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# Audit Quality Indicators: Perceptions of Junior-level Auditors

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# AUDIT QUALITY INDICATORS

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**Abstract: Purpose:** In an effort to develop an audit quality (AQ) framework specific to the US audit market, the Public Company Accounting Oversight Board (PCAOB) recently issued a concept release proposing 28 audit quality indicators (AQIs) along three dimensions: audit professionals, audit process and audit results. Using AQIs initially proposed by the PCAOB, as well as AQIs suggested by prior literature, the authors solicit perceptions from junior-level (senior and staff) auditors to investigate the current state of practice along many of the AQIs relating to audit professionals and audit process.

## **Design/methodology/approach**

In the study, 78 junior-level auditors responded to the survey.

## **Findings**

An analysis of the responses suggests auditors engage in activities and audit firms promote conditions that at times improve, and at other times, reduce audit quality. The authors find that individual auditors' perceptions differ across experience level, gender and audit firm size for certain AQIs.

## **Practical implications**

The study is useful to the PCAOB because it provides insights to help assess the value of potential AQIs in differentiating AQ. The study is also useful to other regulators because it describes audit staff and seniors' perceptions of apparent firm and auditor compliance with accounting and auditing standards. Practitioners should find this information useful in helping to identify possible root causes of audit deficiencies, a challenge put forth to firms by the PCAOB.

## **Originality/value**

This study provides academia with evidence on AQ from practicing auditors, which informs existing and future research along. The study complements existing work by showing how individual auditor characteristics (experience and gender) at the junior levels may impact AQ in practice

## **Keywords:**

Experience, Audit quality, Audit deficiencies, Audit firm size, Audit quality indicators, Auditors' Perceptions

# **1. Introduction**

This study provides evidence on the current state of practice for many audit quality indicators (AQIs) recently developed by the Public Company Accounting Oversight Board (PCAOB or Board, 2015a). Currently, a standardized audit quality (AQ) framework does not exist for US audit markets. Therefore, academia, practitioners and others typically use the UK's Financial Reporting Council's (FRC) AQ framework as a guide in measuring AQ (Johnstone et al., 2014)[+]. Developing a standard framework is on the agenda of domestic and international regulators and standard setters (USA Department of the Treasury, 2008; The Center for Audit Quality, 2012, 2013; PCAOB,

2013b, 2013c; International Auditing and Assurance Standards Board, 2013) and audit firms (KPMG, 2011). An AQ framework, when appropriately used in an integrated audit, offers many benefits to the public because it will provide comparative information about audit firms with the intention of driving a more vibrant market for quality audit services and help investors better evaluate the AQ associated with the financial statements of current and potential investments (PCAOB, 2015a).

The PCAOB (2015a) recognizes the complexity of AQ and the need for a meaningful set of AQIs to support an appropriate standardized AQ framework. Defining AQ solely by audit failures or by relying on audit outcomes limits our ability to understand and assess AQ (Francis, 2011). As part of its 2012-2016 strategic plan and goals to serve the public interest, the Board is developing an AQ framework and has proposed examples of AQIs in terms of audit professionals, audit process and audit results (PCAOB, 2013b, 2013c, 2015a). Without AQIs, it is challenging to assess AQ because of lack of transparency in the audit process (PCAOB, 2015a, p. 3). The PCAOB's (2015a, p. 1) concept release states AQIs "may provide new insights about how to evaluate the quality of audits and how high quality audits are achieved" and "may also stimulate competition among audit firms focused on the quality of firms' work and, thereby, increase AQ overall". The implicit expectation is audit firms will vary on the AQ dimensions. This is emphasized as the PCAOB (2015a, p. 3) further indicates "the promise of AQIs, in generating insights into the foundations of AQ, both within and among firms and in creating incentives for competition in quality, is considerable".

Our study seeks to gain an understanding of whether there is significant variation in measures that influence AQ by soliciting auditors' perceptions of the current state of practice for proposed AQIs. We draw from the PCAOB's (2013a, 2013d, 2015a) proposed AQIs, under the assumption the proposed AQIs are measures of high quality and from prior literature, relating to job performance and drivers of AQ, to identify other measures that influence AQ. If auditors' perceptions suggest low AQ or reveal significant variations between groups, this may suggest the measures are informative in differentiating and evaluating AQ. However, if there is not a significant

variation and responses suggest already high levels of AQ for the measures, this may imply using the measures because AQIs will not stimulate competition among firms and thus will not increase AQ, as suggested by the PCAOB.

A recent study solicits the views of investors and upper-level auditors (partners and senior-managers), providing varying perspectives on AQ and evaluating many AQIs proposed by the PCAOB (Christensen et al., 2015). Our study complements and extends this work by assessing junior-level auditors' perceptions on selected AQIs[†]. We target junior-level auditors to address our research questions for the following reasons. First, junior-level auditors perform the majority of audit procedures that define AQ and provide the foundation for other procedures and processes affecting AQ[†]. Second, individual auditor and audit team activities (e.g. testing controls) are distinct from audit activities at the firm level (e.g. providing training), making it important to understand how junior-level auditors contribute to AQ and what they believe audit firms do to contribute to AQ. Third, junior-level auditors are less likely to provide opinions to the PCAOB when the Board solicits public comments, but their perspectives may be valuable to the PCAOB and other audit standard setters. Many of the AQIs in the proposed AQ framework [such as work enjoyment, appreciation by supervisors, knowledge of generally accepted auditing standards (GAAS) and generally accepted accounting principles (GAAP)] directly affect the work performed by junior-level auditors. As such, this study is useful because it provides the perceptions of junior-level auditors on the current state of practice for AQIs. We solicit auditors' perceptions through an anonymous online survey to address the following research questions:

- *RQ1. What are auditors' perceptions of the current state of practice relating to audit professionals AQIs?*
- *RQ2. What are auditors' perceptions of the current state of practice relating to audit process AQIs?*

We present analyses of the perceptions of 78 junior-level auditors as a full sample and also separately along three dimensions (experience level, gender and audit firm size) that prior research suggests influence AQ. Overall, we find respondents generally enjoy

their work and feel their firms and supervisors support them. Respondents express confidence in their abilities and generally agree they are knowledgeable about accounting and auditing standards. Respondents feel their firms promote high-quality audits through training and supportive environments. However, respondents report a high degree of multitasking, distractions during the audit process, lack of knowledge of international financial reporting standards (IFRS) and international auditing standards and firm reliance on work by outsiders that are not specialists [+]. Collectively, these items can lower AQ if not appropriately addressed.

Our findings make several contributions. Our study provides confirmatory evidence on the current state of practice for the PCAOB's AQIs, which may be useful in developing the AQ framework. Specifically, we highlight areas of focus where audit professionals or audit process may increase or decrease AQ and provide insight as to the usefulness of potential AQIs in terms of differentiating AQ. The study is also useful to other regulators, such as the Securities and Exchange Commission (SEC), Financial Accounting Standards Board (FASB) and American Institute of Certified Public Accountants (AICPA) because it describes audit staff and seniors' perceptions of apparent firm and auditor compliance with accounting and auditing standards. Practitioners may find this information useful in helping to identify possible root causes of audit deficiencies, a challenge put forth to firms by the PCAOB (2012a, 2012b, 2012c). Additionally, results from this study can help firms improve AQ by addressing concerns raised through overall findings, as well as consider implications of experience level, gender and audit firm size differences. An increase in AQ should lead to fewer financial statement misstatements and undetected internal control weaknesses related to financial reporting, which is favorable for all stakeholders.

