Examining The Role Of IS Audit In The Public Sector

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EXAMINING THE ROLE OF IS AUDIT IN THE PUBLIC SECTOR

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Abstract

There is a tension in the role of the IS auditor in public sector financial audits. Budgets for the conduct of such audits are tight. However, systems facilitating the production of financial reports are increasingly complex. How can IS audit be most effectively used to improve audit effectiveness and efficiency? Accordingly, this research reports the results of 23 extended interviews with public sector auditors from four public sector audit offices in contemplation of the IS audit function’s role in the public sector.

Overall, the evidence supports the expectation that financial IS audit increasingly contributes to audit planning, is more involved when significant changes to existing IS are made or new IS are implemented, and increasingly utilizes sophisticated tools to support the financial audit. By contrast the evidence does not support the expectation that financial IS audit is increasingly involved in the implementation of continuous auditing and undertaking application control reviews.

Training of future IS auditors should aim to ensure a strong understanding of IS audit’s role in the audit planning process. The results also imply that training for future IS auditors in environment and system general controls, and in sophisticated data mining and knowledge discovery tools, is crucial.

Keywords: IS audit, audit, public sector, financial IS audit.

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1 The authors wish to gratefully acknowledge the research assistance of Ms Lynne Gerke in this project.
1 INTRODUCTION

New regulations and developments in international auditing standards and the increased reliance of business on information technology are commonly acknowledged as increasing the importance of the role and scope of the Information Systems (IS) audit function in financial audits (Carlin & Gallegos, 2007; Cerullo & Cerullo, 2005; McPhee, 2005). However, as the implications of the regulatory requirements have increased the pressure on budgets for financial audits in the public sector, a tension has arisen as to the scope and role of IS audit. Indeed, the role of IS audit is still developing as financial auditors and IS auditors continue to develop their understanding of each other’s role in these times of increased audit quality expectations but yet tighter and tighter budgets (Peecher, Schwartz, & Solomon, 2007; Vilsanoiu & Serban, 2010).

In examining IS audit, this research identifies, considers and discusses the manner in which the role of the IS audit function in the conduct of public sector financial audits has changed. This investigation enhances practitioner and researcher understanding of the IS audit role, how it has changed, and likely future changes.

Many IS auditors perceive the role of IS audit to be highly important (see for example Hardy, 2008), although financial auditors’ perceptions have in the past been that the contribution of IS audit toward the objectives of the financial audit are often poorly communicated and indirect (Bagranoff & Vendryzk, 2000). The role of IS audit is often considered critical to the financial audit process (Carlin & Gallegos, 2007), and Vilsanoiu and Serban (2010) suggest that the importance of the IS audit function in the financial audit increases as more and more financial auditors employ Business Risk Audit (BRA) methodologies to undertake the financial audit.

The task of IS audit is well documented and understood (see for example Carlin & Gallegos, 2007; Weber, 1999). Research considering the overall purpose of IS audit in the financial audit and how this role has changed as BRA methodologies have been increasingly adopted (Vilsanoiu & Serban, 2010), and regulation requirements have increased (Kinney Jr, 2005), is however limited (Curtis, Jenkins, Bedard, & Deis, 2009).

Increasing complexity of systems and changing regulation make it essential that auditors, budget developers and policy makers have a shared understanding of the role of IS audit and the risks that arise where this understanding does not exist. Accordingly, the interesting research question for this study is: How has the role of financial IS audit in the public sector changed as a result of the changes over time in financial systems and auditing? Addressing this research question allows the development of a deeper understanding of the role of IS audit in the public sector, and the manner in which this role has changed and continues to change.

This study investigated the research question by undertaking interviews with 23 senior auditors in four Australian public sector audit offices. The study supports a broad research program investigating the role, application and best practice methodologies of public sector IT audit. The research contributes to the enhanced professional understanding of the IS audit role. The findings support the view that IS audit may need to be outsourced to specialists depending on the complexity, materiality, and riskiness of systems and the environment. The IS audit must also be scheduled to allow the audit plan to consider the conclusions of the IS audit. The research also contributes to practice by suggesting that the training of future auditors in environment and system general controls is crucial. The results also suggest it is important for future IS auditors to have training in the use of sophisticated data mining and knowledge discovery tools, and knowledge of IS audit’s role in the audit planning process.

