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ACADEMIC CULTURE, BUSINESS CULTURE, AND MEASURING ACHIEVEMENT DIFFERENCES: INTERNAL AUDITING VIEWS

Benjamin S. Roth

ACCEPTANCE

This dissertation, ACADEMIC CULTURE, BUSINESS CULTURE, AND MEASURING ACHIEVEMENT DIFFERENCES: INTERNAL AUDITING VIEWS, by BENJAMIN STERLING ROTH, was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree Doctor of Philosophy in the college of Education, Georgia State University.

The Dissertation Advisory Committee and the student's Department Chair, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty. The Dean of the College of Education concurs.

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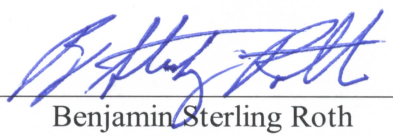

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ABSTRACT

ACADEMIC CULTURE, BUSINESS CULTURE, AND
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INTERNAL AUDITING VIEWS
by
Benjamin Sterling Roth

This study explored whether university internal audit directors' views of culture and measuring achievement differences between their institutions and a business were related to how they viewed internal auditing priorities and uses. The Carnegie Classification system's 283 Doctorate-granting Universities were the target population. Directors for 144 institutions (51%) returned questionnaires providing their views of academic culture and measuring achievement differences; the importance of internal auditor attributes, and types, subject areas, and determinants of internal auditing work; and whether operational audits of research, teaching, and public service were appropriate. Data collected included directors' age, gender, race and ethnicity, education, certifications, and work experience and information on their reporting officials, boards/audit committees, audit departments, and institutions. Chi-square tests of independence, $p \leq .05$, determined statistically significant relationships, and Cramer's V, effect size. Dichotomous categories of "businesslike" and "distinct" were used to label views from the university's perspective. Fifty-six percent viewed university culture distinct; 65% viewed measuring achievement businesslike. Thirty-eight percent viewed both businesslike; 30%, both distinct; 26%, culture distinct and measuring achievement businesslike; and 6%, culture businesslike and measuring achievement distinct. Culture views were related to measuring achievement views with medium effect, and with large effect for respondent subsets, such as older ($\geq$ 50 years) males, certified internal auditors

(CIAs), and directors at schools with higher research funding and/or a medical school. Also, with small effects, a distinct culture view favored awareness of culture and missions; a businesslike culture view favored operational audits; and a businesslike measuring achievement view favored operational audits in research, teaching, and public service. Older males had the highest percentages viewing culture businesslike and both culture and measuring achievement businesslike. CIAs had highest percentages viewing culture distinct and both culture and measuring achievement distinct. With culture and measuring achievement views related, internal auditor awareness of university culture and missions might warrant greater emphasis. Businesslike views favoring operational audits might encourage management practices historically decried by scholars as ill-fitting an academy, or might conserve resources to make more available to enhance academic practices and outcomes.

ACADEMIC CULTURE, BUSINESS CULTURE, AND MEASURING ACHIEVEMENT DIFFERENCES: INTERNAL AUDITING VIEWS

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Benjamin Sterling Roth

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ABBREVIATIONS

AAUP	American Association of University Professors
ACUA	Association of College and University Auditors
AICPA	American Institute of Certified Public Accountants
AIR	Association for Institutional Research
B/AC	board/audit committee
CFE	certified fraud examiner
CFO	chief financial officer
CIA	certified internal auditor
CISA	certified information systems auditor
CPA	certified public accountant
CUBA	*College and University Business Administration*
DRU	Doctoral/Research Universities
IA	internal auditing
IIA	The Institute of Internal Auditors
IPPF	International Professional Practices Framework
IRB	Institutional Review Board
IT	information technology
MBA	master of business administration
NACUBO	National Association of College and University Business Officers
NMSU	New Mexico State University
P/C	president/chancellor
RU/H	Research Universities (high research activity)

RU/VH	Research Universities (very high research activity)
SAS	Statement on Auditing Standards
SIAS	Statement on Internal Auditing Standards
SOX	U.S. Sarbanes-Oxley Act of 2002
SPPIA	*Standards for the Professional Practice of Internal Auditing*
SRIA	Statement of Responsibilities of the Internal Auditor
Standards	*International Standards for the Professional Practice of Internal Auditing*
VPF	vice president for finance
YIA	years in internal auditing

CHAPTER 1

THE PROBLEM

Context

Internal auditing is a function with business origins and ties, and business may define its culture. U.S. higher education has business connections, but its origins and culture lie in the realm of reason and knowledge. Culture differences between business and higher education, differences widely addressed in the literature, provide context for my study of how views of culture and measuring achievement of missions relate to the use of internal auditing in U.S. research universities. Definitionally, culture is a broad concept associated with cultivation, education, expertise, taste, heritage, and convention. Schein (1992), as cited by Bergquist and Pawlak (2008) in *Engaging the Six Cultures of the Academy*, defined organizational culture as a

> pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems. (p. 9)

To facilitate cultural comparisons, van den Berg & Wilderom (2004) in "Defining, Measuring, and Comparing Organisational Cultures" defined organizational culture as "shared perceptions of organisational work practices within organisational units" (p. 570). Because my study involves comparing cultures, the latter definition is relevant, adding a measure of simplicity and directness to the former definition's more thought-provoking breadth and depth. For my purpose, both definitions provide context, not only for the activities of higher education and internal auditing but also for the institutions and units that deliver and house these activities.

Internal auditing has had a place in U.S. higher education for over 50 years. The Association of College and University Auditors (ACUA) formed in 1958, which was 17 years after establishment of The Institute of Internal Auditors (IIA), internal auditing's current international standard-setting body. Scholarly research on higher education internal auditing began in the 1960s and grew, if not apace, at least steadily. Chapter 2, Literature Review, discusses that research.

Research universities have teaching, research, and public service missions to which academic and administrative functions contribute. While mindful of tradition, these institutions focus on the future. As Alfred North Whitehead declared, "'The task of a university is the creation of the future, so far as rational thought and civilized modes of appreciation can affect the issue'" (as quoted in Bailey, Ramling, & Ramamoorti, 2003, p. ix).

Rationality should flourish in an environment that embraces openness, scholarly discipline, and objective counsel. Such counsel from a scholar in another discipline might advance a researcher's idea, or an administrator's pragmatic advice might promote an academic goal. Internal auditing, practiced in accord with its standards, could offer comparable counsel and provide other services to move the academic enterprise forward. Internal auditing's appropriate use could facilitate accomplishment of teaching, research, and public service missions, or its underuse or misuse could detract from their achievement. Part of my context is how this business-originated function fits in an organization where some constituencies might embrace (or insist upon) and others might reject business ways.

Internal Auditing Definition and Standards

Although higher education internal auditing is most associated with financial, compliance, or internal control matters, some of its practitioners tout it as, and some accounting scholars have urged it to be, more far-reaching. The IIA's International Professional Practices Framework (IPPF) (2011) defined internal auditing as

> an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes. (p. 2)

The IPPF defined risk management, in part, as "a process to . . . control potential events . . . to provide reasonable assurance regarding the achievement of . . . objectives"; control, in part, as "any action . . . to manage risk and increase the likelihood that . . . objectives . . . will be achieved"; and governance, in part, as "processes and structure to inform, direct, manage, and monitor the activities of the organization toward the achievement of its objectives" (IIA, 2011, pp. 42-43).

My study addressed risk management, control, and governance processes, all of which involve achievement of objectives, within the context of a research university's research, teaching, and public service missions. As I discuss in more detail in Chapter 3, Method, I found university missions and a business's objectives comparable. My study's focus on measuring their achievement facilitated comparisons between the two types of organizations. Operational audits in the three university mission areas are also an area of primary emphasis.

According to the *International Standards for the Professional Practice of Internal Auditing (Standards)*, "the internal audit activity must be free from interference in

determining the scope of internal auditing, performing work, and communicating results" (IIA, 2011, p. 17). The *Standards* also require that

> the chief audit executive . . . establish risk-based plans to determine the priorities of the internal audit activity, consistent with the organization's goals . . . . [I]nput of senior management and the board must be considered . . . . The chief audit executive should consider accepting . . . consulting engagements based on the . . . potential to improve management of risks, add value, and improve the organization's operations. (IIA, pp. 25-26)

Views of Culture and Measuring Achievement Differences

My study explored internal audit directors' views of the extent of difference (a) between their respective institutions' culture and a business's culture and (b) between measuring achievement of their respective institutions' missions and measuring achievement of a business's objectives. In addition, my study captured internal audit directors' perceptions of board members', senior administrators', and faculty members' views of the extent of difference (a) between their respective institutions' culture and a business's culture and (b) between measuring achievement of their respective institutions' missions and measuring achievement of a business's objectives.