We also contribute to the AQ literature. This study answers calls for more research considering the relation between individual auditor characteristics (experience and gender) and AQ (Francis, 2011). This study also provides academia with evidence on AQ from practicing auditors, which informs existing and future research along with the potential for curriculum adjustments. Christensen et al. (2015) find upper-level auditors define a lack of AQ in terms of failure to comply

with GAAS, whereas investors define AQ in terms of individual auditor competence. However, auditors and investors agree that auditor characteristics are a key determinant of AQ (Christensen et al., 2015). Our study complements this work by showing how individual auditor characteristics (experience and gender) at the junior levels may impact AQ in practice.

The next section provides background and basis for this study. Section 3 describes methodology, including participants and survey development. Section 4 presents and discusses results. We conclude with a summary of findings, study limitations and suggestions for future research.

## **2. Background and literature review**

While the PCAOB (2012a, 2012b, 2012c, 2013a) recognizes a decline in the overall number and severity of audit deficiencies over the past decade, concerns remain over recurring deficiencies relating to lack of technical competence or due professional care, ineffective or insufficient supervision, ineffective engagement quality reviews and other factors. These are not new issues. Research investigating SEC enforcement actions spanning the past several decades (Campbell and Parker 1992; Beasley et al., 2001, 2013) reveals similar concerns, documenting issues with technical competence (16 per cent), due professional care (67-71 per cent), planning and supervision (56 per cent), sufficient competent evidential matter (73-83 per cent), professional skepticism (60 per cent) and interpreting or applying GAAP requirements (49 per cent). These research findings highlight the importance of identifying AQIs and support the PCAOB's goal to develop an AQ framework to measure and improve AQ.

### ***2.1 Audit quality framework***

The PCAOB (2015a) recently released an AQ framework with three elements – audit professionals, audit process and audit results. The framework incorporates segments identified by recent academic literature and contains elements similar to the FRC's AQ framework in the UK (Knechel et al., 2013). Early versions of the framework (PCAOB

2013b) started with over 70 AQIs and was subsequently reduced to 40 AQIs, presented in terms of inputs (e.g. workloads, experience, training), process (e.g. tone at the top, information and communication, personnel management) and results (e.g. financial statements and disclosures, going concern warnings, audit committee communications). The current version of the AQ framework (PCAOB 2015a), released on July 1, 2015, presents 28 AQIs in terms of audit professionals, audit process and audit results.

## *2.2 Audit quality indicators*

In contemplating an AQ framework, the PCAOB (2015a, p. 13) suggests several AQIs to measure each element of the framework:

- *Audit professionals: staffing leverage; partner workload; manager and staff workload; technical accounting and auditing resources; persons with specialized skill and knowledge; experience of audit personnel; industry expertise of audit personnel; turnover of audit personnel; amount of audit work centralized at service centers; training hours per audit professional; audit hours and risk areas; and allocation of audit hours to phases of the audit;*
- *Audit process: results of independent survey of firm personnel; quality ratings and compensation; audit fees, effort, and client risk; compliance with independent requirements; investment in infrastructure supporting quality auditing; audit firm's internal quality review results; PCAOB inspection results; and technical competency testing; and*
- *Audit results: frequency and impact of financial statement restatement for errors; fraud and other financial reporting misconduct; inferring AQ from measures of financial reporting quality; timely reporting of internal control weaknesses; timely reporting of going concern issues; results of independent surveys of audit committee members; trends in PCAOB and SEC enforcement proceedings; and trends in private litigation.*

However, the PCAOB seeks to affirm its suggestions and identify other potential AQIs. Our study provides insight for this evaluation and consideration of alternative AQIs.

Academic literature also offers suggestions on varying, and at times conflicting, AQI constructs. A long history of organizational psychology literature examines job satisfaction and performance and, overall, indicates a positive relation between the two; however, there is variation in findings (Judge et al., 2001; Bowling et al., 2015). Bowling et al. (2015, p. 95) present evidence suggesting that job satisfaction is a positive predictor of performance when "employees have a fair amount of discretion in deciding how to perform their work" but not necessarily a predictor in situations when employees lack this discretion. Examples of occupations with high (low) levels of discretion are Police Detectives (Machine Operators), considering the need for analytical and problem-solving skills and creative thinking (Bowling et al., 2015). Thus, there is a stronger likelihood job satisfaction that relates positively to performance for auditors. Similarly, prior research suggests auditors dissatisfied with working conditions or workload may engage in actions that reduce AQ (Alderman and Deitrick, 1982; McNair, 1991; Herrbach, 2001; Christensen et al., 2015). Anecdotal evidence indicates that intense workload during the busy season is a major contributor to auditor stress and high turnover rates in public accounting (Shellenbarger, 1998). Increased workload during busy season is directly related to job burnout (Sweeney and Summers, 2002) and high turnover rates (Fogarty and Uliss, 2000).

While the PCAOB proposes AQIs relating to workload, the recommendations do not extend to concerns stemming from the fact that auditors often work on multiple engagements or tasks simultaneously. Working on multiple tasks and clients simultaneously or during the same work session affects AQ because it can cause auditors to make certain information-processing and memory-related errors (Bhattacharjee et al., 2013). Research shows that working on multiple tasks for the same client can create a halo effect that affects auditors' subsequent unrelated judgments (Nisbett and Wilson, 1977; Murphy et al., 1993; Finucane et al., 2000; O'Donnell and Schultz, 2005). Working on multiple clients may cause memory-conjunction errors, which can adversely affect AQ. Lindberg and Maletta (2003)

document that auditors may incorrectly associate positive (negative) audit evidence from one client to a subsequent client and reduce (increase) audit work because of an unwarranted more (less) favorable impression of the second client. Working on multiple clients can also result in auditors using contrast effects, that is, using similar information from a previous task as a basis against which to compare information for the current task. Research shows that contrast effects negatively impact auditor decision-making processes in a multiple-client audit setting (Bhattacharjee et al., 2007) because the outcome of the evaluation of the information is dependent on how the information compares to the prior task (Manis et al., 1988; Higgins, 1996).

The PCAOB (2015a) also seeks to include AQIs relating to tone at the top and leadership. Extant research suggests that organizational communication also relates to job performance. Pincus (1986) finds that supervisor communication (i.e. openness and willingness to listen to and guide subordinates) and communication climate (i.e. general organizational-level communication environment, including timeliness of information) each have a significant positive correlation with performance. A recent study ties these concepts together and reports that management communication influences employees' perceptions of organizational support, giving employees a sense of value and contribution to the organization, which increases employees' performance (Neves and Eisenberger, 2012). Malone and Roberts (1996) find firm quality control and review procedures, and individuals' perceptions of the strength of these factors relate negatively with behaviors that reduce AQ, providing additional potential AQIs.

Francis (2011) notes that a key level of analysis is the inputs to the audit process. Specifically, the quality of the audit varies by the relative competence of the people performing the audits. Academic literature finds that AQ varies by several factors, including gender, experience level of the audit staff and firm size (Chung and Monroe, 2001; Gul et al., 2013; Bobek et al., 2015); therefore, our analysis evaluates our findings through the lens of each of these factors. Specifically, Chung and Monroe (2001) find that females are more accurate decision-makers in complex decision tasks, and Bobek et al. (2015) find that decision-making varies by gender. Gul et al. (2013)

find that individual auditors at higher ranks and auditors with Big 4 audit firm experience are relatively more conservative. Christensen et al. (2015) capture the views of auditors at higher ranks (partners and senior-managers) but does not consider junior-level auditors. Our study provides the perceptions of junior-level auditors – the group with, arguably, the greatest impact on audit inputs and processes – on the current state of practice relating to some of the PCAOB's AQIs. Additionally, we categorize the results of the study along the dimensions of experience level, gender and firm size to capture variances and similarities of the auditors' perceptions, which informs the auditing literature. The next section describes the methodology.

