

Assessing Relevance and Ranking of the AICPA Core Competencies  
In a Federal Audit Agency Region

by

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A dissertation submitted to the faculty of  
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I certify that I have read this dissertation and that in my opinion it meets the academic and professional standards required by Wilmington University as a dissertation for the degree of Doctor of Business Administration.

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Walter A. Blaney, Ph.D.

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## Abstract

Opinions of federal auditors have been inadequately solicited regarding competencies required for success after graduation with an accounting degree. This study assessed the relative importance of the AICPA *Core Competency Framework for Entry into the Accounting Profession* to the federal auditor of government contractors. A survey was administered to approximately 650 auditors of a federal audit agency region requesting opinions of the importance of AICPA-defined competencies. Approximately 40% responded by indicating that the majority of the AICPA core competencies are relevant in auditing government contractors. Federal auditors indicated competency in risk analysis to be important and deemed the AICPA categories of Functional and Personal competencies to be more important than the Broad Business Perspective competencies. Of concern, federal auditors did not indicate the Broad Business Perspective competency of strategic critical thinking to be significantly important to their job. Given employer preference for skill in this area, additional research opportunities exist to determine reasons and remedies for this gap in perception regarding development of strategic critical thinking abilities. The study also indicated that senior federal auditors did not find the Broad Business Perspective competencies more important than less experienced auditors did. Finally, contrary to prevailing literature, auditors of federal contractors identified significant need for better training in conventional accounting technical content such as general ledger accounting and, especially, cost accounting. Therefore, a competency model for federal auditors needs to make continued room for knowledge requirements along with the broader skill set advocated by the AICPA. The implications of this finding are significant with regard to what an already overburdened undergraduate accounting curriculum can be expected to deliver.

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## CHAPTER 1

### INTRODUCTION

Differences between accounting competencies required for the job and the proficiencies actually brought to the workplace by accounting graduates have long been of concern to various stakeholders including the accounting profession, employers, accounting educators, students, and accounting alumni. Graduates and postgraduates have been found to be unprepared to address the needs of their recruiting organizations (Gleaves, Burton, Kitshoff, Bates, & Whittington, 2008). Misunderstandings posed by inappropriate expectations can result in decreased productivity, diminished professional identity, absenteeism, increased turnover, and new hires leaving the field of accounting.

The accounting profession developed a set of competencies in 1999 to resolve what has been referred to as the “tension between internal and external constituencies” (Daigle, Hayes, & Hughes, 2007, p. 153). This skill set is referred to as the AICPA core competency framework (Framework) developed by the American Institute of Certified Public Accountants (AICPA), the premier professional accounting association for certified public accountants. The Framework provides a commonly agreed upon set of learning expectations that were designed to be sufficiently flexible for applicability to the various accounting career fields of public accounting, auditing, managerial accounting, and tax. The Framework deliberately concentrated on skills versus knowledge given the rapidity with which accounting content can change. The Framework is described in detail in Appendix A.

Although the AICPA did not prioritize the core competencies, it is likely that some competencies are deemed more important depending upon such factors as the specific accounting field pursued and years of experience in the workplace. This study will assess the relative



importance of these skills to the auditor of federal contractors, a subset of accounting professionals whose opinions have largely been overlooked in the literature.

As early as the 1970s, the accounting profession has been attempting to correctly identify and mitigate differences between what accounting practitioners require in accounting graduates versus the differing perceptions of accounting educators and students. Although a sizeable amount of research targets public and corporate accounting, most graduates of an accounting program will not work in public accounting (Ponemon, 1998). The input of a major employer of accounting graduates as auditors, the federal government, is largely missing. Not only is existing research deficient in this area but the scarcity of it mirrors the limited attention to federal auditing job responsibilities addressed by conventional accounting education.

The paucity of surveys of federal auditors may be due to confidentiality constraints posed by the nature of their work. However, federal contract spending approximates \$500 billion, annually, and the oversight of this spending is largely in the hands of federal auditors. This study will offer a unique insight into the attitudes and beliefs of auditors of a large federal audit agency who are charged with the responsibility of examining the costs of government contractors. The Federal Government represents a major employer of accounting graduates as auditors whose opinions regarding the assessment of the relevance and ranking of the AICPA core competencies are important. Without the input of federal auditors in accounting research, the meaningfulness of the core competencies identified by the accounting profession has not been thoroughly assessed.

The AICPA core competencies were developed by professional accounting societies, who, in turn, exerted influence on universities to address the competencies in their accounting curricula. Professional accounting societies include the aforementioned AICPA, which

administers the certified public accountant (CPA) exam, the American Accounting Association (AAA), which serves academia, and the Institute of Management Accountants (IMA), which addresses the needs of corporate accountants.

Multiple studies and theories have been advanced regarding why differences persist in the preparation of the accounting major versus the needs of the employer (Courtis & Zaid, 2002; Dean & Campbell, 2010; Freudenberg, Brimble, & Cameron, 2009; Liberatore, Stout, and & Robbins Jr., 2007; McCartney, Marden, & Adair, 2002; Tatikonda & Savchenko, 2010).

Differences between a classroom environment and a workplace environment may contribute to the dissonance. The delivery of an accounting education still primarily occurs with a conventional lecture format where students learn on an individual basis. Given the rigorous CPA examination where success is earned individually, the continuation of a lecture format may very well be the optimum arrangement in terms of exam preparation. However, the newly hired accountant more often encounters a workplace environment where team effort is greatly valued and consequently, is unprepared in terms of the attributes that foster success as a team player. Sathe (2009) found that, “in certain dimensions, a cohort program corresponds to the accounting workplace more so than does a conventional program and develops interpersonal and group-work skills” (p. 47).

A theory promoted for contributing to differences relates to generational disparities. The millennial generation (those generally born in the 1980s) has entered the workforce in the last ten years. Millennials are sometimes criticized for consistent receipt of good grades with investment of relatively modest homework preparation. Millennial attitudes lead to conflict in a workplace environment that is more unforgiving with requiring results (Milliron, 2008). Milliron surmised that the apparent preference of the millennial student for a lessened workload and belief that

analytical and computational competence is not that important would pose significant disadvantages when this student competes with global counterparts.

Another contributor to differences may be poor decisions by students to major in accounting based on the erroneous belief that non-quantitative skills such as verbal and written communication are not important (Ameen, Bruns, & Jackson, 2010). Exacerbating the problem are the ironic results of research of Kennedy & Peecher (as cited in Harding & Trotman, 2009) that finds that auditors, in fact, overestimate their grasp of technical knowledge.

A 2001 survey commissioned by the Auditing Section of the AAA found that changes in auditing education are not happening as quickly as the profession requires. The same survey found that development of the higher-order skills are not typically covered in the undergraduate auditing courses. University accounting programs continue to stress content memorization required for passing the CPA exam instead of emphasizing the critical thinking skills required of auditors by employers (Gupta & Marshall, 2010). Reproductive understanding, a low-level form of learning, predominates in how accounting students appreciate their own studies (Byrne & Flood, 2004). Due to economic pressures, it may be that schools are more interested in achieving the short-term goal of high CPA pass rates for their students than in looking beyond to the long-term need to develop higher order cognitive skills (Ponemon, 1998). However, employers of accounting graduates repeatedly express a need for students whose skills extend beyond rule memorization and include decision-making capabilities and management accounting skills (Bolt- Lee & Foster, 2003). A difference arises between ‘graduate attributes’ (De Lange, Jackling, & Gut, 2006) and ‘employment readiness’ (Freudenberg et al., 2009). Employers not only expect basic technical skills, they also expect students possessing business awareness and an understanding of the real world. Alarming, research finds that students did not rank ‘business

awareness' at all as a required skill and appeared to be unaware or misunderstand employers' expectations in regard to this attribute.

Adding to the problem may be the adoption of less rigorous learning material by accounting instructors who rely heavily on textbook chapter questions instead of materials that develop higher order learning skills such as case studies (Gupta & Marshall, 2010). The problem may be more pronounced for the field of auditing. Research indicates that the university audit course had a significantly larger proportion of the lower order cognitive skills coverage when compared to the accounting courses dealing with cost and information systems. The accounting professional societies are responding by promoting critical thinking skills, the integration of liberal arts into the accounting curriculum, and emphasizing non-quantitative topics such as ethics and communication for accounting students.

### **Statement of the Problem**

Insufficient research exists that assesses the importance of the AICPA core competencies in a federal audit environment. It is not apparent whether the core competencies identified by the AICPA are those that are most needed, or whether other skills not identified by the AICPA would be more relevant to auditors of federal contractors. If the AICPA core competencies are relevant to federal auditors, it is not clear which ones are more important. Finally, it may be that given increased years of experience with greater and more diverse responsibilities, a difference arises between the perceptions of newly hired auditors versus veteran auditors. Even though researchers, as well as the AICPA, have attempted to map the core competencies to both the CPA exam and accounting curricula, the accounting professional societies have not sufficiently obtained the input of federal auditors in evaluating the efficacy of university accounting curricula in meeting practitioner needs. The U.S. Government Bureau of Labor Standards reports that 1.2

million accountants and auditors were employed in 2010. Of these, about 9% were employed in the government, with about one-quarter of those in the federal government. For one federal audit agency tasked with auditing defense contractors, \$103 billion of contract-proposed dollars were audited in 2011. The IRS examined 1.1 percent of the 230 million tax returns filed in 2010, a year in which two trillion dollars were collected in business, individual, employment, estate and trust income taxes.

Many accounting graduates enter the specialized field of auditing. It requires a significant investment in time and training for an auditor to reach full productivity. There are times when an accounting graduate, without regard to grades earned in school, enters the field of auditing without the suite of required competencies required for the job. The lack of preparedness causes frustration for all of these parties invested in the success of the accounting graduate, especially for federal auditors where Department of Defense auditing jobs, as a percent of all accounting and budgeting jobs, are increasing from 10% as of September 30, 2008 to 14% of projected hires for 2010-2012.

Many jobs requiring a background in accounting, such as a government auditing position, require aptitude in careful and sustained reading of regulations and authoritative sources for purposes of subsequent application to problems, most often in written form. Current students and even newly hired graduates may be significantly unaware of these job requirements and employer expectations. Additionally, accounting graduates will underestimate, at times, how important communication skills are to a job they may have mistakenly believed was primarily characterized by 'numbers-crunching'. Research has indicated employers were only marginally satisfied with new hire preparation levels for the entire set of the communication competencies (Jones, 2011).

Accounting education is characterized by rules-based knowledge. Little research exists to indicate that this type of training provides the higher-order critical thinking skills desired by employers. The Association to Advance Collegiate Schools of Business (AACSB), the premier business school accrediting body, notes in its assurance of learning standards that course grades measure learning associated with content. This limited measurement does not provide evidence of the development of broad knowledge and skills.

De Lange et al., (2006) observed that the undergraduate accounting curriculum is failing to provide the more general skills required of graduates when they enter the workforce. The researchers argued that “an investigation of the expectations of employers is warranted to provide further insights into the range of skill sets required in the accounting profession in the twenty-first century” (p. 381).

### **Purpose of the Study**

The purpose of this study is to obtain the input of federal auditors, who audit federal contractors, of the relevance and ranking of the AICPA core competencies in order to develop an ideal competency model for federal auditors within the AICPA framework. A secondary purpose is to determine if a difference exists between the opinions of newly hired, and therefore, less experienced, auditors and those of veteran auditors. It may be that some of the AICPA core competencies are only relevant in varying degrees to the work conducted by the federal auditor of U.S. government contractors. The implication is clear for accounting educators who may identify the need to adjust or tailor accounting curriculum to this important subset of accounting graduates. It may be found that the AICPA has not yet identified the competencies and attributes most needed by the federal auditor.

Other researchers have attempted to identify competencies that are *not* highly valued. For instance, Moreland and Angur (2006) found aptitude in global issues, foreign languages, and economics were not deemed highly important. These researchers also found that work experience was highly rated, a competence not addressed by the AICPA. The high rating for work experience may be attributable to surveyed accountants who are tending to forget their own university courses in favor of the more immediate and familiar work environment.

### **Significance of the Study**

Locating an assessment of the importance of the AICPA core competencies in the federal audit arena is of particular relevance given that the Federal Government is the nation's largest employer according to the U.S. Bureau of Labor Statistics. The Federal government continues to increase the ranks of auditing jobs. The internet site *Where the Jobs Are* (n.d.), which projects hiring needs for the federal government, indicates that 6% of the projected jobs for 2010-2012 will represent accounting and budgeting positions and that auditing jobs as a percent of all accounting and budgeting jobs are increasing from 10% as of September 30, 2008 to 14% for 2010-2012. The U.S. Bureau of Labor Statistics forecasts that total employment is projected to grow by 14.3 percent over the decade 2010-2020 while jobs in accounting and auditing are forecasted to grow at 16% (U.S. department of Labor, 2011). Therefore, focusing research in a federal audit environment for evaluating the ranking and relevance of the AICPA core competencies will provide needed research that assesses the opinions of accounting graduates working as auditors in the federal arena.

Some of the recent findings of the U. S. Government Accountability Office (GAO), which reports its audits of other federal agencies to Congress, indicate that improvement in performance needs to occur in the ranks of federal auditors. The GAO has found that federal

auditors have been deficient in their adherence to generally accepted government auditing standards especially in the areas of maintaining independence, documentation and evidence, and adequate supervision of auditors (United States GAO, 2008). While identified differently from the AICPA core competencies, the auditing standards to which federal auditors are obligated to adhere are somewhat aligned, for instance, independence is associated with ‘professional demeanor’, documentation with ‘communication’ and ‘reporting’ and evidence with ‘measurement’. It is especially important, given the political environment in which federal auditors sometimes operate and the fiduciary responsibility with which they have been entrusted, to continuously monitor for needed skills and expectations, deliver audit services in line with the milestone schedules of other stakeholders, and stay apprised of significant threats with which their audit entity deals, especially with regard to funding and competition. Federal auditors require well-developed negotiation and presentation skills in arguing for the continued benefit and viability of their services (Chambers, 2011).

### **Research Questions and Hypotheses**

The main research question is whether the AICPA core competencies adequately describe the skills and attributes required in a federal auditing environment. Related research questions deal with ranking the competencies in importance and determining whether competencies not identified by the AICPA are also meaningful in the federal audit environment. Since Courtis and Zaid (2002) noted that there is “always a lag between employer needs and what the education system delivers” (p. 323), there is a research need for measuring whether a ‘lag’ exists between the AICPA core competencies and the skills required in a federal auditing environment.

Associated with these questions is determining the existence and magnitude of the difference in opinions between less experienced new hires versus the opinions of more



experienced auditors. Specifically, junior and senior auditors may possess different expectations regarding required skills and desired attributes for success on the job.

The following research questions guided this study:

- **Research Question 1:** To what extent are the AICPA core competencies relevant in auditing federal contractors? From this research question, the following hypotheses were developed:

Hypothesis 1a: A majority of the AICPA core competencies are relevant in auditing federal contractors.

Hypothesis 1b: A majority of auditors of federal contractors will identify the AICPA Functional competency of ‘Risk Analysis’ as important or very important.

- **Research Question 2:** To what extent are some AICPA core competencies more important than others are to auditors of federal contractors? From this research question, the following hypotheses were developed:

Hypothesis 2a: The AICPA Functional core competencies are perceived to be more relevant than the Broad Business Perspective competencies to auditors of federal contractors.

Hypothesis 2b: The AICPA Personal core competencies are perceived to be more relevant than the Broad Business Perspective competencies to auditors of federal contractors.

Hypothesis 2c: Auditors of federal contractors will identify the AICPA Broad Business Perspective competency of ‘Strategic Critical Thinking’ as

more important than any other competency within the Broad Business Perspective category.

- **Research Question 3:** To what extent are opinions different regarding the relevance and ranking of the AICPA core competencies given increased job experience of the auditor of federal contractors? From this research question, the following hypothesis was developed:

Hypothesis 3: Greater appreciation for the Broad Business Perspective competencies will be demonstrated by the more experienced auditors of federal contractors.

- **Research Question 4:** To what extent are other competencies, not identified by the AICPA as a core competency, important to the work of auditors of federal contractors? From this research question, the following hypothesis was developed:

Hypothesis 4: Senior auditors of federal contractors will identify ‘Maintaining Independence’ as an additional required competency.

- **Research Question 5:** To what extent are some undergraduate accounting courses/topics overemphasized for a career in auditing federal contractors? From this research question, the following hypotheses were developed:

Hypothesis 5a: Tax Accounting will be identified as a subject that tends to be over-emphasized in undergraduate accounting education.

Hypothesis 5b: The topic of ‘Consolidation’ will be identified as a subject that tends to be over-emphasized in undergraduate accounting education.

## Definition of Terms

- 150-Hour Educational Requirement: Candidates for the Uniform CPA Exam must have completed 150 semester hours of collegiate education including a baccalaureate degree.
- American Accounting Association (AAA): A national membership organization made up primarily of accounting educators
- American Institute of Certified Public Accountants (AICPA): A national professional organization of certified public accountants
- AICPA Statements on Auditing Standards: provide guidance on the application of generally accepted auditing standards (GAAS) to the audits of non-public companies
- Association to Advance Collegiate Schools of Business (AACSB): The accrediting organization for business programs
- Certified Public Accountant (CPA): A person who passes the Uniform CPA Exam, after meeting the educational and work-related requirements.
- CAS: Cost Accounting Standards
- Cost representations: Proposed, incurred, or billed cost by a Federal contractor
- FAR: Federal Acquisition Regulations
- Federal Auditor: For purposes of this survey, a federal auditor audits the prospective and actual cost representations of federal U.S. Government contractors. Specifically, the auditor evaluates cost proposals prepared by a federal contractor to win a contract or audits actual costs incurred under an existing contract by a federal contractor

- Federal Contractor: A non-government owned business that contracts to provide goods and services to a federal U.S. Government customer, such as the Army or U.S. Department of Health and Human Services
- GAAP: Generally accepted accounting principles
- GAGAS: Generally accepted government auditing standards
- Going concern opinion: an audit opinion where substantial doubt exists about the audited entity's ability to continue in business
- Sarbanes-Oxley Act (SOX): Legislation passed by the US Congress in 2002, in response to financial frauds at Enron and Worldcom. Its purpose is to oversee the financial reporting of public companies

### **Limitations and Assumptions**

The study is limited in that not all federal auditors audit federal contractors. For instance, some federal auditors audit other government components or entities. While this may impede generalization to all federal auditors, the research may prove applicable to non-government auditors who also audit U.S. federal contractors.

It is not assumed that all survey takers will be familiar with the AICPA core competencies; however, since all participants are college accounting graduates, a fundamental understanding of accounting terminology is assumed.

## CHAPTER 2

### REVIEW OF THE LITERATURE

The review of the literature begins with an introduction to the history of the accounting competency framework in order to provide context for the AICPA identification of core competencies. A discussion of the specific standards and competencies required of the auditing profession, a subset of the field of accounting, follows. Auditor skills and deficiencies in job-preparedness are next presented followed by a review of other constraints faced by the auditor in meeting employer expectations. Finally, the last half of the literature review is devoted to changes needed in the content and delivery of accounting instruction in order to make formal accounting education relevant to employer needs and to develop Framework competencies.

The intent of the literature review is to demonstrate the ongoing work undertaken by the accounting professional societies, accounting educators, and employers of accounting graduates to assure required competencies. The work of the professional accounting organizations culminated in the development of the AICPA core competencies. However, the research to-date is incomplete in its failure to solicit and consider the opinions of a sizeable contingent of accounting professionals, federal auditors.

#### **History of Competency Framework**

A rigorous evaluation of the efficacy of accounting education meeting employer needs began more than 35 years ago by the accounting profession and accounting educators. Various competency models began to emerge that migrated from a rules and content-driven basis to a skills-based framework. Recognizing that accounting education was deficient for the needs of employers, a committee of the American Accounting Association (AAA, 1986) published a report in entitled *Future Accounting Education: Preparing for the Expanding Profession*. The

publication has informally become known as the Bedford Report, named for Committee Chairman Norton Bedford of the University of Illinois. The ‘Bedford Committee’ concluded that accounting curriculum should be phased from primarily preparing financial statements to include a broader framework for economic decision-making. The Bedford Report addressed the expanding profession, the current state of accounting education, and the future scope, content, and structure of accounting education. The report also described a conceptual framework for future accounting education and a plan for implementation by the year 2000 (Gupta & Marshall, 2010; Daigle et al., 2007; Jones, 2011; Bolt-Lee & Foster, 2003).

In 1988, the American Institute of Certified Public Accountants (AICPA) issued a revision to its 1979 *Educational Requirements for Entry into the Accounting Profession*. The 1979 publication had recommended at least 150-college semester hours for accounting students and the 1988 revision provided a course of action for introducing communication, intellectual, and interpersonal skills education into the accounting curriculum (American Accounting Association [AAA], 1999).

In 1989, the Sponsors’ Education Task Force of what was then known as the ‘Big 8’ accounting firms (presently, the big 8 have been reduced to 4 major accounting firms) published what is referred to as the ‘White Paper’, the title of which was *Perspectives on education: Capabilities for success in the accounting profession* (AAA, 1989). The ‘White Paper’ focused on the number and quality of students entering public accounting and addressed core competencies needed by graduating accounting majors. Issuance of the ‘White Paper’ was motivated by concern of the major accounting firms that graduates of existing accounting programs were lacking the skills necessary for the upcoming twenty-first century. The ‘White Paper’ recommended meaningful modifications in university accounting curriculum regarding

the acquisition of organizational business knowledge along with the conventional topics of accounting and auditing. The ‘White Paper’ highlighted the lack of educational attention paid to required verbal, written, and interpersonal skills that were becoming increasingly necessary for the business workplace and argued for a partnership between accounting faculty and accounting practitioners that would implement improvements to accounting education. Most importantly, the ‘White Paper’ recommended the establishment of a coordinating committee to guide the changes in education and encouraged the AAA to establish the Accounting Education Change Commission (AAA, 1999; Bolt-Lee & Foster, 2003; Dean & Campbell, 2010; Moreland & Angur, 2006).

The Accounting Education Change Commission (AECC), established by the AAA in 1989, operated until 1996 and, during that time, issued several position statements. In 1990, the AECC issued its first position statement that detailed the goals of accounting education, including the skills and knowledge required for the workforce. The position statement discussed knowledge and skills needed by accounting graduates; i.e., interpersonal, communication and intellectual skills and addressed how accounting education should adapt to respond to the changing needs of the accounting profession. Statement number four, entitled *Improving The Early Employment Experience Of Accountants*, discussed the lack of preparation of accounting students for the workforce previously identified in the *Bedford Report*. Statement number four also recommended that accounting educators acquire knowledge regarding the needs of future employers of accounting students. The AAEC supported the AICPA recommendation of 150 hours of education by the year 2000 and stressed that the trigger for change must start with accounting educators (Daigle et al., 2007; AAA, 1999; Bolt-Lee & Foster, 2003; AECC, 1990).

In 1994, the Institute of Management Accountants (IMA) published *What Corporate America Wants in Entry Level Accountants*, a description of deficiencies in accounting education. The research project surveyed corporate America to determine the skills needed by entering professionals and found deficient student knowledge of budgeting and product costing. However, the research also determined that students were over-prepared in such topics as individual income taxes and governmental and not-for-profit accounting (Bolt-Lee & Foster, 2003; Daigle et al., 2007; Gupta & Marshall, 2010; Jim, Damtew, Banatte, & Mapp, 2009; McCartney et al., 2002). In 1996, the IMA published another study entitled *The practice analysis of management accounting* that discussed how management accountants had evolved into more sophisticated decision-support specialists rather than mere ‘number-crunchers’ (Jim et al., 2009).

The AICPA again followed up in 1998 by initiating the CPA Vision Project, which stressed the importance of work experience and continuing education in maintaining proficiency and relevance (Bolt-Lee & Foster, 2003; McCartney et al., 2002; Thomas, 2000;). The Institute of Internal Auditors made its contribution in 1999 by publishing the “*Competency Framework for Internal Auditing*, a wide-ranging examination that described the global competencies required for internal auditing (McCartney et al., 2002).

Finally, about 1998-1999, the AICPA issued its *Core Competency Framework for Entry into the Accounting Profession*, an outgrowth of the previous 1998 CPA Vision Project that had recommended a shift from a content driven to a skills-based curriculum. The AICPA *Core Competency Framework for Entry into the Accounting Profession* identified three broad categories of competencies; Functional competencies (technical skills), Personal competencies (individual attributes that facilitate professional relationships and personal improvement) and



Broad Business Perspectives competencies (understanding the business context in which accountants perform services) (AICPA, 2012a). The core competencies were intended to be applicable to all persons entering the accounting profession, regardless of the specific career path they choose such as public accounting, corporate/management accounting, or auditing. All three of the competency classifications included the skill of leveraging technology due to the significance of changes provided by technology and the need for accounting graduates to adapt to its dynamic, evolving, nature.

The Functional competencies, upon which accounting faculty can have the most direct impact as course subject matter, include decision modeling, risk analysis, measurement skills related to appropriate criteria such as generally accepted accounting principles, reporting, and research. The Personal competencies addressed professional demeanor, problem solving and decision-making, interaction including teaming and diversity, communication including presentation and business writing, and project management skills. Finally, the Broad Business Perspective competencies described abilities in strategic/critical thinking, knowledge of the industry and sector perspective, skills in supporting an international or global perspective, awareness of legal and regulatory perspectives, and the ability to recognize market needs with a marketing and client focus (Bolt-Lee & Foster, 2003; Daigle et al., 2007; Gupta & Marshall, 2010; Jim et al., 2009; Kaciuba &, and Siegel, 2009; Thomas, 2000).

The AICPA core competencies serve as an organized framework that permits identification to various goals. For instance, the core competencies have been mapped to the different parts of the CPA exam to ensure testing in these skills. The competencies have also been plotted to skills that could be developed in an internship experience (Beard, 2007). In this

paper, the competencies will be evaluated with reference to their relevance and importance as skills required in a federal audit environment.

The three AICPA core competency classifications have been further grouped into levels of progressive learning to demonstrate the skills required to acquire fully each competency (Kaciuba & Siegel, 2009). For instance, the development of professional demeanor, one of the Personal competencies, is first developed by assuming the responsibility to prepare for meetings, secondly, when team members engage in an effort to reach consensus, and, lastly, when team members consider the external social implications of their consensus. Vasarhelyi, Teeter, and Krahel (2010) identified three close parallels to the three categories of competencies by labeling them as aptitudes in attitude, behavior, and objective knowledge.

The major accrediting body for U.S. business schools, the Association to Advance Collegiate Schools of Business (AACSB), integrated the AICPA core competencies into the accreditation Assurance of Learning (AOL) standards in the form of learning goals and objectives. Assurance of learning promotes top-down accountability necessary for accreditation (Daigle et al., 2007; Gupta & Marshall, 2007). The AOL standards ensure learning goals that include the development of skills such as those described in Bloom's 1956 classification of cognitive skills; i.e., analysis, synthesis, and evaluation.

The federal government has also contributed to the identification of competencies uniquely required by the auditor. In 2008, the Treasury Department established the Advisory Committee on the Auditing Profession (Advisory Committee) in order to examine the requirements for maintaining a robust auditing profession. The committee researched such topics as the structure and finances of accounting firms as well as concentration and competition within the auditing profession. The Advisory Committee focused on determining the auditing

profession's ability to develop and retain sufficient qualified personnel knowledgeable of business and financial environment and to provide sufficient audit quality for investors. The Department of the Treasury intended for the Advisory Committee to ensure investor protection and assure a meaningful profession for public company auditors. Although the Federal Government participated in ensuring auditor competencies in this manner, this effort by the Treasury Department did not address skills required by the federal auditor who audits the financial records of companies hired as government contractors.

In 2011, the global requirements expected of auditors were addressed by the International Accounting Education Standards Board (IAESB) of the International Federation of Accountants. The IAESB published International Education Standard No. 5 *Practical Experience Requirements for Aspiring Professional Accountants* that articulated an expectation that the global accounting professional acquire written and verbal communication skills to allow for the successful presentation and defense of positions (Jones, 2011).

Finally, to bring history up to the present day, the AICPA very recently has built upon the 1998 CPA Vision Project with its *CPA Horizons 2025 report* published in 2011 (AICPA, 2012b). *CPA Horizons 2025* is described as a strategic process to take stock of imminent issues and re-assess core competencies and values. The core competencies committed to in the *CPA Horizons 2025* report are not significantly different that the core competencies published in 1999 and include skills in communications, leadership, critical-thinking and problem solving, anticipating and serving evolving needs, and synthesizing intelligence to insight, integration, and collaboration.

## **Auditing Standards and Competencies**

Only one subject in the study of accounting directly correlates with a distinct section of the CPA exam and that is auditing. The CPA exam primarily tests on the AICPA Statements on Auditing Standards as the most important criteria governing auditing. In this section of the literature review, auditing standards and two of the most important auditor competencies are discussed, independence and ethics.

**Standards.** Finally, the auditing standards to which auditors are subject; e.g., GAAP, GAGAS, impose their own set of aptitudes auditors must acquire. These competencies include planning, evidence gathering, and supervision that involves mentoring and evaluating subordinates, and engaging in peer review (Arens & Elder, 2006; Byrne & Flood, 2004; Digabriele, 2008; Francis, 2011; Gupta & Marshall, 2010; Kaciuba & Siegel, 2009; Liberatore et al., 2007; McKnight & Wright, 2011; Moreland & Angur, 2006; Vasarhelyi et al., 2010).

A number of other bodies contribute standards for auditing besides the AICPA. Individual state boards of accountancy, the Securities Exchange Commission (SEC), and the Public Company Accounting Oversight Board (PCAOB), all regulate the auditing profession. The Sarbanes-Oxley Act of 2002 (SOX) authorized the PCAOB to establish auditing standards for audits of public companies including standards in risk, planning, audit supervision, and audit evidence. Before the PCAOB adopted this responsibility, the Auditing Standards Board of the AICPA previously had set the auditing standards for public companies. Upon its establishment, the PCAOB largely adopted the AICPA standards. With the passage of SOX, for the first time ever, the audit profession has been subject to external and independent oversight, rather than self-regulation. For instance, the PCAOB can bring enforcement actions against auditors. In response to SOX, public company auditing firms, the AICPA, and members from outside the

public company auditing profession teamed to form the Center for Audit Quality, a nonpartisan, nonprofit group based in Washington, D.C. to promote investor confidence and public trust.