The remainder of this paper is set out as follows. Section 2 provides a focused literature review of the classical role of the IS audit function, and sets out expectations from analysis of the relevant literature. Section 3 outlines a methodology for the examination of the role of the financial IS audit. Section 4 provides the results of this research. Section 5 provides a discussion of the implications of these results for current IS audit practice and theory. Finally, Section 6 concludes this paper.
2 LITERATURE REVIEW

In the financial audit, the financial auditor renders an opinion as to whether the financial statements and accompanying notes present fairly the organisation’s financial position, results from operations, and cash flows (Apostolou & Crumbley, 2008). The auditor’s overall objective is to obtain reasonable assurance as to whether the financial statements are free of material misstatement due to error or fraud, and to enable the auditor to express an opinion as to whether the financial statements are prepared in accordance with an applicable reporting framework (International Auditing and Assurance Standards Board, 2009). This opinion is a matter of the auditor’s judgment supported by appropriate evidence (Apostolou & Crumbley, 2008). Although the auditor’s judgment is theirs alone, the auditor does rely on the expert advice of those people with expertise the financial auditor does not possess. The IS auditor is a specialist with such expertise.

The specialist IS auditor may carry out IS audit work in support of IT-focused, financial, operational or regulatory audits (Muthukrishnan, 2008). The role of IS audit work undertaken in support of the financial audit is the focus of the current research question, and is referred to here as the ‘financial IS audit’.

The Weber (1999) definition of IS audit as ‘the process of collecting and evaluating evidence to determine whether a computer system safeguards assets, maintains data integrity, allows organizational goals to be achieved effectively, and uses resources efficiently’ is the classic definition in the audit literature. The Weber (1999) definition is adopted for IS audit in this research.

2.1 The changing role of financial IS audit

In the financial IS audit, the IS auditor supports the financial auditor through feedback, assurances and suggestions to address the traditional financial auditor’s attest objectives that IS be available, maintain confidentiality, and ensure integrity (Sayana, 2002; Weber, 1999).

A financial IS audit typically evaluates general IT controls after a risk assessment has been made during the audit planning stage (Bagranoff & Vendrzyk, 2000). However, the IS auditor also undertakes application control reviews, an audit support task noted by Bagranoff and Vendrzyk (2000) as increasingly important throughout the 1990s, and particularly so as BRA methodologies were adopted for financial audit (Vilsanoiu & Serban, 2010) due to the increased business IS risk arising from system complexity (Bagranoff & Vendrzyk, 2000). Application controls are a set of manual or automated controls embedded within an application that reduce IS risk (Information Technology Governance Institute, 2007). Reliable application controls reduce financial IS audit effort (Daigle, Kizirian, & Sneathen, 2005). The emphasis of the US Sarbanes-Oxley Act upon the need for effective IT controls in financial reporting demonstrates the needs for effective and reliable IT controls (Hardy, 2008).

Weber (1999) identified several emerging trends affecting the role of IS audit at that time. For the IS audit, these trends included the Internet, Ecommerce, business process reengineering (BPR), outsourcing, data privacy, data mining and knowledge discovery, and inter-organizational systems and virtual organizations. All these trends were recognised as having direct implications for the financial IS audit with the exception of data privacy (Weber, 1999).

Weber (1999) considered that increasing use of the Internet and the adoption of Ecommerce required the IS auditor to be aware of the different exposures arising from these trends as well as the controls that may be implemented to reduce expected losses arising from these exposures. Similarly, changes to IS as a result of the adoption of BPR required extra vigilance on the part of the IS auditor to ensure that IS controls are not compromised by these changes (Weber, 1999).

In the view of Weber (1999), outsourcing of an organisation’s IS affected the IS auditor’s ability to gather evidence in support of the financial audit’s attest objectives. The IS auditor would in the future therefore need to act to ensure that their ability to collect and evaluate evidence was not compromised.
by IS outsourcing decisions (Weber, 1999). The assessment of audit risk, in light of changing technology and increasing complexity of information systems, was also considered by Weber (1999) to require the use of data mining techniques to collect and evaluate audit evidence. Curtis et al (2009) confirm the use of such tools as a strategy to assist with the financial audit process. Finally, Weber (1999) saw the increased interlinking of organisational information systems and the creation of virtual organisations as increasingly requiring the auditor to rely upon the work of other auditors.

The IS profession also considered the changing role of IS audit. The Information Systems Audit and Control Association (ISACA) provides the Certified Information Systems Auditor (CISA) certification. CISA is the preeminent professional qualification for IS auditor certification (Green, Best, Indulska, & Rowlands, 2005). Writing eight years after Weber (1999), ISACA (2007) in its ‘CISA Review Manual’ emphasised that changes in the IS audit process continually occur as technological innovations arise. ISACA (2007) identified emerging technological changes such as integrated auditing and continuous auditing as having implications for the IS audit process.