### **3. Methodology**

To address our research questions and to gain insight into AQIs, we solicit auditors' perceptions through an anonymous online survey[†]. We distributed the survey to 344 auditors at public accounting firms, primarily in the Midwest region of the USA[†]. In total 154 participants accessed the online survey. Of these, we exclude 19 participants who did not respond to a single item and 36 participants who started, but did not complete, the survey[†]; 99 participants completed the survey (29 per cent response rate)[†]. As our study focuses on junior-level auditors' perceptions, we exclude 21 responses from individuals who did not identify their rank as junior-level. Table I provides demographics for our final sample of 78 participants.

In all, 46 staff and 32 seniors responded to our survey (37 males, 40 females)[†]. Participants representing the Big 4 were 61, and 17 participants represented non-Big 4 audit firms[†]; 43 respondents note a Certified Public Accountant (CPA) designation. In terms of service experience by client type, 62 participants have experience auditing public companies (39 claim expertise), and 65 participants have experience auditing private companies (28 claim expertise); 51 participants have audited other client types (e.g. not-for-profit or government units), but only four claim expertise in these areas.

A majority of participants note manufacturing engagement experience (62 respondents) and specialization (26 respondents). This is reasonable because most participants work for audit firms located in

the Midwest USA, where there is a predominance of manufacturing firms. Participants report the next two most prevalent industries as finance or insurance (36 with engagement experience and 14 specializing) and health care or social assistance (29 with engagement experience and three specializing).

### *3.1 Survey instrument*

Drawing from the PCAOB's (2013b) list of AQIs and prior literature, we develop and administer an online survey relating to AQIs for which staff and senior level auditors should have relevant knowledge. The survey instrument addresses the PCAOB's elements of audit professionals and audit process. Examples of survey items relating to the audit professionals' category include knowledge of and confidence in ability to apply accounting and auditing standards and how often auditors feel time-pressured. Examples of process-related survey items include superiors' commitment to quality of audit work, adequacy of the engagement review process, consultation with superiors, reasonableness of required work hours and workloads, level of auditor turnover and frequency in which audit work is outsourced to specialists or non-specialists[†]. Based on prior literature (Bonner, 1990; Griffin and Ricchiute, 2011), we also included items addressing audit team and audit firm effectiveness. Examples include confidence in performing technical auditing tasks and firm's commitment to risk assessment and AQ.

To better understand the commonalities in the data, we developed AQ constructs within the PCAOB audit professionals and audit process elements by coding survey items into one of the following six categories:

1. auditor mood or affect;
2. auditor knowledge and confidence;
3. individual auditor activity;
4. audit team activity;
5. audit firm environment; or
6. audit firm activity.

An alternative approach to categorization is exploratory factor analysis (EFA). We do not use EFA because our data set is not appropriate for this statistical method. Our sample size falls below the recommended 150 cases, and our ratio of participants to survey items falls below the sufficient level of 5:1 (Pallant, 2013). Further, many of our items are on a five-point ordinal scale, which is inappropriate for traditional EFA (Nunnally and Bernstein, 1994). Two independent coders and two authors individually coded each survey item into one of the six categories [†]. Next, we aggregated the four coders' results and assigned an item to the category most frequently selected by the coders. In cases of a tie (where two coders selected one category and two coders selected another), a third author broke the tie by assigning the item to one of the two categories. Figure 1 presents our theoretical model illustrating how AQIs suggested by prior literature relate to our AQ constructs, within the relevant PCAOB AQ framework elements for our study.

## **4. Discussion of results**

In this section, we present and discuss survey results for RQ1 and RQ2 in terms of our six AQ constructs. Two constructs (auditor mood or affect, auditor knowledge and confidence) relate to the audit professionals' element, whereas the remaining constructs (individual auditor activity, audit team activity, audit firm environment, audit firm activity) relate to the audit process element. We assess median responses for our full sample, as well as consider differences by rank (staff versus senior), gender and audit firm size (Big 4 versus non-Big 4) [†].

### *4.1 Auditor mood or affect*

Table II presents findings for items relating to auditor mood or affect. Participants report that they enjoy their jobs (median = 4), are not bored most of the time (median = 2) and feel accomplished and appreciated by superiors (medians = 4) [†]. These results are encouraging because prior literature finds that job satisfaction is a positive predictor of performance in occupations where the employee has some discretion in performing their work (Bowling et al., 2015), and auditors do have discretion in performing their work. Participants

indicate they feel overworked (median = 4) and often feel time-pressured (median = 4 on scale of 1 rarely to 5 always). These items can have either a positive or negative effect on AQ because some auditors perform better under pressure (DeZoort and Lord 1997). However, Sweeney and Summers (2002) find that increased workloads can lead to job burnout. Prior literature finds burnout predicts increased turnover intention, poor job performance and lower levels of job satisfaction (Jones et al., 2010). There are no statistically significant differences in auditor mood or affect items based on rank, gender or firm size. Overall, our results suggest that auditors have a positive mood or affect relating to their jobs, which should improve AQ. We next consider items relating to auditor knowledge and confidence.

## *4.2 Auditor knowledge and confidence*

Table III presents findings for items relating to auditor knowledge and confidence [+]. Auditor confidence has been shown to influence auditor judgment, whereas technical knowledge has been found to be more important than managerial knowledge in explaining AQ (Chung and Monroe, 2000; Ernstberger et al., 2015).

Respondents report a relatively high level of knowledge of US GAAP (median = 4) and, although they express only moderate knowledge of AICPA and PCAOB standards (medians = 3), indicate high confidence in their ability to apply AICPA and PCAOB standards (medians = 4). Participants also express confidence in their ability to collect evidence, recognize misstatements, apply correct audit procedures, understand and test the effectiveness of internal controls, document events and processes, identify and respond to risk factors, interview clients and apply appropriate professional skepticism (medians = 4).

Respondents indicate a relative lack of knowledge of IFRS (median = 2.5) and international auditing standards (median = 2) but moderate confidence in applying international auditing and assurance standards board (IAASB) standards and recognizing IFRS misstatements (medians = 3). This suggests less confidence relating to international compared with domestic standards. This is logical though because our participants primarily have domestic audit

experience [+]. Interestingly, results indicate that respondents have more confidence in their ability to apply both international and domestic standards than in their knowledge of the standards themselves. This may be in part because of their ability to research standards, as applicable, prior to applying a standard.

Overall, participants appear confident and feel they are knowledgeable in most areas, though the lack of knowledge and confidence in some areas can negatively impact AQ. Results show that participants do not appear overconfident in their knowledge level: they disagree they are more knowledgeable than superiors on many audit issues (median = 2) and are confident in their ability to communicate with superiors (median = 4.50) [+].

In comparing staff to seniors, as noted in Table III, we find several notable differences in responses. Staff auditors express a higher level of agreement than seniors for knowledge of IFRS and international auditing standards (staff medians = 3, seniors medians = 2) while expressing a lower level of agreement for knowledge of AICPA standards (staff median = 3, seniors median = 4). Both seniors and staff express lack of confidence in applying international auditing standards, with staff relatively more confident (median = 3) than seniors (median = 2). Seniors and staff express similar levels of confidence in applying PCAOB and AICPA standards (medians = 4). As we might expect, seniors express more confidence in their ability to perform auditing procedures. For example, seniors are more confident in their ability to gather evidence, assess need for corroborative evidence, apply professional skepticism and interview audit clients (seniors medians = 5, staff medians = 4). Seniors are also more confident in their ability to communicate with superiors (seniors median = 5, staff median = 4).