The auditing standards for most auditors employed by the Federal Government are the Generally Accepted Government Auditing Standards (GAGAS), which are formulated and published by the U.S. Government Accountability Office (GAO). The GAGAS provide the ‘rules of the road’ for auditors in conducting audits. While not intended for such, the GAGAS also provide a valuable insight for competencies expected of the federal auditor including aptitude in planning, project management, report writing, and maintaining independence.

**Independence.** Auditors are subject to an independence standard in order to maintain the public trust. Independence from bias is especially important and characterizes all auditing positions, governmental and otherwise. Auditor independence is crucial for public and investor confidence. The U.S. Department of the Treasury Advisory Committee (2008) found that “The independence of the public company auditor—both in fact and appearance—is crucial to the credibility of financial reporting, investor protection, and the capital formation process” (p. 27). The SEC and PCAOB establish independence requirements for auditors of public companies while the AICPA and individual states establish independence requirements for both public and private company auditors. (Arens & Elder, 2006; Francis, 2011).

Loss of independence poses a threat to the quality of audit effort. For example, research indicates that audit quality is lower when clients hire their former external accountants into executive positions (Francis, 2011). Fortunately, the majority of public companies in the United States put auditor ratification to an annual shareholder vote in acknowledging the importance of independence of the audit function (U.S. Department of Treasury, Advisory Committee on Auditing, 2008).

**Ethics.** Closely related to independence is the need to develop ethical awareness and recognize situations that may compromise ethical goals. Wygant (as cited in Guffey & McCartney, 2008) noted that inexperienced new hires arrive at the job with a personal set of standards that, while applicable in their own lives, may be less employable at the job. The youth and inexperience of the newly hired accounting graduate both helps and hinders the exercise of ethical reasoning.

Accounting students expect to have their performance evaluated based on merit, instead of clocking overtime, an expectation that can expect to conflict with the actual environment of cyclical deadlines and time sensitive projects. Sweeney and Boyle (2005) discovered that newly hired accountants are sensitive to perceived injustice of uneven work distribution, missing the more practical point that high performers are assigned more work. These “quality-threatening behaviors” (p. 91) identified by Sweeney and Costello (2009) found at audit trainee levels support the need for early training in ethical expectations. Fortunately, while the undergraduate accounting curriculum might not include a separate course on ethics, accounting texts do include ethical issues as end of chapter material or cases (Arens & Elder, 2006).

In spite of the widely accepted need for independence and ethics training, research indicates that audit-based emphasis on ethics in accounting curricula may only result in a limited ethical viewpoint that does not translate well to handling moral difficulties encountered in other accounting subjects (Fleming, Romanus, & Lightner, 2009). For instance, an auditor needs to appreciate the requirement to make ethical concessions concerning audit recommendations when client management is in a relatively strong negotiating position (Hatfield, Agoglia, & Sanchez, 2008). An auditor’s inability to grasp and practice such delicate strategy can lead to a decrease in work product quality. Of more concern, but perhaps true for all professions, researchers have

found that moral reasoning of auditors decreases the longer the auditor is in the workforce. Such a finding would support the need for on-going supportive training to maintain this important attribute needed by the federal auditor.

The development of independence and ethics are not defined as core competencies by the AICPA. However, given their special importance to the federal auditor, it is believed that federal auditors will identify competence in these areas as skills required in addition to the AICPA core competencies.

### **Accounting and Auditor Skills**

**Accounting skills.** The study of accounting is holding firm as a popular college major and enrollments in business schools are at “historic highs” (Fogarty, 2010. p. 404).

The study of accounting generally leads to four different types of jobs, accounting for a public CPA firm, managerial accounting for industry, governmental accounting and auditing, and internal auditing in various types of companies. For accountants, the primary responsibility is to translate economic events into a series of established accounts that conform to professional standards. In order to do so, accountants require skills in financial reporting, information systems, tax accounting and regulation (Fogarty, 2010; Moreland & Angur, 2006). Users of accountant work products expect accountants to possess skills in overall business operations, technology, managerial and general business skills.

Accounting skills include technical competencies, personal attributes, and general business skills complementary to the academic discipline of accounting. Of these, oral, written, and presentation communications skills are competences frequently found wanting in accounting graduates (Ameen et al., 2010; Jones, 2011). In spite of the increasing attention paid by academics to address the teaching of communication skills, students remain unconvinced of the

need for this skill and, therefore, unprepared (Ameen et al., 2010; Bolt-Lee & Foster, 2003; Bui & Porter, 2010; Curtis & Zaid, 2002; McIntyre, 2005). Although employers expect accounting students to be able to write in ‘business English’, teachers focus on ‘academic English’.

Researchers frequently cite deficiency in communications skills as a skill lacking in accounting graduates even though communication expertise has been rated as either most important or second most important skill for both audit and tax work (Ameen et al., 2010). The International Federation of Accountants reinforced the demand for communication competency in its International Education Standard 3. Jones (2011) found that basic writing mechanics are in highest demand, duplicating the same finding by Albrecht and Sack (2000).

The employer expects the newly hired accountant to understand and appreciate the contribution expected of them in maximizing earnings. Although a simple concept, the graduating accountant may mistakenly assume such goals are intended for the operational component of the workforce and not, the accountant. Tatikonda and Savchenko (2010) report that businesses “no longer want bean counters; they want accountants who will help make better beans - products with lower cost and higher quality” (p. 36).

Along with business intelligence skills, accountants are expected to bring complex skills to the workplace in the use of statistical analysis systems (SAS), web conferencing, electronic audit and data retrieval programs, and competencies in risk management (“Challenges to,” 2003; McCartney et al., 2002). Accountants are expected to be able to synthesize data enabled by higher-order cognitive skills as well as to discern meaning in learning; i.e., to regard learning as a continuum that continues with life-long professional education and experience (Kaciuba & Siegel, 2009).



Researchers find that employers also expect capabilities in ethics, teamwork, and written communication, proficiencies not typically emphasized in an accounting curriculum (Kavanagh & Drennan, 2008). Along with these softer skills, Jones and Abraham (2009) espouse the need for hires with emotional intelligence, defined as the ability to listen, transfer knowledge, and negotiate and collaborate. Accountants are anticipated to bring to the workplace aptitudes that fit the AICPA second category of core competencies, the Personal competencies. These attributes include maturity, listening attentiveness and listening responsiveness skills, dependability self-confidence, attendance, responsibility, sound judgment, the ability to teamwork, the aptitude to accept criticism, deductive analysis, global insight, initiative, judgment, and punctuality (Beard, 2007). However, more than any of the other competencies, the Personal competencies can conflict with generational attributes. Studies reveal that current accounting students select courses for convenience, not content. Alarming, the research conducted by Milliron (2008), indicates that millennial student competence is about the same as that of students in the early 1970s that were less inclined to attend college. For that reason, concern exists that the recent graduate may not possess the temperament or maturity required for the rigors of an accounting education and subsequent employment.

**Auditing skills.** For accountants who enter the field of auditing, additional skills are required. Due to the specific nature of auditing, auditors typically exercise greater analytical skills than those of an accountant and offer assurance services that opine on the quality of information. The cost of white-collar crime and accounting scandals like Enron, which led to a stunning loss of pension funds, has triggered a need for auditors to possess skills beyond conventional accounting expertise. The auditor collects and evaluates evidentiary support for accounting transactions. Because auditing requires formulating conclusions regarding the fair

presentation of information in financial reports, auditors require higher order intelligence skills that permit evaluating complex issues. Since much of reported financial information relies upon estimated amounts, auditors require the critical thinking skills that allow for analyzing business risk (McKnight & Wright, 2011) and which are described as the 'strategic/critical thinking' AICPA core competency included in the Broad Business category.

Typical auditor skills include working with a variety of software including spreadsheets, email, word processing, graphics, presentation applications, general ledger, and tax programs (Jim et al., 2009). Because an audit culminates in the issuance of a report, good writing skills are required for providing written assurance and in providing the persuasive aspect of an opinion (Vasarhelyi et al., 2010). The increase in public expectations has widened the audience of audit reports to external parties, such as attorneys, who require clear writing on accounting and auditing topics and terminology with which they are unfamiliar.

Auditors require skills in business performance management, considered the current phase of business intelligence (Turban, Sharda, Aronson, & King, 2008). A common tool used in business performance management is activity-based costing (ABC). ABC allocates costs through sophisticated modeling which is of particular interest to the government auditor who evaluates costs charged to government contracts.

Public expectations are challenging auditors to develop investigative talents to discern fraud and to possess knowledge of criminal and civil law. However, Glover's (as cited in Arens & Elder, 2006) research indicates that auditors don't sufficiently consider the required nature of testing when faced with fraud considerations but, merely, and inappropriately, increase audit budgets and the extent of testing. In fact, research indicates that auditors do not frequently

encounter fraud at all. Sharing data within the auditing profession is hampered by obligations to respect client confidentiality and litigation concern (Francis, 2011).

According to Messmer (as cited in Digabriele, 2008), auditors especially need to develop the professional skepticism and the interpersonal communication skills required to extract responses from uncooperative and potentially hostile audit subjects. At times, sophisticated negotiation tactics are expected of auditors in consultation with their clients in order to attain quality in financial statement reporting (Hatfield et al., 2008). Specifically, the auditor is expected to engage in give-and-take bargaining with management where negligible items are brought to management's attention with the intent to waive them eventually, in order to gain agreement on more significant required accounting adjustments.

As auditors become involved in legal and regulatory matters, they need to be able to distinguish facts to maintain believable testimony. The ability of the auditor to make such distinctions draws upon a different skill set than accounting skills. Unfortunately, accounting students were found, more often than not, to describe lower-order reproductive conceptions of learning instead of the desired higher-level critical thinking skills (Byrne & Flood, 2004).

Of particular concern to auditors is the series of internal controls a business implements to safeguard assets. The U.S. Government Accountability Office (2008) describes internal controls as management processes designed to provide reasonable assurance about the capability of a company to provide reliable financial reporting while adhering to rules and regulations. In order to conduct various audits, government auditors rely on these company internal controls to identify and design audit tests. One of the more vexing challenges for practitioners, accounting educators, and especially the auditor, is to identify and correlate the internal controls required to gain assurance for specific reported financial statement information and, beyond that, to design

the appropriate audit procedures, such as detailed transaction testing (Arens & Elder, 2006).

Unfortunately, studies indicate that auditors find the review of internal controls testing as one of the more mundane aspects of auditing, when, in fact, this task requires the higher-order strategic critical thinking skills identified as one of the Broad Business Perspective competencies.

Auditors need to understand and document systems documentation controls and to associate those controls with client assertions supported by audit evidence. Other required proficiencies deal with internal controls designed to protect assets such as appropriate separation of duties.

The evaluation of government contractor internal controls is a matter of great significance for the federal auditor.

As remote audits become more the norm, auditors need to know how to deal with colleagues and clients when face-to-face meetings are not possible. Due to improvements in technology, auditors require the ability to work in virtual teams that are geographically distant (Digabriele, 2008; Moreland & Angur, 2006; Vasarhelyi et al., 2010). The AICPA core competencies include leveraging technology as a skill that permeates all the other competencies.

While not all the competencies described may be required of the government auditor, the government auditor frequently relies on the work of client internal auditors who, themselves, are required to master these competencies. Therefore, government auditors, charged with examining the records of public companies, need to be knowledgeable of requirements not directly imposed upon them in the performance of their work but imposed on their audit subjects. Government auditors need to understand and appreciate key stakeholders concerned with their own organization as well as the organization under audit.

Auditors require the aptitude to deal with corporate governance required by the PCAOB and to develop analytical abilities, business acumen, and the ability to work within a budget. In

fact, accounting faculty and practitioners viewed analytical/critical thinking skills as the most important skill of successful accountants, which is needed for decision modeling, one of the AICPA Functional core competencies (AACSB, 2007; McCartney et al., 2002). With respect to the AICPA Broad Business Perspective classification of competencies, auditors need to understand the audited entity by taking an enterprise-wide risk perspective to properly assess risk.

Auditors are expected to acquire require skills in project management, one of the AICPA Personal competencies that, for the federal auditor, requires mapping the life of an audit and identifying its milestones. Completion of an audit is especially sensitive to time constraints and, for that reason, necessitates scheduling and sequencing predecessor-successor relationships among activities as well as the allocation of labor resources over a specified period. Project managers need to be generalists, take a system versus analytical approach, and to serve as facilitators, all skill sets that may be deficiently addressed in a conventional accounting course of study (Liberatore et al., 2007; Stout, West, & Liberatore, 2004). Finally, the proclivity for life-long learning especially extends to federal auditors who must stay current with a changing audit standard-setting environment.

With regard to identifying skills, for purposes of this study, it was decided to use the core competencies identified by the AICPA in 1999, given their rigorous historical development by the profession as previously described, and their adoption by the well-respected professional body of the AICPA.

## Constraints

Other constraints contribute to the lack of auditor development of the Framework skills, including auditor expectations, the legal and regulatory environment, audit quality, and other external issues outside the control of the auditor.

**Expectations.** Auditors who enter public accounting usually intend to spend only a short time in the job, in order to gain the experience required for the CPA exam, before moving on to another employer (McCartney et al., 2002; Pomenon, 2007). Their short tenure in public accounting hinders a meaningful effort to ameliorate differences in skills provided and skills required.

**Legal and regulatory environment.** Litigation, which could serve as a key indicator of auditors failing to acquire the Framework skills is infrequent and usually unsuccessful; i.e., less than one percent of SEC registrants litigate against their auditors (Francis, 2011, p. 128). With reference to increased oversight, it is not clear that increased regulation such as Sarbanes-Oxley is increasing audit quality or decreasing audit misconduct. For instance, Francis found that the initiative the SEC undertook in 2000 to curtail accounting firm consulting services was not based on significant proof that providing such services impaired auditor independence. Where corporate fraud could serve as a useful indicator of auditor failure, the auditor's clients normally prevent litigation from going forward. Clients do not want the negative publicity that could adversely affect investor/creditor perception so settlements for auditor misconduct usually take place away from the public eye. The same situation occurs in the federal auditing world where high profile contractors may elect to settle rather than risk the negative aspects of publicity.

It is unusual for a client to continue to retain an auditor if the auditor intends to issue a going-concern opinion; i.e., an opinion that the firm has limited future viability. Even in those

cases where a client financially faltered, research indicates the auditor frequently neglected to issue a going-concern opinion in the prior year, thus failing in the one of the few metrics available for measuring audit quality. Exacerbating the already low going-concern opinion issuance, studies by Carey and Simnett (as cited in Francis, 2011) indicate there is even less of a chance of issuance of this opinion the longer the auditor tenure with a client.

**Audit quality.** Most audit environments engage in peer review, an attempt to improve quality of the work process and product with a review by one's colleagues. However, research indicates that the quality and reliability of peer review diminishes if the reviewer knows the identity of the auditor (Harding & Trotman, 2009). Tan and Jamal (as cited in Harding & Trotman, 2009) stated managers more favorably evaluate quality if they are aware of the identity of the auditor and if that auditor was evaluated as outstanding. However, when the identity of the auditor was not known, the manager noted no differences in quality between the outstanding auditor and an auditor judged as average. In the federal audit agency surveyed in this study, the identities of peer reviewers are generally known.

The Department of the Treasury advisory committee recommended the PCAOB consider requiring audit firms to disclose, publicly, certain quality indicators; i.e., metrics in order to increase public confidence. To-date, this recommendation has not been implemented. In spite of the increased emphasis needed for audit quality resulting from accounting scandals such as Enron, Zimbelman observed that the audit planning auditors engage in before starting fieldwork is not significantly impacted by the profession's standards on fraud risk assessments (as cited in Arens & Elder, 2006).

**External issues.** Degradation of audit quality might be outside the control of the auditor who relies on external input. For example, Caster, (as cited in Francis, 2011), found that

customers erroneously confirmed as correct, confirmations that were deliberately sent out as incorrect.

Sometimes it is the decreasing number of large reputable CPA firms that contributes to auditors failing to achieve Framework competencies. The aforementioned Treasury report noted that contract terms can, at times, dictate the choice of one of the very few large auditing firms; e.g., an initial offering of stock. To the extent that the large accounting firms unwittingly contribute to auditors failing to achieve Framework competency, their frequent use by businesses assures the continuance of the problems. With respect to auditing, one of the constraints challenging the profession is the small number of concentrated big firms. The U.S. Department of the Treasury Advisory Committee reported in 2008 that the four largest auditing firms audit 98% of the 1,500 largest public companies. The small number of influential firms poses a weakness in that they cooperate to advance a common set of interests that can continue to delay auditor achievement of Framework competencies (Francis, 2011).

**CPA exam.** The premier professional organization for accountants, the AICPA, is responsible for compiling the content of the CPA exam. Universities struggle with providing a rich educational experience that might provide some of the missing skills identified by the Framework instead of teaching to the CPA exam, an expectation frequently voiced by students and the tuition-paying parents of students. Arguing against the CPA exam to gauge accounting program success is Ponemon (1998) who noted that some accounting programs successfully emphasize the management accounting and control systems skills required by employers but not necessarily reflected on the CPA exam. In order to maintain relevance, universities should seek to maintain an active role in the process instead of having its weaknesses identified by outside sources. Cowdroy et al., (as cited in Jones & Abraham 2009) noted that “a major challenge for



higher education is to demonstrate relevance and educational quality to an increasingly wide range of stakeholders with conflicting expectations in the name of accountability” (p. 51).

Schools are faced with the challenge of assigning weights to competencies with which employers or other constituents might not agree (Thomas, 2000). Therefore, in order to achieve specific Framework competencies, some might argue the first step is to assure the CPA exam tests in the competencies required by employers. Unless a shift in the focus of certification occurs, users will not perceive value from accounting educators (Vasarhelyi et al., 2010). Some of this stress may be relieved from acknowledging the role of employers to provide on-the-job (OJT) training; however, an immediate impact might be achieved by changes to the content of the CPA exam to ensure it emphasizes the skills required by employers.

**Accreditation.** A contributor to continuing lack of preparedness could be the AACSB requirement for requiring accounting professors to achieve a doctorate as the terminal credential, which tends to eliminate qualified practitioners from the teaching profession who might introduce significant practical work experience into the classroom.

**Other.** Other impediments to achieving Framework competencies include irrelevant accounting curricula, increasing use of technology in the practice of accounting, a declining student work ethic, decreasing academic standards caused by competition of colleges for enrollment, and finally, cultural and gender issues. With respect to cultural and gender issues, Sanders and Romeo observed women now make up more than half of accounting students and, at least in Texas, women represent 80 percent of accounting classes (Elam & Mendez, 2010; (as cited in Pasewark & Viator, 2006). The increasing numbers of women entering the profession can both help and hinder the needs of the profession. For instance, research by Chin and Chi (as cited in Francis, 2011) indicates that audits are of higher quality when the lead auditor is female.

However, Pasewark, and Viator (2006) found that women leave the profession at faster rates than men.

More students are going directly through school resulting in younger entrants to an accounting position (Nelson, Vandrzyk, Quirin, & Kovar, 2008). It is assumed a younger graduate is less advanced in acquiring Framework competencies than the working adult acclimated to the workplace environment and attuned to employer needs. Newly hired accounting majors have been found to be deficient in the Personal competencies of communications and teamwork (Massey, 2011). However, Garvin (2005) found that four of the six most important core competencies for employer, faculty and practitioner, are from the Personal competency category. Although the millennial student may be adept at multitasking, the less positive aspect of such a skill is an inability to concentrate for an appreciably sustained period. New entrants into the accounting work place often do not perceive a difference in the work-life balance issues between public, private, and governmental accounting employment when, in fact, public accounting, with its long hours during tax season, is a difficult position for parents of young children to hold (Warrick, Daniels, & Scott, 2010).

Accountants also encounter a different actual leadership style than what is preferred or expected. Research has found that most accountants prefer transformational leadership but, more often, encounter transactional supervision (Early & Davenport, 2010). Transactional leadership assumes subordinates are motivated through an exchange process of rewards and punishment. On the other hand, a transformational leader is visionary and inspirational and empowers followers in responding to their higher order needs. In their study of leader power and propensity to leave a job among U.S. accountants, Rahim and Afza (1993) found that the referent power base had the strongest effect on commitment and satisfaction; i.e., the ability of a leader to

influence a follower because of loyalty or admiration of the leader. However, the leadership style encountered by accountants and auditors in the workplace will most likely be transactional, since the nature of accounting and auditing is subject to many and well defined rules and regulations. In fact, it is more probable than not that, in a federal audit environment, the leadership style is frequently authoritarian, given the need to adhere to federal audit criteria and the responsibility to recognize the public trust.

### **Changes Needed In the Content and Delivery of Accounting and Auditing Education**

As previously noted, changes to accounting education have historically been identified and motivated by accounting professional organizations based on input these groups obtain from accountant-employers. This section of the literature review includes a general discussion of educational issues affecting achievement of Framework competencies, changes needed in the content and delivery of accounting education to address the general needs of accounting majors, and specific educational needs of auditors.

**Educational issues affecting Framework competencies.** The accounting profession noted deficiency in accounting education as early as 1969 when it first recommended requiring 150 credit hours in order to sit for the CPA exam (Moreland & Angur, 2006). However, academia was slow to respond to the 1986 recommendations of the Bedford Committee (Jones, 2011). The Framework developed by the AICPA attempts to improve upon historically slow acceptance of recommendations by establishing progressive levels of learning that correlate with Bloom's 1956 taxonomy of learning (Byrne & Flood, 2004; Gupta & Marshall, 2010). That is, the Framework levels of learning advance from mere identification to discerning meaning by analysis and by synthesizing knowledge gained from many sources for the purpose of evaluation. The Framework competency levels were descriptively detailed by Kaciuba and Siegel (2009) in

their study of the AICPA core competencies in a medical practice case study. For instance, the authors described Level 1 skills as the ability to *identify* scarce resources in a business organization, Level 2 skills as the ability to *discuss* the decision- making undertaken by physicians when a practice is at near capacity, and Level 3 skills as the *evaluation* of social costs and benefits that arise from doctor decisions. It is difficult in an accounting curriculum to ensure the development of advanced or higher level learning when such a significant Level 1 requirement to identify a vast body of accounting rules exists.

Some researchers promote a trend in thought as to whether employers, and not universities, are better suited to provide the first AICPA core competency, the Functional competency. That is, hire those students who come better prepared in the second two competencies, the Personal and Broad Business Perspective competencies since study in the liberal arts develops the ability to apply general lessons to specific topics. Issues such as ethics are emphasized to a greater extent in the study of liberal arts (Fogarty, 2010) Students with a liberal arts background may be found to possess a higher degree of critical and analytical thinking than traditional accounting majors (Ponemon, 1998).

**Changes needed in accounting education.** Intent to acquire a good job drives many students' decisions to major in Accounting and these students expect accounting education to ensure success on the rigorous CPA exam (Vasarhelyi et al., 2010). The CPA exam is highly valued by accountant-employers and demands a content-driven acquisition of knowledge. The exam provides assurance to employers and faculty that students have mastered requisite content and schools respond to this influence by teaching to the exam rather than providing the more broad-based education presumed for a professional. Consequently, teaching to the exam can sometimes jar on the sensibilities of educators who perceive greater responsibility. Accounting

faculty correctly assess that an undergraduate accounting education is broader than the focus of the CPA exam (Thomas, 2000). Some accounting faculty are finding success in addressing this challenge by requiring students to research and to cite authoritative criteria for each subject, such as statements of financial accounting standards (Wu, 2008). In so doing, accounting educators are assisting students on learning how to learn, in accordance with one of the Framework competencies that advocates lifelong learning. One of the challenges accounting educators face in promoting accounting as a fully realized profession requiring a full complement of courses that develop critical thinking, is the rules-driven nature of accounting. However, the responsibility of educating an accounting student includes preparing the student for professional work and professional identity (Wilkerson, 2010). The AICPA core competency that commits to life-long learning is compatible with the notion of professionalization as a process of learning that enables the application of generic skills to practice specifics (Fogarty, 2010).

Fortunately, the 150-hour requirement for passing the CPA exam is causing accounting students to take advanced courses that help to achieve some of the AICPA core competencies. Advanced courses cover topics such as computer-assisted audit tools and offer deeper coverage of internal control topics, assurance services, audit report preparation, electronic data processing auditing, interviewing techniques, and the design of substantive tests to be conducted in audit fieldwork (McCartney et al., 2002). Sometimes the trigger for changes in education is motivated by external sources such as the SEC, which, in 2009, started requiring the use of XBRL, eXtensible Business Reporting Language, for companies submitting filings to the SEC (Jim et al., 2009).

Changes are also needed in the delivery of an accounting education to reflect the dynamic nature of the economy. Some research indicates that schools are reluctant to change or to use

creative types of learning that might introduce involving business professionals into the classroom as instructors to emphasize the practical need for communication skills (McCartney et al., 2002). Progress is being made in this area, as the more conventional classroom activities of textbook problem solutions and term papers are decreasing in importance and are being replaced by team projects, cases, technological presentations, the use of the internet for research, and business simulations recently introduced on the CPA exam. The use of case studies forces users to focus on complex ‘exceptions to the rule’ situations. Problem-based learning advances content mastery to critical evaluation skills (Fogarty, 2010). Schools need to teach students how to research and how to design retrieval methodologies so that future auditors will know how to support their findings with adequate evidence since research and risk analysis are skills with which students have been found to struggle (Daigle et al., 2007). Contributing to the education deficiency is the reliance accounting faculty place on end of chapter material for testing that does not lend itself to developing the Personal or Broad Business Perspective skills. In addition, due to the enormity of material that must be covered in an accounting course of study, faculties tend to focus upon teaching material that is easily gradable (Fogarty, 2010). The AACSB (2007) warned educators about developing program objectives around a specific measurement tool. Consequently, instead of creative methods of delivery such as case studies, faculty default to the lecture format, a more passive learning experience. However, there are some success stories in universities responding to the need for change. In 1997-1998, in response to AECC efforts, the University of Illinois at Urbana-Champaign implemented an accounting curriculum revision referred to as *Project Discovery* that emphasized cases, group exercises, projects, and simulations (McCartney et al., 2002). Simulations are a relatively new CPA testing technique.

Employers frequently lament the inability of accounting graduates to compose succinct, precise, written documentation supported by established criteria. Recommended improvements to accounting education would include increased coverage of verbal and written communication instruction across the accounting curriculum (Jones, 2011). On the other hand, due to its heavily quantitative nature, math-oriented students who are not comfortable with the demands of good communication skills may be attracted to the study of accounting under the erroneous perception that success will not depend on communication aptitude.

Another long-needed change in education relates to the paucity of academic research concerning the needs of employers. Changes that occur in the delivery of an accounting education or changes that occur in the accounting or auditing profession frequently do so in a void of research that dictates the need for change. Specifically, Francis (2011) noted that much of what accountants do is not scientifically supported by research and that even when researched; topics covered are those that can be researched rigorously at the expense of more nuanced issues. The apparent lack of substantive research is due in part to the confidentiality needs of practitioners and the deficient practitioner experience of long-term educators. Academics may tend to pursue topics of little interest or relevance to employers who, in turn, either cannot or will not share weaknesses in the practice of accounting. For that reason, changes that do manage to occur, risk premature deterioration due to their trendiness, as opposed to that which is grounded in supportable academic investigation.

Many employers provide substantial OJT to compensate for deficiencies or irrelevance in university accounting education. While some OJT will appropriately remain necessary for specific employment, accounting educators should not be lulled into irrelevance by the adage that “education is proving itself too important to be left in the hands of educators” (Fogarty,

2010, p. 407). Related to OJT are internships, earned concurrent with university education, that introduce the student to the work routines and required skills of employers. Internships are especially useful in providing two of the three categories of AICPA core competencies, the Personal and Broad Business Perspective competencies. It is in the workplace where students develop aptitudes in initiative, dependability, promptness, professional appearance, time management, ability to work with others and take supervisory direction, and develop oral and written communication skills (Beard, 2007). Student interns are found less likely to leave the job than accounting hires who did not participate in an internship. However, inadvertently confounding the benefits derived from work experience and OJT as a source of needed skills is the 150-hour requirement now required by most states for CPA exam applicants. Ironically, some states concurrently reduced the work experience requirement when they imposed the 150-hour credit requirement (Moreland & Angur, 2006).

**Specific educational needs of auditors.** Given the significant number of accounting majors that find employment as government auditors, it is important that university education and the professional societies recognize the specific skill sets needed by this subset of accountants. Auditors require the ability to assess the “full set of risk exposures” in order to understand where to devote audit effort (McCartney et al., 2002, (p. 316). Business schools are expected to provide these skills. However, advanced accounting courses continue to be targeted to financial auditing versus internal or government auditing (“Challenges to,” 2003).

CPA exam content as well as accounting university courses should provide sufficient coverage to the unique demands of auditing in a federal environment. The U.S. Department of the Treasury Advisory Committee on Auditing advised in 2008 that professional exam content should serve as a mechanism for needed curricular changes in accounting education to mirror the



complexity of auditing public companies in a global economy. The 150-academic hour required in most states to take the CPA exam attempts to acknowledge this necessity. Auditors need to appreciate that their performance will be judged on three broad bases: quality, efficiency, and productivity, instead of content memorization (Wu, 2008).

With specific reference to auditing, much audit work is done well after the occurrence of events and includes a significant verification component, an activity that may not appear to require thoughtful analysis. Consequently, bright students may not be drawn to the study of accounting due to its perception as a number-crunching occupation rather than a path to the more advanced executive positions of a company (Ameen et al., 2010).

The introductory audit course in an accounting curriculum typically includes topics on internal control, evidence, professional standards, and the audit report. However, most universities continue to offer only one auditing course in the accounting curriculum compared to multiple accounting courses in principles, cost, or tax, even though the larger audit firms significantly oriented audit planning toward a broad business risk perspective in the late 1990s. The university introductory auditing course has been slow to change from a conventional, financial statement, focus to a broader process orientation that would encompass more than traditional procedures (“Challenges to,” 2003).

