errors in memory. His objective was to provide insights into the knowledge structure which underlay the decisions of experienced auditors. Based on the positive relationship between recency of experience and the generation of error hypothesis, it was concluded that auditors developed error prototypes and perception of error frequency through personal experience, experience associate and training. He suggested that auditors brought to the audit, a wealth of task-related knowledge acquired through years of training and experience. He examined the role of prior knowledge of financial statement errors in the generation of initial diagnostic hypotheses in the preliminary analytical review.

With the knowledge structure they have developed, experts (auditors) perform important auditing tasks that novices cannot (Frederick & Libby, 1986). Frederick and Libby (1986) argued that two types of knowledge are required when predicting financial statement error implications of internal control weaknesses. These are knowledge of the double-entry generating process, which resulted in the concurrence of certain pairs of account errors and knowledge of the association of internal control weaknesses with particular account errors. The relation between financial statements error and internal control is a basic element of audit knowledge, as it forms an important part of the experienced auditor's knowledge store. Auditors were expected to have both types of knowledge, but students were expected to possess only knowledge of account relations. The results demonstrated the manner in which an auditor's knowledge interacts with characteristics of the audit task to produce the predictable expertise effects. It was concluded that although abilities were a part of auditors' expertise, a greater portion of the expertise was composed of task-specific knowledge. Experienced decision-makers used decision heuristics to incorpo-

rate domain-specific knowledge with the routine parts of perception and comprehension.

According to Butt (1988), auditors perform better than novice in frequency judgments as a result of knowledge structure. Although both the direct and indirect experience methods are important to attain accurate frequency judgments, Butt (1988) found frequency judgments based on only direct experience were the most accurate. The summarised frequency information becomes more useful under the direct experience method. Auditors use the pre-existing specific knowledge structures of financial statement errors stored in memories to process new information.

Experience-related differences in the content and structure of auditors' knowledge of financial statement errors contribute to the effectiveness and efficiency of audit decisions (Libby & Fredrick, 1990). Experienced auditors exhibited more complete knowledge of financial statement errors by generating a greater quantity of accurate explanatory hypotheses. They have more accurate knowledge of error occurrence rates, which allowed them to select more commonly occurring explanations for audit findings. More experienced auditors categorised their knowledge along different dimensions, and they developed gradations of errors within categories. Hence, auditors' performance in various components of audit process differs depending on their task-specific knowledge.

When performing an audit, auditors make memory errors (Moeckel, 1990). The two types of memory errors are failure to integrate and reconstruction. Failure to integrate refers to a failure to make mental connections between related pieces of information. Reconstruction refers to the altering of the mental representation of information to make it coherent with the representations of related information. However, auditors make different types of memory errors depending on their experience. Inexperienced auditors failed to integrate because their memory structures were not capable of connecting the separately received pieces of evidence. Whereas, experienced auditors reconstructed more. Due to their elaborate memory capabilities, experienced auditors under-process the incoming information and use their expectations rather than actual observations when creating a mental representation of evidence. Hence, the decreased ability to integrate audit evidence is linked to both the lack of experience and the occurrence of reconstructive memory processes. It is also shown that reconstructive memory process might actually offset the benefits of increased experience in the attempt to integrate information.

In this respect, Bonner (1990) found that task-specific knowledge aided the performance of experienced auditors both in the selection and weighting of cues in the assessment of analytical risk, but not in the assessment of control. According to Bonner and Lewis (1990), knowledge and ability are important determinants of expertise which could better explain variations of auditors' performance in various types of audit task. Variations in task performance occur as a result of differences in the type of knowledge and ability to successfully complete the tasks. They found that, on average, the senior managers performed better than the seniors on all audit tasks, and scored significantly higher on tests of knowledge and problem-solving ability. However, the general experience variable explained less than 1% of the variance in performance scores. Task-specific training and experience, and innate ability provided most of the explanatory power. Hence, general experience is an incomplete measure of task-specific expertise (Bonner & Lewis, 1990). Years of experience will not necessarily be a good indicator of expertise. Different tasks, particularly in accounting/auditing, require varying types of knowledge. Persons with a given amount of experience acquire not all types of knowledge equally. They suggested that auditors' expertise be designated general domain knowledge, sub-specialty knowledge, world knowledge, and general problem-solving ability. One or more of these types of knowledge and problem-solving ability are required for expert performance. Bonner and Walker (1994) added that the acquisition of auditing knowledge would be further enhanced through outcome feedback combined with understanding of rules.