With two notable exceptions, we find no significant differences with respect to firm size and gender regarding knowledge of standards, confidence in applying standards or confidence in performing auditing procedures. Participants from Big 4 firms agree more than non-Big 4 respondents to having knowledge of PCAOB standards (Big 4 median = 4, non-Big 4 median = 2) and confidence in applying those standards (Big 4 median = 4, non-Big 4 median = 3). This is reasonable because

Big 4 firms have a much larger share of the audit market of publicly traded companies and thus more exposure to PCAOB standards.

Overall, our results suggest auditors have more confidence in their knowledge and ability to apply US standards and procedures than international standards. Seniors, in particular, express low level of agreement for knowledge of international standards. This is likely because of international standards only recently receiving more attention in college curricula. In addition to internal factors such as mood or affect and knowledge and confidence, auditors can individually engage in activities that promote or reduce AQ. We next examine individual auditor activity under RQ2 relating to the PCAOB's audit process element.

### *4.3 Individual auditor activity*

Table IV summarizes findings for items relating to individual auditor activity. Participants indicate continuing professional education courses are synergetic with their duties for both themselves and their colleagues (medians = 4)[<sup>+</sup>]. Taken in conjunction with the generally low agreement for knowledge of accounting and auditing standards, this finding suggests that auditors receive focused training for their particular clientele and not on the broader set of accounting and auditing standards. Participants generally agree they often consult with superiors (median = 4.5) and agree less that they consult with peers more than superiors on difficult audit issues (median = 3). This is a positive indicator of AQ and suggests junior-level auditors feel comfortable discussing audit issues with superiors.

Conversely, some auditor activities contribute to low AQ. Auditors report working concurrently on multiple engagements (median = 2) and multiple audit-related tasks (median = 4)[<sup>+</sup>]. Participants report spending the majority of their time on more than one engagement (median = 75 per cent), on more than one audit-related task at a time (median = 88.5 per cent) and switching between audit-related activities in a typical work hour (median = 75 per cent). Auditors also experience self-imposed interruptions approximately one-third of the time (median = 36 per cent). Multi-tasking is of particular concern because prior research finds multi-tasking impairs

judgement and leads to auditor errors (Lindberg and Maletta, 2003; Bhattacharjee et al., 2013).

Significant differences exist between audit staff and seniors on per cent of time they participate in more than one engagement at a time (median = 67 per cent versus 75.5 per cent, respectively), participate in more than one audit-related task at a time (median = 78.5 per cent versus 95.5 per cent, respectively), switch between audit-related activities in a typical work hour (median = 75 per cent versus 77 per cent, respectively) and work remotely from home (median = 34.5 per cent versus 50 per cent, respectively). These differences suggest seniors are utilized at a higher rate on multiple engagements and tasks than staff. Increases in responsibilities for seniors likely contribute to these differences.

Interestingly, individual auditor activity responses did not vary by gender. However, we detect significant differences by firm size. Respondents from non-Big 4 firms report they work on more audit engagements concurrently than Big 4 participants report (median = 3 versus 2, respectively). Non-Big 4 respondents also report spending a greater percentage of their time on more than one concurrent engagement (median = 89 per cent versus 75 per cent) and working remotely from home more often (median = 51 per cent versus 38 per cent). Overall, comparison of responses by firm size suggests non-Big 4 auditors work on smaller audit clients, requiring a greater deal of multitasking and flexibility. This higher level of multitasking can negatively impact AQ if not properly managed.

While individual auditor activity is important, auditors spend most of their time working with an audit team. Therefore, we next examine audit team activity AQIs.

#### *4.4 Audit team activity*

Table V presents findings for audit team activity items. Overall, respondents agree team members work together well (median = 4) and believe their audit teams are highly effective in performing various audit tasks (medians range from a low of 80 per cent for appropriately auditing key related party transactions to a high of 95 per cent for

expressing an appropriate audit opinion) [†]. With a few exceptions, seniors and staff generally agree on audit team performance. Compared to seniors, staff perceive audit teams to be more effective at obtaining a sufficient understanding of the client and its environment (median = 90 per cent versus 80 per cent), preparing adequate audit documentation (median = 92.5 per cent versus 88 per cent), managing client-imposed pressures (median = 90 per cent versus 82.5 per cent) and testing internal controls of public clients (median = 88 per cent versus 80.5 per cent). It is possible relatively inexperienced staff have excessive confidence in the audit process, which is tempered at the higher ranks.

We find, for the most part, male and female respondents agree audit teams are highly effective. However, we find significant differences of opinion between men and women participants on three items. Women report higher degrees of team effectiveness at obtaining a sufficient understanding of the client and its environment (median = 91 per cent versus 85 per cent), properly evaluating adequacy of disclosure (median = 90 per cent versus 84 per cent) and gathering sufficient, competent audit evidence (median = 92.5 per cent versus 89 per cent).

Both Big 4 and non-Big 4 auditors express similarly high levels of team effectiveness in all but one item. Big 4 auditors express higher levels of team effectiveness at obtaining a sufficient understanding of internal controls than non-Big 4 auditors report (median = 85 per cent versus 75 per cent). This is probably because Big 4 auditors have more experience conducting integrated audits for public clients, which requires the understanding and testing of internal controls.

#### *4.5 Audit firm environment*

Table VI notes aspects of the audit firm environment that both positively and negatively influence AQ. The audit firm environment is important because prior literature finds management communication influences employees' perceptions of organizational support, giving employees a sense of value and contribution to the organization, which increases employees' performance (Neves and Eisenberger, 2012).

On the positive side, respondents agree that superiors value quality over quantity of audit work and support their audit decisions, work hours are reasonable during non-peak season and staff's workload is reasonable (medians = 4) [+]. Respondents also agree the firm encourages open communication with superiors (median = 5). In addition, respondents state a majority of the time firms include staff in pre-planning activities (median = 75 per cent), encourage professional skepticism (median = 95 per cent) and support staff's questioning mindset (median = 88.5 per cent).

However, respondents agree that they often feel pressure to complete audit tasks and auditor turnover is high (medians = 4) but disagree that seniors' workload is reasonable (median = 2). Respondents also note they are often interrupted for inquiries related to a previous engagement (median = 50 per cent) or non-audit related matters (median = 42 per cent), and reviewers identify deficiencies in firm quality control about half the time (median = 49.5 per cent). Overall, while the audit firm environment appears supportive, junior-level auditors' perceptions of excessive time pressure, too many interruptions and unreasonable workload can negatively impact their performance, thereby reducing overall AQ.

In comparing responses by rank, gender and firm size, a few notable differences emerge. Seniors (median = 2), as opposed to staff (median = 3), are less likely to agree managers' workload is reasonable. This is likely because seniors have more direct contact with managers and thus have a better understanding of managers' workload. Regarding work hours and turnover, non-Big 4 respondents express higher levels of agreement than Big 4 respondents that peak season work hours are reasonable (median = 4 versus 3). They also report (as compared to Big 4 respondents) lower levels of agreement that audit turnover is high (median = 3 versus 4). The results support the view that non-Big 4 firms are more successful at creating a work/life balance than their Big 4 counterparts (Buchheit et al., 2014).