Given the increased skills expected of auditors, universities might also consider adding an additional auditing course that would address the legal and ethical foundations of the audit profession, part of the third classification of the AICPA core competencies. Some schools appear to be responding to the challenge by increasing the coverage of fraud and technology issues in the introductory auditing course. The results of this study, dealing with the relevance and importance of the AICPA core competencies in a federal audit environment, may encourage the

design of curriculum specialties to address this unique career path available to accounting graduates.

As noted in the discussion regarding changes needed in accounting education, research in the field of auditing indicates insufficiency. For instance, the research on the relationship between internal control systems and financial statement correctness remains deficient according to Francis (2011). However, the topic of auditee internal controls is a critical one for federal auditors. Auditors typically assume that if client internal controls are weak, the probability of errors is higher and that the appropriate response is to design increased or more complex audit procedures. However, Francis notes little research in this area to support the need for increased audit where internal controls are weak and auditors are still unclear on how to best interpret an internal control weakness into the proper auditing response. Audit faculty need to distinguish between what may appear to be sound conclusions and that which is not supported by the research.

The AICPA Personal competencies include communication skills. As with changes needed in the more general topic of accounting education, the adoption of classroom, team-simulation exercises would help auditing students develop needed skills in client-interaction, a key component of auditor communication.

Like the more general topic of accounting, external forces also affect instruction in auditing. An external influence driving changes in audit education are employers requiring project management skills, especially useful for managing the audit and identified as one of the AICPA Personal core competencies (Stout et al., 2004). Project management focuses on work breakdown structure and adhering to milestones. Employers drove the changes in the managerial

accounting course to include topics in project management skills, which as previously noted, are especially important to the federal auditor.

A specific weakness of particular concern to the government contract auditor is that the most widely covered transaction cycle in accounting education is the revenue cycle (“Challenges to,” 2003). However, government contract auditors are most interested in how entities account for cost and, not, revenue. Clearly, changes in accounting education continue to be identified as identified by employers and communicated by the accounting professional organizations. Hopefully, some of these changes may soon address what is uniquely required by the federal auditor.

Auditors are expected to be especially attuned to ethical assessments. However, Arens, and Elder (2006) found during their interview of auditors that little attention was paid to corporate governance in the university accounting curriculum. Consequently, new accounting graduates enter the workforce with inadequate ethical awareness.

Auditors, like accountants, undergo serious OJT training. This is especially true in a federal auditing environment where auditors progress through an approximate three-year training program characterized by structured, OJT courses and classes. These auditors typically take classes in internal control, workpaper writing, statistical sampling, and courses in authoritative criteria like the federal acquisition regulations.

Auditors typically engage in peer review, a subject not addressed in any great detail in accounting curriculum but in which auditors engage to assure quality of work product and processes. The AICPA Auditing Standards Board has issued statements on quality control standards (SQCS) that address work experience in acquiring professional competency (Moreland & Angur, 2006). The SQCS impose competency requirements on practitioners very similar in

framework to the AICPA core competencies, including the need to understand a system of internal control, professional judgment, technical proficiency and familiarity with the client's industry.

## CHAPTER 3

### METHODOLOGY

This study was intended to help practitioners in the particular situation of auditing federal contractors by identifying the importance of certain AICPA core competencies for this particular occupation. This study was also intended to provide insight to accounting educators in tailoring curriculum to meet the special educational requirements of accounting students pursuing the particular career of auditing federal contractors. The research used a closed-ended Likert-scale and open-ended questionnaire to assess the relevance and ranking of the AICPA core competencies in a federal auditing environment, seek opinions of competencies not identified by the AICPA that are important in auditing federal contractors, and solicit opinions regarding the overemphasis of undergraduate accounting education with respect to federal auditing of government contractors. This chapter describes the steps undertaken to address hypotheses and research questions and includes sections on the restatement of the problem, research questions, discussion of the population, instrumentation used, data collection and analysis, and a statement on limitations of the study.

#### **Restatement of the Problem**

The opinions of federal auditors dealing with required knowledge, skills and attributes required of the accounting graduate are not found to any great extent in the existing literature. Moreover, to the extent that the AICPA core competencies represent a comprehensive set of required skills applicable to different disciplines of the accounting profession, a scarcity of research exists that assesses the importance of these competencies in a federal audit environment.

The core competencies were developed by the AICPA without prioritization. Insufficient evidence is available to indicate whether some competencies identified by the AICPA are needed

more than other competencies or if the importance of competencies differs depending on the experience level of the accounting professional. Obtaining the opinions of federal auditors regarding the importance and ranking of the AICPA core competencies will assist both the accounting educator and the federal government employer in designing curriculum and on-the-job training targeted for the unique career of auditing federal contractors.

### **Research Questions**

The following research questions have guided this study:

- Research Question 1: To what extent are the AICPA core competencies relevant in auditing federal contractors?
- Research Question 2: To what extent are some AICPA core competencies more important than others are to the auditor of federal contractors?
- Research Question 3: To what extent are opinions different regarding the relevance and ranking of the AICPA core competencies given increased job experience of the auditor of federal contractors?
- Research Question 4: To what extent are other competencies, not identified by the AICPA as a core competency, important to the work of auditors of federal contractors?
- Research Question 5: To what extent are some undergraduate accounting courses overemphasized for a career in auditing federal contractors?

### **Population**

The population was one geographic region of a sizeable federal audit agency that audits the cost representations of government contractors. The single geographic region selected was representative of all other regions of that agency in that all agency auditors receive the same

training at an educational site central to all regions, follow the same audit policy prescribed by agency headquarters, follow the same agency-prescribed criteria, and use the same agency audit programs. In addition, there are frequent transfers of auditors among the various regions.

There were two groups included in the population that were relevant to this study. The first group was comprised of auditors identified as junior auditors, or auditors at General Service (GS) grade levels GS-7, 9 and 11. The second group was comprised of senior level auditors, specifically, auditors at grades GS-12 and GS-13. Auditors identified as Junior auditors are typically hired at a GS-7 grade, progress to GS-9 after one year, GS-11 after two years, and GS-12 after three years. Progression to first line supervisory GS-13 is competitive. Typically, no more than one year is spent at the GS-7, -9 and -11 grade levels.

The number of auditors in each group can vary over time based on ongoing employment of new hires, progression through the GS grades, and auditors leaving employment. As of the time of this study, the group of senior level auditors totaled about 380 and the group of junior auditors totaled about 265 in the single geographic region. Managers included in the region above the GS-13 level were excluded from the population given their small number relative to the other GS levels.

Survey Monkey was used to administer the survey. The researcher is an audit manager in the federal audit agency. Therefore, in order to mitigate bias, the Survey link was emailed to the population by a non-supervisory colleague of the researcher.

### **Instrumentation**

Initially, survey Likert questions were first developed from the AICPA core competencies described on the AICPA Educational Competency Assessment website and from a survey of related literature, described in Chapter 2, regarding required knowledge, skills and

attributes of accounting graduates. Two questions for each competency were developed by the researcher that captured the substance of the competency in a federal auditing context. Nine more Likert questions regarding competencies and attributes developed from the literature were also included. However, based on subsequent review and feedback from an expert panel that included four of the researcher's colleagues and a CPA-college instructor of accounting and statistics, the nine questions developed from the literature were discarded and the survey Likert competencies were confined to just the AICPA core competences. It was anticipated that competencies and attributes described in the literature would be reflected in responses to the open-ended questions included in the survey.

The AICPA groups the core competencies into three broad categories, each of which includes 5 to 6 specific competencies. Although 'Leverage Technology' is identified as a separate competency by the AICPA in each of the three broad categories, for purposes of this survey, it was treated as one competency given its similarity across the three categories. For the survey, two questions were developed for each of the competencies within the three broad categories for a total of 36 Likert questions. The questions for the survey were presented randomly and not in order of the three categories. Total competencies across the three categories and including 'Leverage Technology', amounted to 18 and are show below:

<b>No.</b>	<b><u>Core Competency Category</u></b>	<b><u>Competency</u></b>
1	Applicable to all categories	Leverage Technology
2	Broad Business Perspective	International Global Perspective
3		Industry Sector Perspective
4		Legal Regulatory Perspective
5		Marketing Client Focus
6		Resource Management
7		Strategic Critical Thinking
8		Functional
9	Measurement	



<b>No.</b>	<b>Core Competency Category</b>	<b>Competency</b>
10		Risk Analysis
11		Research
12		Reporting
<hr/>		
13	Personal	Communication
14		Interaction
15		Leadership
16		Professional Demeanor
17		Project Management
18		Problem Solving Decision Making

Measurement characteristics concerning reliability, validity and structure are next discussed. Decisions were made in order to achieve trustworthiness, rigor and quality of the survey. For instance, the competencies to be measured were selected as those that have been identified by the AICPA, the premier professional association for the accountant. Although not visible on the survey instrument, the researcher coded Likert questions to the AICPA core competencies in order to draw meaningful conclusions upon analysis of the data. The three categories of AICPA competencies, the competencies within each category, and the codes assigned to the competencies are shown in the following table. A detailed explanation of competencies provided by the AICPA is provided as Appendix A.

<b>No.</b>	<b>Category</b>	<b>Category Code</b>	<b>Competency</b>	<b>Competency Code</b>
	Applicable to all categories		Leverage Technology	LT
<hr/>				
1	Broad Business Perspective	BB	International Global Perspective	IG
			Industry Sector Perspective	IS
			Legal Regulatory Perspective	LR
			Marketing Client Focus	MK
			Resource Management	RS
			Strategic Critical Thinking	SC
<hr/>				
2	Functional	F	Decision Modeling	DM

No.	Category	Category Code	Competency	Competency Code
			Measurement	M
			Risk Analysis	RA
			Research	RC
			Reporting	RP
3	Personal	P	Communication	C
			Interaction	I
			Leadership	L
			Professional Demeanor	PD
			Project Management	PM
			Problem Solving Decision Making	PS

To corroborate findings, a comparison of survey findings to other research concerning the AICPA core competencies was conducted, for example, comparison with employer, practitioner, and faculty perceptions regarding prioritization of the AICPA core competencies for accountants (Garvin, 2005).

The survey was first offered to an expert panel of four federal audit managers with many years of employment as federal auditors in order to evaluate the questions for content validity and clarity. The two questions developed for each competency were reviewed in detail in conjunction with a CPA-accounting and statistics college instructor to assure that main concepts for each competency were adequately and appropriately captured. Because the detailed description provided by the AICPA for each competency (see Appendix A) is comprehensive in its description, the two questions for each competency were further refined to ensure similarity regarding substance of the competency.

Since the survey was newly developed for purposes of this study, it was next offered to three CPA-colleagues of the researcher to ensure that they identified the 36-Likert questions to the same categories and competencies as the researcher. To assist these raters, abbreviated definitions for the competencies were provided by the researcher. Upon receipt of the reviewers'

coding, Fleiss' Kappa coefficients were computed to measure inter-rater agreement. The Fleiss Kappa coefficient generalizes kappa to the measurement of agreement between more than two raters (Fleiss, 1971). Fleiss Kappas above .75 suggest strong agreement above chance while values below .40 suggest poor agreement. The Fleiss Kappa obtained from the use of SPSS was .82. The kappas for each competency and the overall kappa are shown below.

Category	AICPA Core Competency	Kappa
<u>All</u>	Leverage Technology (LT)	.48
<b><u>Broad Business Perspective</u></b>	International Global Perspective (IG)	1.00
	Industry Sector Perspective (IS)	1.00
	Legal Regulatory Perspective (LR)	1.00
	Marketing Client Focus (MK)	.79
	Resource Management (RS)	.84
	Strategic Critical Thinking (SC)	1.00
<b><u>Functional</u></b>	Decision Modeling (DM)	.84
	Measurement (M)	.79
	Risk Analysis (RA)	1.00
	Research (RC)	.85
	Reporting (RP)	.65
<b><u>Personal</u></b>	Communication (C)	.85
	Interaction (I)	.54
	Leadership (L)	.65
	Professional Demeanor (PD)	.79
	Project Management (PM)	.79

Category	AICPA Core Competency	Kappa
	Problem Solving/Decision Making (PS)	.85
<b><u>Overall</u></b>		.82

The survey was then administered to a pilot group of seven auditors to determine if it was too complicated, achieved its purpose, and was understood by participants. The pilot group was asked to identify ambiguities or difficult questions and record the time it took to complete the questionnaire. The pilot groups were drawn from the audit office the researcher manages. Cronbach alpha statistics were computed to measure internal consistency and reliability of the two questions developed for each competency and for competencies within the three categories. Fong, Ho, and Lan (2010) describe internal reliability as an “attribute of a multi-item scale that refers to the extent to which items in the scale are related” (p. 1).

Poor (<.7) Cronbach alpha statistics resulted for about half of the competencies indicating inconsistent responses. Bland and Altmans (as cited in Spiliotopoulou, 2009) describe an alpha of .7 or greater as generally reliable. A possible reason for the inconsistent responses might be the multi-dimensionality of the text developed by the AICPA to describe the competency, that is, some of the competencies describe multiple and disparate ideas. Kember and Leung (2008) observed, “There can then be a tension between fully describing a construct and achieving reliable measurements. Including all pertinent facets of a construct in a scale will result in multidimensionality, which will reduce alpha values” (p. 345).

Acceptable Cronbach alpha statistics were obtained, however, for the three broad categories. Therefore, based on results of the Cronbach alpha tests, and concern regarding an overly long survey to address multidimensionality of the data, it was decided to reduce the number of questions for each competency from two to one, and, therefore, survey Likert

questions were reduced from 36 to 18. The omitted question for each of the competencies was determined based upon which omission would increase the alpha, as indicated by Minitab alpha output. Upon elimination of half the Likert questions, Cronbach alpha statistics were computed for the three categories to ensure at least .7. Acceptable alphas for the three categories were achieved and are shown below:

Category	Cronbach Alpha
Broad Business Perspective	.9
Functional	.7
Personal	.8

The category and competency coding is shown below, followed by the survey questions.

Cat Code	Comp Code	AICPA Core Competencies
	LT	Use technology assisted tools to assess and control risk and document work
BB	IG	Grasp global threats and opportunities impacting contractors
BB	IS	Analyze changes in the financial risks of the contractor's industry/sector
BB	LR	Analyze impact of changes in contracting laws and regulations
BB	MK	Establish working relationships with client-audit requestors
BB	RS	Consider how human resource management affects a contractor
BB	SC	Communicate the contractor's planning process, strategy, and goals
F	DM	Use mathematical or scientific models to evaluate decision alternatives
F	M	Identify pros and cons of alternative methods of measurement
F	RA	Understand why controls cannot completely eliminate the risk of fraud
F	RC	Interpret research findings from a variety of viewpoints
F	RP	Report findings in accordance with auditing standards
P	C	Communicate information and concepts with conciseness and clarity when writing and speaking
P	I	Interact and cooperate productively and maturely with others
P	L	Inspire and motivate team members
P	PD	Demonstrate objectivity and integrity consistent with the standards of auditing
P	PM	Prioritize and delegate various aspects of a project in order to allocate resources
P	PS	Develop innovative or creative solutions to problems

The survey questions were scrambled for survey administration as indicated below:

**Question: How important is it for the federal auditor in your Agency to...?**

No.	AICPA Core Competencies	Not Important	Little Importance	Somewhat Important	Important	Very Important
1	Analyze changes in the financial risks of the contractor's industry/sector					
2	Understand why controls cannot completely eliminate the risk of fraud					
3	Demonstrate objectivity and integrity consistent with the standards of auditing					
4	Establish working relationships with audit requestors					
5	Interact and cooperate productively and maturely with others					
6	Use technology assisted tools to assess and control risk and document work					
7	Communicate information and concepts with conciseness and clarity when writing and speaking					
8	Interpret research findings from a variety of viewpoints					
9	Communicate the contractor's planning process, strategy, and goals					
10	Identify pros and cons of alternative methods of measurement					
11	Consider how human resource management affects a contractor					
12	Develop innovative or creative solutions to problems					
13	Report findings in accordance with auditing standards					
14	Inspire and motivate team members					
15	Analyze the impact of changes in contracting laws and regulations					
16	Use mathematical or scientific models to evaluate decision alternatives					
17	Prioritize and delegate various aspects of a project in order to allocate resources					
18	Identify global threats and opportunities impacting contractors					

19. Of the competencies listed above, please identify by Item Number, the three competencies which you feel are **most** important.

20. Of the competencies listed above, please identify by Item Number, the three competencies which you feel are **least** important.
21. What additional skills, not listed, are also important for auditing federal contractors?
22. Which of your skills most needed development upon hire as an auditor of federal contractors?
23. What subjects/topics tend to be over-emphasized in undergraduate accounting education with respect to auditing federal contractors?

<b>Demographic Information</b>	
Age	Gender
GS grade	How many years as a Federal Auditor
How many years since college graduation	How many years of full-time work experience

### **Data Collection Procedures**

Contact with research participants was enabled by enlisting the assistance of a non-supervisory colleague who emailed the Survey Monkey link to the population. Participation was voluntary and no incentives for participation were offered. Access to the population was gained by obtaining permission from a highly placed manager within the specific region surveyed. A reminder email was twice sent at one-week intervals to encourage responses. Procedures for obtaining informed consent included:

- notifying participants that the researcher is employed by the same federal audit agency
- communicating that completion of the survey should take about 15 minutes
- sharing that benefits include contribution to academic research regarding the best preparation for a career in federal auditing
- stating that the study does not involve payments or incentives

- disclosing that participation was voluntary and confidential

### **Data Analysis Procedures**

Data collected from respondents were coded and entered into a computer data file for analysis using Minitab, IBM SPSS (ver. 20.0) statistical software and Microsoft Excel.

Demographic data related to the number and nature of the two groups of junior and senior auditors were determined using frequencies and percentages in order to develop a profile of the respondents.

**Research Question 1** asked to what extent the AICPA core competencies are relevant in auditing federal contractors. It was assumed that the majority of the AICPA core competencies would be relevant (Hypothesis No. 1a.) and that a majority of auditors of federal contractors would identify the AICPA Functional core competency of ‘Risk Analysis’ as important or very important (Hypothesis No. 1b.)

Survey Likert survey questions 1 through 18 measured responses for research question 1 on a five-point scale corresponding to the relative importance of each competency with 1 representing *not important* to 5 representing *very important*. Descriptive statistics were computed regarding frequencies and percentages of responses. The mean was computed for the 18 competencies, one for each AICPA core competency. Operationalization of relevance was if the mean of the competencies was at least three, which corresponds to ‘Somewhat Important’. If the mean of the competencies was at least three, it was concluded that the AICPA core competencies were relevant in auditing federal contractors. Multiple regression was used to develop models such as determining if competency rating was a function of GS level or a function of GS levels plus gender or age.



Means were computed and ranked for the responses for each question measured on the Likert scale.

Survey questions 19 and 20 also measured responses for research question 1 by requesting identification of the three most important and the three least important AICPA core competencies with reference to their description in questions 1 through 18 of the survey. For questions 19 and 20, responses were ranked and frequencies and percentages of responses were computed and compiled in a Pareto chart to illustrate the most important competencies and to provide support for responses to questions 1 through 18 measured on the Likert scale.

Survey questions 21 and 22 also measured responses for research question 1 to the extent that responses could be mapped to the AICPA core competencies. For responses to questions 21 and 22, the AICPA core competencies were concluded to be relevant in auditing federal contractors if they were identified in the response.

**Research Question 2** asked to what extent are some AICPA categories of competencies more important than the others are, to auditors of federal contractors. It was hypothesized that the AICPA competencies included in the Functional and Personal categories would be more relevant to the auditor of federal contractors than the competencies included in the Broad Business Perspective category (Hypotheses No. 2a and 2b.). It was also hypothesized that auditors of federal contractors would identify the AICPA Broad Business Perspective core competency of ‘Strategic Critical Thinking’ as more important than any other competency within the Broad Business Perspective category (hypothesis No. 2c).

Survey Likert survey questions 1 through 18 measured responses for Research Question 2 on a five-point scale corresponding to the relative importance of each competency with 1 representing *not important* to 5 representing *very important*. Descriptive statistics were computed

regarding frequencies and percentages of responses. Means were computed for the responses for each question measured on the Likert scale. The means computed were for the 18 competencies developed from the 18 questions, one for each AICPA core competency and for the three categories of competencies. Means were ranked to determine which AICPA core competencies were more important than other AICPA core competencies and which categories were more important than other categories. An independent t-test was conducted to test for statistical difference amongst the means for the three categories.

Survey questions 19 and 20 also measured responses for Question 2 by requesting identification of the three most important and the three least important AICPA core competencies with reference to their description in questions one through 18 of the survey. For questions 19 and 20, frequencies and percentages of responses were computed and compiled in a Pareto chart to illustrate the most important competencies and to provide support for responses to questions 1 through 18 measured on the Likert scale.

**Research Question 3** asked to what extent are opinions different regarding the relevance and ranking of the AICPA core competencies given increased job experience of the auditor of federal contractors. This question attempted to determine if differences exist regarding the assessment of importance of the AICPA core competencies with increased years of experience. It was hypothesized that greater appreciation for the AICPA Broad Business Perspective core competencies will be demonstrated by the more experienced auditors (hypothesis No. 3).

Descriptive statistics regarding frequencies and percentages of responses for Junior (GS-7, -9, and -11) and Senior (GS-12 and -13) auditors were computed. Means were computed and ranked for the responses for each question measured on the Likert scale for Junior and Senior auditors. The means computed were for the 18 competencies developed from the 18 questions,

one for each AICPA core competency. Multiple regression was used to determine which independent variables (demographic factors) were statistically significant in influencing the outcome of the dependent variable (responses to questions one through 18).

In order to determine if differences existed between the two groups of Junior and Senior auditors, an independent T-test was computed to compare the means between the two groups for each of the 18 competencies. Multiple regression was used to determine which independent variables (demographic factors) were statistically significant in influencing the outcome of the dependent variable (responses to questions one through 18). The demographic information requested on the survey regarding years since college graduation, years as a federal auditor, years of full-time work experience, and GS levels, represented independent variables, with responses to questions one through 18 on the Likert scale representing the dependent variables.

**Research Question 4** asked to what extent other competencies, not identified by the AICPA as a core competency, are important to the work of auditors of federal contractors. It was assumed that senior auditors (GS-12 and GS-13) would identify ‘Maintaining Independence’ as an additional required competency (hypothesis No. 4).

Survey question 21 addressed research question 4 by requesting additional skills, not listed in questions one through 18, which were also important for a federal auditing position. The responses to question 21 that could be mapped to an AICPA core competency by the researcher were done so with the expert opinion of a colleague CPA solicited to ensure consistency in how responses were rated. (See Appendix B for codebook).

**Research Question 5** asked to what extent some undergraduate accounting courses/topics were overemphasized for a career in auditing federal contractors. It was assumed that the accounting subjects of ‘Tax’, and ‘Consolidation’ would be identified by auditors of

federal contractors as courses/topics that tend to be over-emphasized in undergraduate accounting education (Hypotheses No. 5a and 5b). To the extent that results of this survey indicate the need for the establishment of a unique track of study for a career in auditing federal contractors, some conventional accounting courses may need to yield to more focused courses or, in its absence, identifying needed on-the-job education.

Survey question no. 23 measured response for research question no. 5 “*What subjects/topics tend to be over-emphasized in undergraduate accounting education with respect to auditing federal contractors?*” Responses were compiled to determine responses to the question and, given the open-ended format of the question, analyzed with respect to other information offered by the respondents. Where responses could be traced to an AICPA core competency, they were done so with the expert opinion of a colleague CPA solicited to ensure consistency in how responses were rated. (See Appendix B for codebook).

### **Limitations and Delimitations of the Study**

Delimitations include restricting the population to federal auditors at a single geographic region within the federal audit agency and excluding the opinions of managers above a GS-13. Limitations of the study include its limited generalizability to non-federal auditors or federal auditors who do not audit the cost representations of government contractors. However, to the extent that auditors in this federal agency audit non-governmental entities and have the same concerns of public or corporate auditors, the findings may have application to these auditors.

## CHAPTER 4

### RESULTS

#### Overview of Organization of Data Presentation

This chapter presents survey response rates, demographic information of responding federal auditors, and findings based upon analysis of data obtained from respondents for five research questions. The purpose of this study was to develop an ideal competency model for federal auditors within the AICPA framework of core competencies. In order to do so, input was solicited from federal auditors of federal contractors regarding the relevance and ranking of the AICPA core competencies. The findings for five research questions from which nine hypotheses were developed are presented as separate sections in this chapter.

#### Response Rates

The survey was administered to all General Service (GS) auditors at grade levels GS-7, GS-9, GS-11, GS-12 and GS-13, at a single geographic region in a large Federal audit agency that audits the cost representations of government contractors. For purposes of this survey, auditors at the GS-7, 9 and 11 grades were identified as the Junior auditor group while GS-12 and 13 auditors comprised the group of Senior auditors. At the time of the study, Junior auditors totaled about 265 and Senior auditors totaled about 380 for a total of 645. A total of 306 responses were received, however, 40 respondents did not identify their GS grade level while three GS-14 auditors responded. Junior auditors represented 41% (109/263) of respondents and Senior auditors comprised the remaining 59% (154/263).

Table 1

*Response Rates*

<u>Group</u>	<u>Respondents</u>	<u>Population</u>	<u>Percent of Population</u>
Junior Auditors	109	265	41%
Senior Auditors	<u>154</u>	<u>380</u>	41%
Total	<u>263</u>	<u>645</u>	41%

**Demographic Data**

In response to demographic data queries, as with GS-grade level, some respondents answered only some of the questions. Additionally, the responses provided by the three GS-14 auditors were excluded from all demographic data reported in the following table, which shows usable responses for demographic data.

Table 2

*Demographic Data*

<u>Demographic Data</u>	<u>Number</u>	<u>Percentage</u>
Age		
21-30 years	93	35.7
31-40 years	60	23.1
41-50 years	60	23.1
51-60 years	39	15.0
Over 60 years	<u>8</u>	<u>3.1</u>
Total	<u>260</u>	<u>100.0</u>
Gender		
Male	123	50.6
Female	<u>120</u>	<u>49.4</u>
Total	<u>243</u>	<u>100.0</u>
Years Since College Graduation		
0-10 years	165	63.0
11-20 years	41	15.6
21-30 years	37	14.1
31-40 years	17	6.5
Over 40 years	<u>2</u>	<u>0.8</u>
Total	<u>262</u>	<u>100.0</u>

<u>Demographic Data</u>	<u>Number</u>	<u>Percentage</u>
Years as a Federal Auditor		
0-10 years	213	80.7
11-20 years	23	8.7
21-30 years	19	7.2
31-40 years	8	3.0
Over 40 years	<u>1</u>	<u>0.4</u>
Total	<u>264</u>	<u>100.0</u>
Years of full-time work experience		
0-10 years	125	47.4
11-20 years	60	22.7
21-30 years	47	17.8
31-40 years	28	10.6
Over 40 years	<u>4</u>	<u>1.5</u>
Total	<u>264</u>	<u>100.0</u>

Average	GS7			GS9		
	<u>F</u>	<u>M</u>	<u>Total</u>	<u>F</u>	<u>M</u>	<u>Total</u>
Age	29	34	32	33	37	35
Years Since College Graduation	4	5	5	7	6	6
Years as a Federal Auditor	1	1	1	1	3	2
Years Full Time Work Experience	4	8	8	8	12	10
Count	11	13	24	17	15	32

Average	GS11			GS12		
	<u>F</u>	<u>M</u>	<u>Total</u>	<u>F</u>	<u>M</u>	<u>Total</u>
Age	36	33	34	40	43	41
Years Since College Graduation	8	7	7	12	14	13
Years as a Federal Auditor	2	2	2	7	8	8
Years Full Time Work Experience	11	10	10	15	19	17
Count	20	25	45	46	43	89

Average	GS13			Total		
	<u>F</u>	<u>M</u>	<u>Total</u>	<u>F</u>	<u>M</u>	<u>Total</u>
Age	43	47	45			
Years Since College Graduation	14	22	18			
Years as a Federal Auditor	13	18	15			
Years Full Time Work Experience	19	23	21			
Count	25	27	52	119	123	242
% Percent of Total				49%	51%	100%

The composition of the respondents approximated the population in that 190 auditors in the GS-7 through GS-12 grades responded. The ratio of GS-13s to lower grades is about one to four resulting in an expected response rate of 48 GS-13s (190/4) which closely compares to the actual response rate of 52 GS-13s.

### Research Findings

**Research question 1.** Research question one asked to what extent are the AICPA core competencies relevant in auditing federal contractors. From this research question, hypothesis No. 1a was developed; i.e., a majority of the AICPA core competencies is relevant in auditing federal contractors.

**Survey Likert questions.** Survey Likert questions one through 18 measured responses on a five-point scale corresponding to the importance of each competency with one representing not important to five, representing very important. The Likert questions are presented below the following table of categories and competencies, with category and competency codes shown in bold.



Core Competency Category	Category Code	Competency	Competency Code
Applicable to all categories	All	Leverage Technology	LT
Broad Business Perspective	BB	International Global Perspective	IG
		Industry Sector Perspective	IS
		Legal Regulatory Perspective	LR
		Marketing Client Focus	MK
		Resource Management	RS
		Strategic Critical Thinking	SC
Functional	F	Decision Modeling	DM
		Measurement	M
		Risk Analysis	RA
		Research	RC
		Reporting	RP
Personal	P	Communication	C
		Interaction	I
		Leadership	L
		Professional Demeanor	PD
		Project Management	PM
		Problem Solving Decision Making	PS

*Question: How important is it for the federal auditor in your Agency to...?*

- Q1 - Analyze changes in the financial risks of the contractor's industry/sector? BB/IS
- Q2 - Understand why controls cannot completely eliminate the risk of fraud? F/RA
- Q3 - Demonstrate objectivity and integrity consistent with the standards of auditing? P/PD
- Q4 - Establish working relationships with audit requestors? BB/MK
- Q5 - Interact and cooperate productively and maturely with others? P/I
- Q6 - Use technology assisted tools to assess and control risk and document work? All/LT
- Q7 - Communicate information/concepts with conciseness/clarity when writing/speaking? P/C
- Q8 - Interpret research findings from a variety of viewpoints? F/RC
- Q9 - Communicate the contractor's planning process, strategy, and goals? BB/SC

Q10 - Identify pros and cons of alternative methods of measurement? F/M

Q11 - Consider how human resource management affects a contractor? BB/RS

Q12 - Develop innovative or creative solutions to problems? P/PS

Q13 - Report findings in accordance with auditing standards? F/RP

Q14 - Inspire and motivate team members? P/L

Q15 - Analyze the impact of changes in contracting laws and regulations? BB/LR

Q16 - Use mathematical or scientific models to evaluate decision alternatives? F/DM

Q17 - Prioritize and delegate various aspects of a project in order to allocate resources? P/PM

Q18 - Identify global threats and opportunities impacting contractors? BB/IG

Descriptive statistics regarding frequencies and percentages are presented in Tables 3 and 4. If the mean of a competency was at least three, which corresponded to 'somewhat important', it was concluded that the AICPA core competency is relevant in auditing federal contractors. The mean of survey Likert questions one through 18 are presented in Table 5. Of the 306 responses, three responses from auditors at the GS-14 grade level were excluded, for a total of 303 responses.