Further studies show that auditors organise their knowledge structure differently for different audit tasks. Differences in the knowledge structure of experienced and inexperienced auditors is evident in their judgments, namely, in recall of typical and atypical information in a going-concern situation (Choo & Trotman, 1991). Experienced auditors recalled more atypical than typical items than inexperienced auditors, and showed a significantly higher clustering of recalls on the basis of atypical/typical items. With respect to financial statement errors, auditors structured their memory primarily on the basis of audit objective rather than transaction cycle while their audit tasks are structured based on the transaction cycle (Nelson, Libby & Bonner, 1995). Hence, this difference hindered auditors drawing on previous experience when performing certain audit judgments. It was suggested that knowledge has adverse effects when applied to audit tasks which do not have the same structure. Thus, auditors' knowledge structures for financial statement errors and the structure of audit planning tasks adversely affected auditors' ability to access and use previously experienced error frequencies. In addition, auditors' organisation of knowl-

edge structure is influenced by industry experience and number of clients, measured by length of experience and position in the firm (Ashton, 1991) particularly in estimating error frequency, which requires auditors' knowledge of industry error frequency.

Based on the above discussion, it can be concluded that auditors' expertise varies according to their knowledge acquired through task-specific experience. Since the performance of audit work is very much determined by the nature of client business and industry, auditors' expertise is developed through their industry experience. The following section discusses differences that exist across industry in different aspects of accounting and auditing, which consequently affects auditors' expertise.

INDUSTRY EFFECTS

Since auditors' expertise is determined by industry knowledge, auditors' judgments are very much influenced by effects of industry differences. As suggested in past studies, industry is a factor that may have contributed to the inconsistency in auditors' judgments. The importance of industry consideration in auditors' work is clearly emphasised by the accounting profession (AICPA, 1978). Auditors are recommended to always maintain an understanding of the client's business and industry (AICPA, 1978). An understanding of a client's business and industry is a necessary condition for a proper audit although the responsibility is not explicitly recognised in the professional standards, and not much guidance is provided on how auditors should fulfil this responsibility. Studies show that the "lack of knowledge of a client's business or industry was often a problem" (AICPA, 1978, p. 39). Auditors need to gain specific knowledge of industry because of the significant differences that exist across industries in several aspects, including the pattern of financial accounting errors (Hylas & Ashton, 1982; Ham, Losell & Smieliauskas, 1985; Wright & Ashton, 1989), employee compensation in relation to firm performance variables (Ely, 1991), production of audit services (Stein, Simunic & O'Keefe, 1994), inherent risks (DiPietro, Mock & Wright, 1994), and materiality judgments (Pattillo & Siebel, 1973a & 1974; Krogstad *et al.*, 1984; Steinbert, 1987; Iskandar & Iselin, 1999; Iselin & Iskandar, 2000).

In the conduct of an audit, auditors encounter errors affecting client financial statements, which then require financial statement adjustments. It was found that the pattern of errors significantly differs across industries and errors are concentrated in relatively few audit areas, which are fairly predictable by industry (Hylas & Ashton, 1982). Dif-

ferent circumstances signalling the occurrence causes of the errors across industries would be expected to affect the knowledge structure of auditors. Common errors that occur include errors in account payable, purchases, sales, account receivable and inventory (Ham *et al.*, 1985). Although the occurrence of errors and error rates may be influenced by a few factors including accounting category and size, Ham *et al.* (1985) found that industry is the most significant factor causing differences in error incidence. Specifically, the error incidence rate for accounts receivable were lower in the service and manufacturing industries than that in the distribution industry. The error incidence for inventory category was higher in the manufacturing industry than in the distribution industry. The error incidence for purchases category was the highest in the service industry.

In an extended study using a larger set of detected errors drawn from a different time period, Wright and Ashton (1989) also found similar results of great variability in the distribution and pattern of errors across industries. The number of inventory and cost of goods sold errors was relatively larger in manufacturing and merchandising companies; receivables and marketable securities/investments errors were larger in commercial banks, and savings and loans; accrued liabilities and long-term liabilities errors were larger in insurance companies; and property, plant and equipment errors were larger in natural resource companies.