Interesting discrepancies exist when reviewing the per cent of time auditors experience interruptions and believe audit firms spend on audit-related activities. Staff and seniors report that reviewers identify deficiencies in engagement workpapers – 56 per cent versus

50 per cent of the time, respectively [+]. One explanation is staff's work may be subject to closer scrutiny or staff receives more feedback relating to workpaper deficiencies. Staff and seniors also report differently regarding how often firms include staff in pre-planning activities (median = 81 per cent versus 70.5 per cent, respectively). It is possible that seniors are more aware when staff is excluded from pre-planning activities.

Not surprisingly, seniors experience interruptions more often than staff on current engagements (median = 75 per cent versus 72.5 per cent). Interestingly though, seniors report more non-audit related interruptions (median = 50 per cent versus 36.5 per cent) [+]. This can be particularly problematic because seniors are also under greater time pressure and engage in more multi-tasking. Respondents at non-Big 4 firms report being interrupted more often than Big 4 respondents report for non-audit related reasons (median = 56 per cent versus 37 per cent) and for inquiries related to previous engagements (median = 65 per cent versus 50 per cent). The findings suggest non-Big 4 firms should review processes to minimize active audit engagements interruptions.

Our last AQ construct considers activity at the audit firm level.

#### *4.6 Audit firm activity*

Table VII reports on activities audit firms engage in relating to AQ. Respondents agree engagement team size is adequate, they and their colleagues are adequately trained in their industries, training they receive improves their audit skills, their work and their colleagues' work are always supervised and firms adequately communicate guidance on professional standards (medians = 4) [+]. This is important as extant literature finds "auditors' perceived strength of their firm's quality control and review procedures" relates negatively with behaviors that reduce AQ (Malone and Roberts, 1996, p. 49).

Respondents also state that firms spend a majority of time on AQ-enhancing activities, including engagement pre-planning (median = 90.5 per cent), brainstorming sessions (median = 76 per cent), pre-engagement fraud risk assessments (median = 91.5 per cent) and

random reviews of engagements by both corporate office (median = 75 per cent) and peer firms (median = 75 per cent). One item that could lead to lower AQ is the high percentage of time audit firms rely on the work of outside non-specialists (median = 69 per cent). In fact, academic literature finds lower financial reporting quality and higher litigation risk when the external auditor relies on the work of internal auditors (Bame-Aldred et al., 2013). These potential negative consequences could be in part because of an unconscious bias as described by Brody et al. (2015), whereby internal auditors are asked to provide a consulting service (serve their client), as well an assurance service (assist the external auditor).

Overall, respondents agree that their firm is engaging in AQ-enhancing activities. Aside from a few notable exceptions seen in Table VII, this agreement transcends rank, gender and firm size. Regarding percentage of time spent on audit firm activities, staff respond with higher percentages than seniors for pre-planning (median = 95.5 per cent versus 83 per cent), use of outside specialists or experts (median = 51 per cent versus 43.5 per cent) and engaging services of other auditors (median = 34 per cent versus 25 per cent). However, seniors respond with a higher percentage of time than staff that corporate office randomly reviews audit engagements (median = 83 per cent versus 70 per cent) [+]. Perhaps the most concerning difference is seniors' perceptions that audit firms do not engage in pre-planning 17 per cent of the time. Failure to properly plan an audit engagement can lead to poor AQ and potential restatements.

Gender differences are generally not prevalent across audit firm activity items, with the notable exception that males perceive a much higher percentage of audit engagements are randomly reviewed by corporate office than females (median = 77 per cent versus 50 per cent). As expected, significant differences in audit firm activities exist between Big 4 and non-Big 4 audit firms. Big 4 firms more often engage outside specialists (median = 50 per cent versus 25 per cent) and internal specialists (median = 83.5 per cent versus 50 per cent). Given the complexity and scope of Big 4 audit clients, it is not surprising that Big 4 firms are often engaging specialists. However, it appears Big 4 firms are more often engaging in activities that can reduce the level of AQ. Respondents at Big 4 firms report relying more

often on work of others (median = 75 per cent versus 25 per cent) and less often having engagements randomly reviewed by corporate office (median = 68.5 per cent versus 100 per cent) [†] and peer firms (median = 50 per cent versus 100 per cent). Relying too heavily on outsiders' work, without an appropriate level of monitoring and not having adequate engagement review can lead to lower levels of AQ.

## **5. Limitations and conclusion**

In this section, we discuss some limitations to the study and conclude. The nature and number of survey questions prevents the reliable use of factor analysis to classify our research questions. The inability to perform factor analysis is mitigated by having four independent coders code each question into the six categories. As survey responses were collected electronically and anonymously with no clear separation of early and late responses, we are unable to adequately assess the presence of non-response bias. Finally, our study reports auditors' perceptions of AQIs; our survey did not ask participants to directly link AQIs to actual audit failures (a common existing measure of AQ).

Notwithstanding the study's limitations, our results provide insights on activities individual auditors engage in and conditions audit firms promote that impact AQ. The results also identify differences and similarities in auditors' perceptions of AQIs by experience level, gender and audit firm size. We find that individual auditors generally tend to engage in activities that improve AQ, with some experience level, gender and audit firm size differences. Overall, participants enjoy their jobs, feel accomplished and appreciated by superiors and believe that superiors support their audit decisions. Participants express knowledge of US accounting and auditing standards and confidence in their ability to apply their knowledge in audit engagements. Participants believe they are adequately trained, audit teams are effective, the audit firm environment in which they work is conducive to producing high quality audits and firms generally engage in audit activities that enhance AQ. The positive nature of the responses to these AQIs, as well as the relative lack of variation in responses, suggest the PCAOB should reduce their focus on these items.

However, we identify several areas that do create cause for concern. First, respondents report not being knowledgeable on international standards and not confident in applying those standards. While some participants may not use international standards on audits of their current clients, larger firms have clients applying international standards. This lack of knowledge could impede AQ for these participants' future audits. As previously discussed, technical knowledge is an important component of AQ. Second, participants report high levels of multi-tasking and interruptions. These issues particularly plague seniors and auditors at non-Big 4 firms. AQ will likely be impaired if auditors become too distracted in the course of completing an audit unless firms take action to mitigate this potential problem. Multi-tasking in general has been found to be associated with reduced AQ. Third, junior level auditors often feel overworked and time pressured. Overworked auditors are at a higher risk of job burnout which can lead to poor audit performance. Finally, some audit firms' activities may be hindering the production of high-quality audits. Specifically, reliance on outside work, particularly by Big 4 firms, can be problematic if the outside work is not performed at the same high-quality standards as the firm's own work or if the outside work is not adequately supervised.

The results of this study should be of interest to audit firms and regulators because more thought is given to how the audit process, and in particular work done by junior-level auditors, influences AQ. While participant responses generally support the notion that audit firms' policies and procedures encourage high-quality audits, this study identifies several key areas for further review (such as, technical knowledge deficiencies, burnout, multitasking, reliance on outside work) to ensure a continuous standard of excellence in auditing and protect the public interest.