Table 3

*Frequencies of Likert responses - Questions 1 through 18*

Q	Category	Competency	Not Important	Little Importance	Somewhat Important	Important	Very Important	Total
1	BB	IS	10	43	85	99	66	303
2	F	RA	0	0	30	126	147	303
3	P	PD	1	1	11	76	214	303
4	BB	MK	1	3	20	107	172	303
5	P	I	0	0	10	97	196	303
6	ALL	LT	3	1	19	112	168	303

Q	Category	Competency	Not Important	Little Importance	Somewhat Important	Important	Very Important	Total
7	P	C	0	0	7	87	209	303
8	F	RC	6	20	42	116	119	303
9	BB	SC	4	39	70	119	71	303
10	F	M	9	33	76	125	60	303
11	BB	RS	11	52	102	95	43	303
12	P	PS	3	17	54	125	104	303
13	F	RP	0	2	10	60	231	303
14	P	L	3	6	54	126	114	303
15	BB	LR	4	8	28	109	154	303
16	F	DM	6	23	74	118	82	303
17	P	PM	3	10	43	132	115	303
18	BB	IG	<u>19</u>	<u>58</u>	<u>106</u>	<u>84</u>	<u>36</u>	<u>303</u>
	Total		83	316	841	913	5,454	5,454

Table 4

*Percentages of Survey Likert Responses - Questions 1 through 18*

Q	Category	Competency	Not Important	Little Importance	Somewhat Important	Important	Very Important	Total
1	BB	IS	3%	14%	28%	33%	22%	100%
2	F	RA	0%	0%	9%	42%	49%	100%
3	P	PD	0%	0%	4%	25%	71%	100%
4	BB	MK	0%	1%	7%	35%	57%	100%
5	P	I	0%	0%	3%	32%	65%	100%
6	ALL	LT	1%	0%	7%	37%	55%	100%
7	P	C	0%	0%	2%	29%	69%	100%
8	F	RC	2%	7%	14%	38%	39%	100%
9	BB	SC	1%	13%	24%	39%	23%	100%
10	F	M	3%	11%	25%	41%	20%	100%
11	BB	RS	4%	17%	34%	31%	14%	100%
12	P	PS	1%	6%	17%	41%	34%	100%
13	F	RP	0%	1%	3%	20%	76%	100%
14	P	L	1%	2%	18%	42%	38%	100%
15	BB	LR	1%	3%	9%	36%	51%	100%

Q	Category	Competency	Not Important	Little Importance	Somewhat Important	Important	Very Important	Total
16	F	DM	2%	8%	24%	39%	27%	100%
17	P	PM	1%	3%	14%	44%	38%	100%
18	BB	IG	6%	19%	35%	28%	12%	100%

The mean for all survey Likert questions was 4.11. The means for all Likert questions are presented below in ranked (high to low) order.

Table 5

*Ranked (High to Low) Means and Standard Deviations of Survey Likert Survey Questions 1 Through 18*

<u>Question</u>	<u>Category</u>	<u>Competency</u>	<u>M</u>	<u>SD</u>
13	F	RP	4.72	0.56
7	P	C	4.67	0.52
3	P	PD	4.65	0.60
5	P	I	4.61	0.55
4	BB	MK	4.47	0.69
6	ALL	LT	4.45	0.72
2	F	RA	4.39	0.66
15	BB	LR	4.32	0.85
17	P	PM	4.14	0.85
14	P	L	4.13	0.84
8	F	RC	4.06	0.99
12	P	PS	4.02	0.91
16	F	DM	3.82	0.98
9	BB	SC	3.71	1.01
10	F	M	3.64	1.01
1	BB	IS	3.55	1.08
11	BB	RS	3.35	1.04
18	BB	IG	3.20	1.08

Table 5 indicates that no mean was found to be less than three. Therefore, the data supports hypothesis No. 1a, that a majority of the AICPA core competencies are relevant in auditing federal contractors.

Hypothesis No. 1b was also developed from Research Question No. 1, i.e., that a majority of auditors of federal contractors will identify the AICPA Functional core competency of ‘Risk Analysis’ as important or very important. The data presented in Tables 3, 4 and 5 supports hypothesis No. 1b. Ninety-one percent of respondents found ‘Risk Analysis’ to be important or very important. However, it is noted that 6 other competencies were ranked higher than ‘Risk Analysis’, one in the Functional category, three in the Personal category, one in the Broad Business Perspectives category, and ‘Leverage Technology’, applicable to all categories.

Survey questions No. 19 and 20 (these were questions No. 2 and 3 on the Survey administered on Survey Monkey – see Appendix C) also measured responses for Research Question No. 1 by requesting identification of the three most important and the three least important AICPA core competencies with reference to their description in questions one through 18 of the survey. For questions No. 19 and 20, responses were ranked by the total number of responses (high to low) and frequencies and percentages of responses were computed, as indicated in Tables 7 and 8. Total responses for the three most important competencies totaled 289 and for the three least important competencies totaled 283. The first choice was weighted by three, the second choice was weighted by two, and the third choice weighted by one, as shown at the bottom of the tables.

Table 6

*Three Most Important Competencies, Weighted, and Ranked High to Low*

Question	Category	Competency	Choices			Total	Percent
			First	Second	Third		
3	P	PD	270	78	18	366	21.1%
13	F	RP	204	116	29	349	20.1%
9	BB	SC	84	120	48	252	14.5%
4	BB	MK	54	44	23	121	7.0%
5	P	I	36	32	31	99	5.7%
7	P	C	24	28	21	73	4.2%
2	F	RA	27	30	14	71	4.1%
15	BB	LR	27	24	19	70	4.0%
12	P	PS	33	14	16	63	3.6%
1	BB	IS	36	16	7	59	3.4%
14	P	L	18	18	21	57	3.3%
17	P	PM	21	14	16	51	2.9%
6	ALL	LT	9	12	11	32	1.8%
10	F	M	6	18	3	27	1.6%
16	F	DM	9	4	7	20	1.2%
8	F	RC	6	6	1	13	0.7%
11	BB	RS	0	4	2	6	0.3%
18	BB	IG	<u>3</u>	<u>0</u>	<u>2</u>	<u>5</u>	<u>0.3%</u>
		Total	867	578	289	1,734	100.0%
		Weights	3	2	1		
		Total Divided by Weights	289	289	289		

Table 6 indicates that 55.7% (21.1 + 20.1 + 14.5) of the top three choices for most important competencies included the Personal Competency of ‘Professional Demeanor’ (PD), the Functional competency of ‘Reporting’ (RP) and the Broad Business Perspective competency of ‘Strategic Critical Thinking’ (SC). The identification of ‘Strategic Critical Thinking’ as the third choice contradicts its ranking in Table 5 as the 14<sup>th</sup> (out of 18) most important competency.

Table 7

*Three Least Important Competencies, Weighted, and Ranked High to Low*

Question	Category	Competency	Choices			Total	Percent
			First	Second	Third		
18	BB	IG	279	86	41	406	23.9%
11	BB	RS	141	100	34	275	16.2%
8	F	RC	66	54	27	147	8.7%
1	BB	IS	66	48	23	137	8.1%
16	F	DM	69	46	13	128	7.5%
10	F	M	39	36	38	113	6.7%
6	ALL	LT	42	34	21	97	5.7%
14	P	L	27	30	26	83	4.9%
4	BB	MK	27	18	6	51	3.0%
17	P	PM	12	24	11	47	2.8%
12	P	PS	6	28	11	45	2.7%
2	F	RA	15	12	13	40	2.4%
7	P	C	15	12	8	35	2.1%
15	BB	LR	6	12	4	22	1.3%
5	P	I	12	6	2	20	1.2%
9	BB	SC	6	12	1	19	1.1%
3	P	PD	15	2	1	18	1.1%
13	F	RP	<u>6</u>	<u>6</u>	<u>3</u>	<u>15</u>	<u>0.9%</u>
Total			849	566	283	1698	100.0%
Assigned Weights			3	2	1		
Total Divided by Weights			283	283	283		

Table 7 indicates that 48.8% (23.9 + 16.2 + 8.7) of the top three choices for least important competencies included the Broad Business Perspective competencies of ‘International/Global’ and ‘Resource Management’ and the Functional competency of ‘Research’.

Pareto charts were compiled to illustrate the top half of the most important (Table 6) and top half of the least important (Table 7) competencies and categories in order to provide support for responses to questions No. 1 through 18 measured on the Likert scale. The following

questions represented the top half of the most important. *How important is it for the federal auditor in your agency to...?*

Q 3 - Demonstrate objectivity and integrity consistent with auditing standards? 21.1%

Q13 - Report findings in accordance with auditing standards? 20.1%

Q 9 - Communicate the contractor's planning process, strategy and goals? 14.5%

Q 4 - Establish working relationships with audit requestors? 7.0%

Q 5 - Interact and cooperate productively and maturely with others? 5.7%

Q 7 - Communicate information and concepts with conciseness and clarity? 4.2%

Q 2 - Understand why controls cannot completely eliminate the risk of fraud? 4.1%

Q15 - Analyze the impact of changes in contracting laws and regulations? 4.0%

Q12 - Develop innovative or creative solutions to problems? 3.6%

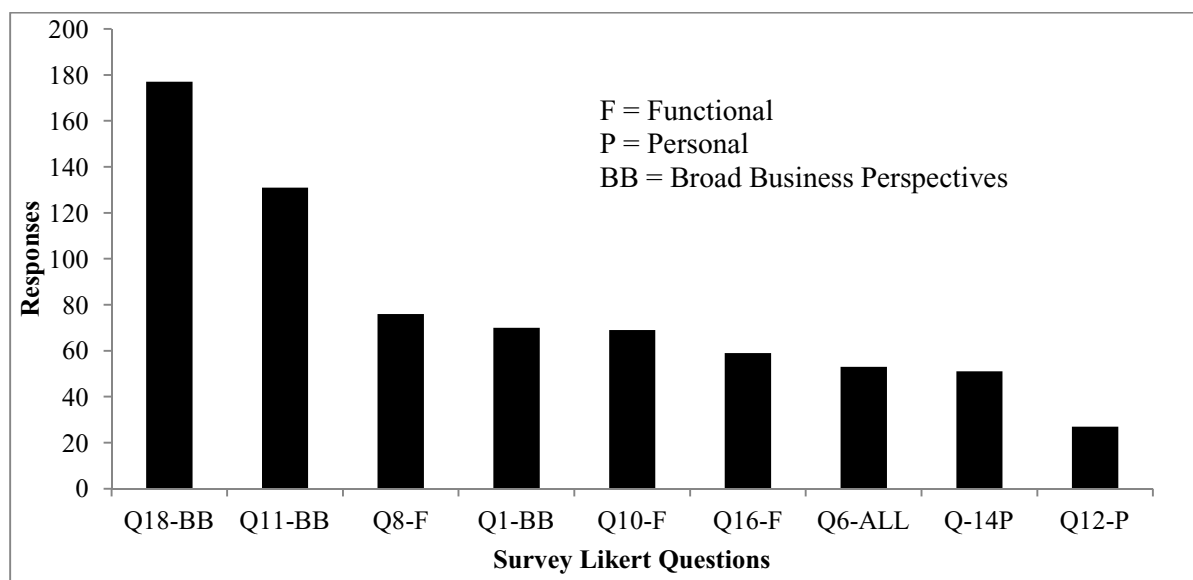


Figure 1. Top 9 (out of 18) most important competencies and categories

The following questions represented the top half of the least important competencies.

*How important is it for the federal auditor in your agency to...?*

Q18 - Identify global threats and opportunities impacting contractors? 23.9%



- Q11 - Consider how human resource management affects a contractor? 16.2%
- Q 8 - Interpret research findings from a variety of viewpoints? 8.7%
- Q 1 - Analyze changes in the financial risks of the contractor's industry/sector? 8.1%
- Q16 - Use mathematical or scientific models to evaluate decision alternatives? 7.5%
- Q10 - Identify pros and cons of alternative methods of measurement? 6.7%
- Q 6 - Use technology assisted tools to assess, control risk and document work? 5.7%
- Q14 - Inspire and motivate team members? 4.9%
- Q4 – Establish working relationships with audit requestors? 3.0%

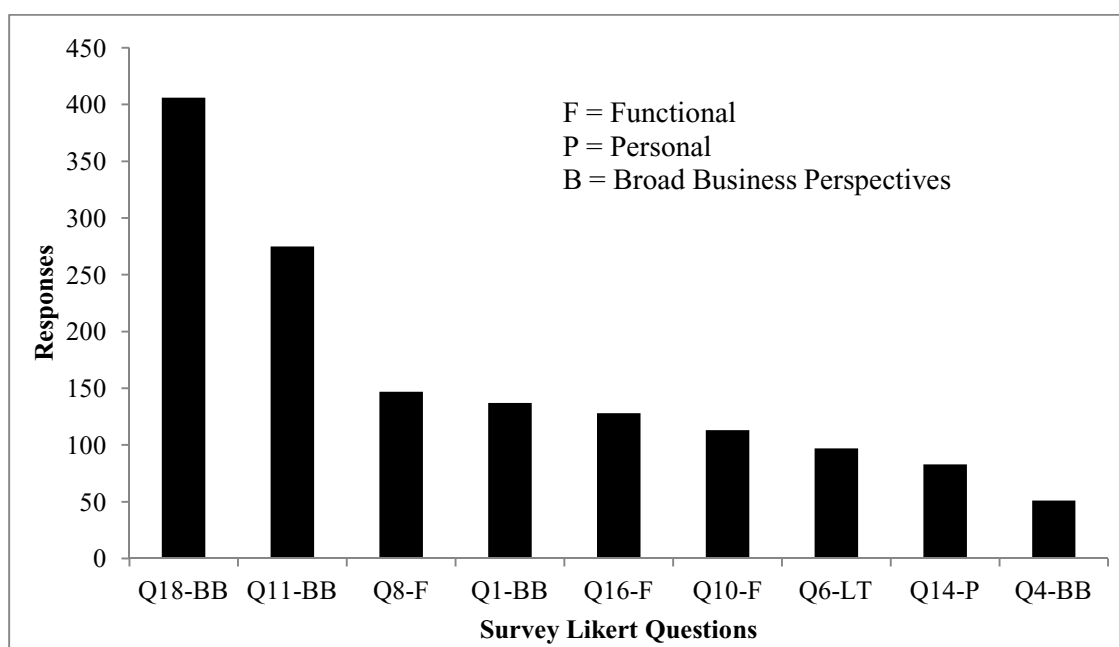


Figure 2. Top 9 (out of 18) least important competencies and categories

Multiple regression was used to determine which independent variables (demographic factors) were statistically significant in influencing the outcome of the dependent variables (responses to questions one through 18).

In order to address collinearity of the variables, the SPSS statistic that measures collinearity called 'Variance Inflation Factor' (VIF) was analyzed. The VIF is a measure of how

much the variance of an estimated regression coefficient is inflated by the existence of correlation among the predictor variables in a model (Simon, 2004). Collinearity indicates strong correlations among the independent variables and increases the standard errors of the coefficients. Increased standard errors may result in some independent variable coefficients insignificantly different from zero, that is, it makes some variables statistically insignificant when they should be significant. According to Simon (2004), the rule of thumb is that for VIFs exceeding four, it is likely there is collinearity associated with that variable. The expedient solution, where two or more variables have a VIF approximating four is to remove one of the variables from the regression model. The selection of which variable was removed was based on that variable's weaker (lower) t value.

For all Likert questions, collinearity was found between the variables 'age' and 'years of full-time work experience'. Each question presented below discusses the treatment of collinearity for that particular question. The means and standard deviations for the variables are presented in the following table.

Table 8

*Means and Standard Deviations for Variables – Multiple Regression*

<u>Variable</u>	<u>M</u>	<u>SD</u>
Age	38.85	11.93
Years Since College Graduation	11.32	10.57
Years as a Federal Auditor	6.88	8.71
Years of Full-Time Work Experience	14.73	11.79
Females (Males)	49.4% (50.6%)	Not computed
GS7	9.5%	Not computed
GS9	13.3%	Not computed
GS11	18.7%	Not computed
GS12	36.9%	Not computed
GS13	21.6%	Not computed

In the preceding table, the means for the variables indicate that the average age of respondents was 38.85 years, the average number of years since college education was 11.32 years, the average time spent as a federal auditor was 6.88 years, the average number of years spent in full-time employment was 14.73 years, and the split between women and men was 49.4/50.6 percent. The percents shown for the GS levels represent their share of respondents.

The high standard deviations indicate variability in the data and suggest skewness where the modes and medians for the variables are different from the mean. For instance, the mode and median values for the variable ‘age’ were found to be 28 and 36, respectively with a minimum respondent age of 21 and a maximum respondent age of 67. Compared with a mean of 39 which is higher than both mode and median, positive skewness is indicated where the majority of the data falls to the left of the distribution.

For the variables gender and GS level, the variable was set to one for females and zero for men. When the respondent was a GS7, the variable was set to one and set to zero for all other GS levels, and so forth for the other GS levels of GS9, 11, and 12. Replies received from three GS-14s were not used. Descriptions and characteristics for the competencies described below for survey Likert questions one through 18 are described at <http://www.aicpa.org/interestareas/accountingeducation/resources/pages/corecompetency.aspx>.

*Demographic information by survey Likert questions.* Survey Likert question 1 asked ‘How important is it for the federal auditor in your agency to analyze changes in the financial risks of the contractor's industry/sector’? This question related to the Broad Business Perspective competency of ‘Industry Sector’ described as individuals entering the accounting profession should be able to identify through research and analysis the economics and broad business

financial risks and opportunities of the industry and economic sector in which a given organization operates.

The mean (SD = 1.08) for question 1 was 3.55, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean ( $t = -8.69$ ,  $p = 1.69E-16$ ), therefore, this competency was deemed less important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of 'age' (VIF=6.53) and 'years of full-time work experience' (VIF=5.87) with a Pearson Correlation of .90 between the two variables. After removing 'years of full-time work experience' due to the lower  $t$  (-1.23 v. 2.49 for 'age'), regression was run again.  $R^2$  remained the same at .11. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 9

*Coefficients, T and P Values for Variables – Survey Likert Question No. 1 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	2.17	6.38	.00
Age	.021	2.57	.01
Years Since College Graduation	-.01	-.60	.55
Years as a Federal Auditor	-.00	.33	.74
Females (Males)	.42	3.10	.00
GS7	.88	2.97	.00
GS9	.68	2.55	.01
GS11	.62	2.51	.01
GS12	.40	2.05	.04

'Age', gender, and all GS levels influenced the response to the question as evidenced by p-values less than .05 and t values greater than 2.0. For instance, as age increased, the respondents assigned greater importance to the competency. Women believed the competency

was more important than men did. The positive coefficients for the GS levels mean a positive increase to the predicted response will occur regardless of the GS level of the respondent, unless the respondent is a GS-13 (dummy variable equal to zero).

Survey Likert question 2 asked *‘How important is it for the federal auditor in your agency to understand why controls cannot completely eliminate the risk of fraud?’* This question related to the Functional competency of ‘Risk Analysis’ described as the risk that an auditor will fail to detect a misstatement, caused by error or fraud. Business risk is defined as the risk that either a client (government contractor) or the auditor’s employer (government auditing agency) will fail to achieve its objectives). The understanding of business risk, in turn, affects how business strategy is developed and executed.

The mean (SD = .66) for question 2 was 4.39, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean ( $t = 6.97$ ,  $p = 1.385E-11$ ), therefore, this competency was deemed more important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of ‘age’ (VIF=6.539) and ‘years of full-time work experience’ (VIF=5.874) with a Pearson Correlation of .907 between the two variables. After removing ‘years of full-time work experience’ due to the lower  $t$  (.149 v. 1.345 for ‘age’), regression was run again.  $R^2$  remained at .0451. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 10

*Coefficients, t and p Values for Variables – Survey Likert Question No. 2 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	3.80	17.50	.00
Age	.013	2.54	.01
Years Since College Graduation	-.007	-.93	.35
Years as a Federal Auditor	-.002	-.20	.84
Females (Males)	.117	1.35	.18
GS7	.068	.36	.72
GS9	.131	.77	.44
GS11	.143	.90	.37
GS12	.163	1.30	.19

Only ‘Age’ was found to influence the response to the question as evidenced by p-values less than .05 and t value greater than 2.0. Specifically, the positive coefficient for ‘Age’ means that as age increased, the respondents assigned greater importance to the competency.

Survey Likert question 3 asked ‘*How important is it for the federal auditor in your agency to demonstrate objectivity and integrity consistent with the standards of auditing?*’ This question related to the Personal competency of ‘Professional Demeanor’ defined as the commitment to maintain a public reputation for excellence. This competency addresses expected behavior, including the traits of objectivity, integrity and ethics. ‘Professional Demeanor’ includes a commitment to a stable work performance as well as a commitment to life-long learning.

The mean (SD = .600) for question 3 was 4.65, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean (t = 14.85, p = 5.92E-40), therefore, this competency was deemed more important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of ‘age’ (VIF=6.539) and ‘years of full-time work experience’ (VIF=5.874) with a Pearson Correlation of .907 between the two variables. After removing ‘years of full-time work experience’ due to the lower t (-1.927 v. 2.89 for ‘age’), regression was run again which decreased  $R^2$  from .054 to .039. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 11

*Coefficients, t and p values for Variables – Survey Likert Question No. 3 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	4.50	25.91	.00
Age	.010	2.27	.02
Years Since College Graduation	-.008	-1.31	.19
Years as a Federal Auditor	-.003	-.38	.70
Females (Males)	.075	1.09	.27
GS7	-.055	-.36	.72
GS9	-.160	-1.17	.24
GS11	-.157	-1.24	.21
GS12	-.152	-1.52	.13

Only ‘Age’ was found to influence the response to the question as evidenced by p-values less than .05 and t value greater than 2.0. Specifically, the positive coefficient for ‘Age’ means that as age increased, the respondents assigned greater importance to the competency.

Survey Likert question 4 asked ‘*How important is it for the federal auditor in your agency to establish working relationships with audit requestors?*’ This question related to the Broad Business Perspective competency of ‘Marketing Client Focus’ defined as the ability to anticipate and meet changing needs of clients, employers, customers and markets. For the federal auditor, the customer is primarily the requestor of the audit, another government entity; however,

customers could also mean the employer and distant clients such as Congress or the taxpaying public.

The mean (SD = .694) for question 4 was 4.47, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean ( $t = 8.72$   $p = 9.85E-17$ ), therefore, this competency was deemed more important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of ‘age’ (VIF=6.537) and ‘years of full-time work experience’ (VIF=5.869) with a Pearson Correlation of .907 between the two variables. After removing ‘age’ due to the lower  $t$  (1.149 v. -1.67 for ‘years of full-time work experience’), regression was run again which decreased  $R^2$  from .048 to .043. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 12

*Coefficients, t and p values for Variables – Survey Likert Question No. 4 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	4.53	30.08	.00
Age	.004	.62	.53
Years Since College Graduation	.003	.36	.72
Years as a Federal Auditor	-.007	-1.26	.21
Females (Males)	.178	2.02	.04
GS7	-.111	-.58	.56
GS9	-.273	-1.57	.12
GS11	-.112	-.70	.48
GS12	-.027	-.21	.83

Only gender was found to influence the response to the question as evidenced by p-values less than .05 and  $t$  value greater than 2.0. The positive coefficient for ‘Females’ means that women believed the competency to be more important than did men.



Survey Likert question 5 asked ‘*How important is it for the federal auditor in your agency to interact and cooperate productively and maturely with others*’? This question related to the Personal competency of ‘Interaction’ defined as the ability to work productively with individuals in a diversity of roles and with varying interests in the outcome. Characteristics of the competency include teamwork, coaching or mentoring, and the acceptance of guidance from team leaders.

The mean (SD = .551) for question 5 was 4.61, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean ( $t = 14.81$ ,  $p = 4.03E-40$ ), therefore, this competency was deemed more important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of ‘age’ (VIF=6.54) and ‘years of full-time work experience’ (VIF=5.87) with a Pearson Correlation of .91 between the two variables. After removing ‘age’ due to the lower  $t$  (.94 v. -1.45 for ‘years of full-time work experience’), regression was run again which decreased  $R^2$  from .05 to .05. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 13

*Coefficients, t and p values for Variables – Survey Likert Question No. 5 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	4.88	41.43	.00
Age	.000	-.05	.96
Years Since College Graduation	-.001	-.23	.82
Years as a Federal Auditor	-.005	-1.19	.24
Females (Males)	.069	1.02	.31
GS7	-.181	-1.22	.22
GS9	-.274	-2.05	.04
GS11	-.348	-2.81	.01
GS12	-.125	-1.28	.20

The variables GS-levels 'GS9' and 'GS11' were found to influence the response to the question as evidenced by p-values less than .05 and t value greater than 2.0. The negative coefficients for 'GS9' and 'GS11' mean that the predicted response will be lessened in the respondent is either a GS9 or GS11.

Survey Likert question 6 asked '*How important is it for the federal auditor in your agency to use technology assisted tools to assess and control risk and document work*'? This question related to the competency of 'Leverage Technology', a competency listed as applicable for all categories; i.e., appreciation for the effects of technology on the business environment (Broad Business Perspective category), acquisition of skills to use technology effectively and efficiently (Functional Category) and commitment to lifelong learning of new technologies (Personal Category). Characteristics of this competency include specific skills such as recognition of information architectures, accessing information contained within electronic databases, using technology for strategic purposes, use in assessing and controlling risk, and appropriate use in interaction with others.

The mean (SD = .72) for question 6 was 4.45, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean ( $t = 8.08, p = 9.23E-15$ ), therefore, this competency was deemed more important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of 'age' (VIF=6.539) and 'years of full-time work experience' (VIF=5.874) with a Pearson Correlation of .907 between the two variables. After removing 'years of full-time work experience' due to the lower t (-.427 v. .627 for 'age'), regression was

run again which decreased  $R^2$  from .035 to .034. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 14

*Coefficients, t and p Values for Variables – Survey Likert Question No. 6 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	4.26	19.28	.00
Age	.00	.48	.63
Years Since College Graduation	-.00	-.66	.51
Years as a Federal Auditor	.00	.98	.32
Females (Males)	.18	2.10	.03
GS7	.15	.81	.41
GS9	.22	1.32	.18
GS11	.01	.07	.94
GS12	.00	.01	.98

Only gender was found to influence the response to the question as evidenced by p-values less than .05 and t value greater than 2.0. The positive coefficient for ‘Females’ means that women believed the competency to be more important than did men.

Survey Likert question 7 asked ‘*How important is it for the federal auditor in your agency to communicate information and concepts with conciseness and clarity when writing and speaking*’? This question related to the Personal competency of ‘Communications’ defined as the ability to give and exchange information within a meaningful context and with appropriate delivery. Characteristics of the competency include verbal, writing, and presentation skills as well as the employment of more developed skills in determining context, concurrent use of interpersonal skills, and the ability to discern indirect meaning.

The mean (SD = .51) for question 7 was 4.67, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the

overall mean ( $t = 17.21$ ,  $p = 7.07E-51$ ), therefore, this competency was deemed more important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of 'age' (VIF=6.53) and 'years of full-time work experience' (VIF=5.87) with a Pearson Correlation of .90 between the two variables. After removing 'years of full-time work experience' due to the lower  $t$  (-.30 vs. .64 for 'age'), regression was run again.  $R^2$  remained at .032. After the second regression, the VIF for all variables was less than four.

Descriptive statistics after the second regression were:

Table 15

*Coefficients, t and p Values for Variables – Survey Likert Question No. 7 Multiple Regression*

Variable	Coefficient	$t$	$p$
Constant	.16	28.56	.00
Age	.00	.69	.48
Years Since College Graduation	-.00	.56	.57
Years as a Federal Auditor	.00	.02	.97
Females (Males)	.13	2.08	.03
GS7	-.11	-.78	.43
GS9	-.10	-.78	.43
GS11	-.11	-.97	.33
GS12	-.143	-1.51	.131

Only gender was found to influence the response to the question as evidenced by the  $p$ -values less than .05 and the  $t$  value greater than 2.0. The positive coefficient for 'Females' means that women believed the competency to be more important than did men.

Survey Likert question 8 asked '*How important is it for the federal auditor in your agency to interpret research findings from a variety of viewpoints*'? This question related to the Functional competency of 'Research' defined as obtaining information from within and outside of an entity. Characteristics of the competency include qualitative interpretation, developing

conclusions, identification of uncertainties, as well as the more fundamental skills in accessing and retrieving relevant information.

The mean (SD = .98) for question 8 was 4.06, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean ( $t = -0.74$ ,  $p = .45$ ), therefore, this competency was deemed less important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of 'age' (VIF=6.53) and 'years of full-time work experience' (VIF=5.87) with a Pearson Correlation of .90 between the two variables. After removing 'years of full-time work experience' due to the lower  $t$  ( $-1.64$  v.  $2.31$  for 'age'), regression was run again.  $R^2$  decreased from .079 to .068. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 16

*Coefficients, t and p Values for Variables – Survey Likert Question No. 8 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	3.69	11.47	.00
Age	.013	1.68	.09
Years Since College Graduation	-.01	-1.24	.21
Years as a Federal Auditor	-.00	-.35	.72
Females (Males)	.42	3.33	.00
GS7	-.05	-.20	.83
GS9	-.08	-.34	.73
GS11	-.17	-.76	.44
GS12	-.23	-1.25	.21

Only gender was found to influence the response to the question as evidenced by the p-values less than .05 and the t value greater than 2.0. The positive coefficient for 'Females means that women believed the competency to be more important than did men.