Although the *Standards* specify only senior management and the board as sources of audit planning input, I took into account faculty members also, given their importance in the academy and their obvious contributions to its culture and missions. I believe internal audit directors' perceptions of these three groups' views on my matters of interest were adequate for this exploratory study. Moreover, I considered obtaining responses directly from members of these three groups to be problematic. Representative samples might not have been obtainable, and group members might have given my questionnaire a low priority, leading to excessive nonresponses, unreflective responses, or responses provided by delegates.

Priorities and uses of internal auditing were assessed in terms of internal audit directors' rankings of the importance at their respective institutions of the following internal auditing factors: internal auditor attributes, types of internal auditing work, subject areas of internal auditing work, and determinants of types and subject areas of internal auditing work. For comparison purposes, I also examined internal audit directors' perceptions of board members', senior administrators', and faculty members' rankings of types of internal auditing work. Internal audit directors' views on the appropriateness at their institutions of operational audits in the areas of research, teaching, and public service were, as previously noted, of primary interest.

Research Initiatives of The IIA and Accounting Academicians

The IIA and accounting academicians addressed internal auditing research at the start of the 21st century. In fact, Whitehead's quotation was from the Editorial Preface of The IIA Research Foundation's monograph, *Research Opportunities in Internal Auditing* (Bailey et al., 2003). The monograph's purpose was primarily to inspire accounting academics to do basic and applied research on significant internal auditing topics, and secondarily to strengthen communication between accounting faculty members and practicing internal auditors.

The preface evoked higher education's and internal auditing's professionalism and rigor as well as both domains' open-mindedness. The preface also acknowledged that the two communities exhibit "two distinct cultures" (Bailey et al., 2003, p. xi) and concluded that their contrasting theoretical and practical perspectives could produce "'creative abrasion,' . . . [from which] the most conceptually sound and robust practical solutions can be developed" (Bailey et al., 2003, p. xi).

Indications and Effects of Culture Differences

Indications of culture differences between higher education institutions and their internal auditing functions could be found in the monograph. For example, the accounting academic community, almost always within a business school, would tend to reflect a business culture in its research and in its education of students of accounting, the source discipline of the vast majority of internal auditors. Thus, internal auditors, even in a higher education institution, might also tend to reflect, if not endorse, a business culture. Outside of the business school, such a culture might clash more often than not with the culture of the realm of reason and knowledge. Cultural commonalities might also exist between the overall academic community and internal auditing practitioners, however. For instance, a cardinal characteristic of internal auditing is independence, and of academia, detachment. Thus, mutual appreciation of apartness might prove productive, or at least mollify differences.

Whether culture differences between an institution's academic units and internal auditing component are obstructive, productive, or reconcilable, the differences, given internal auditing's business roots, might mirror culture differences between higher education and business generally. As it happens, higher education and the world of business meet regularly at the governance table in universities, where business people have comprised a majority of board members since the late 19th century (Ricci, 1999).

Evolution of Business's Influence

After the Civil War, prominent alumni used their sizable financial resources to support their institutions and to involve themselves in institutional operations as board members. In the late 19th and early 20th centuries, wealthy U.S. landowners and

businessmen founded many postsecondary institutions (Rudolph, 1962), including business schools. In 1883, businessman Arthur Rodgers created a school of commerce at his alma mater, the University of California (Haas Web site, 2008). John D. Rockefeller funded the business school at the University of Chicago in 1910. From 1890 to 1920, university boards were dominated by businessmen who regarded professors' work as countable and controllable (Thelin, 2004).

Between 1920 and 1940, in keeping with the scientific management and efficiency movements advocated by business, major foundations sought to increase standardization in higher education. The Rockefeller Foundation and the Carnegie Foundation for the Advancement of Teaching (Carnegie Foundation) joined "with the United States Bureau of Education to collect and analyze data, toward the common goal of rationalizing colleges and universities into effective systems" (Thelin, 2004, p. 238). The foundations promoted a corporate model for higher education institutions, and boards and presidencies changed accordingly. In the previous century, presidents and board members were often clerics, but by 1930, almost three fourths of board members at 15 elite private institutions were corporate executives, lawyers, and bankers. This triumvirate then also comprised about two thirds of board members in a sample of state, private, and technical schools—twice the 1880 proportion (Thelin).

Early in the 20th century, Henry Pritchett, former Massachusetts Institute of Technology president and the first president of the Carnegie Foundation, wrote articles in national journals envisioning a future where U.S. colleges and universities would be divided into categories and systematically measured. "Boards were . . . to be filled primarily by corporate executives, natural leaders to whom university presidents would

report and respond. In short, American higher education was scheduled to undergo a managerial revolution" (Thelin, 2004, p. 239).

The revolt was methodical. The New York City-based Carnegie Foundation would perform a higher education survey of a state and recommend to the legislature and governor a flagship university and one governing board for all public colleges and universities in that state. In defending the corporate form in places like California, where the corporate power of rail and oil giants threatened progressivism, the new system was rationalized as necessary for a fair fight. However, politicians in many states fought attempts to segregate liberal arts and utilitarian subject areas for efficiency purposes, citing the Morrill Act's intent to mix fields of study. But sluggish economies in the South made campus efficiency attractive, for example enabling the Georgia Institute of Technology to take up "its mission to 'engineer the New South'" (Thelin, 2004, p. 240).

There were ideas and methods outside the U.S. to consider as well. Flexner (1930) questioned American universities' adoption of business methods that ignored "fundamental differences between business and education" (p. 185). He contrasted the former's focus on profits, charting, and tangible resources with the latter's emphasis on knowledge, understanding, and creativity. Flexner asserted that "efficiency in administration and fertility in the realm of ideas have . . . nothing to do with each other" (p. 186) and touted British and German university systems.

Flexner (1930) noted that in England provincial universities had Oxford and Cambridge graduates on staff and scholars on governance groups, helping assure traditional academic disciplines had a bearing on management. He found in German institutes the same "detached, scientific, and systematic method of observing and

reflecting on the problems of politics, economics, and law . . . as there is . . . on the problems of disease" (pp. 328 – 329). Accordingly, German universities prepared graduates to handle practical problems of any occupational calling. He saw the German university, even in tough times, safeguarded by "law, idea, and tradition" (p. 347). Flexner even questioned the idea of university standards, offering that "the spirit of a university is a more effective guarantee of high standard than any mechanical device, any kind of organization can possibly be" (p. 348).

Unnoticed by Flexner and his associates was the removal of nonconforming faculty members and students in German universities after the 1920s (Thelin, 2004). In the U.S., "control, not inquiry, was the consequence of the foundation-based structural innovations" (Thelin, p. 242). Professors, including renowned scholars, expressed opposition, as did the American Association of University Professors (AAUP), to no avail. Foundation efforts imposed a business model on U.S. higher education, creating a civil service structure. Thelin captured the cost:

> The professional expertise of professors was simultaneously a source of envy and of distrust; it represented energy to be defused. Ironically, this attitude created an environment that was particularly hostile to those truly bright and self-starting scholars who could have made novel contributions. At worst, the corporate model promoted an accountable "business as usual" operation that was antithetical to inspired teaching and original research. (p. 243)

Origins and Impact of Management Movements

Higher education institutions through their business schools were often the source of management movements. Three such movements were scientific management, originating in the late 19th century; efficiency, extending scientific management ideas along with progressivism into the 1930s; and managerialism, which attracted negative

critiques after the late 1970s in literature from the United Kingdom that addressed U.S. as well as British practices. These three movements affected education in general and higher education in particular.

Called a "mental revolution" (George, 1968, p. 93) by its architect, Frederick Winslow Taylor, scientific management was a significant part of educational reform in the Progressive Era (Urban & Wagoner, 2004). Scientific management had four core principles: create a science for each aspect of a person's work, scientifically choose and train each worker, partner with workers to assure work accords with the scientific principles, and balance the work between managers and workers based on the best fit. Management told workers what to do, and they were to do as told (Callahan, 1962).

Locke (1996) characterized Taylor's pioneering of incentive pay programs as converting "the 'black art' of unsubstantiated personal know-how into systems of objective standards" (p. 20). Taylor developed standard cost accounting and budgeting methodologies; his widely adopted concepts bred hierarchies of line and staff. "Taylorism brought the separation of thought (management) from doing (labor) into the workshop, and with it a 'science' based on a moral claim: managers, because they are experts, exercise legitimate authority over those who work" (Locke, p. 20).