Integrated auditing focuses on risk, and the dependence of business processes on information technology increases the need to understand the controls around information systems (ISACA, 2007) and the extent to which these controls can be relied upon in audit planning as part of risk assessment (Vilsanoiu & Serban, 2010). For the external audit function the risk is that a misleading or incorrect audit opinion will be supplied, and the changing role of IS audit suggests that IS audit’s role in risk assessment with the entire audit team is increasingly important (ISACA, 2007). The changing role noted by the ISACA (2007) is supported by the findings of Vilsanoiu and Serban (2010) that, as BRA methodologies are adopted in the financial audit, IS audit’s role increasingly contributes to the planning and risk assessment processes of the financial audit.

Audit scandals and the requirement to better monitor financial issues at audited entities on a continuous (rather than a ‘spot’) auditing basis were identified by ISACA (2007) as drivers for the increasing adoption of continuous auditing in financial audits. Continuous auditing was expected to affect the role of IS audit through the increased adoption of real-time monitoring.

As we can see, the integration and complexity of the technologies have increased over time with Ecommerce and Internet-based systems, as well as the rise of the virtual organisation. Given the level of reliance of the modern organisation upon IS for financial reporting, IS audit that is ineffective and inefficient presents significant business risks. The dependence of business processes on technology has increased over time, and system changes and application controls have stronger implications for system risk. Continuous auditing and the application of Computer Assisted Audit Tools (CAATs) and other data mining tools in practice have also increased in importance. With the increasing adoption of BRA methodologies, the importance of the IS auditor’s risk assessment regarding the general and application level controls in financial systems in organizations for audit planning has also dramatically increased.

2.2 Expectations of the role of financial IS audit from an analysis of literature

The preceding focused review of the literature on the role of the IS audit allows the development of five expectations regarding the role of financial IS audit. The audit literature emphasises the role of financial IS audit as one of support to the financial auditor in achieving the audit’s attest objectives. Both Weber (1999) and ISACA (2007) identified changes in the IS audit role. Considering these changes in the context of the research question ‘How has the role of financial IS audit in the public sector changed as a result of the changes over time in financial systems and auditing?’, several statements of expectation are proposed. These expectations relate to developments in IS audit practice over the decade since the publication of Weber (1999) and the particular impact of the Internet upon system risk and complexity.

First, both Weber (1999) and ISACA (2007) indicate that the financial IS audit function will become more integrated with financial audit. Increases in complexity are likely to derive from more interconnected organisations arising from the factors identified by Weber (1999), including the
Internet, Ecommerce, outsourcing, and interorganizational systems and virtual organisations. O’Donnell and Rechtman (2005) also identify the role of risk assessment in the audit planning process from a professional perspective. Specifically, the factors identified by Weber (1999) indicate that the tasks of risk assessment and audit planning will increase as systems increase in complexity. Accordingly,

**Expectation One:** The financial IS audit process will increasingly contribute to the planning phase of the financial audit.

Alles, Kogan and Vasarhelyi (2002) identify the increased application of technology and systems-based audit when continuous auditing is undertaken. Moreover, ISACA (2007) identifies continuous auditing as having increasing implications for the financial IS audit. So,

**Expectation Two:** The IS audit function is increasingly involved in the implementation of continuous auditing at audit clients.

Weber (1999) also indicates that BPR activities increasingly require the IS auditor to specifically examine new systems to ensure that IS controls are not compromised by these changes. Vilsanoiu and Serban (2010) supported the view that increased IS audit activity is required in the event of the implementation of new or revamped systems that impact financial transactions and accounts. Thus,

**Expectation Three:** The involvement of the IS audit function in the audit process will increase in the event of significant changes to existing IS or the implementation of new IS.

Weber (1999) also predicted an increase in the use of data mining and knowledge discovery tools in support of the financial audit. Bagranoff and Vendrzyk (2000) and Curtis et al (2009) support this prediction. Thus,

**Expectation Four:** The IS audit function will increasingly undertake data mining and knowledge discovery tools by way of Computer-Assisted Audit Techniques (CAATs) in support of the attest objectives of the financial audit.

Finally, Vilsanoiu and Serban (2010) identify that as the adoption of BRA methodologies increases so too does the requirement for application control reviews increase. Accordingly,

**Expectation Five:** The financial IS audit process will increasingly undertake application control reviews in comparison to general computer controls.

### 3 RESEARCH METHOD

Qualitative research methods were utilized for this research. Interviewees for this research were drawn from Australian public sector audit offices as part of a continuing research project examining opportunities for improvement in IS audit methodology in the public sector. The purposive sampling approach used here sought to ensure a wide range views of the role of IS audit. To control for the size of the office involved, two ‘large’ audit offices that maintain a separate business unit for the IS audit function, and two ‘small’ audit offices that do not maintain such a separate business unit, were selected. Interviewees were sought from both the financial audit and IS audit functions where possible.