Survey Likert question 9 asked ‘*How important is it for the federal auditor in your agency to communicate the contractor’s planning process, strategy, and goals*’? This question related to the Broad Business Perspective competency of ‘Strategic Critical Thinking’ defined as the ability to link data, knowledge, and insight together from various disciplines to provide information for decision making. Characteristics of the competency include analyzing strengths, weaknesses, opportunities, and threats of an organization, the ability to transfer and apply information from one situation to another and the analysis of strategic information.

The mean (SD = 1.01) for question 9 was 3.71, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean ( $t = -6.74$ ,  $p = 7.14E-11$ ), therefore, this competency was deemed less important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of ‘age’ (VIF=6.53) and ‘years of full-time work experience’ (VIF=5.87) with a Pearson Correlation of .90 between the two variables. After removing ‘years of full-time work experience’ due to the lower  $t$  (-1.51 v. 2.41 for ‘age’), regression was run again.  $R^2$  decreased from .114 to .105. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 17

*Coefficients, t and p Values for Variables – Survey Likert Question No. 9 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	2.60	8.18	.00
Age	.01	2.03	.04
Years Since College Graduation	-.01	-.91	.36
Years as a Federal Auditor	.01	.86	.38
Females (Males)	.54	4.32	.00
GS7	.68	2.47	.01
GS9	.42	1.68	.09
GS11	.35	1.51	.13
GS12	.28	1.57	.11

The variables ‘Age’, gender, and the GS-level ‘GS7’ were found to influence the response to the question as evidenced by p-values less than .05 and t value greater than 2.0. The positive coefficient for ‘Age’ means that as age increased, the respondents assigned greater importance to the competency. Women believed the competency was more important than men did. The positive coefficient for ‘GS7’ means that the predicted value will increase if the respondent is a GS-7.

Survey Likert question 10 asked ‘*How important is it for the federal auditor in your agency to identify pros and cons of alternative methods of measurement?*’ This question related to the Functional competency of ‘Measurement,’ defined as measures or criteria that should be reliable and relevant. Characteristics of the ‘Measurement’ competency include reference to standards of disclosure and reporting (such as GAAP, GAGAS, FAR or CAS) and the implications of ambiguities when estimates are required.

The mean (SD = 1.01) for question 10 was 3.64, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from

the overall mean ( $t = -7.81$ ,  $p = 7.41E-14$ ), therefore, this competency was deemed less important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of 'age' (VIF=6.53) and 'years of full-time work experience' (VIF=5.87) with a Pearson Correlation of .90 between the two variables. After removing 'years of full-time work experience' due to the lower  $t$  (-1.74 v. 3.27 for 'age'), regression was run again.  $R^2$  decreased from .10 to .09. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 18

*Coefficients, t and p Values for Variables – Survey Likert Question No. 10 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	2.32	7.31	.00
Age	.02	3.19	.00
Years Since College Graduation	-.01	-1.74	.08
Years as a Federal Auditor	.00	.53	.59
Females (Males)	.27	2.16	.03
GS7	.73	2.64	.00
GS9	.50	2.03	.04
GS11	.44	1.94	.05
GS12	.48	2.64	.00

The variables 'Age', gender, and the GS-levels 'GS7', 'GS9' and 'GS12' were found to influence the response to the question as evidenced by p-values less than .05 and t value greater than 2.0. The positive coefficient for 'Age' means that as age increased, the respondents assigned greater importance to the competency. Women believed the competency to be more important than men did. The positive coefficients for GS levels 7, 9 and 12 mean that the predicted value will increase if the respondent is one of these three GS levels.



Survey Likert question 11 asked ‘*How important is it for the federal auditor in your agency to consider how human resource management affects a contractor*’? This question related to the Broad Business Perspective competency of ‘Resource Management’, defined as the ability to manage a variety of resources such as human, financial, physical, and environmental. Characteristics of the ‘Resource Management’ competency include identification of the effect of market forces on an organization’s cost of capital, labor or commodities, knowledge of how businesses decide to allocate scarce resources, and identification of the social costs and benefits of decisions regarding resource management.

The mean (SD = 1.04) for question 11 was 3.35, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean ( $t = -12.34$ ,  $p = 4.8E-29$ ), therefore, this competency was deemed less important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of ‘age’ (VIF=6.53) and ‘years of full-time work experience’ (VIF=5.87) with a Pearson Correlation of .90 between the two variables. After removing ‘years of full-time work experience’ due to the lower  $t$  (-1.53 v. 2.23 for ‘age’), regression was run again.  $R^2$  decreased from .073 to .064. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 19

*Coefficients, t and p Values for Variables – Survey Likert Question No. 11 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	2.25	6.66	.00
Age	.01	1.69	.09
Years Since College Graduation	-.00	-.46	.64
Years as a Federal Auditor	.00	.55	.57
Females (Males)	.39	2.94	.00
GS7	.54	1.85	.06
GS9	.52	1.97	.05
GS11	.45	1.86	.06
GS12	.34	1.74	.08

Gender was the only variable found to be influential in predicting response to the question as evidenced by p-values less than .05 and t value greater than 2.0. The positive coefficient for gender means that women believed the competency to be more important than men did.

Survey Likert question 12 asked ‘*How important is it for the federal auditor in your agency to develop innovative or creative solutions to problems*’? This question related to the Personal competency of ‘Problem Solving/Decision Making’, defined as the ability to solve problems with good insight and judgment at times, creatively. Characteristics of the competency ‘Problem Solving/Decision Making’ include the ability to interpret information, analysis of the pros, cons, and impact of decisions, recognizing where consensus is appropriate, and knowing when to follow directions and ask for assistance.

The mean (SD = .91) for question 12 was 4.02, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean ( $t = -1.53$ ,  $p = .12$ ), therefore, this competency was deemed less important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of ‘age’ (VIF=6.53) and ‘years of full-time work experience’ (VIF=5.87) with a Pearson Correlation of .90 between the two variables. After removing ‘years of full-time work experience’ due to the lower t (-.95 v. 1.19 for ‘age’), regression was run again. R<sup>2</sup> decreased from .03 to .02. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 20

*Coefficients, t and p Values for Variables – Survey Likert Question No. 12 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	3.72	12.77	.00
Age	.00	.71	.47
Years Since College Graduation	.00	.14	.88
Years as a Federal Auditor	.00	.43	.66
Females (Males)	.22	1.95	.05
GS7	-.03	-.150	.88
GS9	.03	.14	.88
GS11	.03	.15	.87
GS12	-.01	-.10	.91

As evidenced by the t and p values, gender was found to be substantially influential in predicting a response with a t value of 1.95 very close to two and a p-value just barely over .05. The positive coefficient for gender means that women believed the competency to be more important than men did.

Survey Likert question 13 asked ‘*How important is it for the federal auditor in your agency to report findings in accordance with auditing standards*’? This question related to the Functional competency of ‘Reporting’, defined as the clear and objective communication of findings and the results of work in accordance with professional standards. Characteristics of the ‘Reporting’ competence include identification of appropriate reporting media, describing work

performed in a manner that provides report usefulness, and serving as a spokesperson for an organization.

The mean (SD = .55) for question 13 was 4.72, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean ( $t = 17.65$ ,  $p = 2.57E-52$ ), therefore, this competency was deemed more important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of 'age' (VIF=6.53) and 'years of full-time work experience' (VIF=5.87) with a Pearson Correlation of .90 between the two variables. After removing 'age' due to the lower t (1.92 v. -2.01 for 'years of full-time work experience'), regression was run again.  $R^2$  decreased from .04 to .02. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 21

*Coefficients, t and p Values for Variables – Survey Likert Question No. 13 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	4.74	41.81	.00
Years Since College Graduation	.00	.149	.88
Years as a Federal Auditor	5.909E-005	.01	.99
Years of Full-Time Work Experience	-.00	-.76	.44
Females (Males)	.08	1.26	.21
GS7	.11	.78	.43
GS9	.11	.91	.35
GS11	-.06	-.51	.61
GS12	.02	.25	.80

As evidenced by the t and p values, none of the variables were found to influence the prediction of the response to this question.

Survey Likert question 14 asked ‘*How important is it for the federal auditor in your agency to inspire and motivate team members*’? This question related to the Personal competency of ‘Leadership’, defined as the skills needed to influence, inspire, and motivate individuals and groups to achieve results. Characteristics of the competency ‘Leadership’ include analyzing alternative means to reach consensus or compromise, controlling for biases, motivating others, and persuasion.

The mean (SD = .84) for question 14 was 4.13, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean ( $t = .45, p = .65$ ), therefore, this competency was deemed slightly more important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of ‘age’ (VIF=6.53) and ‘years of full-time work experience’ (VIF=5.87) with a Pearson Correlation of .90 between the two variables. After removing ‘years of full-time work experience’ due to the lower  $t$  (-2.21 v. 2.59 for ‘age’), regression was run again.  $R^2$  decreased from .074 to .054. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 22

*Coefficients, t and p Values for Variables – Survey Likert Question No. 14 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	4.07	14.67	.00
Age	.00	1.35	.179
Years Since College Graduation	-.00	-.52	.59
Years as a Federal Auditor	-.00	-.75	.45
Females (Males)	.19	1.80	.07
GS7	-.37	-1.56	.12
GS9	-.35	-1.61	.10
GS11	-.48	-2.41	.01
GS12	-.21	-1.32	.18

The only variable found to influence a predicted response to this question was GS11. The negative coefficient for GS11 means that the predicted value will decrease if the respondent is a GS11 grade level.

Survey Likert question 15 asked *'How important is it for the federal auditor in your agency to analyze the impact of changes in contracting laws and regulations?'* This question related to the Broad Business Perspective competency of 'Legal Regulatory Perspective', defined as the capability to describe the legal and regulatory environment and analyze the impact of changes of this environment. Characteristics of the 'Legal Regulatory Perspective' competence include identifying the political and environmental forces affecting the accounting standard setting process and the regulation of the profession.

The mean (SD = .85) for question 15 was 4.32, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean ( $t = 4.30$ ,  $p = 2.25E-05$ ), therefore, this competency was deemed more important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of 'age' (VIF=6.53) and 'years of full-time work experience' (VIF=5.87) with a Pearson Correlation of .90 between the two variables. After removing 'years of full-time work experience' 'due to the lower  $t$  (-2.89 v. 3.11 for 'age'), regression was run again.  $R^2$  decreased from .11 to .08. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 23

*Coefficients, t and p Values for Variables – Survey Likert Question No. 15 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	4.57	17.31	.00
Age	.00	1.27	.20
Years Since College Graduation	-.01	-1.81	.07
Years as a Federal Auditor	-.01	-1.59	.11
Females (Males)	.13	1.24	.21
GS7	-.22	-.99	.32
GS9	-.41	-1.20	.04
GS11	-.40	-2.10	.03
GS12	-.36	-2.40	.01

The variables found to influence responses to this question include GS11 and GS12. The negative coefficients for GS11 and GS12 mean that the response can be expected to decrease when the respondent is either a GS11 or GS12.

Survey Likert question 16 asked ‘*How important is it for the federal auditor in your agency to use mathematical or scientific models to evaluate decision alternatives*’? This question related to the Functional competency of ‘Decision Modeling’, defined as the objective consideration of issues by using strategic, critical, and, at times, quantitative modeling techniques.

The mean (SD = .98) for question 16 was 3.82, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean ( $t = -5.02$ ,  $p = 8.37E-07$ ), therefore, this competency was deemed less important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of ‘age’ (VIF=6.53) and ‘years of full-time work experience’ (VIF=5.87) with a Pearson Correlation of .90 between the two variables. After removing ‘years

of full-time work experience ‘due to the lower t (-2.70 v. 3.45 for ‘age’), regression was run again.  $R^2$  decreased from .08 to .05. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 24

*Coefficients, t and p Values for Variables – Survey Likert Question No. 16 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	2.96	9.30	.00
Age	.01	2.12	.03
Years Since College Graduation	-.01	-1.26	.20
Years as a Federal Auditor	.00	.12	.89
Females (Males)	.354	2.80	.00
GS7	.37	1.35	.18
GS9	.20	.82	.41
GS11	.29	1.27	.20
GS12	.14	.79	.43

‘Age’ and gender were found to influence the response to this question. The positive coefficient for ‘Age’ means that the response will increase the older the respondent. The positive coefficient for gender means that women will rate this question higher than men will.

Survey Likert question 17 asked ‘*How important is it for the federal auditor in your agency to prioritize and delegate various aspects of a project in order to allocate resources?*’ This question related to the Personal competency of ‘Project Management’, defined as the ability to effectively control the course of a multi-dimensional, multi-step undertaking and “managing project assets including human, financial, property, and technical resources.

The mean (SD = .85) for question 17 was 4.14, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean (t = .70, p = .48), therefore, this competency was deemed more important than the other competencies.



Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of ‘age’ (VIF=6.53) and ‘years of full-time work experience’ (VIF=5.87) with a Pearson Correlation of .90 between the two variables. After removing ‘years of full-time work experience’ due to the lower t (-.91 v. 1.43 for ‘age’), regression was run again. R<sup>2</sup> decreased from .06 to .05. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 25

*Coefficients, t and p Values for Variables – Survey Likert Question No. 17 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	4.02	14.57	.00
Age	.00	1.19	.23
Years Since College Graduation	-.00	-.13	.89
Years as a Federal Auditor	-.01	-1.66	.09
Females (Males)	.17	1.61	.10
GS7	.10	.43	.66
GS9	-.13	-.60	.54
GS11	-.41	-2.07	.04
GS12	-.08	-.56	.57

The only variable found to influence the prediction of the response was GS11. The negative coefficient for GS11 means that the predicted response to the question will decrease if the respondent is a GS11.

Survey Likert question 18 asked ‘*How important is it for the federal auditor in your agency to identify global threats and opportunities impacting contractors?*’? This question related to the Broad Business Perspective ‘International Global Perspective’ competency, defined as identifying the threats and opportunities of doing business in a borderless world. Characteristics of the International Global Perspective’ competency include the ability to

describe and analyze ambiguities of the cultural and financial impact of entering global markets, and the consideration and prioritization of global issues in formulating business decisions.

The mean (SD = 1.08) for question 18 was 3.20, compared to a mean of 4.11 for all Likert questions. A t-test found the mean for the competency to be significantly different from the overall mean ( $t = -14.36$ ,  $p = 1.12E-36$ ), therefore, this competency was deemed less important than the other competencies.

Multiple regression for the variables shown in the following table found VIF of four or greater for the variables of 'age' (VIF=6.53) and 'years of full-time work experience' (VIF=5.87) with a Pearson Correlation of .90 between the two variables. After removing 'years of full-time work experience' due to the lower  $t$  (-1.57 v. 2.98 for 'age'), regression was run again.  $R^2$  decreased from .13 to .12. After the second regression, the VIF for all variables was less than four. Descriptive statistics after the second regression were:

Table 26

*Coefficients, t and p Values for Variables – Survey Likert Question No. 18 Multiple Regression*

<u>Variable</u>	<u>Coefficient</u>	<u>t</u>	<u>p</u>
Constant	2.12	6.34	.00
Age	.02	2.92	.00
Years Since College Graduation	-.03	-2.73	.00
Years as a Federal Auditor	.00	.155	.87
Females (Males)	.53	4.02	.00
GS7	.50	1.73	.08
GS9	.18	.69	.48
GS11	.23	.96	.33
GS12	.23	1.21	.22

'Age', gender, and 'Years since College Graduation' were found to influence the response to this question. The positive coefficient for 'Age' means greater importance will be assigned to this question by older respondents. The positive coefficient for gender means that

women find this competency to be more important than men do. The negative coefficient for ‘Years since College Graduation’ means the response can be expected to decrease given the higher the number of years since college graduation.

Presented in the table below is a summary of the statistically significant variables for the 18-Likert questions sorted by category.

Table 27

*Summary of Statistically Significant Variables for Likert Questions – all Grade (GS) Levels*

<i>Question: How important is it for the federal auditor in your Agency to...?</i>							
Item No.	AICPA Core Competencies	Category	Competency	Age	Years Since College Graduation	Female	Jr Grades Sr Grade 12
1	Analyze changes in the financial risks of the contractor’s industry/sector	BB	IS	+		+	+
4	Establish working relationships with audit requestors	BB	MK			+	
9	Communicate the contractor’s planning process, strategy and goals	BB	SC	+		+	+
11	Consider how human resource management affects a contractor	BB	RS			+	
15	Analyze the impact of changes in contracting laws and regulations	BB	LR				- -
18	Identify global threats and opportunities impacting contractors	BB	IG	+	-	+	
2	Understand why controls cannot completely eliminate the risk of fraud	F	RA	+			
8	Interpret research findings from a variety of viewpoints	F	RC			+	

*Question: How important is it for the federal auditor in your Agency to...?*

Item No.	AICPA Core Competencies	Category	Competency	Age	Years Since College Graduation	Female	Jr Grades	Sr Grade 12
10	Identify pros and cons of alternative methods of measurement	F	M	+		+	+	+
13	Report findings in accordance with auditing standards	F	RP					
16	Use mathematical or scientific models to evaluate decision alternatives	F	DM	+		+		
3	Demonstrate objectivity and integrity consistent with the standards of auditing	P	PD	+				
5	Interact and cooperate productively and maturely with others	P	I				-	
7	Communicate information and concepts with conciseness and clarity when writing and speaking	P	C			+		
12	Develop innovative or creative solutions to problems	P	PS			+		
14	Inspire and motivate team members	P	L				-	
17	Prioritize and delegate various aspects of a project in order to allocate resources	P	PM				-	
6	Use technology assisted tools to assess and control risk and document work	All	LT			+		

*Survey open-ended questions.*

Survey question No. 21 (Question No. 4 on the Survey administered on Survey Monkey – see Appendix C) also measured responses for research question No. 1 to the extent that responses could be mapped to the AICPA core competencies. Question No. 21 asked, “*What additional skills, not listed, are also important for auditing federal contractors*”? For responses to question No. 21, the AICPA core competencies were concluded to be relevant in auditing federal contractors if they were identified in the response. Responses indicated 163 skills out of 236 could be traced to the AICPA core competencies, 44 in the Functional category, 89 in the Personal category, 21 in the Broad Business Perspective category and 9 attributed to ‘Leverage Technology’, applicable to all categories. The remaining 73 skills (236 minus 163), the profile of respondents, and detail regarding specific competencies in each category is included in the discussion for research question no. 4.

Survey question No. 22 (Question No. 5 on the Survey administered on Survey Monkey – see Appendix C) also measured responses for research question No. 1 to the extent that responses could be mapped to the AICPA core competencies. Question No. 22 asked, “*Which of your skills needed improvement upon hire as an auditor of federal contractors*”? For responses to question no. 22, the AICPA core competencies were concluded to be relevant in auditing federal contractors if they were identified in the response. A profile of the respondents who answered this question is presented below in the following table.

Table 28

*Profile of Respondents to Question 22 - “Which of your skills needed improvement upon hire as an auditor of federal contractors”?*

<u>Gender</u>	<u>GS7</u>	<u>GS9</u>	<u>GS11</u>	<u>GS12</u>	<u>GS13</u>	<u>Unidentified</u>	<u>Total</u>
Female	6	9	16	29	15	1	76
Male	8	9	17	31	21		86
Unidentified			1				1
Total	<u>14</u>	<u>18</u>	<u>34</u>	<u>60</u>	<u>36</u>	<u>1</u>	<u>163</u>
	8.6%	11.0%	20.9%	36.8%	22.1%	.6%	100.0%

As indicated, 163 respondents replied to question 22, identifying 229 skills needing improvement, 178 that could be mapped to the AICPA core competency descriptions and 51 representing ‘Other Skills’. Key words were identified in responses and traced to the same or very similar terms used by the AICPA to describe core competencies. The skills that could be mapped to the AICPA core competencies are shown in the table below.

Table 29

*Skills Identified as Needing Improvement, Mapped to AICPA Core Competencies*

<u>Categories and Competencies</u>	<u>No. Responses</u>	<u>Percent</u>
<u>Functional Category</u>		
Measurement	30	
Reporting	11	
Decision Modeling	8	
Risk Analysis	8	
Research	3	
Total Functional	<u>60</u>	33.7%
<u>Personal Category</u>		
Communication	43	
Problem Solving / Decision Making	17	
Professional Demeanor	6	
Interaction	6	
Project Management	3	

<u>Categories and Competencies</u>	<u>No. Responses</u>	<u>Percent</u>
Leadership	<u>1</u>	
Total Personal	<u>76</u>	42.7%
<u>Broad Business Perspective Category</u>		
Legal Regulatory Perspective	6	
Marketing Client Focus	5	
Industry Sector Perspective	5	
Strategic Critical Thinking	4	
International Global Perspective	1	
Resource Management	<u>0</u>	
Total Broad Business Perspective	<u>21</u>	11.8%
<u>Applicable to all Categories</u>		
Leverage Technology	<u>21</u>	11.8%
Total	<u>178</u>	<u>100.0%</u>

The high response rate attributed to the ‘Measurement’ competency was due to its AICPA description including reference to measurement “Criteria” such as Generally Accepted Accounting Principles (GAAP). No other competency described by the AICPA references ‘Criteria’, which is integral to the job of an auditor. To the extent that respondents identified GAAP, federal auditing standards, federal acquisition regulations or cost accounting standards, their responses were coded as ‘Measurement’.

The 51 ‘Other Skills’ included 19 respondents who identified ‘Contracting’, 14 who identified ‘Auditing’, 13 who identified ‘Cost Accounting’, 4 who identified ‘Accounting’ and 1 who identified ‘Business Systems’.

**Research Question 2.** Research question 2 asked to what extent are some AICPA categories of competencies more important than others are to auditors of federal contractors.

From this research question, it was hypothesized that the AICPA competencies included in the

Functional and Personal categories are more relevant to the auditor of federal contractors than the competencies included in the Broad Business Perspective category (Hypotheses No. 2a and 2b). Respondents perceived the Personal Category as most important ( $M = 4.37$ ,  $SD = .506$ ), followed by the Functional category ( $M = 4.12$ ,  $SD = .591$ ), and then, the Broad Business Perspective Category ( $M = 3.77$ ,  $SD = .695$ ).

The means for the categories were found to be statistically different from one another. A t-test was conducted to test for statistical difference between the means for the Broad Business Perspective competencies and the Personal competencies ( $t = -12.21$ ,  $p = 1.62E-30$ ), between the means for the Broad Business Perspective competencies and the Functional competencies ( $t = -6.79$ ,  $p = 2.71E-11$ ); and between the means for the Personal and Functional competencies ( $t = -5.53$ ,  $p = 4.85E-08$ ). Therefore, the data supported hypotheses Nos. 2a and 2b.

Hypothesis No. 2c was also developed from Research Question 2; i.e., that auditors of federal contractors will identify the AICPA Broad Business Perspective core competency of ‘Strategic Critical Thinking’ as more important than any other competency within the Broad Business Perspective category. The data partially supported hypothesis No. 2c. Not only did respondents indicate ‘Strategic Critical Thinking’ as the third most important competency of the six Broad Business Perspectives competencies instead of first, but they also ranked as low, competencies similar to ‘Strategic Critical Thinking’ that are included in the Functional and Personal categories; i.e., ‘Decision Modeling’ and ‘Problem Solving’, respectively. However, when asked to rank the three most important competencies, ‘Strategic Critical Thinking’ was identified as the third (out of eighteen) most important competency.

*Survey Likert questions.* Survey Likert questions one through 18 measured responses for Research Question 2 on a five-point scale corresponding to the relative importance of each



competency with one representing *not important* to five, representing *very important*.

Descriptive statistics were computed regarding frequencies and percentages of responses, as previously shown in Tables 3 and 4. Means were computed for the responses for each question measured on the Likert scale. The means computed were for the 18 competencies developed from the 18 questions, one for each AICPA core competency. Means were ranked to determine which AICPA core competencies were more important than other AICPA core competencies, as previously indicated on Table 5.

Survey questions 19 and 20 also measured responses for Question 2 by requesting identification of the three most important and the three least important AICPA core competencies with reference to their description in questions one through 18 of the survey. The results of these questions are presented in Tables 6 and 7. For questions 19 and 20, frequencies and percentages of responses were computed and compiled in a Pareto chart to illustrate the most important competencies and to provide support for responses to questions one through 18 measured on the Likert scale. The Pareto charts are presented in Figures 1 and 2.

**Research Question 3.** Research question 3 asked to what extent are opinions different regarding the relevance and ranking of the AICPA core competencies given increased job experience of the auditor of federal contractors. The research sought to determine if differences exist regarding the assessment of importance of the AICPA core competencies with increased years of experience. From this research question, it was hypothesized that greater appreciation for the AICPA Broad Business Perspective core competencies will be demonstrated by the more experienced auditors (hypothesis No. 3).

*Survey Likert questions.* Information for the survey Likert questions are presented in the following tables.

Table 30

*Frequencies of Survey Likert Responses - Juniors and Seniors - Questions 1 through 18*

Q	Category	Competency	Not Important		Little Importance		Somewhat Important		Important		Very Important		Total	
			Jr	Sr	Jr	Sr	Jr	Sr	Jr	Sr	Jr	Sr	Jr	Sr
1	BB	IS	1	8	10	27	30	47	41	41	27	29	109	152
2	F	RA	0	3	1	4	8	17	47	49	53	79	109	152
3	P	PD	0	1	0	0	3	5	27	34	79	112	109	152
4	BB	MK	0	1	1	0	9	9	39	44	60	98	109	152
5	P	I	0	1	0	0	5	2	33	39	71	110	109	152
6	ALL	LT	0	3	0	1	6	9	37	53	66	86	109	152
7	P	C	0	0	0	0	2	3	28	38	79	111	109	152
8	F	RC	0	6	6	12	18	16	39	56	46	62	109	152
9	BB	SC	1	3	10	24	25	31	41	58	32	36	109	152
10	F	MK	0	9	9	18	30	35	48	57	22	33	109	152
11	BB	RS	3	8	17	30	37	48	33	46	19	20	109	152
12	P	PS	1	2	7	8	13	29	50	56	38	57	109	152
13	F	RP	0	0	0	1	1	4	19	28	89	119	109	152
14	P	L	2	1	2	3	22	24	45	53	38	71	109	152
15	BB	LR	1	3	2	6	7	17	38	47	61	79	109	152
16	F	DM	0	6	6	15	25	35	46	54	32	42	109	152
17	P	PM	0	3	4	5	16	20	45	61	44	63	109	152
18	BB	IG	5	13	16	34	43	49	28	39	17	17	109	152

Table 31

*Percentages of Survey Likert Responses – Juniors and Seniors – Questions 1 through 18*

Q	Category	Competency	Not Important		Little Importance		Somewhat Important		Important		Very Important	
			Jr.	Sr.	Jr.	Sr.	Jr.	Sr.	Jr.	Sr.	Jr.	Sr.
1	BB	IS	1%	5%	8%	18%	28%	31%	38%	27%	25%	19%
2	F	RA	0%	2%	1%	3%	7%	11%	43%	32%	49%	52%
3	P	PD	0%	1%	0%	0%	3%	3%	25%	22%	72%	74%
4	BB	MK	0%	1%	1%	0%	8%	6%	36%	29%	55%	64%
5	P	I	0%	1%	0%	0%	5%	1%	30%	26%	65%	72%
6	ALL	LT	0%	2%	0%	1%	5%	5%	34%	35%	61%	57%
7	P	C	0%	0%	0%	0%	2%	2%	26%	25%	72%	73%
8	F	RC	0%	4%	6%	8%	16%	10%	36%	37%	42%	41%
9	BB	SC	1%	2%	9%	16%	23%	20%	38%	38%	29%	24%
10	F	MK	0%	6%	8%	12%	28%	23%	44%	38%	20%	21%
11	BB	RS	3%	5%	16%	20%	34%	32%	30%	30%	17%	13%
12	P	PS	1%	1%	6%	5%	12%	19%	46%	37%	35%	38%
13	F	RP	0%	0%	0%	1%	1%	3%	17%	18%	82%	78%
14	P	L	2%	1%	2%	2%	20%	16%	41%	35%	35%	46%
15	BB	LR	1%	2%	2%	4%	6%	11%	35%	31%	56%	52%
16	F	DM	0%	4%	6%	10%	23%	23%	42%	36%	29%	27%
17	P	PM	0%	2%	4%	3%	15%	13%	41%	40%	40%	42%
18	BB	IG	5%	9%	15%	22%	39%	32%	26%	26%	15%	11%

Table 32

*Ranked (High to Low) Means and Standard Deviations of Survey Likert Questions 1 through 18*

Juniors					Seniors				
No.	Categ	Comp	<i>M</i>	<i>SD</i>	No.	Categ	Comp	<i>M</i>	<i>SD</i>
13	F	RP	4.81	0.41	13	F	RP	4.74	0.53
7	P	C	4.71	0.49	7	P	C	4.71	0.49
3	P	PD	4.70	0.51	5	P	I	4.69	0.56
5	P	I	4.61	0.57	3	P	PD	4.68	0.60
6	ALL	LT	4.55	0.60	4	BB	MK	4.57	0.66
4	BB	MK	4.45	0.68	6	ALL	LT	4.43	0.80
15	BB	LR	4.43	0.77	2	F	RA	4.30	0.91
2	F	RA	4.39	0.66	15	BB	LR	4.27	0.94
17	P	PM	4.18	0.81	14	P	L	4.25	0.84
8	F	RC	4.15	0.89	17	P	PM	4.16	0.91
12	P	PS	4.07	0.90	12	P	PS	4.04	0.94
14	P	L	4.06	0.89	8	F	RC	4.03	1.09
16	F	DM	3.95	0.86	16	F	DM	3.73	1.09
9	BB	SC	3.85	0.98	9	BB	SC	3.66	1.07
1	BB	IS	3.76	0.96	10	F	M	3.57	1.13
10	F	M	3.76	0.87	1	BB	IS	3.37	1.14
11	BB	RS	3.44	1.04	11	BB	RS	3.26	1.08
18	BB	IG	3.33	1.05	18	BB	IG	3.09	1.13

With reference to the preceding ranking of means for Juniors and Seniors, the data does not support that greater appreciation for the AICPA Broad Business Perspective core competencies is demonstrated by the more experienced auditors (hypothesis No. 3). Two-thirds (4 out of 6) of the Broad Business Perspective competencies were found ranked in bottom third of all competencies by both Junior and Senior auditors and, in fact, the means of these Broad Business Perspective competencies in the bottom third were found to actually be somewhat lower for the senior auditors.