Inter-industry differences are also evident in the employee compensation and accounting-based firm performance variables including stock returns, accounting returns, sales revenue and net interest income (Ely, 1991). Significant inter-industry differences in the relation between compensation, measured as the change in salary plus the short-term bonus award for the current year, and firm performance variables were found between banks, electric utilities, oil and gas firms, and retail groceries from 1978 to 1982. These industry differences existed as the result of differences in production environments, and the way they were reflected in accounting variables.

Differences between industries in terms of the production of audit services are the results of differences in industry inherent risks (Stein *et al.*, 1994). The existence of industry differences in the production of audit services is recognised in terms of professional labour mix provided by audit partners, managers, and seniors (Stein *et al.*, 1994), namely between industrial firms and financial institutions. The measurement of risk and its impact on audit production varied across industries. For instance, the ratio of book value of liabilities to total assets was a significant determinant factor of partner and manager hours for indus-

trials, but not for determining the bank and loan audit hours. For financial clients the emphasis is on the incidence of operating losses. The coefficients of assets, being the most important determinant of auditor effort, were quantitatively different across industries. For industrial clients, inherent risk is a significant determinant of lower-level labour hours. For financial clients, however, inherent risk is a determinant of higher-level labour hours.

Hence, the increase in inherent risk, results in an increase in senior and staff time for industrial clients and an increase in partner and manager time for financial clients (Murphy, 1994). This is reflected differently in definitions of inherent risk in both industries. Financial institutions were likely to involve more complex issues which require a more sophisticated risk assessment. This results in the need for more experienced staff. For industrial clients, however, the inherent risk assessment primarily relates to the risk of material errors occurring. This assessment requires more sampling, using relatively junior staff as the level of risk increased.

Program-planning decisions in audit were also tailored to the clients' industry, which depended on the level of risks and changes in risks (DiPietro *et al.*, 1994). Based on the examination of actual evidential planning judgments abstracted from audit working paper, it was found that auditors adapted the nature of procedures to be performed to the client's industry. However, the level of adaptability varied with the audit area being examined. The focus was on planning decisions on accounts receivable and accounts payable of companies audited by the Big 6. The nature and extent of audit procedures for both accounts were a function of the client's industry and risk characteristics.

Industry differences appeared to have an influence on materiality judgments (Pattillo & Siebel, 1973a; 1974). Industry classification was found to be an important input of non-financial information for auditing practitioners when making materiality judgments Krogstad *et al.* (1984). In constructing a model of an expert system for making materiality judgments during the planning stage of an audit, Steinbart (1987) found that the client's industry classification was one of the factors impacting on auditors' planning-stage materiality judgments. In the study, he illustrated the use of information relating to the nature of the client (including the client's industry classification) in the model. Although the study may have problems in generalising the results of one expert judgement at the planning stage of an audit to other settings, its findings would seem to suggest the importance of industry classification in auditors' materiality judgments. The type of industry interacts with industry specialisation to affect materiality thresholds (Iskandar &

Iselin, 1999). For instance, materiality thresholds for the finance industry by finance specialist auditors are lower than those for the retail industry by retail specialists.

AUDITORS' INDUSTRY SPECIALISATION

As a result of the industry differences discussed above, auditors develop their expertise according to concentration on specific industries. In assessing the overall audit risk, for example, auditors utilize their knowledge of an entity's industry as the framework for materiality judgments about the company accounts or class of transaction level. In the US, specialisation by industry has been established among major audit firms (Zeff & Fossum, 1967; Rhode, Whitsell & Kelsey, 1974; Schiff & Fried, 1976; Eichenseher & Danos, 1981; Danos & Eichenseher, 1982). In those studies, it was shown that the Big 8 audited more than 90% of large corporation in the US, whose revenue comprised 94.8% of the total revenue for all companies. The examination of audit work done for large corporate clients revealed the predominance of the Big 8 audit firms in large US industries particularly industrial companies (Rhode *et al.*, 1974). Overall, results indicate the existence of leadership criteria, whereby a firm owed its position to one or two very important clients. The client-industry concentration for large public accounting firms and their leadership position did not change significantly over the period (Schiff & Fried, 1976). The dominance of the Big 8 audit firms in many industries in the US remain stable over the period until 1978 (Eichenseher & Danos, 1981). About four or fewer CPA firms received at least 50% of the revenues deriving from clients in the industry. The level of auditor concentration in a specific industry is a positive function of the degree of client-specific regulation and capital market activity (Danos & Eichenseher, 1982). Danos and Eichenseher (1982) concluded that changes in industry specific CPA firm market share were dependent on the firm intra-industry market share, overall market share and the regulatory nature of the client industry. In "non-regulated" industries, the large industry-specific market share tended to erode.