The research method adopted was a series of semi-structured interviews with 23 senior auditors employed by one of four identified public sector audit offices. The interview protocol explored each interviewee’s views relating to the purpose and role of the IS audit function. The semi-structured interview protocol guided the interview to ensure the research question was addressed. This approach supported the research contribution of increased professional understanding and academic comprehension of the IS audit function.

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2 The interview protocol is available from the authors upon request.
3.1 Research analysis

Each interview was transcribed for later analysis utilizing a cross-case analytical matrix developed according to the steps set out in Lillis (1999). This process required the thematic coding of interview transcripts by individual sentence blocks, and then further coding into conceptual headings and final coding into supported statements. This approach allowed a full audit trail from the interpreted results to the underlying impartial transcript of the interview (Lillis, 1999).

Each interviewee sentence block in the interview transcripts was coded to themes based upon the interview protocol. Each sentence block was coded to a single theme. Sentence block concepts were grouped according to the classical ‘5w’ framework (that is, ‘who, what, why, when, and where’) to outline the perceived role of IS audit. The ‘5w’ framework derives from the ‘six honest serving men’ of Rudyard Kipling in (Kipling & Lewis, 1998), and is the conventional approach to obtaining the ‘full story’ in the discipline of journalism (Cramerotti, 2009).

This approach has been adopted in research seeking to provide advice and description of professional practice. Past applications of this framework include, for example, the development of a ‘how-to’ medical guide (Pappone & Santinelli, 2004), the development of an understanding of the volunteer market in not-for-profit organisations (Bussell & Forbes, 2002), and factors in the adoption of ICT outsourcing approaches (Laplante, Costello, Singh, Bindiganavile, & Landon, 2004). In audit literature, the ‘5w’ framework has been applied in professional journals to consider IT control weaknesses (Klamm & Watson, 2011), adapted to assist with understanding the role and need for a best practice IT control framework (Information Technology Governance Institute, 2007). The ‘5w’ framework has also formed the basis for previous accounting and audit-related research (Lanza & Gilbert, 2007; Loraas & Searcy, 2010).

Within each ‘5w’ concept, each interviewee statement, through interpretation and summarisation, was coded to identify commonly supported statements for analysis. Commonly supported statements were defined as those statements supported by more than half of all interviewees. Although extensive dual-coding was not undertaken, samples of coding and the high-level coding structure were confirmed with co-authors. Focussing the analysis of results upon the most supported statements mitigates the limitations presented by the lack of extensive dual coding of transcripts.

Adopting the analytical approach outlined by Lillis (1999), a conceptual matrix was developed to identify commonly supported statements (see for example Table 2 below). The results are portrayed in matrix form to present the commonly supported statements ranked by the number of interviewees supporting the statement, and supplemented by direct quotations from interviewees.

4 RESULTS

Interviewees for this research were drawn from four Australian public sector audit offices. These audit offices are referred to as Office A, Office B, Office C, and Office D. Both Office A and Office C are relatively small Australian public sector audit offices that did not maintain separate IS audit business units. In Office A and Office C, external third party service providers provide IS audit support as required. Office B and Office D are both relatively large Australian public sector audit offices that do maintain separate IS audit business units.

For this research, twenty-three experienced auditors were interviewed in 2009 and 2010 on condition of anonymity. For Office A and Office B, two interviewers working together undertook each interview. A single interviewer undertook the interviews for interviewees at Office C and Office D.

Basic demographic information was sought from interviewees to indicate their audit experience and role. The number of audit opinions issued each year, and the number of full-time-equivalent employees at each office, was derived from publicly available information. This information is presented in Table 1.

http://aisel.aisnet.org/pacis2011/23
Table 1: Basic demographic information for interviewees and the organisational context for each office.

The information presented in Table 1 indicates all interviewees to be experienced and senior audit professionals. Seventeen financial auditors and six IS auditors were interviewed. Each interviewee is consistently identified by their employing office (A, B, C, or D) and a uniquely assigned reference number (e.g., ‘C4’ indicates interviewee 4 from Office C). Statements made by IS auditors are specifically identified; interviewees without their role identified are financial auditors.

4.1 The role of the Information System Audit function

Audit offices can be clearly distinguished on the basis of whether an in-house IS audit function exists. Both Office B and Office D maintain an IS audit business unit whilst Office A and Office C instead rely principally upon third party suppliers. The following analysis uses this distinction as a basis. The results are analysed in accordance with the classic ‘5w’ (who, what, why, when, and where) framework. No findings are reported for the ‘when’ and ‘where’ concepts in the ‘5w’ framework as no commonly supported statements were identified according to the criteria outlined above.