In order to determine if differences existed between the two groups of Junior and Senior auditors, an independent T-test was computed to compare the means between the two groups for

each of the 18 competencies. The responses showed partial support that differences existed between the two groups of Junior and Senior auditors. As the following table indicates, t statistics for all competencies, except for 'Industry Sector Perspective' (IS), were less than 2.0, although the t statistic for the personal competency of 'Leadership' was almost two at 1.94. Likewise, the p-value for all competencies, except for 'Industry Sector Perspective' (IS), was greater than .05.

Table 33

*Independent T-test – Comparison of the Means between Junior and Senior Auditors*

<u>No.</u>	<u>Category</u>	<u>Competency</u>	Jr <u>M</u>	Jr <u>SD</u>	Sr <u>M</u>	Sr <u>SD</u>	<u>t</u>	<u>p</u>
1	BB	IS	3.75	.99	3.37	1.13	2.85	.00
2	F	RA	4.41	.66	4.29	.91	1.15	.25
3	P	PD	4.70	.51	4.68	.60	.33	.74
4	BB	MK	4.45	.68	4.55	.69	-1.15	.25
5	P	I	4.61	.57	4.69	.56	-1.03	.30
6	ALL	LT	4.56	.59	4.43	.80	1.48	.14
7	P	C	4.71	.49	4.71	.49	.09	.92
8	F	RC	4.15	.88	4.03	1.09	1.04	.29
9	BB	SC	3.83	.99	3.65	1.07	1.37	.17
10	F	M	3.76	.86	3.58	1.13	-1.48	.14
11	BB	RS	3.44	1.03	3.27	1.09	1.27	.20
12	P	PS	4.07	.90	4.04	.94	.28	.77
13	F	RP	4.81	.41	4.73	.55	1.32	.18
14	P	L	4.04	.90	4.25	.83	-1.94	.05
15	BB	LR	4.44	.77	4.27	.94	1.64	.10
16	F	DM	3.93	.88	3.73	1.09	1.61	.10
17	P	PM	4.17	.84	4.16	.91	.13	.89
18	BB	IG	3.32	1.05	3.08	1.13	1.82	.07

Again, the data partially supports that greater appreciation for the AICPA Broad Business Perspective core competencies is demonstrated by the more experienced auditors (hypothesis No. 3).

Multiple regression was used to determine which independent variables (demographic factors) were statistically significant in influencing the outcome of the dependent variable (responses to questions one through 18) for the two groups Juniors (GS7, GS9 and GS11) and Seniors (GS12 and GS13).

The means and standard deviations for the Junior and Senior audit group variables are presented below in the following table.

Table 34

*Means and Standard Deviations for Junior and Senior Variables – Multiple Regression*

<u>Variable</u>	<u>Juniors</u>		<u>Seniors</u>	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Age	33.64	10.45	42.54	11.57
Years Since College Graduation	6.37	7.58	14.84	11.0
Years as a Federal Auditor	1.79	1.91	10.49	9.78
Years Full-Time Work Experience	9.47	10.16	18.46	11.47
Females % (Males%)	48.0%(52.0%)	Not computed	50.3%(49.7%)	Not computed

The high standard deviations in the preceding table indicate variability in the data and suggest skewness where the modes and medians for the variables are different from the mean. For instance, the mode and median values for the variable ‘age’ for junior auditors were found to be 24 and 29 respectively, with a minimum respondent age of 21 and a maximum respondent age of 62. A maximum age of 62 was unexpected for a junior auditor but possible due to recent employment efforts to hire experienced workers. Compared with a mean of 34 which is higher

than both mode and median, positive skewness is indicated where the majority of the data falls to the left of the distribution.

As previously discussed in research question No. 1, the SPSS statistic that measures collinearity called ‘Variance Inflation Factor’ (VIF) was analyzed. Where the VIF was found to exceed four, the variable removed was the one with the weaker (lower) t value. Collinearity was found between the variables ‘age’ and ‘years of full-time work experience’ for all Likert questions, the same as the multiple regression results discussed in Research question No. 1. The variable removed due to the weaker (lower) t value, ‘years of full-time work experience’ was also the same for each of the Likert questions presented in Research question No. 1. The same variables were found to be statistically significant as those discussed in Research question No., 1 (see Table 27), except for GS levels which were measured in question No. 1 but not in this analysis. The responses to two of the Likert questions were found to be statistically different for the two groups of Junior and Senior auditors. Results are summarized in the table below, sorted by category.

Table 35

*Summary of Statistically Significant Variables - Survey Likert Questions, Junior/Senior Auditors*

<i>Question: How important is it for the federal auditor in your Agency to...?</i>						
No.	AICPA Core Competencies	Category	Competency	Age	Years Since College Graduation	Female Junior
1	Analyze changes in the financial risks of the contractor’s industry/sector	BB	IS	+		+
4	Establish working relationships with audit requestors	BB	MK			+

*Question: How important is it for the federal auditor in your Agency to...?*

No.	AICPA Core Competencies	Category	Competency	Age	Years Since College Graduation	Female	Junior
9	Communicate the contractor's planning process, strategy, and goals	BB	SC	+		+	
11	Consider how human resource management affects a contractor	BB	RS			+	
15	Analyze the impact of changes in contracting laws and regulations	BB	LR				
18	Grasp global threats and opportunities impacting contractors	BB	IG	+	-	+	
2	Understand why controls cannot completely eliminate the risk of fraud	F	RA	+			
8	Interpret research findings from a variety of viewpoints	F	RC			+	
10	Identify pros and cons of alternative methods of measurement	F	M	+		+	
13	Report findings in accordance with auditing standards	F	RP				
16	Use mathematical or scientific models to evaluate decision alternatives	F	DM	+		+	
3	Demonstrate objectivity and integrity consistent with the standards of auditing	P	PD	+			
5	Interact and cooperate productively and maturely with others	P	I				-
7	Communicate information and concepts with conciseness and clarity when writing and speaking	P	C			+	



*Question: How important is it for the federal auditor in your Agency to...?*

No.	AICPA Core Competencies	Category	Competency	Age	Years Since College Graduation	Female	Junior
12	Develop innovative or creative solutions to problems	P	PS			+	
14	Inspire and motivate team members	P	L				
17	Prioritize and delegate various aspects of a project in order to allocate resources	P	PM				
6	Use technology assisted tools to assess and control risk and document work	ALL	LT			+	

When compared with the independent t-test for comparing the means between Junior and Senior auditors (Table No. 33), an anomaly of statistical significance found for regression, but not for the independent T-test, is observed for question No. 5. The anomaly is attributed to the different number of responses available for the T-test than regression. That is, a higher number of respondents provided responses to their GS-levels (264) than complete responses for the variables evaluated under regression (241). For regression, if a respondent did not provide responses for all variables, the response was not used.

**Research Question 4.** Research Question 4 asked to what extent are other competencies, not identified by the AICPA as a core competency, important to the work of auditors of federal contractors. It is assumed that senior auditors (GS-12 and GS-13) will identify ‘Maintaining Independence’ as an additional required competency (hypothesis No. 4).

*Survey open-ended question. Survey question No. 21 “What additional skills, not listed, are also important for auditing federal contractors” addressed Research Question 4. A profile of the respondents who answered this question is presented in the table below.*

Table 36

*Profile of Respondents to Question 21- “What additional skills, not listed, are also important for auditing federal contractors?”*

<u>Gender</u>	<u>GS7</u>	<u>GS9</u>	<u>GS11</u>	<u>GS12</u>	<u>GS13</u>	<u>Unidentified</u>	<u>Total</u>
Female	7	8	12	25	14	1	67
Male	8	9	14	28	18	0	77
Unidentified	<u>0</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>
Total	<u>15</u>	<u>18</u>	<u>27</u>	<u>53</u>	<u>32</u>	<u>1</u>	<u>146</u>

A total of 236 skills were identified, a majority (163) of which could be traced to the AICPA Core Competencies. For instance, since the AICPA Functional competency ‘Measurement’ includes the term *criteria* in its description, skills in criteria such as Generally Accepted Accounting Principles (GAAP), Generally Accepted Government Auditing Standards (GAGAS), Federal Acquisition Regulations (FAR) and Cost Accounting Standards (CAS) were traced to ‘Measurement’.

Likewise, skills in confidence, efficiency, ethics, curiosity, inquisitiveness, open-minded, adaptability, patience, professionalism, tenacity, and work ethic were traced to the Personal competency of ‘Professional Demeanor’ since its detailed description provided by the AICPA includes many of these key words. Skills traced to the Personal competency of ‘Interaction’ included coaching, conflict resolution, and teamwork, for the same reason. Appendix B - Codebook for Survey Open-Ended Questions provides detailed information regarding the tracing of respondent replies to the AICPA core competencies.

The table below presents the summary of responses that could be traced to the AICPA Core Competencies. The majority (89/163 = 55%) were traced to the Personal category while 82% ((44+89)/163) of responses were traced to the Functional and Personal categories.

Table 37

*Survey Question 21 Additional Skills Important for Auditing Federal Contractors*

<u>AICPA Categories and Competencies</u>	<u>No. Responses</u>
<u>Functional Category</u>	
Decision Modeling	2
Research	5
Risk Analysis	12
Measurement (knowledge of criteria such as GAAP, GAGAS, FAR, CAS)	<u>25</u>
Total Functional	<u>44</u>
<u>Personal Category</u>	
Leadership	7
Interaction	8
Professional Demeanor	12
Project Management (organizational skills, multi-tasking, time management)	13
Communication (interpersonal, listening, presentation)	23
Problem Solving (Analytical ability, professional skepticism)	<u>26</u>
Total Personal	<u>89</u>
<u>Broad Business Perspective Category</u>	
Industry Sector (contractor)	4
Legal/Regulatory (laws)	5
Marketing/Client focus (meet customer needs)	6
Strategic/Critical Thinking (“Big Picture”, decision making, logical thinking)	<u>6</u>
Total Broad Business Perspective	<u>21</u>
<u>Applicable to all Categories</u>	
Leverage Technology	<u>9</u>
<b>Total</b>	<b><u>163</u></b>
<u>Other Non-AICPA Competency Skills</u>	
Federal Contracting/Types of Contracts	22
Cost Accounting/indirect pools, bases, rates	12
General Ledger Accounting/ Automated systems	11

<u>AICPA Categories and Competencies</u>	<u>No. Responses</u>
Work independently	5
Internal Controls	4
Auditing	4
Previous or private sector experience	2
Business Systems	2
Forensic Accounting	2
Attention to detail	1
Common sense	1
CPA designation	1
English language fluency	1
Independence	1
Managerial skills	1
Observation	1
Training	1
Tax laws	1
Total	<u>73</u>
Grand Total	<u>236</u>

While one senior auditor identified ‘Maintaining Independence’ as an additional required competency, it was concluded the data did not support hypothesis No. 4.

**Research Question 5.** Research Question 5 asked to what extent some undergraduate accounting courses/topics were overemphasized for a career in auditing federal contractors. It is assumed that the accounting subjects of ‘Tax’, and ‘Consolidation’ will be identified by auditors of federal contractors as courses/topics that tend to be over-emphasized in undergraduate accounting education (hypotheses Nos. 5a and 5b).

*Survey open-ended question.* Survey question No. 23 “*What subjects/topics tend to be over-emphasized in undergraduate accounting education with respect to auditing federal contractors*” (Question No. 6 on the survey administered on Survey Monkey – see Appendix C)

addressed Research Question 5. A profile of the respondents who answered this question is presented in the table below.

Table 38

*Profile of Respondents Survey Question No. 23*

<u>Gender</u>	<u>GS7</u>	<u>GS9</u>	<u>GS11</u>	<u>GS12</u>	<u>GS13</u>	<u>Unidentified</u>	<u>Total</u>
Female	7	9	14	27	15	1	73
Male	7	9	18	29	18		81
Unidentified		1	1			1	<u>3</u>
Total	<u>14</u>	<u>19</u>	<u>33</u>	<u>56</u>	<u>33</u>	<u>2</u>	<u>157</u>

As indicated, one hundred fifty seven responses were received for this question.

However, the majority (113/157) of responses appeared to indicate that the question was not understood, constituted a declaratory response from which it was uncertain whether an over or under-emphasized topic was being communicated, represented a response to an underemphasized topic versus an overemphasized course, or was replied to as “none”.

Of the remaining 44 (157 minus 113) replies, 16 respondents replied that financial accounting or auditing courses were overemphasized, 6 provided replies to the topics of ‘consolidation’ and ‘fund accounting’ normally covered in an advanced, senior-level, accounting course, 5 replied ‘tax’, and two stated ‘marketing’. Single responses were provided for such topics as non-audit letter, non-accounting business courses, quantitative courses, audit letter, derivatives, ethics, financial statement preparation, GAAP, independence, information technology, material, non-accounting courses, present/future value, and theory. Although responses were provided for ‘Tax’ (hypothesis No. 5a) and ‘Consolidation’ (hypothesis No. 5b), it is noted that very few responses were provided to support these hypotheses.

Of more interest were the responses that mentioned topics specific to the job of federal auditor of government contractors. Of the 113 responses that did not directly respond to

identifying over-emphasized courses, 67 either mentioned or expressed preference for topics that address the audit of federal contractors such as contracts, FAR, CAS, GAGAS, cost accounting, or managerial accounting.

### **Factor Analysis.**

The AICPA has already attempted to identify logical groupings for competencies by grouping them into the three categories of Broad Business Perspectives (understanding internal and external business concepts), Functional (technical competencies), and Personal (individual attributes). Factor analysis was employed to further explain responses as a function of other underlying dimensions, that is, explain the pattern of correlations within a set of observed variables. Factor analysis examines correlations among variables in order to identify groupings of highly interrelated variables that reflect latent dimensions or 'factors' in the observed variables.

The principal components method of extraction was used to identify a combination of variables (a component or factor) that accounted for as much variation in the original variables as possible. The goal was to determine how many factors were needed to represent the variables and then to determine what the components represented.

The rule of thumb for a minimum factor analysis sample size is at least 300 per Mundfrom and Shaw's (2005, p. 160) citation of Comrey and Lee that was achieved by the survey response rate. Respondents to the survey Likert questions totaled 303; therefore, factor analysis was conducted.

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) was run in SPSS to determine if factor analysis was appropriate. The KMO varies between zero and one, with values

closer to one as better. A value of .6 is a suggested minimum (“Annotated SPSS Output Factor Analysis”, n.d.) A KMO of .918 was achieved; therefore, factor analysis was appropriate. Bartlett’s test of sphericity significance was .000 (less than .05), also indicative of the appropriateness of factor analysis.

Two factors, identified with Eigenvalues greater than one, accounted for 53.1% of the variability suggesting a significant amount of unexplained variation. Factors were rotated in order to determine the simplest interpretation, using Varimax in SPSS. The following rotated component matrix table shows which variables (survey Likert questions) load on which components after rotation. The survey Likert question on the competency ‘Leverage Technology’ (No. 6) was omitted since it applied to all three AICPA categories of competencies.

Table 39

*Rotated Component Matrix for all variables (Survey Likert questions) except “Leverage Technology”*

<i>How important is it for the federal auditor in your agency to...?</i>				Factor	
<u>No.</u>	<u>Question</u>	<u>Category</u>	<u>Competency</u>	<u>One</u>	<u>Two</u>
18	Identify global threats and opportunities impacting contractors	Broad Business	International/ Global	.80	
11	Consider how human resource management affects a contractor	Broad Business	Resource Management	.78	
10	Identify pros and cons of alternative methods of measurement	Functional	Measurement	.74	
16	Use mathematical or scientific models to evaluate decision alternatives	Functional	Decision Modeling	.72	
9	Communicate the contractor’s planning process, strategy, and goals	Broad Business	Strategic/ Critical Thinking	.72	
1	Analyze changes in the financial risks	Broad	Industry/ Sector	.71	

<i>How important is it for the federal auditor in your agency to...?</i>				Factor	
<u>No.</u>	<u>Question</u>	<u>Category</u>	<u>Competency</u>	<u>One</u>	<u>Two</u>
	of the contractor's industry/sector	Business			
12	Develop innovative or creative solutions to problems	Personal	Problem Solving	.61	
17	Prioritize and delegate various aspects of a project in order to allocate resources	Personal	Project Management	.59	
5	Interact and cooperate productively and maturely with others	Personal	Interaction		.82
7	Communicate information and concepts with conciseness and clarity when writing and speaking	Personal	Communication		.76
3	Demonstrate objectivity and integrity consistent with the standards of auditing	Personal	Professional Demeanor		.74
13	Report findings in accordance with auditing standards	Functional	Reporting		.72
4	Establish working relationships with audit requestors	Broad Business	Marketing		.65
2	Understand why controls cannot completely eliminate the risk of fraud	Functional	Risk Analysis		.43
14	Inspire and motivate team members	Personal	Leadership		.42

Factor analysis was also run on responses to survey Likert questions by the three categories of Broad Business Perspectives, Functional and Personal. Factor analysis resulted in the identification of only one factor for two of the categories, Broad Business Perspectives and Functional. However, factor analysis resulted in two factors for the Personal category. The Kaiser-Meyer-Olin measure of sampling adequacy for responses to the Personal category questions was .786 (higher than .6) and the significance of Bartlett's test of sphericity was .00 (<



.05). Total cumulative variance explained by the two factors was 68.3%. The following rotated component matrix table shows which variables (survey Likert questions) loaded on which components (factors) after rotation for the questions pertaining to the Personal category.

Table 40

*Rotated Component Matrix for all variables (Survey Likert questions) in the Personal category*

<i>How important is it for the federal auditor in your agency to...?</i>				Factor	
<u>No.</u>	<u>Question</u>	<u>Category</u>	<u>Competency</u>	<u>One</u>	<u>Two</u>
5	Interact and cooperate productively and maturely with others	Personal	Interaction	.82	
3	Demonstrate objectivity and integrity consistent with the standards of auditing	Personal	Professional Demeanor	.82	
6	Communicate information and concepts with conciseness and clarity when writing and speaking	Personal	Communications	.75	
11	Develop innovative or creative solutions to problems	Personal	Problem Solving		.80
13	Inspire and motivate team members	Personal	Leadership		.80
16	Prioritize and delegate various aspects of a project in order to allocate resources	Personal	Project Management		.79

As indicated, factor analysis resulted in two factors for the Personal category. The personal competencies of 'Interaction', 'Professional Demeanor' and 'Communications' loaded onto one factor while 'Problem Solving', 'Leadership' and 'Project Management' loaded onto another. These results suggest that the Personal category may be better split into two different

categories. Although a significant amount of unexplained variation is suggested by a total cumulative variance of 68.3%, it would not add value to bring in another factor just for the sake of increasing explained variance since there are only six factors and in light of how respondents assigned different importance to the two factors. The means for the first factor competencies of 'Interaction', 'Professional Demeanor' and 'Communications' ranked in the top third of all competencies while the second factor competency means for 'Problem Solving', 'Leadership' and 'Project Management' ranked in the middle or bottom half of all competencies.

## CHAPTER 5

### DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

This chapter contains discussion concerning the research questions, hypotheses developed from the research questions, conclusions regarding the research objective, implications of the study and the potential for further research based on results of the study.

#### **Purpose**

The purpose of this study was to develop an ideal competency model for federal auditors within the AICPA framework of core competencies. While the AICPA did not present its competencies in a preferential order, the opinions of federal auditors were solicited to determine if some of the competencies are more relevant than others are or if, in fact, other competencies not identified by the AICPA are more useful to the federal auditor. A survey was administered to all general service (GS) auditors at grade levels GS-7, GS-9, GS-11, GS-12 and GS-13 at a single geographic region in a large Federal audit agency that audits the cost representations of government contractors. A total of 306 responses were received representing a 41% response rate. For purposes of the survey, auditors at the GS-7, 9, and 11 grades were identified as junior auditors while GS-12 and GS-13 auditors comprised the group of senior auditors.

#### **Research Question 1**

Research question No. 1 asked to what extent are the AICPA core competencies relevant in auditing federal contractors. It was assumed that a majority of the AICPA core competencies would be found to be relevant (hypothesis No. 1a). The data indicated that two-thirds (12 out of 18) of the competencies were found to have means of greater than four ('important') and that no

mean was found to be less than 3 ('somewhat important'). The mean for all Likert questions was 4.11. Therefore, the data supported hypothesis No. 1a, that a majority of the AICPA core competencies are relevant in auditing federal contractors. It was also assumed that a majority of auditors of federal contractors would identify the AICPA Functional core competency of 'Risk Analysis' as important or very important (hypothesis No. 1b.). The data indicated 91% of respondents found 'Risk Analysis' to be important or very important and, therefore, the data supported hypothesis No. 1b. However, the data also showed that the means of six other competencies ranked higher than 'Risk Analysis', one more in the Functional category (Reporting), three in the Personal category (Communications, Professional Demeanor, and Interaction), one in the Broad Business Perspectives category (Marketing) and, one for the 'Leverage Technology' competency that is applicable to all three categories. All seven of these competencies scored high, with the data indicating responses within a close range of 91%-98% (Table 4) of respondents finding these competencies to be important or very important. Therefore, it is not considered significant that the means of six other competencies ranked somewhat higher than 'Risk Analysis'.

When asked to choose the three most important and the three least important competencies, respondents indicated strong (double-digit percentages) preferences, thereby providing support for hypothesis No. 1a, that the competencies are relevant to the job of auditing federal contractors. All three categories were represented in the top three choices and were the Personal competency of 'Professional Demeanor', the Functional competency of 'Reporting' and the Broad Business Perspective competency of 'Strategic Critical Thinking'. The top half (9 out of 18) included representation of all categories; i.e., four competencies in the Personal category,

two in the Broad Business Perspective, two in the Functional and one for the ‘Leverage Technology’ competency that is applicable to all three categories.

The two competencies identified as least important with significant percentages were ‘International/Global’ and ‘Resource Management’, both of which are Broad Business Perspective competencies, providing support for hypotheses Nos. 2a and 2b, that the Broad Business Perspective competencies are less important than the Functional and Personal competencies. When asked to identify the least important competencies, replies were more heavily weighted toward the Broad Business Perspective competencies.

When asked to identify skills that needed improvement upon hire as an auditor of federal contractors, the majority of responses (178 out of 229) identified skills whose descriptions could be traced to the description of an AICPA core competency, providing further support of hypothesis No. 1a, that the majority of competencies are considered relevant.

**Demographic information by survey Likert questions.** Table 27 in Chapter 4 summarized the statistically significant demographic variables for survey Likert questions.

‘Age’ was influential in predicting responses for seven of the eighteen competencies, almost evenly split between the Broad Business Perspective and Functional competencies, indicating support for hypothesis No. 3, that senior (older) auditors are more appreciative of the Broad Business Perspective competencies than are junior (younger) auditors.

Gender was also found to influence the response for 11 of the 18 responses. Women were found to rate the competency higher for four of the Broad Business Perspective competencies, three of the Functional competencies, two of the Personal competencies, and for the ‘Leverage Technology’ competency applicable to all categories. Since the results of multiple regression found gender influenced the response to many of the Likert questions, in order to determine if

women tended to rate higher in general, t-tests were conducted between men and women for their responses to all competency questions and for their responses to categories of competencies questions. The results are shown below and indicate that women did tend, in general, to rate higher than did men. For all tests, the mean response for women was found to be higher than the mean response for men and statistically significant as evidenced by the t and p values.

All Competencies			Broad Business Perspective Competencies		
	Female	Male		Female	Male
Mean	4.25	4.00	Mean	3.95	3.59
Variance	0.25	0.23	Variance	0.48	0.41
Observations	120	123	Observations	120	123
t Stat	4.03		t Stat	4.26	
P(T<=t) two-tail	0.00		P(T<=t) two-tail	0.00	

Functional Competencies			Personal Competencies		
	Female	Male		Female	Male
Mean	4.27	4.02	Mean	4.49	4.33
Variance	0.30	0.33	Variance	0.23	0.20
Observations	120	123	Observations	120	123
t Stat	3.44		t Stat	2.63	
P(T<=t) two-tail	0.00		P(T<=t) two-tail	0.00	

However, in order to determine if differences exist in the importance assigned to categories of competencies between men and women, t-tests were conducted between two different categories of competencies at a time for women and for men. The results follow and indicate that for each pair of categories, men and women were consistent in their identification of importance of the category. That is, both men and women found the Functional category more important than the Broad Business Perspective category, the Personal category more important

than the Functional category and the Personal category more important than the Broad Business Perspective category. The results indicate that even though women tend to rate higher, no difference exists in how they would assign importance to the three categories of competencies when compared with men.

Females			Males		
	Broad Business Perspectives	Functional		Broad Business Perspectives	Functional
Mean	3.95	4.27	Mean	3.59	4.02
Variance	0.48	0.30	Variance	0.41	0.33
Observations	120	120	Observations	123	123
t Stat	-3.84		t Stat	-5.47	
P(T<=t) two-tail	0.00		P(T<=t) two-tail	0.00	

Females			Males		
	Functional	Personal		Functional	Personal
Mean	4.27	4.49	Mean	4.02	4.33
Variance	0.30	0.23	Variance	0.33	0.20
Observations	120	120	Observations	123	123
t Stat	-3.310		t Stat	-4.76	
P(T<=t) two-tail	0.001		P(T<=t) two-tail	0.00	

Females			Males		
	Broad Business Perspectives	Personal		Broad Business Perspectives	Personal
Mean	3.95	4.49	Mean	3.59	4.33
Variance	0.48	0.23	Variance	0.41	0.20
Observations	120	120	Observations	123	123
t Stat	-6.88		t Stat	-10.53	
P(T<=t) two-tail	0.00		P(T<=t) two-tail	0.00	

## Research Question 2

Research question No. 2 asked to what extent are some AICPA categories of competencies more important than are others to auditors of federal contractors. It was hypothesized that the AICPA competencies included in the Functional and Personal categories were more relevant to the auditor of federal contractors than the competencies included in the Broad Business Perspective category (Hypotheses No. 2a and 2b).

Results revealed that respondents perceived the Personal Category as most important ( $M = 4.37$ ,  $SD = .78$ ), followed by the Functional category ( $M = 4.12$ ,  $SD = .96$ ), and then, the Broad Business Perspective Category ( $M = 3.7$ ,  $SD = 1.08$ ). Therefore, the data supported hypotheses Nos. 2a and 2b.

The responses to open-ended questions 21 and 22 (Questions four and five in the Survey Monkey survey – see Appendix C) also supported Hypotheses 2a and 2b in that replies showed clear preferences for the Functional and Personal categories over the Broad Business Perspective category. For question 21, “*What additional skills, not listed, are also important for auditing federal contractors,*” the Functional and Personal competencies were identified as 27% and 55% of all responses, respectively. For question 22, “*Which of your skills needed improvement upon hire as an auditor of federal contractors*” the Functional and Personal competencies were identified as 34% and 43% of all responses, respectively. It is noteworthy that for those six competencies that scored a mean of below 4.0, four of them belonged to the Broad Business Perspective category. On the other hand, one-half of the top third of competencies (three out of six) were in the Personal category.

It was also hypothesized that auditors of federal contractors would identify the AICPA Broad Business Perspective core competency of ‘Strategic Critical Thinking’ as more important



than any other competency within the Broad Business Perspective category (hypothesis No. 2c). The data was mixed in support of this hypothesis. Instead of identifying ‘Strategic Critical Thinking’ as more important than any other competency within the Broad Business Perspective category, respondents ranked ‘Strategic Critical Thinking’ as the third most important competency of the six Broad Business Perspectives competencies (Mean = 3.71) following ‘Marketing’ and ‘Legal/Regulatory’. Respondents also ranked as relatively low (means below 4.11, the mean for all competencies), competencies similar to ‘Strategic Critical Thinking’ that are included in the Functional and Personal categories; i.e., ‘Decision Modeling’ (Mean = 3.82) and ‘Problem Solving’ (Mean = 4.02), respectively. However, when asked to rank the three most important competencies, ‘Strategic Critical Thinking’ was identified as the third (out of eighteen) most important competency. As one auditor observed for a skill needing improvement, “*critical thinking - learning how to ask the appropriate follow-up questions and not taking the contractor's assertions at face value.*” Therefore, the data was found to partially support hypothesis No. 2c.

**Factor Analysis.** Factor analysis was run on responses to survey Likert questions by the three categories of Broad Business Perspectives, Functional, and Personal. Factor analysis resulted in the identification of only one factor for two of the categories, Broad Business Perspectives and Functional. However, factor analysis resulted in two factors for the Personal category. The personal competencies of ‘Interaction’, ‘Professional Demeanor’ and ‘Communications’ loaded on one factor while ‘Problem Solving’, ‘Leadership’ and ‘Project Management’ loaded on another. These results suggest that the Personal category may be better split into different categories. However, as explained in Chapter 4, although a significant amount of unexplained variation is suggested by total cumulative variance, it would not add value to

bring in another factor just for the sake of increasing explained variance since there are only six factors and in light of how respondents assigned different importance to the two factors. The means for the first factor competencies of ‘Interaction’, ‘Professional Demeanor’ and ‘Communications’ ranked in the top third of all competencies while the second factor competency means for ‘Problem Solving’, ‘Leadership’ and ‘Project Management’ ranked in the middle or bottom half of all competencies.

**Survey Likert questions by competency categories.** A discussion of the survey Likert responses, by competency category, is presented in this section.