In 1911, Taylor (as cited in Callahan, 1962) claimed his principles applied "'to all social activities: . . . the management of . . . our tradesmen, large and small; . . . our universities, and our governmental departments'" (p. 43). Scientific management and the ensuing efficiency movement permeated U.S. society. Progressivism equated social "progress with greater efficiency" (Leonard, 2009, p. 110), seeing in it "'the merger of the prestige of science with the prestige of the well-organized business firm' . . . [giving]

the 'metaphor of system its tremendous twentieth-century potency'" (Rogers, 1982, as cited in Leonard, p. 128).

Although scientific management and the efficiency movement were widely promoted by the press, they were occasionally disparaged by it. *The Nation* (1912) editorialized: "As the modern efficiency expert pursues his devastating way, the troubled question is more and more frequently heard: 'Who of us is safe?' The old immunity of the college professor is soon to vanish. He has been asked to punch a time-clock as he teaches, and to work out a daily sheet showing by curves and percentages whether he is or is not an unprofitable servant" (p. 402).

By contrast, an account 50 years later of an Ivy League physics department's management found professorial commitment reliant on participation not proportion:

> There are 16 major . . . committees and 12 sub-committees . . . staffed largely by senior faculty, but on occasion . . . assistant professors, . . . [an] administrative assistant, or shop specialist. . . . [C]ommittee management spreads decision-making and engulfs all professorial members in a number of time-consuming committee activities. This is possible in a university because faculty members in general work without regard to timechecks. . . . [S]pread of colleague participation is made possible by the heavy working schedule of the faculty members. However, the acceptance of a heavy working schedule is dependent upon the system of participative management. (Marcson, 1962, p. 38)

The third movement, managerialism, promoted aspects of the other two. Pollitt (1990) defined managerialism as "a set of beliefs and practices, at the core of which burns the seldom-tested assumption that better management will prove an effective solvent for a wide range of economic and social ills" (p. 1). But what some viewed curative, others found abusive. The latter saw a need for greater resources and better policies, not more exertion and efficiency amid fixed funding and structure. But for its

proponents, managerialism evoked confidence, promoting clear-eyed leadership as the means to change—radically if needed—to achieve aims and assure success (Pollitt).

Locke (1996) described managerialism in the U.S. after World War II as follows:

> Managerialism has the traits of militarism. It represents "a vast array of customs, interests, prestige, actions, and thought" . . . transcending the needs for the efficient running of commercial and industrial organizations . . . [with] its influence . . . extending into almost every kind of organization in America, profit and nonprofit, commercial and educational, governmental and military. Managerialism as it grew up in America came to exhibit "the qualities of caste and cult, authority and belief." And . . . American management and the mystique it generated . . . denied organizations the means needed to formulate and effectively reach goals. (p. 3)

Pollitt (1990) noted that managerialism after the late 1970s led British and U.S. public institutions to embrace "management boards, management training, performance indicators, staff counseling and appraisal schemes" (p. vii). Training became how-to peddled by pedagogues without a nuanced understanding of management. Principles "pitched at a high level of generality . . . [were] taken for granted as truths" (pp. 3-4). An abundant literature provided specifics of tasks, techniques, and priorities (Pollitt).

21st Century Events

The increasing emphasis on risk management, control, and governance processes over the past several years warrants examination in light of Pollitt's points. Risk, control, and governance techniques and tools have flooded the marketplace in the wake of the U.S. Sarbanes-Oxley Act of 2002 (SOX), the Public Company Accounting Reform and Investor Protection Act. Passed after frauds at Enron, WorldCom, and other corporations severely impacted the U.S. economy and financial markets, SOX required publicly traded companies and their external auditors to review and report on the adequacy of internal controls over financial reporting. Fraud risk and governance also received emphasis.

In view of the severity of the recession in 2008 and 2009, did SOX assure proper oversight or perhaps inhibit it? Although SOX did not apply to nonprofit entities, that question, which will go unanswered by this study, provided further context for exploring higher education internal auditing, a function sometimes considered synonymous with oversight. Though not subject to SOX, some government and nonprofit entities, including higher education institutions, adopted aspects of it (Menditto & Shedd, 2005). Accordingly, internal auditors in colleges and universities began giving greater attention to risk management, control, and governance processes and perhaps less attention to other processes pertinent to institutional progress.

Culture and Measuring Achievement Differences

In addition to the apparent culture differences between higher education and business already discussed, there may be clear differences between measuring achievement of university missions and measuring achievement of business objectives. I considered measuring achievement of both to be logically comparable within my context and useful in framing my study. As explained in Chapter 3, the construct I used to assess measuring achievement differences was based on the commonality and centrality of missions among universities and objectives among businesses. Measuring achievement difference was a central concept within my study. With higher education missions neither profit-oriented nor easily measured, many writers and scholars have questioned the suitability of business practices for colleges and universities (Barzun, 1968; Corson, 1975; Flexner, 1930; Millett, 1962; Rourke & Brooks, 1966; Slaughter, 1990; Veblen, 1917/1958).

In addition, Slaughter, Archerd, and Campbell (2004) pointed out that research universities' increasing commercial activity led to a growing literature on science's values and norms. A Mertonian view emphasized scientific openness and skepticism and the distinctness of science from the business world (Merton, 1942/1973, as cited by Slaughter et al.). The Committee on Science, Engineering, and Public Policy (1992, 1993), as cited by Slaughter et al., touted the "'Vannevar Bush' model, in which universities did basic science, government laboratories developed the ideas, and industry applied them" (p. 130).

Overarching Research Question

My overarching research question, which stemmed from this framework of culture and measuring achievement differences, was whether internal audit directors' views of the extent of difference (a) between their respective institutions' culture and a business's culture and (b) between measuring achievement of their respective institutions' missions and measuring achievement of a business's objectives were related to how they viewed the priorities and uses of internal auditing at their institutions.

Nature of Internal Auditing

Internal auditing's original and ongoing role in protecting commercial interests plus the function's emphasis on risk management, control, and governance processes, which before and after SOX have been primarily corporate concerns, could be indications that the function embraces business norms. Moreover, with that heritage, internal audit directors might tend to hold a business point of view in doing their work in the academy. Their education, experience, and certifications might also impact their culture and measuring achievement mindset.

In accomplishing their work, however, higher education internal auditors must not apply any standard or recommend any solution without consideration of all pertinent factors. The IIA Code of Ethics, which with the definition of internal auditing and the *Standards*, form the IPPF for internal auditors, states the following regarding objectivity:

> Internal auditors exhibit the highest level of professional objectivity in gathering, evaluating, and communicating information about the activity or process being examined. Internal auditors make a balanced assessment of all the relevant circumstances and are not unduly influenced by their own interest or by others in forming judgments. (IIA, 2011, p. 5)

All the relevant circumstances should include missions because "help[ing] an organization accomplish its objectives" (IIA, 2011, p. 2) is part of the definition of internal auditing. Attitudes and values associated with organizational culture would also appear to be relevant circumstances. Therefore, to comply with the IPPF Code of Ethics, higher education internal auditors, in helping institutions improve operations and accomplish objectives, should be expected to consider the culture surrounding those operations and the missions framing those objectives. My study shed light on whether they did.

Operational Auditing

My study specifically addressed the use of operational auditing, a type of auditing often advocated for colleges and universities in the scholarly literature, and a type of auditing, in contrast to compliance and financial auditing, whose employment might be especially affected by an organization's culture and missions. The following definition of operational auditing, a term not mentioned in the IPPF, appeared on a Web page for the Office of Audit Services at New Mexico State University (NMSU): "a comprehensive review of the varied functions within an organization to appraise the efficiency and

economy of operations and the effectiveness with which those functions achieve their objectives" (NMSU, 2009, p. 1). I chose this definition, knowing there were countless others, because it included efficiency, effectiveness, and achievement of objectives—components characteristic of the broad review represented by an operational audit, as opposed to the more limited assessments commonly associated with financial and compliance audits.

As discussed in Chapter 2, operational auditing, commonplace in business and government, has not been sufficiently used in higher education. My study examined whether internal audit directors believed operational audits that addressed the accomplishment of research, teaching, and public service missions and goals were appropriate at their universities.

According to its IPPF definition, internal auditing provides both assurance and consulting services. The IPPF definition of assurance services included performance as an example of a type of engagement. Other examples were financial, compliance, system security, and due diligence (for mergers, acquisitions, or joint ventures) engagements. While the IPPF definition of consulting services did not specify performance, that definition's inclusion of "client-agreed" as a criterion permitted performance as a potential type of these services as well, even though counsel, advice, facilitation, and training were the only examples that the definition specified.

Performance is primarily associated with operational audits, although compliance and financial audits may have performance components. By the same token, risk management, control, and governance processes, although intuitively and legally (SOX, for example) more associated with financial and compliance audits, receive attention in

operational audits too. In other words, operational or performance auditing may have significant culture and measuring achievement implications, but such implications may exist in any type of audit and in any aspect of internal auditors' work at a university.