In Malaysia, Big 6 audit firms dominate about 60% of companies listed in the Kuala Lumpur Stock Exchange (KLSE) between 1991 to 1996 (Iskandar, Aman & Maelah, 2000). Over the period, the Big 6 has expanded their market share within a particular industry as well as into another industry (Iskandar & Aman, 2003). In the year 2000, the Big 5 audit market share among the KLSE listed companies has increased more than 70% (Rahmat & Iskandar, 2002).

Industry specialisation is also being practiced by audit firms in Australia (Craswell & Taylor, 1991; Craswell, Francis & Taylor, 1994). The audit market exhibited a variation across groups of relatively homogeneous clients (Craswell & Taylor, 1991). In return, the Big 8 obtains audit fee premiums representing positive returns on investments in industry specialisation and on brand name development (Craswell, Francis & Taylor, 1994). The investment in industry expertise is beyond the general expertise of an audit. In this respect, auditors develop expertise through the acquisition of knowledge and task-specific experience of the client's industry over time. The presence of client-industry specialisation is expected to result in an improvement in audit quality.

In the selection of auditors, companies tend to look for audit firms with industry specialisation. Companies tend to switch to auditors with industry specialisation (Chow & Rice, 1982) because they can render enhanced services through an improved understanding of clients' industry and their environmental influences. Schockley and Holt (1983) found that auditors' industry market share and longevity on the audit engagement were two main determinants of auditor change. Auditors with industry specialisation and engagement longevity are able to provide improved services by capitalising on economies of scale. Hence, company discriminations between Big 8 audit firms is based on the industry expertise variable, which is highly correlated with the market share and name recognition (Schockley & Holt, 1983). The lack of industry specialisation may result in the non-compliance of auditing standards (O'Keefe, King & Gaver, 1994). O'Keefe, King & Gaver (1994) argued that a cost-efficient delivery of high quality audit services requires knowledge of the client's industry and characteristics, as well as industry specific knowledge of reporting standards. The industry specialisation is often used as a proxy for industry-specific knowledge. It was concluded that specialisation in an industry by the audit firm increases audit quality. Hence, the variation in audit quality across the auditor's clients in an industry should decrease with their industry specialisation.

CONCLUSION

The review has highlighted a number of important issues related to auditors' expertise, and these have an important bearing on auditors' judgments. The effects of experience on audit judgments are reflected in some forms of association between auditing experience and the quality of professional judgments, measured in terms of consensus, cue weighting, self-insight and stability. Some studies found that as

the level of audit experience increases, the judgment consensus also increases. Self-insight into the judgments was also found to be positively associated with experience. More experienced auditors exhibited greater insight into their decision-making processes and applied stricter materiality thresholds, particularly in more problematic accounting areas. However, other studies of the effect of experience on audit judgments have produced inconclusive results.

With further developments in the research of audit judgments, the role of experience in auditors' performance has become less important. The use of experience as an operational measure of expertise in auditing research has received a number of criticisms. Bonner and Lewis (1990) argued that general experience is an incomplete measure of auditors' expertise. Bonner and Pennington (1991) questioned the use of experience *per se*, without adequately incorporating task-specific experience as a predictor of high quality performance or expert skill. They argue that the experience variable does not differentiate auditors' specific experience and training through which they acquire different knowledge. Also it does not have a conceptual basis for differentiation among auditors with the same level of experience, although some auditors may be more expert than others at a specific task.