**Broad business perspective competencies.** Six survey Likert questions sought opinions on the Broad Business Perspective category competencies of ‘International/Global Perspective’, ‘Industry/Sector Perspective’, ‘Legal/Regulatory Perspective’, ‘Marketing/Client Focus’, ‘Resource Management’, and ‘Strategic Critical Thinking’. Respondents ranked the Broad Business Perspective category of competencies to be the least important of the three categories of competences supporting Hypotheses 2a and 2b, that the Functional and Personal competencies are more important than the Broad Business Perspective competencies. Four of the six competencies (‘Industry/Sector Perspective’, ‘Strategic Critical Thinking’, ‘Resource Management’ and ‘International/Global Perspective’) had means less than 4.11, the mean for all survey Likert questions.

Multiple regression on the demographic variables found influential variables for the four competencies with means below the 4.11 mean for all survey Likert questions. Women believed four of the competencies (‘Industry/Sector Perspective’, ‘Strategic Critical Thinking’, ‘Resource Management’ and ‘International/Global Perspective’) to be more important than did men.

Increasing age influenced more importance assigned to three of the six competencies

(‘Industry/Sector Perspective’, ‘Strategic Critical Thinking’ and ‘International/Global Perspective’) providing some limited support for hypothesis No. 3, that senior auditors would be more appreciative of Broad Business competencies than would junior auditors.

An unexpected contradiction in the data was found for survey Likert question No. 1 which sought an opinion on ‘Industry/Sector Perspective’. The positive coefficients for the GS levels mean that a positive increase to the predicted response will occur unless the respondent is a GS-13. However, a positive coefficient was also found for ‘Age’, also found to be statistically significant. It was expected that GS-13s (generally older with more years of experience) would find this competency more important than lesser GS-levels. The unexpected contradiction was found again when running regression on Juniors/Seniors discussed in this chapter under research question No. 3. That is, tables 27 and 35 both indicate the same apparent contradiction for Likert question No. 1.

Respondents considered the ‘Marketing/Client Focus’ and ‘Legal/Regulatory’ competencies more important than the other competencies. However, the response ‘Marketing Client Focus’ approximated 4% (compared with an average 6-7%) of all identified competencies when respondents were asked what skills needed improvement and what additional skills were needed for auditing federal contractors. For the federal auditor, attention to audit requestor needs have to be balanced with the concurrent auditing standard to maintain independence.

With regard to ‘Strategic Critical Thinking’, respondents rated this competency in the bottom third of all competencies. The finding supported Hypotheses 2a and 2b in that the Broad Business Perspective competencies were found to be less important than the Functional and Personal Competencies. However, the finding did not support Hypothesis No. 2c in that this competency was found to be less important than other Broad Business Perspective competencies.

Respondents also ranked as low, competencies similar to ‘Strategic Critical Thinking’ that are included in the Functional and Personal categories; i.e., ‘Decision Modeling’ and ‘Problem Solving’, respectively. This finding is of concern given the importance of a competency in ‘Strategic Critical Thinking’ to the federal auditor. Numerous researchers have found strategic critical thinking to be important for the profession of accounting/auditing (Gupta & Marshall, 2010; Jim et al., 2009; Thomas, 2000; Daigle et al., 2007; Kaciuba & Siegel, 2009; Bolt-Lee & Foster, 2003). It may be that graduates and working accountants/auditors continue to focus on the significant accounting content required for the CPA exam rather than skills required for integrating data from a variety of disciplines for decision-making. The response ‘Strategic Critical Thinking’ represented 4% (compared with an average 7%) of all identified competencies when respondents were asked what skills are important for auditing federal contractors.

With regard to ‘Resource Management’ respondents did not mention this competency at all when asked what skills needed improvement upon hire as a federal auditor and what skills are important for auditing federal contractors. However, it is worthwhile to evaluate the results for this competency in conjunction with the results for the Personal competency of ‘Project Management’ since there is some overlap in the AICPA description of these competencies. Respondents ranked the Personal competency of ‘Project Management’ in the middle of all competencies in terms of importance.

Likewise, with regard to ‘Legal Regulatory Perspective’, responses to this competency should be evaluated in conjunction with the Functional competency of ‘Measurement’ that addresses the codification of criteria since important criteria for federal auditors are the Federal Acquisition Regulations (FAR). The results of open-ended question 21 ‘*What additional skills, not listed, are also important for auditing federal contractors*’ indicated 15% (compared with an

average 7%) of responses included reference to criteria such as the FAR. Likewise, the responses to open-ended question 22 ‘*Which of your skills needed improvement upon hire as an auditor of federal contractors*’ indicated a high response rate (17% compared with an average 7%) for the Functional category of ‘Measurement’. The AICPA definition for ‘Measurement’ includes reference to ‘criteria’, which the FAR represents. As auditors become involved in legal and regulatory matters, they need to be able to distinguish facts, based on reference to regulation and criteria, to establish credible testimony.

Finally, with regard to ‘International Global Perspective’, respondents rated this competency as the least important of all competencies. It has only been recently that the CPA exam has included questions on the international financial reporting standards. Therefore, the relevance of this topic may not yet have fully developed, especially for federal auditors who deal primarily with domestic federal contractors. However, as noted previously, the U.S. Department of the Treasury Advisory Committee on Auditing advised in 2008 that professional exam content should trigger changes in accounting education to address auditing public companies in a global economy. Currently, significant federal dollars are spent on United Kingdom contractors British Aerospace Engineering (BAE) and Rolls-Royce as well as the Italian technology company, Finmeccanica, all of which are subject to review by federal auditors.

***Functional competencies.*** Five survey Likert questions sought opinions on the Functional category competencies of ‘Decision Modeling’, ‘Measurement’, ‘Risk Analysis’, ‘Research’, and ‘Reporting’. Respondents ranked the Functional category of competencies as the second most important category, behind the Personal category but more important than the Broad Business Perspective category, supporting Hypothesis 2a, that the Functional competencies are more important than the Broad Business Perspective competencies. However, three of the five

competencies ('Research', 'Decision Modeling' and 'Measurement') had means less than 4.11, the mean for all survey Likert questions.

Multiple regression on the demographic variables found 'Age' and gender to be positive influential variables for 'Measurement' and 'Decision Modeling'; that is, the response would increase the older the respondent and if the respondent were a woman. 'Age' was also found to be positively influential for 'Risk Analysis' while women deemed 'Research' more important than did men.

With regard to 'Risk Analysis, respondents considered this competency more important than the other competencies in support of Hypothesis No. 1b, that a majority of auditors of federal contractors would identify the AICPA Functional competency of 'Risk Analysis' as important or very important. This competency was ranked in the top half of the most important competencies. The finding supports the "full set of risk exposures" (p. 316) identified as necessary for an auditor to understand in order to determine where to devote audit effort (McCartney et al., 2002).

With regard to 'Research', respondents rated this competency as slightly less important than other competencies. The response 'Research' represented only 2% (compared with an average 6%) of all identified competencies when respondents were asked what additional skills were important for auditing federal contractors. This finding is of concern regarding the important need for the auditor to conduct and evaluate research that may include opposing viewpoints. The CPA exam currently includes business simulations that require research of authoritative sources, in a timed environment, to respond to test questions. Auditors need to know how to support their findings with adequate evidence and for that reason need to know how to retrieve and interpret the product of that research. The literature indicates these are skills

with which students have been found to struggle (Daigle et al., 2007). The federal auditor needs to know the applicable authoritative sources for defending audit results, the means to retrieve these sources, and the skills to apply them to a particular situation at hand.

With regard to ‘Measurement’, respondents considered this competency less important than other competencies ranking it in the bottom third of competencies thereby contradicting Hypothesis No. 2a, that the Functional core competencies would be perceived to be more relevant than the Broad Business Perspective competencies. However, the results of open-ended question 21 ‘*What additional skills, not listed, are also important for auditing federal contractors*’ contradicted the results of the Likert question responses. Of 163 responses that could be identified to an AICPA core competency, the highest number of responses, 25 (15% compared with an average 7%), were traced to the Functional category of ‘Measurement’ because the response included a reference to criteria such as GAAP, GAGAS, FAR and CAS. Likewise, the responses to open-ended question 22 ‘*Which of your skills needed improvement upon hire as an auditor of federal contractors*’? also indicated a high response rate (17% out of an average 6%) for the Functional category of ‘Measurement.’ With reference to the apparent contradiction, it is assumed that respondents did not fully associate the survey Likert question’s use of the term ‘alternative methods of measurement’ with criteria such as the FAR.

With respect to ‘Reporting’, respondents found this competency to be the most important competency of all of the competencies. Given that the ultimate work product of the federal auditor is the written audit report, this finding was expected and supported hypothesis No. 2a, that Functional core competencies are more relevant than are the Broad Business Perspective competencies. The ‘Reporting’ competency is similar to the Personal category of ‘Communication’ that addresses writing skills, another competency that highly ranked as the

second most important skill. Because an audit culminates in the issuance of a report, good writing skills are required for providing written assurance and in providing the persuasive aspect of an opinion (Vasarhelyi et al., 2010). The response 'Reporting' represented 6% (compared with an average 6%) of all responses when respondents were asked what skills needed improvement upon hire as a federal auditor and what skills are also important for auditing federal contractors.

Finally, with regard to 'Decision Modeling', respondents rated this competency as less important than other competencies ranking it in the bottom third of competencies. The ranking appears to contradict the 1996 observation of the IMA's study *The practice analysis of management accounting* that management accountants have evolved into more sophisticated decision-support specialists rather than mere 'number-crunchers' (Jim et al., 2009). It may be that this competency is more relevant for the management accountant but not as significant for the federal auditor. Federal auditors, however, do use quantitative techniques as statistical sampling, improvement curve analysis, and regression in their work. About 5% (compared with an average 6%) of responses to survey question no. 22 identified 'Decision Modeling' as a skill needing improvement upon hire.

**Personal competencies.** Six survey Likert questions sought opinions on the Personal category competencies of 'Communication', 'Interaction', 'Leadership', 'Professional Demeanor', 'Project Management' and 'Problem Solving/Decision Making'. Respondents ranked the Personal category of competencies as the most important category, supporting Hypothesis 2b, that the Personal competencies are more important than the Broad Business Perspective competencies.

Only one of the six competencies ('Problem Solving/Decision Making') had a mean less than 4.11, the mean for all survey Likert questions. However, the response 'Problem



Solving/Decision Making' represented 10% (compared with an average 6%) of all responses when respondents were asked what skills needed improvement upon hire as a federal auditor and what skills are also important for auditing federal contractors. Similar to survey Likert question No. 9, which addressed 'Strategic Critical Thinking', this finding is of concern given the importance of the 'Problem Solving' competency.

Multiple regression on the demographic variables found 'Age' to be a positive influential variable for 'Professional Development'; that is the response would increase the older the respondent. Women found the competencies 'Communication' and 'Problem Solving/Decision Making' more important than did men.

Regarding 'Interaction', senior auditors found this competency to be more important than did junior auditors. The finding supports the research conducted by Milliron (2008) that the recent graduate might not yet possess the maturity needed for accounting employment. Although 'Interaction' was ranked as the fourth most important of the 18 competencies, this competency only ranged from 3 to 5% (compared with an average 6-7%) of all identified competencies when respondents were asked what skills needed improvement upon hire and what additional skills were needed for auditing federal contractors.

With regard to 'Professional Demeanor', respondents ranked this competency as third highest in importance. When asked what additional skills were needed for auditing federal contractors, 12% (compared with an average of 7%) of the responses could be traced to the competency of Professional Demeanor. The "quality-threatening behaviors" (p. 91) identified by Sweeney and Costello (2009) found at audit trainee levels support the need for early training in ethical expectations, a dimension addressed by 'Professional Demeanor'. The Sarbanes-Oxley Act of 2002 (SOX) authorized the newly created Public Company Accounting Oversight Board

to establish auditing standards to help better achieve objectivity and integrity consistent with the standards of auditing, in light of auditing failures such as Enron.

Respondents ranked 'Communication' as the second highest ranked competency of all competencies. The response 'Communications' represented 24% (compared with an average 6%) of identified competencies when respondents were asked what skills needed improvement upon hire. Research has found oral, written, and presentation communications skills are frequently found wanting in accounting graduates (Ameen et al., 2010; Jones, 2011) and that employers expect capability in written communication, proficiency not typically emphasized in an accounting curriculum (Kavanagh & Drennan, 2008).

With respect to 'Leadership', respondents ranked it tenth out of eighteen competencies. The response 'Leadership' represented only 4% (out of average 6%) of all responses when respondents were asked what skills needed improvement upon hire as a federal auditor and what skills are also important for auditing federal contractors. However, its ranking as an important competency supports Hypothesis No. 2b, that the Personal core competencies are more relevant than the Broad Business Perspective competencies. The core competencies committed to by the AICPA in the *CPA Horizons 2025* report include 'Leadership', continuing recognition of the importance of this competency (AICPA, 2012b).

Concerning 'Project Management', respondents ranked this competency in the top half of all competencies in support of hypothesis No. 2b, that the AICPA Personal core competencies are more relevant than the Broad Business Perspective competencies. Research indicates an influence driving changes in audit education are employers requiring project management skills, especially useful for managing the audit (Stout et al., 2004). The response 'Project Management' represented 8% (compared with an average of 7%) of all responses when respondents were asked

what skills are important for auditing federal contractors. The competency's important ranking is supported by the literature that notes that project managers need to be generalists, take a system versus analytical approach, and to serve as facilitators (Liberatore et al., 2007; Stout, West, & Liberatore, 2004).

### **Research Question 3**

Research question 3 asked to what extent are opinions different regarding the relevance and ranking of the AICPA core competencies given increased job experience of the auditor of federal contractors. This question attempted to determine if differences exist regarding the importance of the AICPA core competencies with increased years of experience. 'Increased years of experience' was measured by separating the responses into two groups, Junior (Grade Level GS7, 9 and 11) and senior auditors (Grade Level GS12 and 13).

The means ranking for Junior and Senior auditors indicated that increased job experience did not affect opinions regarding the relevance and ranking of the core competencies with the exception of the Personal competency 'Leadership'. Senior auditors ranked 'Leadership' as the ninth (out of 18) most important competency compared to its ranking as the twelfth most important competency for the junior auditors.

It was hypothesized that greater appreciation for the AICPA Broad Business Perspective core competencies would be demonstrated by the more experienced auditors (hypothesis No. 3). However, the data for the Likert questions did not support that greater appreciation for the AICPA Broad Business Perspective core competencies was demonstrated by the more experienced auditors. Instead, the data indicated that two-thirds (4 out of 6) of the Broad Business Perspective competencies were ranked in the bottom third of all competencies by both

Junior and Senior auditors and that the means of these Broad Business Perspective competencies were found to be actually somewhat lower for the senior auditors.

In order to determine if differences existed between the two groups of Junior and Senior auditors, an independent T-test was computed to compare the means between the two groups for each of the 18 competencies. The responses partially supported that differences exist between the two groups of junior and senior auditors. The  $p$  value for ‘Industry Sector Perspective’ competency was found to be less than .05. The data for statistically significant variables discussed in research question No. 1 also indicated some limited support for hypothesis No. 3 with respect to increasing age. As detailed in Table 35, the variable “Age” was found to be positively significant for seven of the 18 survey Likert questions and three of these seven were for the Broad Business Perspective competencies, providing some limited support for hypothesis No. 3. The responses to two of the Likert questions were found to be statistically significant for the two groups of Junior and Senior auditors. One of these was for the Broad Business Perspective competency of ‘Industry/Sector’ and, for this competency; junior auditors actually rated it higher, contradicting hypothesis No. 3.

#### **Research Question 4**

Research question 4 asked to what extent are other competencies, not identified by the AICPA as a core competency, important to the work of auditors of federal contractors. It was assumed that senior auditors (GS-12 and GS-13) would identify ‘Maintaining Independence’ as an additional required competency (hypothesis No. 4). Only one auditor, a Senior auditor, identified ‘Maintaining Independence’ as an additional required competency in responding to survey question 21 “*What additional skills not listed are also important for auditing federal contractors?*”. Another auditor referred to “be independent” which, when evaluated in the

context in which it was provided, was traced to the Personal category of ‘Leadership’ that includes in its definition, “Controls for own biases”, however, only four percent of responses traced to the AICPA competencies for survey question 21 were traced to ‘Leadership’.

Therefore, it was concluded that the data did not sufficiently support hypothesis No. 4. Instead of ‘Maintaining Independence’ as the most frequently cited non-AICPA competency, 22 respondents identified ‘the federal contracting process and types of contracts’, and 13 replied ‘General ledger accounting’. The data’s lack of support for Hypothesis No. 4 is of concern given findings by the GAO that federal auditors have been deficient in their adherence to generally accepted government auditing standards especially in the area of maintaining independence (Kutz, 2008).

### **Research Question 5**

Research question 5 asked to what extent some undergraduate accounting courses or topics were overemphasized for a career in auditing federal contractors. It was assumed that the accounting subjects of ‘Tax’, and ‘Consolidation’ would be identified by auditors of federal contractors as courses or topics that tend to be over-emphasized in undergraduate accounting education (hypotheses No. 5a and 5b). Although responses were provided for ‘Tax’ (hypothesis No. 5a) and ‘Consolidation (hypothesis No. 5b), it was noted that very few of these responses were provided to significantly support hypotheses Nos. 5a and 5b.

Instead, given the open-ended format of the question, the majority of the respondents offered opinions regarding the need for courses that address topics specific to the job of the federal auditor, such as contracting, federal acquisition regulations, cost accounting standards, generally accepted government auditing standards, and cost accounting. For those respondents who directly answered the question, the majority indicated over-emphasis of financial accounting

or auditing courses geared toward non-governmental auditing. As one respondent noted, “*I rarely, if ever, look at financial statements as a federal contract auditor. In my undergraduate accounting classes financial statements were all we talked about.*”

## **Conclusions**

Federal auditors considered the majority of the AICPA core competencies relevant in auditing government contractors and that competency in risk analysis is important. Even so, the response ‘Risk Analysis’ ranged from 5 to 7% (compared with an average of 6-7%) of all identified competencies when respondents were asked what skills needed improvement and what additional skills were needed for auditing federal contractors. Auditors require the critical thinking skills that allow for analyzing business ‘risk’ (McKnight & Wright, 2011).

Federal auditors also deemed the AICPA Functional and Personal competencies more important than the Broad Business Perspective competencies. The most frequently mentioned AICPA-skills needing improvement were the Personal competency of ‘Communication’ and the Functional competency of ‘Measurement’. Concerning communication, one auditor noted, “*effective writing skills are essential, we must document everything we do. Our audit reports are our product and the communication given must be clear and able to stand the test of time.*” The importance assigned to ‘Measurement’ flows directly from the inclusion of the term ‘criteria’ in the AICPA definition for this competency; i.e., criteria represent professional principles and regulations used by accountant/auditors to make decisions, such as codified generally accepted accounting principles or federal acquisition regulations.

With regard to the Broad Business Perspective competency of strategic critical thinking, Federal auditors provided a mixed response regarding the importance of this competency to their job. However, rather than adjusting a competency model to accommodate this finding, the better

remedy given existing evidence, would be to stress the importance of strategic critical thinking in the undergraduate accounting program and on-the-job training for the federal auditor. The literature is laden with significant employer feedback regarding the need for the graduating accounting major to acquire and exercise the ability to ‘link data, knowledge, and insight together from various disciplines to provide information for decision making’, which is included in the AICPA definition for ‘Strategic Critical Thinking’. The core competencies that the AICPA continues to commit in its most recent *CPA Horizons 2025* report include critical thinking and problem solving. Research has found that problem-based learning has been found to advance content mastery to critical evaluation skills (Fogarty, 2010).

The data provided only partial support that senior federal auditors found the Broad Business Perspective competencies more important than less experienced auditors. The finding was unexpected in that it was assumed greater experience and maturity would foster a realization of the importance of the skills included in the Broad Business Perspective competencies, such as global awareness, industry sector knowledge, etc. The group of auditors deemed ‘senior’ auditors for purposes of this study included only one GS level (GS-13) that constitutes supervision. It might be, had GS levels higher than GS-13s been included in the study, the data would have indicated greater appreciation for the Broad Business Perspective competencies.

The information partially supported that federal auditors believe the advanced accounting topics of tax and consolidation were overemphasized for a career in auditing government contractors. The data did not indicate that maintaining independence is required as an additional competency.

Finally, contrary to prevailing literature, auditors of federal contractors identified significant need for better training in conventional accounting technical content such as general

ledger accounting and, especially, cost accounting. The number of auditors expressing dissatisfaction with their skills in conventional accounting topics contradicts Garvin's (2005) observation that "some content will have to be sacrificed" (p. 168). The open-ended format of questions 21-23 permitted respondents to offer a number of sometimes-impassioned replies with regard for the need of better training in knowledge-based topics such as general ledger accounting and cost accounting as well as courses specific to federal auditing. These responses run counter to the goal of the AICPA in identifying the core competencies as skills versus content acquisition. For instance, one respondent noted "*the ability to understanding how the contractor's accounting systems work is very important. Having previous experience as an accountant (general ledger, accounts payable, payroll) has been extremely helpful in understanding how different systems work.*" Knowledge of cost accounting is very important in auditing cost representations of federal contractors especially with regard to rates computed to recover indirect cost. A respondent noted, "*I remember taking cost (or managerial) accounting; but not to the extent that is needed*" for federal auditing. A respondent identified a need for "*knowledge of pools and bases and the application of indirect cost to direct cost*" while another acknowledged the need for training in "*the development of a predetermined and actual indirect rate, including the allocation process for those rates.*"

Many of the comments referred to the need for specialized undergraduate training in the federal acquisition regulations (FAR) criteria applicable to the federal contractor and to federal contracting, in general. For instance, one auditor noted, "*they don't stress the auditing environment in the undergraduate curriculum. I had 1 class my senior semester and nothing prepared myself for federal contract auditing.*" Others noted, "*additional concentration needs to be made on Government Procurement and Contracting*" ... "*understanding various contract*



types, Federal regulations (FAR-DFAR) ... “contract knowledge. The documents and agreements for which the costs were incurred are largely unknown to auditors” and “understanding the acquisition & procurement process.” Finally, one auditor noted “....Specifically FAR, I did not even know this existed when I started.” Few academic institutions offer courses specifically in the federal acquisition regulations (FAR) unless provided as seminars in conjunction with continuing professional education. Instruction in the specialized nature of FAR is more often provided by government employers or federal contractor employers. The responses to open-ended survey questions 21 and 22 reinforced the importance of topics specific to the federal auditor. For question 21, “What additional skills not listed are also important for auditing federal contractors”, 30% (22 out of 73 responses not traced to the AICPA core competencies) identified the federal contracting process and types of contracts, 16% identified cost accounting and 15% identified general ledger accounting. For question 22, “Which of your skills needed improvement upon hire as an auditor of federal contractors”, 37% (19 out of 51 responses traced to a non-AICPA competency) identified the federal contracting process and types of contracts, 27% identified auditing and 25% identified cost accounting. Given its specialized nature, employer on-the-job training could best address the federal contracting process/types of contracts or a joint training effort might be undertaken by the federal government and colleges.

Some respondents’ replies run contrary to a significant amount of the literature that calls for training in non-accounting subjects. For instance, one respondent complained, “schools require too many electives in non-accounting/auditing where additional training in accounting information systems and intermediate to advanced auditing would be more useful. I understand the importance of being well rounded, but I think .... having 10 -12 liberal art type classes over the course of a college education is too much.”

## Implications

While survey respondents provided useful insight into skills required for the federal auditor, only some of those competencies could be practically addressed by the undergraduate accounting curriculum. The high importance assigned to the Personal skill of ‘Communication’ indicates a need to better integrate the practice and mastery of written, oral, and presentation skills into the undergraduate course of study, an effort already underway at many universities.

With respect to improved instruction in the Broad Business Perspective competency of strategic critical thinking, it may be the federal auditor’s intent on meeting the rigidity of auditing standards or preoccupation with the knowledge content required for passing the CPA exam accounts for its low standing as a required competency. Irving (2011) recommends an integrated approach to learning accounting that develops critical thinking skills, communication skills, and experience working in teams. Given the focus on content mastery in the undergraduate accounting curriculum, graduate accounting programs might be better able to address mastery of Broad Business Perspective competencies such as strategic critical thinking.

The study indicates that a competency model for federal auditors needs to make continued room for knowledge requirements along with the broader skill set advocated by the AICPA. The implications of this finding are significant with regard to what an already overburdened accounting curriculum can be expected to deliver. The accounting course of study is currently expected to provide training in emerging areas such as forensic accounting, the international financial reporting standards, and enhanced internal controls resulting from Sarbanes-Oxley legislation but still deliver the knowledge content demanded by the CPA exam. The inclusion of other important competencies such as ethics, identification of fraud, information literacy, communication capabilities, and strategic critical thinking challenges accounting faculty

to find the time to introduce these topics without displacing other key topics in accounting courses (Young & Warren, 2011). Faculty is additionally subject to what Vance and Stephens (2010) refer to as the increasing pressures within colleges to “acquiesce to the needs” (p. 6) of the current generation whose sufficiency in a well-developed work ethic is questioned by the authors. In fact, these authors specifically note the absence in the AICPA Personal category, competencies such as ‘behavioral drive’ and ‘self-motivation’, generational deficiencies that contribute to accounting faculty workload.

### **Limitations**

The study was limited in that not all federal auditors audit federal contractors (businesses). For instance, some federal auditors audit other government components or individuals. While this may impede generalization to all federal auditors, the research may prove applicable to non-government auditors who also audit U.S. federal contractors such as external CPA firms or company internal auditors.

An important limitation of the study was presented by the definitions the AICPA provided for the competencies. The descriptions overlapped for some competencies and across categories. Other researchers may identify different concepts addressed by the competency than the ones included in the survey.

### **Suggested Further Research**

Opportunities for further research include differentiating between the opinions of federal auditors who are CPAs and those who are not CPAs. As discussed in the literature review, the CPA professional organizations frequently drive accounting curriculum changes and reinforce the need for those changes by modifying the content of the CPA exam. For instance, Pecoraro (2011) noted that effective in 2011, the CPA exam now includes questions on the international

financial reporting standards (IFRS). Accounting curricula and texts, in turn, have responded by addressing the topic of IFRS. It may be that federal auditors who aspire to or who have earned the designation of CPA, would attach greater importance to the Broad Business Perspective competency 'International/Global' that considers global issues in reaching business decisions.

With respect to further taxing an overburdened accounting curriculum intent on delivering the knowledge-based content necessary for passing the rigorous CPA exam, additional research might be warranted for evaluating the preparation needed for accounting as a profession. As Wilkerson (2010) noted, the responsibility of educating an accounting student includes preparing the student for professional work and professional identity. However, the burden imposed on undergraduate accounting faculty is, at times, unmanageable and for that reason, universities continue to pass the responsibility of finishing required training to the employer of the accounting graduate. Ainsworth (2001) notes that the Accounting Education Change Commission indicated accounting programs should prepare students to become professional accountant and not *be* professional accountants. Additional research might reveal that employers do not necessarily agree that graduating accountants arrive at employment in this unfinished state. For the business of accounting to fully take its place as a profession similar to law or medicine that also require rigorous exams, the graduating accountant may need to accomplish further schooling to be fully realized as an accounting professional that has achieved capability in the core competencies identified by the AICPA.

Finally, additional research opportunities have been created by the latest wave of AICPA-identified changes, the 2011 CPA Horizons 2025 report. This project has refined the core competency framework previously classified as Broad Business Perspective, Functional and Personal categories. The AICPA currently identifies competencies under the broad categories of

Core Values and Core Competencies as indicated below. Indicated for each one in parenthesis is a crosswalk back to the AICPA core (category/competency):

Core Values	Core Competencies
(P/PD) Integrity – rigorous standards of professional ethics	(P/C) Communication skills
(BB/SC) Competence – superior technical proficiency	(P/L) Leadership skills
(P/PD) Life-long learning	(BB/SC) Critical thinking and Problem-Solving skills
(P/PD & L) Objectivity – impartiality, free of personal bias and conflicts of interest	(BB/MK) Anticipating and serving evolving needs
(P/PD) Commitment to Excellence – deliver high quality services	(P/PS) Synthesizing intelligence to insight – connecting the data, performing analysis, using business acumen to provide astute guidance for better business decision making
(BB/IG) Relevance in the Global Marketplace	(P/I) Integration and Collaboration – strategic alliances to provide multidisciplinary solutions to complex problems

The new classifications appear to have corrected some of the overlapping descriptions previously discussed in Limitations and present intriguing opportunities for further research.

### Concluding Remarks

Many accounting graduates enter the specialized field of auditing businesses that contract to deliver goods and services to the federal government. The opinions of these auditors concerning the skills necessary to succeed in this particular employment arena have been insufficiently solicited. The results of this unique study indicate that federal auditors regard the core competencies identified by the AICPA as important to their job and consider the Personal

suite of competencies as most relevant followed by the Functional and Broad Business Perspective competencies. However, these auditors also need increased or better instruction in the conventional accounting topic of cost accounting, which provides instruction in indirect pool, base, and rate computation. Federal auditors also expressed a need for instruction in the specialized criteria of their job -- the federal acquisition regulations, cost accounting standards, and government auditing standards. Along with on-the-job training currently offered by federal employers, universities could consider a specialization in these distinctive standards and principles required by this subset of accountant-auditors.

Finally, the relatively low importance assigned to the competencies of 'Research', 'Strategic Critical Thinking' and 'Maintaining Independence' is of concern. It is important for the auditor to know how to conduct and evaluate research that may include material not encountered in an undergraduate accounting program such as the specialized FAR. As noted, the CPA exam includes business simulations that require research of authoritative sources, in a timed environment, to respond to test questions. Auditors need to know how to support their findings with adequate evidence and for that reason need to know how to retrieve and interpret the product of that research. Closely related to 'Research' is the ability to recognize the usefulness and application of research to immediate situations, that is, the exercise of strategic critical thinking. The undergraduate accounting program should include opportunities for students to acquire skills in these competencies. Lastly, in light of recent GAO findings specific to the federal auditor, the scarcity of responses identifying 'maintaining independence' is troublesome. Federal auditors have been found deficient in their adherence to generally accepted government auditing standards especially in the area of maintaining independence. Since this skill is closely aligned with the non-quantitative skills included in the Personal category of 'Professional

Demeanor', its emphasis should be pervasively integrated into the undergraduate accounting curriculum.