Just as an academic accounting department might favor business principles and practices promoted by the business school of which it is a part, a university internal audit director might naturally consider that the overall culture and missions of his or her institution call into question the applicability of business ways in some aspects of campus operations. My study explored that possibility as well as the possibility that an internal audit director finds business ways applicable to all aspects of campus operations.

Perspectives on the Place of Business in Higher Education

The literature is replete with the view that a college or university is not a business and should not be managed as one. Yet abundant literature also argues that business principles are vital to higher education's success. The latter perspective has of late surfaced in the form of a risk management emphasis by business interests and the broader internal auditing community. Is it possible, however, that an emphasis on business practice puts higher learning itself at risk?

Veblen's (1918/1957) *The Higher Learning in America: A Memorandum on the Conduct of Universities by Business Men*, written during the efficiency movement, contended that a system of basic truths is kept by "adepts" (p. 1) in all civilizations, and that higher learning relied on scholars pursuing, not applying, knowledge. He claimed universities abandoned the pursuit after the Civil War and yielded to vocationalism. Undergraduate and professional schools, such as law and business, grew, as size and

repute became keys to perceived success, putting higher education in the grasp of business principals and principles (Veblen).

Veblen (1918/1957) declared that governing boards, dominated by businessmen with no business in academics—where boldness, creativity, and the inexpedient are essential—deterred the quest for knowledge. He added that "Plato's classic scheme of folly, [where] . . . philosophers take over the management of affairs, [had been] . . . turned on its head" (p. 57), and accused presidents and administrators of stifling scholars by focusing on statistical accountability. Courses and credits had more measures than meaning, and the extracurriculum mirrored, and prepped students for, the competitive and social whirl of business. Growth in enrollments and buildings had publicity value, while the right resources for academic advances were lacking. Scholars were hired help; scholarship was mediocre and mundane. The necessary solution was "abolition of the academic executive and of the governing board [where the] evils sought to be remedied are inherent . . . and intrinsic" (Veblen, 1918/1957, p. 202).

Millett (1962), in an essay on higher education organization, observed that U.S. colleges and universities sought efficiency after World War II in the face of a surge of veterans and a shortage of finances. Noting higher education's "peculiar function of intellectual enlightenment" (p. ix) and the little information produced in over 70 years of studying its organization, Millett provided his thesis: "*I believe ideas drawn from business and public administration have only a very limited applicability to colleges and universities*" (p. 4).

He opposed Weber's, structuralists', and behavioralists' favoring of hierarchical authority. Government entities reflected the political system; business entities, the

marketplace. The essential purpose of a college or university was "to preserve, transmit, and advance knowledge" (Millett, 1962, p. 33); its setting, operations, and structure were distinct. While government, market, and religious forces might spur that purpose, obstructive oversight could jeopardize institutional autonomy and outcomes (Millett).

He believed colleges and universities required a community of faculty members, administrators, students, and alumni and alumnae. Faculty members must leave resources and routine matters to administrators. Student exemplars were residential undergraduates, who had economic, academic, and social power. They sought reasoning and relevance. Connected alumni donated and served on boards. Millett (1962) claimed that William F. Buckley Jr.'s notion that alumni should govern Yale and its errant faculty denied trustees their moral sense and professors their profession. "An open society . . . must curb the extremes of competitive performance and protect . . . the least able" (p. 161).

He saw administration as a triad: board, president/academic side, and president/ support side. Boards protected the public's interest but were not to overreach internally. He decried selecting presidents based on administrative instead of educational experience, and advocated faculty judgment in educational policy, student affairs, business tasks, and development. He saw community as specialized functions operating "through a dynamic of consensus" (Millett, 1962, p. 235). Millett believed that a higher education environment of flourishing exploration was a sine qua non for individual creativity, which determined a society's outcome. Higher education's objective was met in what students learned and could do. Scholars and their community created those results.

Barzun (1968) pointed to "a possible future" (p. x) for U.S. universities. Leading ones since World War II had grown poor, upset students and the public, faced uneasy faculties, and become corporations. U.S. universities addressed all of life: social and business, arts and minds, the needy and needless. Institutional budgets climbed, faculty ratios dropped, student access and accessories expanded, specialties and courses abounded, and appeals and accountability increased. Barzun summed up faculty members', students', and administrators' places in all this. Teaching was undeveloped and unappreciated, as academic freedom and tenure were questioned and faith put in research and the practical. Administrators helped professors and others best via controls and communal consent. Written rules saved time and fostered fairness and continuity. Trustees must be skeptical, but not enforce business efficiency harmful to a university, whose output was intangible. Technology, regulation, student aid, and allocated costs burdened the institution.

Barzun (1968) advocated that administration be more centralized, interconnect with every element, possess central funds, inform its provost, free its president to lead, and eschew added complexity. Knowing itself was not enough; the university must help others know it—most simply as an independent institution with dignity and designs on truth, even though the public wanted something more practical and productive.

Over 40 years later, universities still may appear to some to favor utility over ultimate truth. Utility responds to public and boardroom demands. A 1984 Business-Higher Education Forum report, *Corporate and Campus Cooperation*, asked "the university . . . to direct its energy to corporate ends. . . . In return, universities can expect careers for their graduates . . . and honorary membership in the private sector" (Slaughter,

1990, p. 186). To Barzun (1968), academic purity required autonomy and apartness. Knowledge, not kowtowing, was what universities owed the public and the captains of industry. While universities owed them both useful research, they did not owe it at the sacrifice of purity (Barzun).

Corson (1975) cited five attributes that led society to turn to universities to meet public service and research needs: capacity and prestige, signal human talent, detachment, rigorous curiosity, and values. Because research and public service have implications, Corson called for these guidelines: protect teaching; avoid sponsor control; and assure quality, significance, openness, and consistency with institutional goals.

Cowley (1980) offered three views of the professor, president, and trustee relationship. Radicals wanted universities scholarly, unconstrained by business. Medials wanted professors central, with boards approving proposals. The ameliorative view was represented in the phrase "'joint responsibility and fuller cooperation'" (AAUP, 1920, as cited in Cowley, p. 218) from an early AAUP Committee T report. Cowley claimed that the idea that lay control restrained professors' freedom was a myth. Colleges and universities operated in the public interest, and faculty members participated in every aspect of institutional operations. For them to contribute to academic governance to a much greater extent would distract them from what the public needed them to do (Cowley).

The above perspectives inform my study but the concurrent and later changes taking place warrant emphasis. By the 1980s, universities had grown tremendously in size. Accompanying higher enrollments was a growing number of faculty and staff members at U.S. colleges and universities. Approximately 750,000 in 1967, the number

was over 2,600,000 by 1993 (Hutcheson, 2000). Change and evolution in the definition of internal auditing also can be seen before and after the 1980s.

Internal Auditing's Definitional Evolution

The IIA's 1971 *Statement of Responsibilities of the Internal Auditor* (SRIA) had this definition: "Internal auditing is an independent appraisal function within an organization for the review of operations as a service to management. It is a managerial control which functions by measuring and evaluating the effectiveness of other controls" (Brink, Cashin, & Witt, 1973, p. 3). This definition, despite its narrow emphasis on controls, was broader than the one Brink (1941) had offered 30 years earlier:

> a systematic examination of the books and records of a business or other organization, *by the employees of that business or organization*, in order to ascertain or verify, and to report upon, the facts regarding its financial position and its financial operation. (p. 4)

The latter definition's focus on financial data could create a perception of internal auditors as proverbial bean counters. The more expansive 1971 definition still risked creating a perception of internal auditors as controlling, especially if some controls were thought to inhibit productivity. The 2011 definition, first promulgated in 1999, mentions control but nothing financial. The definition's inclusion of consulting activity, risk management, and governance processes show(case)s the breadth and reach of internal auditing.

Culture and Higher Education Internal Auditing

Hermanson and Rittenberg (2003) viewed governance and its effectiveness as culturally dependent and emphasized that cultural distinctiveness offered important research opportunities. They also expanded the IIA's definition of governance to emphasize areas where internal auditing could contribute.

> Governance processes deal with the procedures utilized by the representatives of the organization's stakeholders to provide oversight of risk and control processes administered by management. The monitoring of organizational risks and the assurance that controls adequately mitigate those risks both contribute directly to the achievement of organizational goals and the preservation of organizational value. Those performing governance activities are accountable to the organization's stakeholders for effective stewardship. (p. 27)

Purpose

My survey research study explored internal audit directors' views of culture and measuring achievement differences between their universities and a business as well as, to a lesser degree, these directors' perceptions of board members', senior administrators', and faculty members' views of these differences. Specifically, internal audit directors' views were sought on the difference, if any, between their respective institutions' culture and a business's culture as well as between measuring achievement of their respective institutions' missions and measuring achievement of a business's objectives. My purpose was to explore how internal audit directors' views of these differences might be related to the priorities and uses of internal auditing at their institutions, as delineated in the following research questions.