4.1.1 ‘Who’

Table 2 provides the single commonly supported statement made by interviewees in relation to ‘who’ undertakes IS audit tasks.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Commonly Supported Statement</th>
<th>Small (n=13)</th>
<th>Large (n=10)</th>
<th>All (n=23)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Some aspects of IT audit are regularly outsourced.</td>
<td>9</td>
<td>4</td>
<td>13</td>
</tr>
</tbody>
</table>

Table 2: Commonly supported statements regarding ‘Who’ undertakes the tasks of the IS audit function.
Although ‘who’ undertook the IS audit function was not discussed at length by interviewees, the interviewees clearly indicated that at least some aspects of IT audit were regularly outsourced to external third parties.

At Office A and Office C, the external IS auditor assisted with the audit of high-risk clients. A1 noted that IS auditors definitely come in on all my high risk clients anyway... we tend to contract that out because I don’t have the expertise or we don’t have the expertise to do that so that’s how it tends to sit. At Office C, C6 felt that the contractors engaged by their office do a very comprehensive job, and are good, and provide us with all the relevant information, the details and work papers and that to show what their assessments are and how they come up with those assessments, so they're definitely very, very good and detailed.

At Office B and Office D, the engagement of external IS auditors allowed the audit office to obtain specialist skills the more generalist IS auditors did not possess. Interviewee D3, an IS auditor, felt they were one of the few that have mainframe skills and mine are dated... typically if we had a requirement for an audit activity around the mainframe environment we would end up engaging contract staff... when we talk IT audit we're talking a large component of permanent staff supplemented by a relatively large contract pool for specific activities or specific periods. The use of external contract staff gave the office more flexibility and access to significantly more capability.

In summary, IS audit is often outsourced to address a specialist requirement of the financial audit that the audit office did not have the capability or capacity to address.

4.1.2 ‘What’

Table 3 outlines the commonly supported statements discussed by interviewees in relation to ‘what’ is addressed by the IS audit task according to the criteria outlined above.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Commonly Supported Statement</th>
<th>Small (n=13)</th>
<th>Large (n=10)</th>
<th>All (n=23)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IT Auditor primarily undertakes a general computer controls review.</td>
<td>12</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>2</td>
<td>The financial auditor tends to rely on a methodology as a guide to formulating judgment.</td>
<td>9</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>IT Auditor might rarely undertake an application controls review - only for material systems.</td>
<td>10</td>
<td>7</td>
<td>17</td>
</tr>
<tr>
<td>4</td>
<td>IT Auditor needs to be able to come back with a view on controls prior to planning of substantive audit elements.</td>
<td>8</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>The IT auditor and financial auditor together plan the scope of IT audit and IT audit outcomes.</td>
<td>7</td>
<td>8</td>
<td>15</td>
</tr>
</tbody>
</table>

Table 3: Commonly supported statements regarding ‘What’ tasks are provided by the IS audit function.

Each research finding is discussed in order of its rank in Table 3.

The necessity of a broad-ranging IT review was recognised at both small and large public sector audit offices. A General Computer Controls (GCC) review considers the overall ICT environment and was the frequent task undertaken by the IS auditor. A1 considered that for a small (to) moderate size organisation I tend to think the IT auditor role (tends to look) at the general environment of IT, the general controls so security, different system change controls, access, that type of thing. B1, an IS auditor, noted the need for an understanding of general computer controls:

If your remote access is no good then from a business point of view, hey, anyone can dial into your system. If you’ve got good controls over your server, well they can’t get access to the server or they’ve got no more risk there than anyone else who’s already in your system.
The financial auditor relies upon the methodology to ensure consistency and adequacy in the IS audit approach. The smaller offices particularly discussed the methodology as a process they trusted. A4, a financial auditor, considered that the methodology was helpful as it helped auditors to cover all the areas required by the standards. A7 trusted in the process [to develop the methodology] they’ve gone through to link it to the standards. D2 looked to the methodology to ensure consistency, to make it very evident within our mandatory steps where IT audit must be involved.

The review of application controls rather than a GCC review was not likely to be undertaken. A7 felt that we do very little around applications, very little. C3 was concerned that we’re okay with general sort of IT controls but if we were doing some specific application review, have we got the right strategy? C3 felt the need for more application control reviews, given that if you’ve got a strategy to place moderate reliance on controls, I can’t see how you cannot test specific IT controls in relation to that application.

B3 observed that application controls reviews were quite rare at Office B, saying that a lot of the time they tend to assess the general control environment and it’s only if we identify significant risks where we’ll get them to consider the application controls. Scope for more application control reviews was identified at the relatively large audit offices as well. D3, an IS auditor, felt that given that the focus for a financial audit is on really the information being produced by those financial systems the greatest benefit of the IT audit is not so much in the general control environment but the application control environment.