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## Appendix A

## Detailed Description for AICPA Core Competencies

“Leverage Technology” is a competency included each of the three AICPA categories of Broad Business Perspectives, Functional, and Personal competencies. “Leverage Technology” for each of these three categories is first presented, followed by the competencies for the Broad Business Perspectives, Functional, and Personal categories.

<b>Category:</b>	Broad Business Perspective
<b>Competency:</b>	Leverage Technology LT
<b>Description:</b>	Technology alters how organizations operate. To provide the greatest value, today’s accounting professional must understand and appreciate the effects of technology on the broader business environment.
Level 1	Recognizes commonly used information architectures
Level 1	Recognizes business opportunities and risks associated with electronic commerce
Level 2	Mines electronic data sources for business and industry information
Level 3	Develops and communicates reasonable recommendations for technology use in an organization
Level 4	Uses technology to develop and present strategic information
Level 4	Adopts new technology over time

<b>Category:</b>	Functional
<b>Competency:</b>	Leverage Technology LT
<b>Description:</b>	Technology is pervasive in the accounting profession. Individuals entering the accounting profession must acquire the necessary skills to use technology tools effectively and efficiently. These technology tools can be used both to develop and apply other functional competencies.
Level 1	Identifies risks associated with technology and automated business processes
Level 1	Accesses appropriate electronic databases to obtain decision-supporting information
Level 2	Appropriately uses electronic spreadsheets and other software to build models and simulations
Level 2	Uses technology assisted tools to assess and control risk and document work performed

<b>Category:</b>	Functional
<b>Competency:</b>	Leverage Technology LT
Level 3	Assesses the degree of risk of technology and automated business processes
Level 4	Develops strategic uses of technology for enhancing work performance
Level 4	Adopts new technology over time

<b>Category:</b>	Personal
<b>Competency:</b>	Leverage Technology LT
<b>Description:</b>	Technological adaptability is a requirement for today's accounting professional. As technology advances, the accounting professional must acquire new skills and determine how new technologies should be best incorporated into their practices. This commitment to continual technological learning will enhance the development and application of other personal competencies.
Level 1	Exchanges information using appropriate communication technologies such as e-mail, discussion boards and video-conferencing
Level 1	Acquires skills through technology-based learning modules when available and appropriate
Level 2	Describes risks and other issues about privacy, intellectual property rights and security issues related to electronic communications
Level 2	Explores the implications of uncertainties when adopting a new technology
Level 3	Uses technology appropriately to interact with others
Level 4	Adopts new technologies over time
Level 4	Explores new technologies and their application to business and accounting scenarios

<b>Category:</b>	Broad Business Perspective BB
<b>Competency:</b>	International/Global Perspective IG
<b>Description:</b>	Individuals entering the accounting profession should be able to identify and communicate the variety of threats and opportunities of doing business in a borderless world. The accounting professional of the future must provide services to support and facilitate commerce in the global marketplace.
Level 1	Identifies global issues relevant to a business decision
Level 1	Describes uncertainties about the cultural and financial impacts of moving into new markets, and expanding existing markets
Level 2	Analyzes global customer and supplier demographics
Level 2	Identifies and analyzes the social costs and benefits of relevant decisions, including human and financial resource management, in the global

<b>Category:</b>	Broad Business Perspective BB
<b>Competency:</b>	International/Global Perspective IG
	marketplace/ environment
Level 2	Analyzes the cultural and financial impacts of moving into new markets, and expanding existing markets
Level 3	Modifies communications as appropriate for global settings
Level 3	Objectively considers and prioritizes global issues in reaching business decisions
Level 4	Develops, implements, and monitors global business strategies

<b>Category:</b>	Broad Business Perspective BB
<b>Competency:</b>	Industry/Sector Perspective IS
<b>Description:</b>	Individuals entering the accounting profession should be able to identify (through research and analysis) the economics and broad business financial risks and opportunities of the industry and economic sector in which a given organization operates. Identification of these risks and opportunities should include both issues specific to the enterprise, as well as those pervasive throughout the industry/sector.
Level 1	Identifies the economic, broad business, and financial risks of the industry/sector
Level 2	Identifies and describes competitive advantages and disadvantages
Level 2	Describes market forces that make a given organization a candidate for merger, acquisition, and/or strategic alliance
Level 3	Communicates the financial and nonfinancial performance of an organization's operational processes
Level 3	Recommends courses of action that take advantage of an organization's key competitive advantages and disadvantages
Level 4	Effectively addresses changes in the economic, broad business, and financial risks of the industry/sector over time

<b>Category:</b>	Broad Business Perspective BB
<b>Competency:</b>	Legal/Regulatory Perspective LR
<b>Description:</b>	Regulatory forces are being shaped by collaboration, migration, and reform as the various stakeholders globalize, share information, and force their particular needs and viewpoints onto political agendas. Individuals preparing to enter the accounting profession need to be capable of describing the legal and regulatory environment and analyzing the impact of changes in relevant requirements, constraints, and competitive practices.

<b>Category:</b>	Broad Business Perspective BB
<b>Competency:</b>	Legal/Regulatory Perspective LR
Level 1	Identifies uncertainties about how an organization should respond to a legal/regulatory issue
Level 1	Identifies reasons why the legal/regulatory environment might change
Level 2	Identifies and explains the political and environmental forces impacting both the accounting standard setting process and the regulation of the profession; articulates the dynamic nature of these processes and recognizes their implications for organizations and the ways in which they operate
Level 2	Describes the legal and governmental/regulatory environment in which entities operate and the significant costs and benefits of regulation
Level 3	Develops reasonable policies and responses for legal/regulatory matters
Level 4	Develops, monitors, and implements strategies for addressing potential threats and opportunities for the organization from changing legal requirements

<b>Category:</b>	Broad Business Perspective BB
<b>Competency:</b>	Marketing/Client Focus MK
<b>Description:</b>	Individuals who are marketing- and client- focused are better able to anticipate and meet the changing needs of clients, employers, customers, and markets. This involves both the ability to recognize market needs and the ability to develop new markets.
Level 1	Identifies factors that motivate internal and external customers to enter into relationships or continue doing business with an organization
Level 1	Articulates uncertainties about relationships with internal and external customers
Level 2	Recognizes and understands employer/client protocol and expectations
Level 3	Develops an effective plan for addressing a particular employer/client need
Level 4	Generates new engagements for services over time
Level 4	Builds good working relationships over time

<b>Category:</b>	Broad Business Perspective BB
<b>Competency:</b>	Resource Management RS
<b>Description:</b>	The ability to appreciate the importance of all resources (human, financial, physical, environmental, etc.) is critical for success. Individuals entering the accounting profession should be able to apply management and human resources development theories to human resource issues and organizational problems. Individuals preparing to enter the accounting profession should be able to identify sources of capital, and analyze the impact of

<b>Category:</b>	Broad Business Perspective BB
<b>Competency:</b>	Resource Management RS
	participation in the global capital markets.
Level 1	Explains why there are uncertainties about the availability and alternatives uses of resources
Level 1	Identifies resources available to an organization
Level 2	Identifies the effects of market forces on organizations' costs of capital, labor, commodities, etc.
Level 2	Analyzes the implications of an organization's lack of access to supply sources, financial markets, and intellectual capital (barriers to entry, expansion, or survival)
Level 2	Articulates how organizations make decisions to allocate scarce resources, including recognition of both quantitative and qualitative constraints on these decisions (Specific examples include decisions regarding capacity and resource utilization.)
Level 3	Identifies both traditional and non-traditional performance criteria and measurement methods by selecting appropriate success factors and measures of their achievement (see functional competencies)
Level 3	Identifies and addresses the social costs and benefits of business decisions and evaluates the fiduciary performance of public sector and not-for-profit management
Level 3	Articulates how resource availability affects the organization's business functions, processes and administrative procedures
Level 4	Facilitates analysis of the organization and applies continuous improvement principles to the organization

<b>Category:</b>	Broad Business Perspective BB
<b>Competency:</b>	Strategic/Critical Thinking SC
<b>Description:</b>	Critical thinking encompasses the ability to link data, knowledge, and insight together from various disciplines to provide information for decision-making. Being in tune with the "big picture" perspective is a necessary component for success. Individuals entering the accounting profession should be able to communicate to others the vision, strategy, goals, and culture of organizations.
Level 1	Identifies uncertainties about an organization's strengths, weaknesses, opportunities, and threats
Level 1	Articulates the principles of the strategic planning process
Level 1	Identifies and gathers data from a wide variety of sources for decision-making
Level 2	Transfers knowledge from one situation to another

<b>Category:</b>	Broad Business Perspective BB
<b>Competency:</b>	Strategic/Critical Thinking SC
Level 2	Analyzes strategic information (e.g., market share, customer satisfaction, competitor actions, product innovation, etc.)
Level 3	Considers strengths, weaknesses, opportunities, and threats in reaching conclusions
Level 4	Develops, monitors, implements, and transforms business strategies over time

<b>Category:</b>	Functional F
<b>Competency:</b>	Decision Modeling DM
<b>Description:</b>	Individuals preparing to enter the accounting profession must be able to use strategic and critical approaches to decision-making. They must objectively consider issues, identify alternatives, and choose and implement solution approaches in order to deliver services and provide value.
Level 1	Identifies problems, potential solution approaches, and related uncertainties
Level 2	Organizes and evaluates information, alternatives, cost/benefits, risks and rewards of alternative scenarios
Level 2	Employs model-building techniques to quantify problems or test solutions
Level 2	Uses quantitative techniques to explore the likelihood of alternative scenarios
Level 2	Objectively identifies strengths, weaknesses, opportunities, and threats associated with a specific scenario, case, or business activity
Level 3	Links data, knowledge, and insights together for decision-making purposes
Level 4	Engages in continuous improvement and constructs new models over time
Level 4	Makes decisions over time as a result of engaging in continuous improvement and constructing new models

<b>Category:</b>	Functional F
<b>Competency:</b>	Measurement M
<b>Description:</b>	Measures used should be both relevant (that is, bear on the decision to be made) and reliable (consistently measure what they purport to measure). Various measurement and disclosure criteria used by accounting professionals—such as GAAP, OCBOA (Other Comprehensive Basis of Accounting) and tax reporting—have been codified to some degree. Other performance measures (such as Economic Value Added) or stated criteria (for example, investment performance) are used for special purposes. Some measurement criteria (such as effectiveness of internal control) are measured qualitatively, rather than quantitatively.

<b>Category:</b>	Functional F
<b>Competency:</b>	Measurement M
Level 1	Appropriately applies a given measurement method
Level 1	Identifies what needs to be measured
Level 1	Describes uncertainties about data and how items should be measured
Level 2	Describes the pros and cons of alternative methods of measurement
Level 2	Describes the implications of ambiguities when estimates are required
Level 3	Presents the measurement results objectively using applicable standards of disclosure or reporting
Level 3	Determines an appropriate, relevant and reliable measure for the intended use
Level 4	Recognizes changing circumstances and reconsiders measurement methods and estimates as appropriate

<b>Category:</b>	Functional F
<b>Competency:</b>	Risk Analysis RA
<b>Description:</b>	Risk analysis and control is fundamental to professional service delivery. The identification and management of audit risk (that is, the risk that the auditor will fail to detect a misstatement, caused by inadvertent error or fraud, that is material to financial statements) is the basis for the conduct of a GAAS audit. The understanding of business risk (that is, the risk that an entity—either a client or the prospective accounting professional’s employer—will fail to achieve its objectives) affects how business strategy is created and implemented.
Level 1	Explains why controls cannot completely eliminate risk of negative outcomes
Level 2	Describes the pros and cons of controls that mitigate risk of negative outcomes through prevention or detection and correction
Level 2	Identifies risks of negative outcomes (including fraud) for particular scenarios
Level 3	Communicates the impact of identified risks and recommends corrective action
Level 3	Assesses and controls unmitigated risks through, for example, designing, applying, and drawing conclusions from tests
Level 4	Develops and monitors strategies for managing risk over time
Level 4	Implements appropriate corrective action over time

<b>Category:</b>	Functional F
<b>Competency:</b>	Research RC

<b>Category:</b>	Functional F
<b>Competency:</b>	Research RC
<b>Description:</b>	Although accounting professionals need a foundation in standards and other relevant rules, such guidance is constantly evolving. Many accounting profession functions depend on obtaining information from within and outside of an entity. Accordingly, the individual preparing to enter the accounting profession needs to have strong research skills to access relevant guidance or other information, understand it, and apply it.
Level 1	Accesses relevant standards, rules, and other information
Level 1	Identifies relevant information such as industry trends, internal performance history, benchmarks, and best practices
Level 1	Explains why there are uncertainties about the interpretation of information, including existing rules
Level 1	Employs relevant research skills for locating data
Level 2	Articulates assumptions and reasoning associated with application of existing rules to a given problem
Level 2	Qualitatively interprets research findings from a variety of viewpoints
Level 3	Articulates general concepts from existing rules and explains how those concepts apply across a range of problems, including problems not explicitly described
Level 3	Develops and uses reasonable guidelines for drawing conclusions in light of conflicting or ambiguous data
Level 4	Employs relevant research skills over time to generate new information

<b>Category:</b>	Functional F
<b>Competency:</b>	Reporting RP
<b>Description:</b>	Communicating the scope of work and findings or recommendations is an integral part of a professional service. An accounting professional in public practice might issue an audit or attestation report, recommendations for improved services, or tax or financial planning advice. An accounting professional in business, industry, or government might analyze operations or provide communications to the board of directors. Communicating clearly and objectively the work done and the resulting findings is critical to the value of the professional service. Some forms of communication are governed by professional standards (such as the form and content of the standard auditor's report or the required communications to the audit committees) or law. Others are based on the service applied and the needs of those to whom the accounting professional reports.
Level 1	Lists types of information relevant to a given report
Level 2	Considers the pros and cons of alternative contents and formats in preparing



<b>Category:</b>	Functional F
<b>Competency:</b>	Reporting RP
	written and oral presentations
Level 3	Describes work performed and conclusions reached in a manner that enhances the reports' usefulness
Level 3	Using appropriate media, prepares reports with objectivity, conciseness and clarity
Level 4	Continuously monitors and updates reports, as needed
Level 4	Serves as spokesperson for an organization

<b>Category:</b>	Personal P
<b>Competency:</b>	Communication C
<b>Description:</b>	Accounting professionals are called upon to communicate financial and non-financial information so that it is understood by individuals with diverse capabilities and interests. Individuals entering the accounting profession should have the skills necessary to give and exchange information within a meaningful context and with appropriate delivery. They should have the ability to listen, deliver powerful presentations and produce examples of effective business writing.
Level 1	Identifies uncertainties about the best way to communicate
Level 1	Expresses information and concepts with conciseness and clarity when writing and speaking
Level 2	Selects appropriate media for dissemination or accumulation of information
Level 2	Places information in appropriate context when listening, reading, writing and speaking
Level 3	Organizes and effectively displays information so that it is meaningful to the receiving party
Level 3	Receives and originates direct and indirect messages as appropriate when listening, reading, writing and speaking
Level 4	Uses interpersonal skills to facilitate effective interaction over time
Level 4	Communicates decisions appropriately over time

<b>Category:</b>	Personal P
<b>Competency:</b>	Interaction I
<b>Description:</b>	Accounting professionals must be able to work with others to accomplish objectives. This requires them to act as valuable business partners within organizations and markets and work in teams to provide business solutions. Thus, individuals entering the accounting profession should demonstrate an

<b>Category:</b>	Personal P
<b>Competency:</b>	Interaction I
	ability to work productively with individuals in a diversity of roles and with varying interests in the outcome.
Level 1	Identifies uncertainties about interactions with others
Level 1	Accepts suggestions and guidance of team leaders and other members
Level 1	Commits to achievement of common goals when working on a team
Level 2	Interacts and cooperates productively and maturely with others
Level 2	Recognizes the value of working within diverse, cross-functional teams
Level 2	Recognizes and accommodates the protocols and expectations of teams
Level 3	Facilitates free expression and constructive activities of others
Level 4	Coaches or mentors in appropriate circumstances

<b>Category:</b>	Personal P
<b>Competency:</b>	Leadership L
<b>Description:</b>	Individuals entering the accounting profession should be able to effectively lead in appropriate circumstances. This involves acquiring the skills needed to influence, inspire, and motivate individuals and groups to achieve results.
Level 1	Describes why there is no single, “correct” way to perform as a leader
Level 1	Identifies the various leadership styles
Level 2	Analyzes potential ways to reach a consensus or compromise from alternative points of view
Level 2	Recognizes and controls for own biases when receiving input from others
Level 2	Relates leadership styles to different situations
Level 3	Facilitates decisions that involve consensus or compromise as appropriate
Level 3	Motivates others to achieve excellence
Level 3	Persuades and rallies the support of others to a course of action by reasoning or incentive
Level 4	Practices principles of effective governance over time
Level 4	Effectively chairs teams or volunteers for projects

<b>Category:</b>	Personal P
<b>Competency:</b>	Professional Demeanor PD
<b>Description:</b>	The accounting profession is committed to maintaining a public reputation for excellence in the performance of important roles in business and society. Individuals entering the accounting profession should behave in a manner

<b>Category:</b>	Personal P
<b>Competency:</b>	Professional Demeanor PD
	that is consistent with the character and standards of the discipline of accounting, as well as the norms of the environment in which they interact. This competency involves demonstrating objectivity, integrity, and ethical behavior. It also includes a commitment to stable work performance, as well as a commitment to continuously acquire new skills and knowledge.
Level 1	Identifies career and personal goals
Level 1	Accepts professional development as an uncertain and life-long process
Level 1	Commits to confidentiality, quality, efficiency, growth in personal conduct and capabilities, and ethical behavior
Level 1	Identifies ethical dilemmas
Level 2	Considers the impact of alternative solutions on various stakeholders in an ethical dilemma
Level 2	Evaluates information, including others' professional criticism and evaluation, in a manner free of distortions, personal bias or conflicts of interest
Level 2	Relates lessons learned from prior mistakes to new situations
Level 3	Conducts oneself with honesty
Level 3	Objectively considers others' professional criticism or evaluation when making decisions
Level 3	Adheres to a level of personal appearance appropriate to the environment
Level 3	Recognizes situations where professional ethical standards apply and behaves accordingly
Level 3	Prioritizes career and personal goals
Level 3	Uses appropriate ethical values in making decisions
Level 4	Takes appropriate action to gain competencies
Level 4	Manages stress and performs reliably under changing or unusual demands
Level 4	Measures oneself against evolving standards and meets or exceeds those standards

<b>Category:</b>	Personal P
<b>Competency:</b>	Project Management PM
<b>Description:</b>	Accounting professionals must successfully manage a diversity of projects throughout their career. Individuals entering the accounting profession should demonstrate the ability to effectively control the course of a multi-dimensional, multi-step undertaking. This includes managing project assets, including human, financial, property, and technical resources.
Level 1	Identifies uncertainties related to time and resource requirements for a

<b>Category:</b>	Personal P
<b>Competency:</b>	Project Management PM
	project
Level 1	Identifies project goals
Level 1	Lists information relevant to managing a project
Level 2	Organizes the various aspects of a project in order to allocate resources for optimum results
Level 2	Utilizes methods to measure project progress
Level 2	Develops alternative estimates of time and resource requirements for a project
Level 3	Recognizes situations where prompt and determined actions are needed and responds accordingly
Level 3	Sees projects through to completion or orderly transition
Level 3	Prioritizes and delegates as needed
Level 4	Effectively facilitates and controls the project process and takes corrective action as needed
Level 4	Effectively manages human resources that are committed to the project

<b>Category:</b>	Personal P
<b>Competency:</b>	Problem Solving/Decision Making PS
<b>Description:</b>	Accounting professionals are often asked to discern the true nature of a situation and then determine the principles and techniques needed to solve problems or make judgments. Thus, individuals entering the accounting profession should display effective problem solving and decision-making skills, good insight and judgment, as well as innovative and creative thinking.
Level 1	Lists information and evidence that is relevant for a problem
Level 1	Identifies uncertainties about the interpretation or significance of information and evidence
Level 2	Considers unconventional approaches and solutions to problems
Level 2	Makes valid and reliable evaluations of information, including the significance of evidence or facts for problem definition and solution
Level 2	Analyzes the impact, pros, and cons of potential solutions or actions
Level 2	Analyzes the quality of information and evidence, including validity, reliability, and significance
Level 3	Reasons carefully and thinks effectively in abstract terms or generalizations
Level 3	Seeks consensus where appropriate
Level 3	Knows when to follow directions, question plans or seek help

<b>Category:</b>	Personal P
<b>Competency:</b>	Problem Solving/Decision Making PS
Level 3	Uses experience and comparison in forming opinions
Level 3	Synthesizes novel or original definitions of problems and solutions as circumstances dictate
Level 4	Adapts to new contexts and promotes constructive change
Level 4	Strategically considers contingencies and future developments

Appendix B - Codebook for Survey Open-Ended Questions  
Sorted by Competency

Response term	Category	Competency	Key word(s) in AICPA definition
Communicate / communication Concise Documentation Grammar Listening Presentation skills Speaking Work(ing) paper Write / writing	Personal	Communication	Communication Conciseness /writing Listening Presentations Writing
Data analysis Quantitative Statistics / statistical analysis / training	Functional	Decision modeling	Links data for decision making /describes uncertainties about data Uses quantitative techniques
Business Conducting business Government does not work on a profit motive Government spending Industry	Broad business perspectives	Industry sector	Industry Financial and non-financial performance Identifies economic risks of industry Industry / operational processes / economic risks

<b>Response term</b>	<b>Category</b>	<b>Competency</b>	<b>Key word(s) in AICPA definition</b>
Operations Understanding contractor			Industry Operational /operational processes
Coaching Conflict resolution Confrontational How to deal Interaction with contractor employees Interpersonal People skills Role Teams/team work /teaming	Personal	Interaction	Accommodates protocols Coaches Cooperates Facilitates constructive activity of others Interacts maturely and productively Mentor Teamwork/Teams Uncertainties about interactions with others Work productively with individuals in a diversity of roles
Global	Broad business perspectives	International/ global	Global
Empathy Independent Negotiating Persuasive debate Self motivation	Personal	Leadership	Facilitates decisions Motivate Persuades
Laws / laws and regulations	Broad business perspectives	Legal/ regulatory	Legal, regulatory environment

Response term	Category	Competency	Key word(s) in AICPA definition
Technical writings prepared by attorneys			
Computer skills / computer typing Emails Excel Information system auditing Information technology Media Microsoft Software Technology / technological	All	Leverage technology	Technology assisted tools Electronic spreadsheets Decision-supporting information
Customers Provide contracting officers with timely results Relationship with contractor or requestor Requestor Working partnership	Broad business perspectives	Marketing	Customer needs Relationships
Acronyms Auditing standards CAM	Functional	Measurement	Criteria using applicable standards



Response term	Category	Competency	Key word(s) in AICPA definition
CAS FAR Criteria DFARS GAGAS Principles Rules and regulations Standards Terms 'That should be questioned' UCC			
Ability to admit shortcomings Ability to process complex issues Adapt Adjust Analyst/analyze / analytical / analytical ability / analytical skills Confrontational smarts = professional skepticism Creativity Follow directions	Personal	Problem solving	Analyzes impact... pros and cons... Quality of information Adapts to new contexts Creative thinking Follow directions Identifies uncertainties about interpretation/significance Need/Seek help Synthesizes

Response term	Category	Competency	Key word(s) in AICPA definition
<p>Follow-up</p> <p>Help / need or ask need help</p> <p>Logical thinking = analytical</p> <p>Made an error in judgment</p> <p>Outside the box</p> <p>Patience</p> <p>Professional skepticism, process complex issues</p> <p>Respond</p> <p>Satisfies audit step</p> <p>Skeptical mind</p> <p>Tying it all together</p>			
<p>Ability to overcome obstacles present in the environment = tenacity</p> <p>Confidence</p> <p>Continue to do our job = tenacity</p> <p>Curiosity</p> <p>Efficiency</p> <p>Emotional maturity</p> <p>Ethics</p>	Personal	Professional demeanor	<p>Acquire new skills and knowledge</p> <p>Consistent with the standards and disciplines of accounting</p> <p>Continuously acquire new skills</p> <p>Efficiency</p> <p>Growth in personal conduct</p> <p>Honesty/ethics</p>

Response term	Category	Competency	Key word(s) in AICPA definition
Flexibility / adapt Inquisitive Learning Open-minded Professional / professionalism Professionalism/not just get pay check Re-evaluate ways Self confidence Work ethic / commitment to work			Objectivity/free from personal bias Perform reliably Prioritize career and personal goals Manages stress Norms of the environment
Meet deadlines Multitask Organizational / organizational skills Punctuality Thoroughness Time management / timekeeping / timeliness	Personal	Project management	Develop alternative estimates of time Diversity of projects / organizes Estimates of time Organizes Projects through to completion
Audit reports Report writing Summarize	Functional	Report writing	Reports Report writing
Familiarization	Functional	Research	Access relevant rules

<b>Response term</b>	<b>Category</b>	<b>Competency</b>	<b>Key word(s) in AICPA definition</b>
Finding Locate and understand Research			Employs relevant research skills  Research
Controls Fraud Materiality Risk / risk analysis	Functional	Risk analysis	Explain why controls cannot completely eliminate risk of negative outcomes  Identify risks of negative outcomes including fraud  Impact of identified risks  Risk analysis
Big picture /big picture analysis Critical thinking / critical thinking skills Decision making	Broad business perspectives	Strategic/ critical thinking	Big picture Critical thinking Decision making

### Appendix C – Survey

The survey administered on Survey Monkey is presented in this Appendix C. Survey Monkey re-numbered the questions differently than discussed in the dissertation as indicated below.

<u>Dissertation Question</u>	<u>Survey Monkey Question</u>
Likert Questions No. 1 through No. 18	No. 1
Question No. 19	No. 2
Question No. 20	No. 3
Question No. 21	No. 4
Question No. 22	No. 5
Question No. 23	No. 6

## Assessing the Relevance and Ranking of the AICPA Core Competencies

Your opinion is important concerning the skills and attributes needed to succeed in a federal auditing position. Much of the research conducted on what it takes to succeed after graduating with a degree in Accounting has not included the input of those who enter the field of federal auditing.

The purpose of this survey is to determine if the core competencies developed by the AICPA are also important and relevant for the work of a federal auditor. The researcher is employed by DCAA and this survey is part of a dissertation study. Your participation in the survey will help to advance the knowledge needed by the accounting profession as well as accounting educators in determining the skills needed for this unique field.

The survey will take approximately 15 minutes to complete. Participation is voluntary and anonymous.

## Questions

### \*1. How important is it for the federal auditor in your agency to.... ?

	Not Important	Little Importance	Somewhat Important	Important	Very Important
1. Analyze changes in the financial risks of the contractor's industry/sector?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Understand why controls cannot completely eliminate the risk of fraud?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Demonstrate objectivity and integrity consistent with the standards of auditing?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Establish working relationships with audit requestors?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Interact and cooperate productively and maturely with others?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Use technology assisted tools to assess and control risk and document work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Communicate information and concepts with conciseness and clarity when writing and speaking?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Interpret research findings from a variety of viewpoints?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Communicate the contractor's planning process, strategy, and goals?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Identify pros and cons of alternative methods of measurement?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Consider how human resource management affects a contractor?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Develop innovative or creative solutions to problems?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Report findings in accordance with auditing standards?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Inspire and motivate team members?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Analyze the impact of changes in contracting laws and regulations?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Use mathematical or scientific models to evaluate decision alternatives?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Prioritize and delegate various aspects of a project in order to allocate resources?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Identify global threats and opportunities impacting contractors?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**\*2. Of the competencies listed below, please check the 3 competencies which you feel are most important.**

	First Choice	Second Choice	Third Choice
1 Analyze changes in the financial risks of the contractor's industry/sector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2 Understand why controls cannot completely eliminate the risk of fraud	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 Demonstrate objectivity and integrity consistent with the standards of auditing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4 Establish working relationships with audit requestors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5 Interact and cooperate productively and maturely with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6 Interpret research findings from a variety of viewpoints	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7 Use technology assisted tools to assess and control risk and document work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8 Communicate the contractor's planning process, strategy, and goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9 Communicate information & concepts with conciseness & clarity when writing & speaking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10 Identify pros and cons of alternative methods of measurement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11 Consider how human resource management affects a contractor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12 Develop innovative or creative solutions to problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13 Report findings in accordance with auditing standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14 Inspire and motivate team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15 Analyze the impact of changes in contracting laws and regulations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16 Use mathematical or scientific models to evaluate decision alternatives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17 Prioritize and delegate various aspects of a project in order to allocate resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18 Identify global threats and opportunities impacting contractors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



**\*3. Of the competencies listed below, please identify the 3 competencies which you feel are least important .**

	First Choice	Second Choice	Third Choice
1 Analyze changes in the financial risks of the contractor's industry/sector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2 Understand why controls cannot completely eliminate the risk of fraud	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 Demonstrate objectivity and integrity consistent with the standards of auditing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4 Establish working relationships with audit requestors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5 Interact and cooperate productively and maturely with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6 Interpret research findings from a variety of viewpoints	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7 Use technology assisted tools to assess and control risk and document work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8 Communicate the contractor's planning process, strategy, and goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9 Communicate information & concepts with conciseness & clarity when writing & speaking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10 Identify pros and cons of alternative methods of measurement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11 Consider how human resource management affects a contractor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12 Develop innovative or creative solutions to problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13 Report findings in accordance with auditing standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14 Inspire and motivate team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15 Analyze the impact of changes in contracting laws and regulations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16 Use mathematical or scientific models to evaluate decision alternatives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17 Prioritize and delegate various aspects of a project in order to allocate resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18 Identify global threats and opportunities impacting contractors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**4. What additional skills, not listed, are also important for auditing federal contractors?**

**5. Which of your skills needed improvement upon hire as an auditor of federal contractors?**

**6. What subjects/topics tend to be over-emphasized in undergraduate accounting education with respect to auditing federal contractors?**

**\*7. DEMOGRAPHIC INFORMATION**

Age

GS Grade

Years Since College Graduation

Years as a Federal Auditor

Years of Full-Time Work Experience

**8. DEMOGRAPHIC INFORMATION**

Gender (M or F)