Research Questions

Primary research questions were drawn from my overarching research question presented earlier. My initial primary research question was whether the directors' views of culture difference were related to their views of measuring achievement difference.

Other primary research questions were whether the directors' views of these culture and measuring achievement differences were related to

1. How the directors viewed the relative importance at their institutions of various internal auditing factors: internal auditor attributes, types of internal

auditing work, subject areas of internal auditing work, and determinants of types and subject areas of internal auditing work.

2. The directors' level of agreement or disagreement as to the appropriateness at their institutions of operational audits that addressed the accomplishment of missions and goals in research, teaching, and public service, respectively.

Additional primary research questions were whether internal auditor attributes and types, subject areas, and determinants of internal auditing work were related to (a) each other and (b) levels of agreement or disagreement as to the appropriateness of operational audits in the three mission areas.

Secondary research questions addressed whether the directors' views of these culture and measuring achievement differences were related to the various characteristics that follow.

1. Directors' gender, race and ethnicity, age, education, certifications, and work experience; the organizational positions of the directors' reporting officials; genders of these officials; organizational placements of internal audit functions, boards, and audit committees; and how frequently directors met with boards and audit committees.
2. The number of professional staff positions in their internal audit departments; their institutions' enrollment, federal research funding, and total operations funding; and whether their institutions were private or public, or had a medical school.

Other secondary research questions were whether any of the characteristics above were related to rankings of internal auditing factors or levels of agreement or disagreement as to the appropriateness of operational audits in mission areas.

Limitations

The study had the following limitations.

1. It was limited to the Carnegie Classification system's Doctorate-granting Universities category from 2005 to 2010. The category included three subcategories: Research Universities (very high research activity), Research Universities (high research activity), and Doctoral/Research Universities (DRU). Changes in the universities included in the category and subcategories were announced in 2011. The changes did not substantially affect the potential participants for my study. My conclusions cannot be generalized to other types of higher education institutions.

2. It did not attempt to capture the views of internal auditors other than internal audit directors or equivalent. Therefore, conclusions were based on management-level views only.

3. It did not attempt to directly capture the views of board members, senior administrators, and faculty members, for the reasons discussed.

Significance

This study was important because of the increasing pressures on universities to be accountable for their performance, financially efficient, technologically advanced, and properly governed (Lahey & Griffith, 2002). These pressures increase the need for independent advice that can add value and improve operations. Internal auditing's expertise about risk management, control, and governance processes along with its

systematic, disciplined approach that advances operational and compliance processes can help respond to these pressures. The historical and current pervasiveness of culture and measuring achievement in the academy and the potential impact of culture and measuring achievement on the efficacy of internal auditing in research universities made this study timely.

Culture issues associated with higher education internal auditing have received only incidental scholarly attention. My study broke new ground. If creative abrasion between theoreticians and practitioners can lead to sound solutions, perhaps cultural encounters, even subtle or latent ones, when better understood, can have positive outcomes. Clashes between an academic culture and a business culture might affect how internal auditing is viewed at U.S. universities.

University missions, which higher education internal audit directors are professionally and ethically obligated to support, are intertwined with academic culture. Views of culture and measuring achievement differences between universities and a business might ultimately determine not only how but also whether internal auditing is used in the academy.

Future research questions also come to mind. Do those overseeing, leading, and doing the work of higher education have misperceptions of internal auditing because of its (ac)counting and control image? Could institutions of higher education strengthen performance by encouraging the use of internal auditing in more operational areas? I hope that my study serves as a springboard for later research to address such matters and others, which I will address more fully in Chapter 5, Discussion.

CHAPTER 2

LITERATURE REVIEW

Literature on U.S. higher education internal auditing has included 10 dissertations over the past 5 decades: Streetman (1966), Miller (1974), Chapman (1982), Farbo (1985), Azad (1988), Spruill (1989), Traver (1991), Bethea (1992), Reed (1999), and Woodard (2000). Journal articles on the subject began appearing in the mid-1970s. My literature review starts with the first two dissertations and then moves through journal articles and the other eight dissertations—generally chronologically.

Dissertations and Journal Articles

Internal Auditing in Private Institutions

That colleges and universities should make greater use of internal auditing was Streetman's (1966) view. Surveying 43 private colleges and universities and visiting five, he explored the work that internal auditors did and why some schools did not employ the function. He disfavored internal audits of academic areas, deeming self-studies and accreditation reviews sufficient. His position was arguable because internal auditing can help accomplish objectives, and for institutions of higher education, academic objectives are fundamental. Millett (1962) highlighted temporal conditions' effect on higher education's purpose to "preserve, transmit, and advance knowledge" (p. 33). Educational objectives, historically connected to religious, economic, and government interests, respond to "cultural tradition and current social policy" (p. 46). Internal audits might provide valuable assurance or advice regarding achievement of such objectives.

The dissertation cited the IIA's 1957 definition of internal auditing: "'an independent appraisal activity within an organization for the review of accounting,

financial and other operations as a basis for service to management. It is a managerial control, which functions by measuring and evaluating the effectiveness of other controls'" (Streetman, 1966, p. 14). Streetman quoted Seiler (1962): "'Companies . . . [with] a modern philosophy of internal auditing assign reviews . . . of all forms of control to the audit staff . . . , from top executive controls down to controls over petty cash'" (p. 18). Seiler's advocacy of including all forms of control in internal auditing reviews appeared at odds with Streetman's excluding academic areas from internal auditing coverage.

With respect to reporting level, Streetman (1966) claimed that "the officer [that internal auditing] reported to is not as important as the action taken on the reports" (p. 37). The reporting level, to me, is still very important. The person reported to may affect what is audited, and reporting at too low a level could restrict coverage. Streetman cited a 1957 IIA survey of 317 internal audit departments in a range of organizations: 21 reported to the board; 23, to the president; 53, to a vice-president; 136, to the controller; 54, to the treasurer; and 30, to others. He accepted reporting to the controller because that person was familiar with recordkeeping and kept the accounting officer from dominating the auditor. His reasons seemed to underestimate internal auditors' scope of work and self-reliance. To Streetman's credit, he later noted the value of higher reporting when internal auditing is "responsible for areas other than those of a financial nature" (p. 67). He thus appeared to have begun adopting the 1957 internal auditing definition while recognizing that not everyone had—or would.

Thirteen institutions responding to his survey did not have an internal auditing function, with one respondent commenting "that only competent administrators are

employed and they would resent any 'snooping' in . . . their departments" (Streetman, 1966, p. 61). Seventy percent of the functions had one or two professionals. As to an appropriate number of staff members, Streetman advised that "rather than struggle with a formula, the duties . . . should be defined clearly and a staff sufficient to handle that job . . . assembled" (p. 70).

He found no trend toward operational auditing—auditing aimed at efficiency and effectiveness rather than exactitude. Internal auditors attended to financial and accounting data and rarely evaluated management controls. Some reported performing registration, budgeting, and payment duties. That troubled me because performing operational duties compromises internal auditor objectivity and independence, internal auditing essentials.

Streetman (1966) viewed internal auditing vital to colleges and universities' "unique activities . . . [of] sponsored research, intercollegiate athletics, auxiliary enterprises, student loans, relations with the academic community, and the alumni organization" (pp. 96-97). He included purchasing, employment, physical plant, and registration as operational auditing subjects, and opened the door to academic operational audits by noting that "the internal auditor should have a perspective as broad as that of the president" (p. 170).

Many of Streetman's (1966) respondents did not meet all the responsibilities called for by The IIA. Some reported doing mostly accounting work, internal checks, and investigations. Some indicated that they addressed administrative as well as financial controls. One respondent, who had come from a like position in a commercial company, described internal auditing work as mirroring that in a large, well-run business.

Operational Auditing in Public Institutions

Almost a decade later, Miller (1974) examined operational auditing at public colleges and universities with over 5,000 students, sending a survey to 116 internal audit directors at ACUA member institutions meeting his criteria. He explored the relationship between the use of operational auditing and (1) institution size and (2) internal auditor reporting level. Of the 66 respondents, 53 reported performing operational audits.

On average, respondents applied about half of the 74 total audit procedures in Miller's eight model audit programs for the areas of purchasing, personnel, budgeting, insurable risks, investments, stores, security, and physical plant. In regard to the last area, Miller (1974) opined that auditing the physical plant challenged auditors since they "are not oriented toward either engineering or mechanics" (p. 80), but he saw common ground with physical plant personnel in an emphasis on controls. I found gauging operational auditing based on procedures instead of purposes, such as improving efficiency and effectiveness, to be suggestive of compliance auditing.