Since different audit tasks require different types of knowledge, the nature of experience effects on audit judgments cannot be studied in isolation without considering task-specific knowledge (Bonner, 1990). In order to predict the effects of experience on audit task, it would be necessary to specify knowledge and abilities that are necessary to complete such a task (Libby & Luft, 1993). Auditors' performance in a variety of judgment tasks is determined by the appropriateness of the auditors' ability and knowledge, based on a specification of the knowledge necessary to complete particular tasks. On the basis of this argument, auditors would require knowledge of a particular industry in order to perform judgments within the environment of that industry.

For the purpose of certain audit judgments, such as materiality judgments, auditor expertise is specified as industry-specific knowledge. It is necessary that auditors have this industry-specific knowledge to complete a particular task relating to the industry. It can be argued that auditors' industry-specific knowledge is acquired through years of relevant audit experience in a particular industry. Auditors with different amounts of professional experience or with specialised experience in various industries may have different audit strategies (Moriarity & Barron, 1979, p. 130-131). Auditors who have knowledge of a specific industry can be expected to perform better in the judgments made within that industry than in other industries. Like-

wise, auditors who do not have knowledge of a particular industry are expected to perform more poorly. Thus there will be inconsistent judgments between auditors having different levels of industry experience. Sub-specialty knowledge was examined in Ashton's (1991) study. The study recognised industry-specific knowledge among auditors when examining auditors' error frequency knowledge. The study found that industry experience was possibly correlated with the accuracy of judgments about relative frequencies of error-containing accounts in that industry. In practice, differences in industry-specific knowledge are expected to exist among auditors as a result of industry specialisation. Past studies have provided evidence that auditors specialise in certain industries. The review of the literature on auditors' industry specialisation in the previous section establishes a theoretical basis for studying industry-specific knowledge in the context of certain audit judgments.

Discussions on industry effects above show that industry differences exist in several accounting-related areas. These findings provide evidence that industry differences have effects on auditors' judgments during the conduct of an audit. Since auditors are required to consider an entity's industry when making preliminary judgments, such as materiality, these industry differences are also expected to affect auditors' later judgments. This expectation is consistent with Pany and Wheeler's (1989) findings about differences in materiality thresholds across industries using the same calculation method. Different environments within which different industries operate may cause certain specifications set by auditors, such as materiality thresholds, to vary according to industries (Bouwman, 1984). Different industries may require different standards for materiality judgments. The relevance of industry is evident in auditors' judgments (Iselin & Iskandar, 2000). To some extent, differences between industries appear to exist in the size of items. It is expected, therefore, that differences in certain benchmark as materiality thresholds, being applied in industries have caused the differences observed.

Findings of studies reviewed above indicate that industry specialisation among auditors is an important characteristic of auditing practice in the US and Australia, as well as in Malaysia. Industry specialisation among auditors was shown to have effects on different aspects of auditing. It is expected therefore, that industry specialisation will have some impact on auditors' judgments of certain items (Iselin & Iskandar, 2000). Past studies have recognised that industry specialisation exists among the big audit firms. A move towards the development of industry grouping in audit firms has created industry specialisation among auditors within the firms.

Past studies on expert systems provide the basis for arguments that judgments of auditors differ between different industry specialists. Bouwman (1984) showed that financial experts' knowledge bases contain knowledge of specialised industries. Financial experts store a number of company templates in their memory to analyse different types of company for portfolio selection decisions. Cocks and Iselin (1991) examined the content and structure of knowledge bases of expert portfolio managers for corporate equity investments. They found that expert portfolio managers use primary and industrial schemata in equity portfolio selections. The industry basis produced a high consensus between managers in the selections. Cocks and Iselin (1993) studied the corporate memory structure of expert portfolio managers. They found that these experts used primary and industrial schematic bases of categorisation to assist in equity portfolio selection. Results of their multi-trial list presentations and free recall experiments showed that, of the schematic bases, industrial schemata dominate the memory structure of the expert portfolio managers. These schematas helped to facilitate the portfolio managers' recall of companies. Cocks and Iselin (1993) concluded that it is the industrial schemata that dominated the memory structure of the expert portfolio managers. These findings suggest that the industry factor has a great influence on experts' decisions. Since auditors specialise by industry, this research argues that they too will have important industrial schemata in their knowledge structures that will guide audit judgments (including materiality item judgments). Hence, industry specialisation is an important component of overall audit expertise (Craswell *et al.*, 1994: 4). It is concluded, therefore, that there is a theoretical link between industry specialisation and audit expertise.

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