The work of IS audit can reduce substantive testing if it is timely and shows that IS controls are reliable. A1 saw a particular contribution from IS audit by obtaining assurance from doing CIS application work which can then reduce your other control work or other substantive work. However, the contribution was dependent upon the findings. A6 noted a frustration as you do the planning bit, you know, everyone tells you how wonderful the system is and then when you decide well okay I might be able to place reliance on it, put it in your strategy and then you go and do the testing and - only to find that it doesn’t work as well.

D5 saw that IT audit’s involvement in planning needs to be staggered back so that IT audit goes in, does general controls work, you get that underlying assurance in terms of this is what is likely to impact on your risk or not.

Similarly, the benefits of involving the IS audit team in planning were identified by interviewees. A5 stated that’s where the planning stuff is so important, because you need to identify at that stage what are the key systems. C3 in fact saw IS audit’s contribution to the audit plan as the main role of IT audit.

In the larger public sector audit offices, IS audit still needs to engage as part of the team early on and liaise with [financial auditors] through the strategy, through developing all your audit procedures, it needs to be a joint process which sometimes it’s not (B3). D2 felt that IT audit is involved from start to the end – they’re involved in planning; they’re part of the audit team.

To summarise, the auditors interviewed felt that IS audit needed to be engaged early on as part of the audit planning process. Reliance on IS audit methodology was high to ensure consistency and efficiency. Some auditors considered that more focussed application control reviews were more important for financial audits, and that more such reviews were necessary.

4.1.3 ‘Why’

Table 4 outlines the commonly supported statements discussed by interviewees in relation to ‘why’ the IS audit function is engaged to support the financial audit according to the criteria outlined above.
Table 4: Commonly supported statements regarding ‘Why’ the IS audit function is engaged with the financial audit.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Commonly Supported Statement</th>
<th>Small (n=13)</th>
<th>Large (n=10)</th>
<th>All (n=23)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IS Auditors are called in at the choice of the financial auditor, but only where the financial auditor doesn’t feel they have the capacity to identify the General Computer Controls and the numbers are material.</td>
<td>12</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>2</td>
<td>Financial auditor needs an understanding of critical financial systems.</td>
<td>12</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>3</td>
<td>As the auditor may not be able to rely on the system anyway, the auditor tends to rely on substantive testing rather than upon IS controls.</td>
<td>10</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>4</td>
<td>The financial auditor might request a specialist IT auditor review where the client is risky overall.</td>
<td>6</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>It’s usually more efficient to not rely on IT Controls in an audit but instead do more substantive testing</td>
<td>8</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td>IT Auditors are never used on small clients.</td>
<td>9</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>7</td>
<td>Size is an important factor in whether a specialist IT auditor review is requested.</td>
<td>6</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>8</td>
<td>It is rare for IS specialist auditors to be called in on an audit.</td>
<td>8</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>9</td>
<td>The financial auditor might request a specialist IT auditor review where an important system has changed markedly.</td>
<td>7</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>10</td>
<td>Audits of clients with complex systems tend to have IT specialist auditors called in.</td>
<td>5</td>
<td>7</td>
<td>12</td>
</tr>
</tbody>
</table>

Each research finding is discussed in order of its rank in Table 4.

The IS audit function operates in support of the financial auditor. Nevertheless smaller offices were reluctant to engage IS auditors at smaller offices given that, in C2’s view, the IS auditors may want to look at things that are important from an IT perspective, if you like, but may not actually have a significant implication for the financial report. The larger offices similarly worked to focus the work of IS audit, with D6, an IS auditor, considering that from a financial statement auditing viewpoint we’re limited to the impact of the financial systems.

The auditing standards require the financial auditor to come to an understanding of the financial information systems. The small public sector audit offices were aware of the growing need for IS audit and the resources necessary to address this. C5 felt that it’s probably going to become more important in the future because we’ve just seen, over the last couple of years, so many agencies are moving to electronic and IT systems... there’s just going to need to be more and more work done in relation to these systems. A4 was particularly conscious that their office did not have like a budget for those IT audits so we’re not allowed to spend too much time so somehow we have to cut down.

Substantive testing was one area where the cost of IS audit could be reduced; some of the audit clients of C1, an IS auditor, were so small it’s all substantive testing, it’s easier. Substantive testing was prominent for the larger public sector office - B1, an IS auditor, was not aware of anywhere we’ve got a high level of controls reliance. D3, an IS auditor, noted that financial auditors need to consider IT but they may determine that it is more efficient and effective to [adopt a] fully substantive approach to the audit and do not require IT audit assistance.

The more risky audits were more likely to require IS audit support. A7 engaged external IS auditors particularly where the clients were big clients and... big risks and big systems and... key clients,
although this proportion was probably 5% of our clients. For B2, the bigger the risk, the more information that travels through their system, or the more risk there is of it being incorrect.