A finding was that operational auditing was more extensive at schools with between 10,000 and 30,000 students than at institutions with fewer than 10,000 or with more than 30,000 students. Also, operational auditing was more extensive when the internal auditor reported to a vice president than when the internal auditor reported to someone above or below a vice president. That result comported with Streetman's (1966) point that a president may not have time to encourage expanded auditing and with my view that a low reporting level could restrict audit work. Miller (1974) viewed operational audits as having a managerial perspective, focused on resource usage,

controls, and performance. His model programs appeared to capture only some of those areas of focus in depth, however.

Miller (1974) defined internal control as "the plan of organization and all of the coordinate methods and measures adopted within a business to safeguard its assets, check the accuracy and reliability of its accounting data, promote operational efficiency, and encourage adherence to prescribed managerial policies" (p. 5), per an American Institute of Certified Public Accountants (AICPA) Statement on Auditing Standards. He evoked the commercial world, defining internal control "within a business" (p. 5) and defining operational auditing as "applying sensible audit techniques . . . to various operations, controls, resources and procedures within a *company* [emphasis added]" (p. 6).

His literature review noted that auditing in the U.S. initially followed the British model of detailed financial reviews to discover fraud. To control their widely dispersed operations, railroads had been among the first to adopt internal auditing. Oil, steel, and utility companies, similarly widespread and vulnerable to fraud, also added the function. Colleges and universities' multiple teaching, research, public service, and support components, he noted, would similarly justify employing internal auditing departments.

In mentioning that in 1952, the American Council on Education's *College and University Business Administration* (*CUBA*) described internal auditing as verifying transactions and accounts to detect and prevent fraud, Miller (1974) revealed a perception of the nature of the function at midcentury. In 1968, *CUBA* broadened its description of internal auditing to encompass controls, compliance, and safeguarding. Miller saw internal auditing's shift to a more broadly contributing function as requiring operational auditing. He added, businesslike, that "profitability . . . now becomes crucial to the

examination" (p. 33). He saw operational auditing capable of warning of "potentially destructive problems" (p. 34)—not unlike 21st century claims for enterprise risk management.

He noted various views of operational auditing, citing several authors. Mints (1954) saw it focused on compliance and objectives; Leonard (1963) believed its emphasis should be on plans, objectives, operations, and resource use. Cadmus (1964) considered it a product of each auditor's perspective. Pyhrr (1969) found efficiency and effectiveness at its center. Miller (1974) defined operational auditing as

> the appraisal activity within an organization to determine (1) whether adequate policies and procedures have been provided the various operating units to ensure the accomplishment of the objectives of the organization and (2) whether adequate controls have been established and followed by the various operating units to ensure that their assigned functions and responsibilities are accomplished on schedule, with acceptable quality and with reasonable cost. (p. 36)

Miller (1974) listed six phases of an operational audit: familiarization, verification, evaluation, review of audit findings, recommendations, and reporting. The first noted objectives and problems; the second tested plans, procedures, and controls. The third compared performance to expectations. The other three were self-explanatory.

As noted, Miller (1974) equated performing the procedures in his model program to operational auditing. In the personnel area, the procedures focused on federal compliance, appropriate given new requirements in the early 1970s opening up "job opportunities . . . to women, blacks, and other minority group members" (Corson, 1975, p. 186). Efficiency and effectiveness, performance, and management were not clearly evident in his procedures. I observed that he did not address several important factors relevant then and now, such as no internal audit function can audit every area every year

or even every several years, given the limited number of auditing staff members and the large number of auditable entities and processes at a typical institution.

Moreover, I believe familiarization should identify what should be audited and what should not, based on a risk assessment and professional judgment. To conclude that operational auditing was not done because the eight areas he listed were not covered, or to conclude it was not extensive because the procedures in his model were not followed could thus be open to question. His use of the model audit programs thus had limitations. Miller (1974) concluded that operational auditing was not being used to its full potential in public colleges and universities, that board members and presidents must be informed of the benefits of operational auditing, and that recommendations needed to be more consequential and more clearly conveyed.

Early Journal Articles

Touting internal auditing's importance to higher education despite the latter's unbusinesslike nature and hard-to-measure outcomes, Drucker (1975) cited Danforth (1973):

> Pressures for increased accountability . . . need attention from the academic community and require a response that is sympathetic, careful, thoughtful, and skeptical. . . . [T]he path to better management need not lie only through greater abstraction and more centralized control, but may also lie in greater participation by departments and schools and by better fixing of responsibilities and rewards. (Drucker, 1975, pp. 58-59)

That higher education internal auditors should audit widely, to include assessing faculty workload, was Drucker's (1975) view. His survey found that most higher education internal auditors reviewed performance and management in addition to financial matters and compliance, most of their directors reported to the chief financial officer (CFO), and over 68% of their departments had only one professional. Two thirds

of those in one-person shops were certified public accountants (CPAs). None were certified internal auditors (CIAs) because The IIA did not offer the CIA exam until 1974.

The conclusion Drucker (1975) reached was that higher education "lag[ged] far behind private industry in using internal auditing as a tool for controlling and improving operations" (p. 63) and that higher education internal auditors had insufficient independence, as indicated by so few reporting above the CFO level. On a more positive note, he cited ACUA's growth in numbers of institutional members with internal auditing functions, from 97 to 237 over the preceding 8 years.

A former Illinois State Board of Regents auditor and Illinois State University internal audit director, Manahan (1976) echoed Drucker (1975) in a nonscholarly article. Manahan urged that college and university administrators recognize internal auditing's legitimate role and that internal auditors be conscious of the distinctiveness of higher education and the difficulty of measuring its results. He emphasized that internal auditing must be independent, report to the top, and not have operational responsibilities. Citing Illinois legislation instituting internal auditing in state agencies and stipulating that "auditors would be 'responsible to the chief executive officer' . . . [and] be concerned . . . [with] program evaluation" (pp. 61-62), he urged colleges and universities to develop program standards and have internal auditors evaluate them.

Dissertations in the 1980s

Noting that The IIA defined internal auditing as an independent appraisal function and that institutional research in colleges and universities was also an independent appraisal function, Chapman (1982) claimed institutional research equated to internal

auditing. “Both functions are internal . . . , conduct appraisals . . . , and collect data about . . . activities . . . as a service to management” (p. 5).

He explained that The IIA’s first *Standards for the Professional Practice of Internal Auditing (SPPIA)*, promulgated in 1978, had five general and 25 specific standards. He asserted “that the *SPPIA* apply to any unit or activity within an organization which performs internal auditing” (p. 8), including institutional research. He offered, but appeared unmoved by, the Executive Secretary of the Association for Institutional Research’s response to him that “‘it would be unusual for an office of institutional research to be classified with an internal auditing department; some would actively try to avoid such identification’” (p. 9).

Concentrating on the “scope of work” general standard and its five specific standards, Chapman (1982) statistically tested the following three hypotheses using data received from 117 colleges and universities with over 15,000 students and 88 private business corporations with a comparable number of employees as these institutions.

> Hypothesis #1. There is no difference between the proportion of institutions of higher education that have an internal auditing department responsible for performing the five *SPPIA* Scope of Work standards and the proportion of private corporations, of similar size to the institutions of higher education, that have an internal auditing department responsible for performing the five *SPPIA* Scope of Work standards.
>
> Hypothesis #2. There is no difference between the proportion of total expenditures devoted to the five *SPPIA* Scope of Work standards by offices responsible for conducting internal independent appraisals in institutions of higher education and the proportion of total expenditures devoted to the five Scope of Work standards by the internal audit department in private corporations of similar size to the universities studied.
>
> Hypothesis #3. There is no difference between the proportion of full-time equivalent employees devoted to the five *SPPIA* Scope of Work standards in offices responsible for conducting internal independent

> appraisals in institutions of higher education and the proportion of full-time equivalent employees devoted to the five Scope of Work standards by the internal audit department in private corporations of similar size to the universities studied. (p. 10)

Chapman (1982) sought to update Drucker's (1975) study and to help "prove or disprove his conclusion that educational institutions lag far behind private industry in using internal auditing as a tool for controlling and improving operations" (pp. 13-14). Almost 30 years later, my sense, and part of the purpose of my study, is there may not be so much a lag as there is a difference between internal auditing in higher education and in industry.

The *SPPIA's* five general standards were independence, professional proficiency, scope of work, performance of audit work, and management of the internal auditing department. The five specific standards for scope of work were reliability and integrity of information; compliance with policies, plans, procedures, laws, and regulations; safeguarding of assets; economic and efficient use of resources; and accomplishment of established objectives and goals for operations or programs.