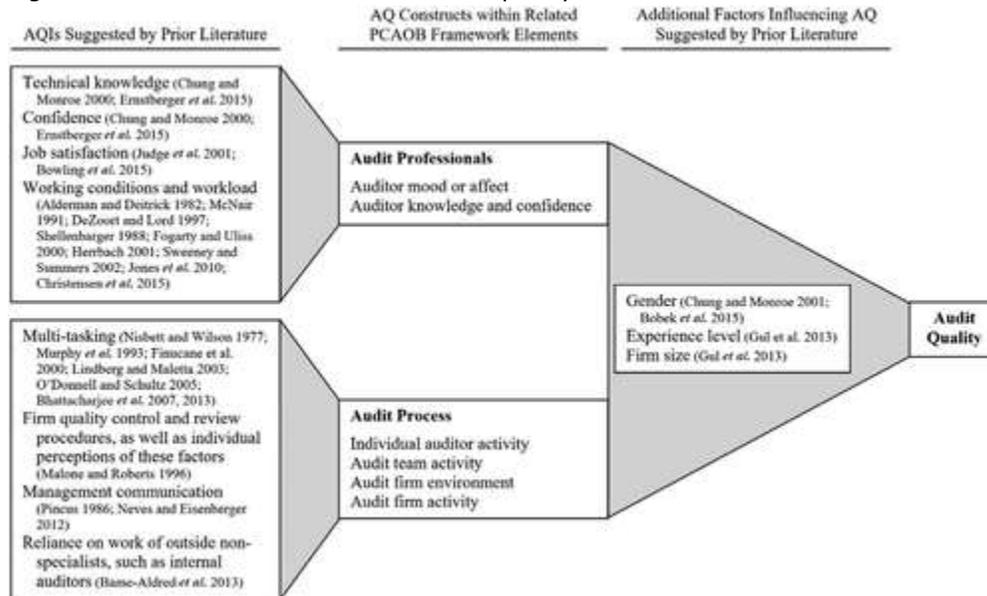
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figure

Figure 1. Theoretical model of our audit quality construct



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## **Appendices**

*Panel A: Auditor professionals*

<i>Rank</i>		<i>Audit firm size</i>	
Staff	46 (59%)	Big 4	61 (78%)
Senior	32 (41%)	Non-big 4	17 (22%)
<i>Education</i>		<i>Professional designations</i>	
Master's degree	34 (43%)	CPA	43 (55%)
Four-year college degree	42 (54%)	CMA	2 (3%)
Some college	2 (3%)	CFE	1 (1%)
<i>Gender<sup>a</sup></i>		<i>Age</i>	
Male	37 (47%)	18-34	76 (97%)
Female	40 (52%)	35 and over	2 (3%)

*Panel B: Auditor experience*

<i>Experience by client type</i>	<i>Public (%)</i>	<i>Private (%)</i>	<i>Other (%)</i>
Audit experience	62 (80)	65 (83)	51 (65)
Claim expertise	39 (50)	28 (36)	4 (5)
<i>Industry experience<sup>b</sup></i>	<i>Conduct engagements (%)</i>		<i>Specialize (%)</i>
Manufacturing	62 (80)		26 (33)
Finance or insurance	36 (46)		14 (18)
Health care or social assistance	29 (37)		3 (4)
Retail trade	20 (26)		6 (8)
Utilities	16 (21)		5 (6)
Wholesale trade	15 (19)		5 (6)
Other <sup>c</sup>	66 (85)		10 (13)

**Notes:** <sup>a</sup>One participant chose to not respond; <sup>b</sup>percentages add up to more than 100% because respondents may choose more than one category; <sup>c</sup>other industries include arts, entertainment or recreation; construction; information; mining; real estate or rental and leasing; transportation or warehousing; various services, support or consulting (except public administration); and other. Less than 15% of participants indicate they conduct engagements in each of these industry categories individually

**Table I.**  
Demographics

**Table II: Auditor Mood or Affect**

Survey item <sup>a</sup>	Full		Rank		Gender				Audit firm size				
	SAMPLE Median (Range)	Staff Median (Range)	Seniors Median (Range)	Z	p	Male Median (Range)	Female Median (Range)	Z	p	Big 4 Median (Range)	Non- Big 4 Median (Range)	Z	p
I feel overworked	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-0.854	0.579	4.00 (2-5)	4.00 (2-5)	-0.430	0.667	4.00 (2-5)	4.00 (2-5)	-0.066	0.981
I enjoy my job	4.00 (1-5)	4.00 (1-5)	4.00 (2-5)	-0.650	0.518	4.00 (2-5)	4.00 (1-5)	-0.295	0.768	4.00 (1-5)	4.00 (2-5)	-1.197	0.231
I am proud most of the time	3.00 (1-5)	3.00 (1-5)	3.00 (1-4)	-0.310	0.756	3.00 (1-5)	3.00 (1-4)	-0.811	0.417	3.00 (1-5)	3.00 (1-5)	-0.073	0.942
I feel accomplished	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-1.284	0.199	4.00 (2-5)	4.00 (2-5)	-0.988	0.348	4.00 (2-5)	4.00 (2-5)	-0.713	0.476
I feel appreciated by my superiors	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-1.013	0.312	4.00 (2-5)	4.00 (2-5)	-0.665	0.506	4.00 (2-5)	4.00 (2-5)	-0.389	0.850
How often feel time-pressured?	4.00 (2-5)	4.00 (2-5)	3.00 (1-4)	-1.577	0.115	4.00 (2-5)	3.00 (2-5)	-1.061	0.286	4.00 (2-5)	3.00 (2-4)	-0.556	0.585

**Notes:** <sup>a</sup>We use Mann-Whitney U tests to compare staff (N = 46) versus seniors (N = 32), male (N = 37) versus female (N = 40) and Big 4 firms (N = 61) versus non Big 4 firms (N = 17). One participant chose not to provide gender. <sup>b</sup>Rare as we indicate in parentheses, unless we state otherwise. All p values are two-tailed, and p-values equal to or less than 0.100 are significant; there are no statistically significant differences in auditor mood or affect items based on rank, gender, or firm size. <sup>c</sup>Unless we note otherwise, participants rate items on level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree). <sup>d</sup>Participants rate on a scale of 1 (rarely) to 5 (always). N = 62, staff N = 36, seniors N = 26, male N = 31, female N = 30, Big 4 N = 49, non Big 4 N = 13.