Similarly, IT auditors are almost never used on small clients (A2: Never small clients!). In the same vein, size is an important factor in requesting a specialist IS auditor review. For C6, with a small audit you know you may find it just to be more of an efficient approach just to do more sort of the steps of substantive based work.

However, overall it was relatively rare for IS specialist auditors to be engaged for financial audits. A2 said well, I don’t get IS audit in a lot. B2 used IS auditors on significant audits: So I’ve only ever seen them on like your departments or your material entities.

The IS auditor was more likely to be engaged where the IS had been changed markedly. In the event of a significant change, A1 would probably engage someone to look at access and backups and changes. Data migration was also an important consideration. C1, an IS auditor, would check that they’ve got procedures in place to copy the data over – how they do it and they’re managing – they’re checking themselves. At Office B, B3 would get (IS auditors) to come in and generate CAATs and compare if the client had a new system and you’re concerned that the opening balances haven’t carried forward from the old system.

Complex systems would also likely result in the engagement of IS audit services. For A7, the question of engaging IS audit will usually be around complexity of the system... which makes it really difficult to do substantively. At the large Office D, D5 stated I’m pretty sure complexity of the organisation and its systems definitely needs IT. The prohibitive cost of engaging an external IS auditor for small audit offices was also a factor. A1 noted that doing so is costly as well, so a lot of the time we do lean towards other substantive tests. C6 also felt that they’re not cheap to outsource (to).

To summarise, a primary reason IS auditors are engaged is to assist the financial auditor in the evaluation of the general computer controls where the financial auditor does not have the capability to undertake this evaluation. As such, size, complexity, system and client risk might motivate the financial auditor to engage IS auditors where substantive testing is insufficient. However as audit efficiency is of particular concern, the interviewees reported that financial auditors tend to rely on substantive testing rather than controls testing. Although it is rare that IS specialist auditors will be engaged on a financial audit, the financial auditor might request a specialist IT auditor review where an important system has changed markedly.

5 DISCUSSION OF RESULTS

The research question addressed by this research paper is: How has the role of financial IS audit in the public sector changed as a result of the changes over time in financial systems and auditing?

After conducting a focused review of the literature on the role of the IS audit, five statements of expectation of the role of financial IS audit were developed earlier in this paper. These expectations are considered in turn now in the light of the results presented in the previous section.

Expectation One was that the financial IS audit process will increasingly contribute to the planning phase of the financial audit. The commonly supported statements ranked fourth and fifth in Table 3 generally supported this expectation, as did the first commonly supported statement outlined in Table 4. That is, interviewees considered that the IT Auditor needs to be able to come back with a view on controls prior to planning of substantive audit elements, and that the IT auditor and Financial Auditor together plan the scope of IT audit and IT audit outcomes. Further, IS Auditors are called in at the choice of the financial auditor, but only where the financial auditor does not feel they have the capacity to identify the General Computer Controls and the numbers are material. Financial auditors at small audit offices were very much less likely to consider the use of specialist IT auditors for planning or audit tasks than their counterparts at large audit offices, and consequently more likely to rely on
substantive testing than large audit offices, as shown by the statements ranked third and fourth in Table 4.

Expectation Two was that the IS audit function is increasingly involved in the implementation of continuous auditing at audit clients. This expectation was not supported. Continuous auditing received little mention by interviewees’ and is not supported by the commonly supported statements identified.

Expectation Three was that the involvement of the IS audit function in the audit process will increase in the event of significant changes to existing IS or the implementation of new IS. The commonly supported statements ranked third and ninth in Table 4 supported this. That is, as the auditor may not be able to rely on the system, the auditor tends to rely on substantive testing although the financial auditor might request a specialist IT auditor review when important IS have changed markedly.

Expectation Four was that the IS audit function will increasingly undertake data mining and knowledge discovery tools by way of Computer-Assisted Audit Techniques (CAATs) in support of the attest objectives of the financial audit. This expectation was generally supported by the commonly supported statements ranked third, seventh, ninth and tenth in Table 4. That is, as the auditor may not be able to rely on the system anyway, the auditor tends to rely on substantive testing (supported by CAATs) rather than upon IS controls. For the financial auditor, size is an important factor in whether a specialist IT auditor review is requested, and the financial auditor might request a specialist IT auditor review where an important system has changed markedly. The financial auditor would also tend to request a specialist IT auditor review for the audit of clients with complex systems. However, differences between the statements ranked seventh, ninth and tenth in Table 4 show that small audit offices were again less likely to engage specialist IS auditors to use CAATs than large audit offices. The less complex nature of their clients’ systems, as well as the higher marginal cost of engaging external specialist IS auditors, appear to be factors in this difference between small and large audit offices.