He noted that *CUBA,* in its 1974 edition, described internal auditing as "'a staff function that serves management by reviewing and appraising the business activities of the institution, the integrity of its business records, and the general effectiveness of operations'" (Chapman, 1982, p. 30). Chapman pointed out that the purpose of the Association for Institutional Research (AIR) was "'to benefit, assist, and advance research leading to improved understanding, planning, and operation of institutions of higher education'" (pp. 38-39).

All three hypotheses were accepted, and Chapman (1982) concluded that internal auditing in higher education did not lag that in private industry. In my judgment, that

there was no statistically significant difference in the proportion of entities having an internal auditing department or in the proportion of total expenditures or full-time equivalent employees dedicated to the scope of work standards between higher education institutions and similarly sized private business enterprises only marginally addressed Drucker's (1975) conclusion. Drucker was concerned not with internal auditing resources but with internal auditing objectives, such as improving operations, and status, such as reporting level. Chapman reported that 35% of higher education internal audit directors reported to an executive vice president or higher level and that 7.5% of directors reported to the board. He also noted that ACUA's institutional membership reached 350 in 1981.

He observed that specific scope of work standards 310, Reliability and Integrity of Information; 320, Compliance with Policies, Plans, Procedures, Laws, and Regulations; and 330, Safeguarding of Assets, related to traditional internal auditing, while standards 340, Economic and Efficient Use of Resources, and 350, Accomplishment of Established Objectives and Goals for Operations, addressed operational auditing. He found college and university audit offices spent 76% of scope of work effort on the first three specific standards: 35% devoted to compliance; 23%, information; and 18%, asset safeguarding. The remaining 24% was approximately evenly split on the last two specific standards: economy and efficiency, and goals and objectives.

Farbo (1985) evaluated the perceived effectiveness of the internal auditing function in private and public colleges and universities by comparing how internal audit directors, their immediate supervisors, and the institutions' external financial statement auditors ranked in importance specified internal audit attributes or responsibilities associated with three internal audit function characteristics: objectivity, competence, and

performance. He claimed greater congruence equated to "greater . . . institutional internal audit productivity and efficiency" (p. i).

That claim might be open to question. Absence of agreement could confirm a desirable independence on the part of internal auditing, making it more effective. Also, that an immediate supervisor, who could be the president, did not prioritize a function's attributes or responsibilities the same as the function's head did may simply reflect the former's understandable and inconsequential unfamiliarity with such particulars. As to external auditors, they perform financial statement audits, a different role from that of internal auditors. Different rankings by internal and external auditors of the former's attributes and responsibilities seemed peripheral to effectiveness, which would seem to rest more on sound coordination between the two audit groups.

The author surveyed a sample of 25 public and 11 private colleges and universities in the western part of the U.S. He proposed 17 hypotheses regarding perceptions of objectivity, competence, and performance among the three groups, between pairs of groups, and variously at and between public and private institutions. His questionnaire section addressing factors (attributes or responsibilities) associated with competence did not use the word "competence," but used instead the words "job performance" (Farbo, 1985, p. 108), thus conflating the second characteristic with the third, one of several overlaps of factors. Others were independence and audit scope, both among the nine factors for objectivity and the five factors for performance.

For objectivity and competence, he assessed whether respondent groups' rankings of specified factors differed. For objectivity, factors were independence, reporting level, freedom to investigate, top management support, adequacy of audit scope, quality of

supervision, review procedures, audit report qualities, and compliance with professional standards. For competence (job performance), factors were planning, promoting services, revising work programs, training others, recognizing problems, reviewing assistants' work, interacting with client, understanding accounting principles and auditing standards, understanding institutional policies and procedures, and showing special competence.

For performance, factors were independence, professional proficiency, scope of work, auditor performance, and audit department management, all the factors that the *SPPIA* labeled the "five major performance measures" (Farbo, 1985, p. 21) for internal auditing. Farbo assessed congruence for performance based on how respondents rated on a 7-point Likert scale the importance of 20 randomly listed items—four for each of the five performance factors.

There was statistically significant agreement for 16 of his 17 hypotheses. He had to reject his hypothesis that there was no statistically significant difference between the assessed measure of professional proficiency as perceived by the internal auditor, his or her immediate superior, and the external auditor at public and private institutions. Based on the relatively larger difference between means for two items associated with professional proficiency at public institutions, Farbo (1985) indicated that the significant difference existed only between internal auditors and their supervisors at public institutions.

Another finding was that 14 (56%) of the 25 internal auditing departments in public institutions, and 6 (55%) of the 11 internal auditing departments in private institutions had either one or two professional staff members. Eight of the internal auditing departments in public institutions and four internal auditing departments in

private institutions had six or more staff members. Of 36 internal audit departments, Farbo (1985) found 4 decreased and 14 increased in the number of professional staff members. Most institutional boards had an audit committee. Internal audit directors at 18 public (72%) and at 8 (73%) private institutions interacted with audit committees.

Types of projects appeared to be expanding. Farbo (1985) found that in addition to financial audits, there were compliance audits at 96% of public and 23% of private institutions (96%/23%), operational audits (88%/100%), audits of federally sponsored programs (32%/46%), internal accounting control reviews (84%/82%), special management requests (100%/82%), and one or more other types of projects (40%/9%). Other types included fraud investigations, conflict of interest reviews, and systems audits.

He acknowledged that his small sample precluded generalizing his results. Although it was unlikely that any group of 11 to 25 individuals, even if highly homogeneous and agreeable, would identically rank 9, 10, or 20 factors, Farbo conjectured on several factors within the three characteristics that displayed relatively large ranking differences. He saw in these differences a range of questions for future research, such as:

> Is the level of communication . . . [among the three parties] as strong as it should be? . . . Does the size of the internal audit department staff have any influence on . . . attempting to adhere to the auditing professional standards? . . . Is the element of "public scrutiny" greater or less at public institutions? (Farbo, 1985, pp. 94-95)

A dissertation by Azad (1988) addressed internal auditors' perceptions of the importance of personal, organizational, and environmental factors associated with operational auditing as well as whether those perceptions differed between certified and noncertified auditors. Azad defined operational auditing as "a systematic evaluation

technique to promote effectiveness, efficiency, and economy of operation" (p. 116). His questionnaire went to 328 ACUA members and produced 157 usable responses.

He found that certified and noncertified auditors' perceptions did not significantly differ for 11 of 14 attributes, but did for the attributes of audit report and professional certification, both of which certified auditors perceived to be more important, and for "knowledge and understanding of the higher education environment" (Azad, 1988, p. 109), which noncertified auditors considered more important. Azad asserted that "the less favorable perceptions of certified auditors concerning the importance of this attribute support the general position of auditors . . . that because internal auditors audit the business aspect of the operation they need to be experts only in auditing" (pp. 109-110).

Azad's (1988) dissertation survey led also to three journal articles, one co-authored, in the 1990s. I review those articles briefly in the following section, Journal Articles and Dissertations in the 1990s. Each of the articles is relatively distinctive despite the common survey base, and they have been cited by others in the higher education internal auditing literature.

Costs of internal and external auditing at major private and public research universities that were ACUA members and were also on the National Science Foundation list of the top 100 institutions in federal sponsored research were the subject of Spruill's (1989) dissertation. He observed that from 1960 to 1965, federal contracts and grants for colleges and universities had grown from $387 million to just over $1 billion, and then more than doubled to over $2.2 billion by 1980. Federal audits began to reflect an adversarial tone, leading the Council on Governmental Relations of the National Association of College and University Business Officers (NACUBO) to create a

newsletter advising campuses of what federal auditors were finding, such as insufficiently supported personnel expenses, inappropriate cost transfers, and inaccurate internal charges and billing rates.

Spruill (1989) posed several research questions:

> Do private institutions spend the same proportion [on audits] as public institutions [do]? Is the ratio of external to internal audit costs uniform over various types of institutions? How do internal auditors at various types of institutions allocate audit effort among financial, compliance, computer, and operational audits? What is the relationship between institutional quality and the amount spent on audits? (p. 56)

He sent a questionnaire to chief internal auditors at 90 institutions meeting his criteria and requested that each respondent submit a copy of the institution's most recent Integrated Postsecondary Education Data System report, providing funding sources and revenue information. Seventy chief internal auditors responded. All provided information on internal auditing costs and on operational audits. However, missing response information precluded canonical correlation analysis for 28 institutions, thus only 42 were so analyzed.