Table III: Auditor Knowledge and Confidence

Survey item <sup>a</sup>	Full		Rank		Gender				Audit firm size				
	Sample Median (Range)	Staff Median (Range)	Seniors Median (Range)	Z	p	Male Median (Range)	Female Median (Range)	Z	p	Big 4 Median (Range)	Non- Big 4 Median (Range)	Z	p
I am more knowledgeable than my superior on many audit issues	3.00 (1-4)	3.00 (1-4)	3.00 (1-4)	-1.518	0.129	3.00 (1-4)	3.00 (1-4)	-0.099	0.921	3.00 (1-4)	3.00 (1-5)	-1.403	0.161
Knowledge of <sup>b</sup>													
US-GAAP	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-0.978	0.328	4.00 (2-5)	4.00 (2-5)	-1.364	0.173	4.00 (2-5)	4.00 (2-5)	-0.257	0.798
IFRS	3.00 (1-4)	3.00 (1-4)	3.00 (1-4)	-0.092	0.927	3.00 (1-4)	3.00 (1-4)	-0.979	0.322	3.00 (1-4)	3.00 (1-4)	-1.231	0.218
PCAOB standards	3.00 (1-4)	3.00 (1-4)	3.00 (1-4)	-0.900	0.368	3.00 (1-4)	3.00 (1-4)	-0.519	0.604	4.00 (1-4)	3.00 (1-4)	-4.248	0.000
AICPA standards	3.00 (1-4)	3.00 (1-4)	4.00 (2-4)	-2.395	0.020	3.00 (1-4)	3.00 (2-4)	-0.089	0.976	3.00 (1-4)	3.00 (2-4)	-0.088	0.958
International auditing standards	3.00 (1-4)	3.00 (1-4)	3.00 (1-4)	-2.628	0.009	3.00 (1-4)	3.00 (1-5)	-0.414	0.679	3.00 (1-4)	3.00 (1-5)	-0.992	0.361
Confidence in ability to: <sup>c</sup>													
Apply AICPA auditing standards	4.00 (1-5)	4.00 (1-5)	4.00 (2-5)	-2.330	0.020*	4.00 (1-5)	4.00 (1-5)	-1.150	0.259	4.00 (1-5)	4.00 (2-4)	-0.990	0.364
Apply PCAOB auditing standards	4.00 (1-5)	4.00 (1-5)	4.00 (1-5)	-0.038	0.965	4.00 (1-5)	4.00 (1-5)	-0.000	0.999	4.00 (1-5)	3.00 (1-4)	-3.475	0.001
Apply IAASB auditing standards	3.00 (1-4)	3.00 (1-4)	3.00 (1-4)	-1.197	0.028	3.00 (1-4)	3.00 (1-4)	-0.123	0.902	3.00 (1-4)	3.00 (1-4)	-0.127	0.899
Recognize GAAP misstatements	4.00 (1-5)	4.00 (1-5)	4.00 (2-5)	-1.952	0.121	4.00 (1-5)	4.00 (1-5)	-1.178	0.239	4.00 (1-5)	4.00 (2-5)	-0.897	0.402
Confidence in ability to:													
Recognize IFRS misstatements	3.00 (1-4)	3.00 (1-4)	3.00 (1-4)	-1.365	0.172	3.00 (1-4)	3.00 (1-4)	-1.425	0.154	3.00 (1-4)	3.00 (1-4)	-0.572	0.569
Apply correct procedure to test management assertions	4.00 (1-5)	4.00 (1-5)	4.00 (2-5)	-2.338	0.020*	4.00 (1-5)	4.00 (1-5)	-0.296	0.768	4.00 (1-5)	4.00 (1-5)	-0.897	0.402

Table IV: Individual Auditor Activity

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Survey item <sup>a</sup>	Full		Bank		Gender		Big 4		Audit firm size				
	Sample Median (Range)	Staff Median (Range)	Senior Median (Range)	Z	p	Male Median (Range)	Female Median (Range)	Z	p	Big 4 Median (Range)	Not Big 4 Median (Range)	Z	p
CFE causes I take on assignments with my duties <sup>b</sup>	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-2.03	0.043 <sup>d</sup>	4.00 (2-5)	4.00 (2-5)	-1.675	0.139	4.00 (2-5)	4.00 (2-5)	-1.386	0.080
CFE causes my colleagues take on assignments with their duties <sup>b</sup>	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-1.859	0.072	4.00 (2-5)	4.00 (2-5)	-0.776	0.438	4.00 (2-5)	4.00 (2-5)	-1.056	0.050
I (two cannot) work my superior on difficult audit issues	4.00 (2-5)	4.00 (2-5)	5.00 (3-5)	-0.386	0.398	5.00 (3-5)	4.00 (2-5)	-0.320	0.749	5.00 (3-5)	4.00 (2-5)	-1.421	0.074
I consult with my peers more than my superiors on difficult audit issues	3.00 (1-5)	3.00 (2-5)	3.00 (1-5)	-1.345	0.179	3.00 (1-5)	3.00 (1-5)	-0.228	0.819	3.00 (1-5)	3.00 (2-4)	-0.634	0.028
Horror of audit engagements I work on currently <sup>c</sup>	2.00 (1-5)	2.00 (1-5)	3.00 (1-5)	-0.381	0.352	3.00 (1-5)	2.00 (1-5)	-0.037	0.979	2.00 (1-5)	3.00 (2-5)	-1.821	0.023
Number of audit-related tasks I work on concurrently <sup>c</sup>	4.00 (1-5)	3.00 (1-5)	4.00 (1-5)	-2.058	0.043	4.00 (2-5)	4.00 (1-5)	-0.420	0.689	4.00 (1-5)	4.00 (1-5)	-1.317	0.020
Percent of time <sup>c</sup> Participate in more than one engagement at a time	75.00 (5-100)	67.00 (5-100)	75.00 (5-100)	-1.456	0.098	75.00 (5-100)	75.00 (2-100)	-0.501	0.616	75.00 (5-100)	80.00 (24-100)	-1.363	0.030
Participate in more than one audit-related task at a time	80.00 (50-100)	70.00 (21-100)	85.00 (50-100)	-2.866	0.003	80.00 (21-100)	80.00 (50-100)	-0.517	0.605	80.00 (21-100)	87.00 (50-100)	-1.700	0.025 (one-tailed)

Table V: Audit Team Activity

Survey item <sup>a</sup>	Full		Bank		Gender		Big 4		Audit firm size				
	Sample Median (Range)	Staff Median (Range)	Senior Median (Range)	Z	p	Male Median (Range)	Female Median (Range)	Z	p	Big 4 Median (Range)	Not Big 4 Median (Range)	Z	p
Team members work together very well <sup>b</sup>	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-1.347	0.133	4.00 (2-5)	4.00 (2-5)	-1.620	0.132	4.00 (2-5)	4.00 (2-5)	-0.113	0.308
Team effectiveness in: Choosing a sufficient understanding of overall controls <sup>c</sup>	82.00 (25-100)	80.00 (24-100)	70.00 (20-100)	-1.277	0.102	80.00 (20-100)	80.00 (20-100)	-1.879	0.130	80.00 (25-100)	70.00 (20-90)	-1.813	0.095
Choosing a sufficient understanding of the client and its environment <sup>c</sup>	86.00 (47-100)	81.00 (31-100)	80.00 (47-100)	-2.213	0.012	85.00 (47-100)	81.00 (31-100)	-2.150	0.033	80.00 (31-100)	80.00 (47-90)	-1.728	0.127
Appropriately identifying high-waive risk areas <sup>c</sup>	91.00 (53-100)	90.00 (53-100)	91.00 (53-100)	-0.555	0.579	90.00 (53-100)	90.00 (31-100)	-1.076	0.283	91.00 (53-100)	92.00 (53-100)	-0.642	0.021
Recognizing threat risk factors <sup>c</sup>	88.00 (53-100)	85.00 (53-100)	89.00 (53-100)	-0.521	0.602	86.00 (53-100)	88.00 (31-100)	-0.942	0.346	87.00 (50-100)	85.00 (53-90)	-0.894	0.421
Adequately responding to identified audit risks <sup>c</sup>	85.00 (48-100)	83.00 (48-100)	83.00 (48-100)	-0.100	0.583	80.00 (40-100)	85.00 (50-100)	-0.288	0.796	80.00 (40-100)	88.00 (71-90)	-1.211	0.028
Appropriately auditing key-related party transactions <sup>c</sup>	81.00 (28-100)	80.00 (40-100)	80.00 (28-100)	-0.017	0.986	75.00 (28-100)	82.00 (50-100)	-1.153	0.249	75.00 (28-100)	81.00 (50-100)	-0.463	0.644
Preparing adequate audit documentation <sup>c</sup>	81.00 (28-100)	82.00 (20-100)	80.00 (28-100)	-1.826	0.054	80.00 (28-100)	80.00 (26-100)	-0.975	0.323	80.00 (26-100)	80.00 (20-100)	-1.262	0.174
Team effectiveness in: Properly evaluating adequacy of disclosure <sup>c</sup>	89.00 (53-100)	90.00 (53-100)	88.00 (50-100)	-1.435	0.151	84.00 (53-100)	90.00 (53-100)	-1.681	0.093	80.00 (50-100)	88.00 (53-90)	-0.208	0.397
Adequately communicating with audit committee <sup>c</sup>	91.00 (53-100)	91.00 (53-100)	94.00 (51-100)	-1.107	0.188	91.00 (53-100)	90.00 (75-100)	-0.724	0.469	90.00 (75-100)	94.00 (53-100)	-1.109	0.170 (one-tailed)