Expectation Five was that the financial IS audit process will increasingly undertake application control reviews in comparison to general computer controls. This expectation had little support at this time. Nonetheless, the commonly supported statements ranked first and third in Table 3 support the observation that this may change in the future. That is, the IT Auditor primarily undertakes a general computer controls review, and might rarely undertake an application controls review for material systems. As the number of material systems increase due to increased system complexity, the need for application controls review for material systems will likely increase in the future.

Overall, the summarized qualitative evidence supports the expectation that the financial IS audit process increasingly contributes to financial audit planning, is more involved when significant changes to existing IS or the implementation of new IS occurs, and increasingly utilizes CAATs in support of the attest objectives of the financial audit. The evidence does not support, however, the expectation that the financial IS audit process is increasingly involved in the implementation of continuous auditing and undertaking application control reviews. There was support in the observations made by interviewees that the need for application control reviews will increase in future.

These findings support several comments regarding financial IS audit. The focus of financial IS audit is emphatically upon the review of general computer controls rather than the review of application controls except where significant changes to an existing IS have occurred or a new IS has been implemented. The IS auditor assists the financial auditor to come to an understanding of the general computer environment, but rarely considers specific application controls. Rather, the financial auditor’s emphasis tends to be upon audit efficiency and effectiveness through audit planning. The IS auditor’s role in the use of CAATs and data mining tools is as an expert in the use and implementation of these tools. These findings have implications for IS audit practice, theory, and policy development.

3 Subsequent to the findings presented in this paper, continuous auditing has been identified at at least one other large public sector audit office as an issue likely to be of future prominence to the IS audit profession.
CONTRIBUTIONS, LIMITATIONS AND FUTURE RESEARCH

This research examined the role of IS audit in the public sector. The research question considered was: How has the role of financial IS audit in the public sector changed as a result of the changes over time in financial systems and auditing? Addressing this research question deepens understanding of the changing role of the public sector IS auditor in practice. A focused literature review allowed the development of five expectations regarding the role of financial IS audit. The summarized qualitative evidence indicates support for Expectation One, Expectation Three, and Expectation Four. The evidence does not indicate support for Expectation Two or Expectation Five.

This research contributes in several ways. First, it synthesizes the role of modern IS audit in financial audits in the public sector. IS audit needs to be heavily involved in financial audit planning. As a result, IS audit may need to be outsourced to further specialists depending on the complexity, materiality, and riskiness of the systems and the environment. IS audit appears to focus upon environment and system general controls reviews rather than specific application controls reviews, even though application systems are becoming increasingly complex.

The IS audit must be scheduled to allow the audit plan to consider the IS audit’s findings. IS audit also needs to be heavily involved in the financial audit of entities where significant changes to existing IS, or the implementation of new IS, has occurred. The adoption of CAATs in support of the financial audit will in practice also support efficiency and effectiveness in undertaking financial audit. The results indicate that application control reviews are rarely undertaken, but equally indicate that application control reviews are undertaken as systems increase in risk, complexity and materiality. IS audit methodologies in practice must clearly set out the criteria for undertaking application control reviews to ensure the effectiveness and efficiency of the financial audit.

Second, this work highlights the importance of rigorous training of future IS auditors in environment and system general controls, and in the use of sophisticated data mining and knowledge discovery tools. Training in undertaking application control reviews where IS is new or significantly changed is also important. Given the heavy involvement of IS audit in the audit planning process, future IS auditors should also possess a strong understanding of IS audit’s relationship to the financial audit.

Finally, the results highlight the contrast between the role of IS audit in small and large public sector audit offices. Small offices that outsource IS audit demonstrate a task-orientation and a cost focus for the engagement of IS audit than large public sector audit offices.

The research presented here has limitations. The external validity of the research’s findings may be limited. However, the presentation and analysis of results from 23 interviewees employed by four audit offices mitigate this limitation. To the authors’ knowledge, the size and scope of this study is unique in presenting an investigation of the practice of IS audit. The lack of extensive dual-coding to validate the coding of commonly supported statements findings of this research is a limitation of the research method. However, by focussing on the commonly supported statements of 23 interviewees and four audit offices in the analysis of these findings this limitation is mitigated.

Given these noted limitations, the conclusions to be drawn from this research must necessarily be guarded. Validation of the results using differing research methods and participants would be valuable. Future research may seek to draw interviewees from a broader range of audit offices or from different nations, or by adopting survey or experiment techniques across a wider cross-section of the profession.

The research presented here is an initial exploration of the research question. The research contributes to practice by providing guidance for improvements to IS audit practice in the use of IS audit. This research presents empirical evidence to support discussions presented in the literature regarding the tensions between audit efficiency and effectiveness, changes in the role of IS audit, and the relationship between the roles of IS audit and financial audit. The results also contribute to theory and training of future IS auditors through a deeper understanding of the role of the financial IS audit.
References