Table VI: Audit Firm Environment

Survey item <sup>a</sup>	Full Sample		Rank		Gender				Audit firm size				
	Median (Range)	Staff Median (Range)	Senior Median (Range)	Z	p	Male Median (Range)	Female Median (Range)	Z	p	Big 4 Median (Range)	Non-Big 4 Median (Range)	Z	p
My superior rates quality over quantity of audit work	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-1.348	0.176	4.00 (2-5)	4.00 (2-5)	-0.385	0.776	4.00 (2-5)	4.00 (2-5)	-0.144	0.886
My superior supports my audit decisions	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-2.706	0.008*	4.00 (2-5)	4.00 (2-5)	-0.078	0.940	4.00 (2-5)	4.00 (2-5)	-0.689	0.484
I often feel pressure to complete audit tasks	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-0.971	0.330	4.00 (2-5)	4.00 (2-5)	-1.384	0.167	4.00 (2-5)	4.00 (2-5)	-0.979	0.328
<b>Reported work hours reasonable:</b>													
During peak periods	3.00 (1-5)	3.00 (1-4)	4.00 (2-5)	-1.122	0.260	3.00 (1-4)	3.00 (1-5)	-0.283	0.789	3.00 (1-4)	4.00 (2-5)	-3.074	0.002*
During non-peak periods <sup>b</sup>	4.00 (2-5)	4.00 (1-5)	4.00 (2-5)	-1.200	0.230	4.00 (1-5)	4.00 (1-5)	-0.278	0.797	4.00 (2-5)	4.00 (1-5)	-0.086	0.930
Auditor turnover at my firm is high	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-1.894	0.061	4.00 (2-5)	4.00 (2-5)	-1.014	0.311	4.00 (2-5)	3.00 (1-5)	-2.964	0.003*
Partners' workload is reasonable <sup>c</sup>	3.00 (1-5)	3.00 (2-5)	4.00 (2-4)	-0.280	0.779	3.00 (2-4)	3.00 (2-5)	-0.444	0.657	3.00 (2-5)	4.00 (2-4)	-1.662	0.100
Managers' workload is reasonable <sup>d</sup>	3.00 (1-4)	3.00 (2-4)	3.00 (2-4)	-1.980	0.047*	3.00 (1-4)	3.00 (2-4)	-0.889	0.365	3.00 (1-4)	3.00 (2-4)	-0.358	0.724
Seniors' workload is reasonable <sup>e</sup>	3.00 (1-5)	3.00 (1-5)	3.00 (2-4)	-1.190	0.233	3.00 (1-4)	3.00 (1-5)	-0.646	0.519	3.00 (1-5)	3.00 (1-4)	-1.288	0.211
Staff's workload is reasonable	4.00 (1-5)	4.00 (1-5)	3.00 (2-4)	-0.886	0.375	4.00 (1-4)	4.00 (1-5)	-0.313	0.754	3.00 (1-5)	4.00 (2-4)	-0.866	0.389
Firm encourages open communication with superiors	3.00 (2-5)	3.00 (2-5)	3.00 (2-5)	-0.975	0.330	3.00 (2-5)	3.00 (2-5)	-0.017	0.886	3.00 (2-5)	3.00 (1-5)	-0.682	0.489

Table VII: Audit Firm Activity

Survey item <sup>a</sup>	Full Sample		Rank		Gender				Audit firm size				
	Median (Range)	Staff Median (Range)	Senior Median (Range)	Z	p	Male Median (Range)	Female Median (Range)	Z	p	Big 4 Median (Range)	Non-Big 4 Median (Range)	Z	p
Team size is adequate for the engagement	4.00 (1-5)	4.00 (1-5)	4.00 (2-5)	-0.838	0.403	4.00 (1-5)	4.00 (1-5)	-0.939	0.341	4.00 (1-5)	4.00 (1-5)	-2.481	0.013*
I am adequately trained in the industries in which I work	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-1.121	0.262*	4.00 (2-5)	4.00 (2-5)	-1.120	0.262*	4.00 (2-5)	4.00 (1-5)	-0.227	0.821
My colleagues are adequately trained in the industries in which they work	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-1.044	0.298	4.00 (2-5)	4.00 (2-5)	-1.182	0.235*	4.00 (2-5)	4.00 (1-5)	-0.628	0.525
<b>Training received from firm:</b>													
Improves auditor judgment skills	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-0.492	0.626	4.00 (2-5)	4.00 (2-5)	-1.029	0.047*	4.00 (2-5)	4.00 (2-5)	-1.228	0.223
Improves client interviewing skills	4.00 (1-5)	4.00 (2-5)	4.00 (1-5)	-1.263	0.110	4.00 (1-5)	4.00 (2-5)	-1.263	0.110	4.00 (1-5)	4.00 (1-5)	-1.328	0.181
Develops professional skepticism skills	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-0.268	0.788	4.00 (2-5)	4.00 (2-5)	-1.474	0.141	4.00 (2-5)	4.00 (2-5)	-0.343	0.732
Improves technical skills	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-2.068	0.040*	4.00 (2-5)	4.00 (2-5)	-2.371	0.019*	4.00 (2-5)	4.00 (2-5)	-0.607	0.540
Improves analytical/review skills	4.00 (2-5)	4.00 (2-5)	4.00 (2-5)	-0.728	0.467	4.00 (2-5)	4.00 (2-5)	-2.031	0.042*	4.00 (2-5)	4.00 (2-5)	-0.681	0.495
My work is always supervised during engagements	4.00 (1-5)	4.00 (1-5)	4.00 (2-5)	-0.067	0.934	4.00 (1-5)	4.00 (1-5)	-2.194	0.030*	4.00 (1-5)	4.00 (1-5)	-0.790	0.429
My colleague's work is always supervised during engagements	4.00 (1-5)	4.00 (1-5)	4.00 (2-5)	-1.235	0.221	4.00 (1-5)	4.00 (1-5)	-2.794	0.007*	4.00 (1-5)	4.00 (1-5)	-1.079	0.282
<b>Percent of time<sup>b</sup>:</b>													
Firm engages in preplanning prior to the start of each engagement	90.00 (56-100)	95.00 (50-100)	93.00 (56-100)	-0.290	0.773	90.00 (46-100)	93.00 (56-100)	-4.630	0.000*	90.00 (47-100)	94.00 (56-100)	-0.012	0.986
Firm engages in brainstorming sessions	70.00 (30-100)	75.00 (35-100)	75.00 (30-100)	-0.812	0.418	70.00 (30-100)	75.00 (35-100)	-0.082	0.938	75.00 (30-100)	85.00 (50-100)	-0.723	0.470
Firm assesses client's fixed risk prior to audit engagements	61.50 (30-100)	60.50 (30-100)	61.00 (30-100)	-0.228	0.820	61.00 (30-100)	60.50 (30-100)	-0.437	0.662	61.00 (30-100)	62.00 (30-100)	-0.540	0.587