In addition to compiling descriptive statistics, Spruill (1989) performed canonical analysis with external audit costs and internal audit costs, respectively, as the criterion (dependent) variable and the following as independent (predictor) variables: (1) federal contracts and grants revenue; (2) number of students; (3) revenue from auxiliaries, including hospitals; (4) number of CPA opinions; (5) proportion of effort on operational audits; (6) internal audit training costs; and (7) Gourman rating of institutional effectiveness. (The Gourman report, the source of Gourman ratings, "was a disaster; in the case of Wisconsin he rated colleges by alphabetical order, and it was a scandal, covered" in *The Chronicle of Higher Education* (P. A. Hutcheson, personal

communication, October 29, 2009).) Spruill found that predictor variables (1), (2), (4), and (7) had significant correlations with external audit costs, and predictor variables (1), (2), (3), (6), and (7) had significant correlations with internal audit costs.

He also computed bivariate correlations as fully as possible for all 70 responders. Results were generally consistent with the canonical analysis. Correlation was not as significant for the number of students for either external or internal audit costs. Except for the correlation between auxiliary revenue and external audit costs, all other canonical correlations significant at $p < .01$ were also so significant using bivariate analysis (Spruill, 1989).

Null hypotheses that there was no significant relationship between external audit costs and, respectively, auxiliary revenue, operational audit effort, and internal audit staff training and development costs were not rejected. His null hypotheses that there was no significant relationship between internal audit costs and, respectively, CPA certifications and operational audit effort were also not rejected. His null hypotheses that there was no significant relationship between external audit costs and, respectively, federal contracts and grants revenue, student population, number of CPA certifications, and the institution's Gourman effectiveness rating were rejected. His null hypotheses that there was no significant relationship between internal audit costs and, respectively, federal contracts and grants revenue, student population, auxiliary revenue, internal audit staff training and development costs, and the Gourman rating were rejected (Spruill, 1989).

Assessed also by Spruill (1989) was time devoted to financial, compliance, operational, and computer audits. Results appear in Table 1.

Table 1

Number of Institutions by Level of Effort by Type of Audit

Type of Audit	Level of Effort				
	1	2	3	4	5
Financial	15	34	9	3	-
Compliance	7	40	13	2	-
Operational	11	35	18	6	-
Computer	23	46	-	-	-

Note. Level 1 = None, Level 3 = About half, and Level 5 = Almost all.

There was a notable difference in internal audit costs and external audit costs at the nine institutions whose internal audit offices devoted about half their effort to financial audits. These schools, on average, spent about $150,000 less in internal audit costs and also less on external audit costs than other institutions. Spruill (1989) also noted that the schools indicating that they devoted over half their resources to operational audits had, on average, the same internal audit costs as those that did no operational audits. Internal audit departments that devoted half or more of their effort to operational audits exhibited higher external audit costs. He also found that public and private institutions had, on average, about the same internal audit costs.

Spruill (1989) expressed surprise that internal audit costs and the level of operational auditing were not significantly correlated and stated, "There might be a difference in perception between management and internal auditors on the value of this service. It might be that internal auditors have not provided a high quality product in this area" (pp. 97-98).

Journal Articles and Dissertations in the 1990s

After an apparent 14-year hiatus in the publication of higher education internal auditing journal articles, nine scholarly articles and another nonscholarly article on the subject appeared in the 1990s. Three scholarly articles—Azad and Skekel (1990) and Azad (1992, 1994)—were based on responses to the ACUA-member survey Azad (1988) conducted for his dissertation.

College and university auditors' perceptions of the importance of personal factors for operational auditing success were the focus of Azad and Skekel's (1990) article. They addressed five attributes derived from the *SPPIA*: objectivity, technical competence, experience, professional certification, and human relations. Respondents used the following 5-point Likert scale: 1 = no importance, 2 = below average importance, 3 = average importance, 4 = above average importance, and 5 = extreme importance. According to ratings of 17 factors, each linked to one of the five attributes, the greatest importance was attached to the attribute of objectivity, followed in descending order of importance by human relations, technical competence, professional certification, and experience. Two factors linked to objectivity had over 4.5 ratings: "freedom from operating responsibilities" and "reassignment in conflict of interest situations." The only other factor of the remaining 15 with a rating over 4.0 was the 4.32 rating for "encouraging auditees to develop and recommend solutions for deficiencies," linked to the human relations attribute.

College and university auditors' perceptions of the importance of organizational factors for operational auditing success were the focus of Azad's (1992) article. Operational auditing, undefined in the 1990 article, was defined here as "a

comprehensive examination of an operating unit aimed at evaluating its performance" (p. 57). The portion of the Azad (1988) survey relevant here addressed eight attributes, again derived from the *SPPIA*: independence, audit plan, audit program, audit supervision, continuing education, training, audit report, and audit follow-up. According to respondents' 5-point Likert scale ratings of 29 factors, each linked to one of the eight attributes, the greatest importance was attached to the audit report, followed in descending order of importance by audit follow-up, audit supervision, audit plan, audit program, continuing education, independence, and training.

The author claimed results could guide decisions on operational auditing, but cautioned that actions "may have . . . political ramifications" (Azad, 1992, p. 67). One such action cited was changing internal auditing's reporting level, a surrogate for independence. Because independence is a sine qua non for effective internal auditing, its low ranking (seventh among eight) appeared unusual to me. The rating was an average of four separate Likert scale ratings of reporting levels, two of which appeared to overlap. The reporting levels were board audit committee, president, board itself, and vice president. Respective mean scores were in a declining sequence of 4.14, 3.88, 3.70, and 2.90 for those levels, even though the first and third levels could be considered analogous. These four factors were not independent of each other, which, to me, made this attribute's ranking open to question.

In all, 16 of the 29 factors for the eight organizational attributes received a rating of over 4.0, and half of those were over 4.5. All eight attributes were rated higher than average in importance. The lowest average mean of any attribute was training's 3.64, just below independence's 3.65 and continuing education's 3.79. Azad's (1992) conclusions

offered only mild encouragement on the essential matter of independence: "institutions . . . may wish to consider changing the reporting status of their auditors from . . . a vice president to . . . the [governing board] audit committee, where possible" (p. 66).

Operational auditing as a previously little-used but purposeful way for colleges and universities to respond to resource limitations and the expectations of federal and state legislators for stewardship and accountability was Azad's (1994) focus in his third article. He noted that operational auditing focused on resource utilization, management controls, and performance as opposed to traditional financial analysis. His primary purpose was to determine the status of operational auditing in U.S. higher education and "the perception of college and university auditors concerning the importance of auditing different activities and functions" (p. 12). Using responses to another part of his 1988 dissertation survey, he assessed 16 administrative areas and 6 academic areas for how important his respondents perceived auditing each area was for improving operational efficiency and effectiveness.

Amplifying his 1992 article, in which he defined operational auditing as "a comprehensive examination of an operating unit aimed at evaluating its performance" (p. 57), Azad (1994) quoted Cadmus (1964): "'Operational auditing is a systematic process of evaluating an organization's effectiveness, efficiency, and economy of operations'" (Azad, p. 12). Azad then added that

> the nature of operational auditing involves a non-traditional approach to review and analysis. Rather than analysing financial transactions, operational auditing focuses on the review of the allocation and utilization of resources. It also focuses on the evaluation of managerial controls and performance. (p. 12)

While acknowledging that higher education's collegial decision-making, intangible inputs and outputs, and absence of a profit motive challenged gauging and upgrading efficiency and effectiveness, Azad (1994) countered that college and university activities—academic functions included—had relevant and assessable elements of efficiency and effectiveness, and thus ought to be subjects of independent review.

He found 53% of respondents engaged in operational audits of academic departments. Twenty-five percent audited faculty research, and 24%, academic programs. Percentages of those that had done audits of faculty teaching load, faculty promotion and tenure, and faculty development were 16, 6, and 5, respectively. Azad (1994) claimed his results were consistent with Drucker's (1975) finding that educational institutions were behind the private sector in employing operational auditing. Azad's respondents at both public and private schools perceived that auditing administrative areas was more important than auditing academic ones.

In his dissertation, Traver (1991) claimed that communicating internal auditing professional standards to those higher in the organization was necessary for internal auditing to be effective. He assessed (1) whether higher education internal audit directors and their direct superiors had different perceptions of the relative importance of factors that impacted internal audit effectiveness and (2) whether their perceptions differed by Carnegie Foundation institutional classifications. Factors, drawn from IIA standards, were professionalism, objectivity, scope, independence, performance, and audit management.

Surveys went to internal audit directors at 326 ACUA U.S. member institutions and to the 235 responding directors' direct superiors. Of the latter group, 184 responded.

Traver (1991) found statistically significant differences between the two groups' perceptions of the relative importance of all factors except professionalism. In comparison, Farbo (1985) found statistically significant agreement for his performance factors of independence, scope of work, auditor performance, and audit department management between audit directors and immediate supervisors and did not find statistically significant agreement for professional proficiency. Traver also found differences among Carnegie classifications not statistically significant.

The survey instrument's first part, which went to directors and their superiors, had 24 items to be rated on a 6-point Likert scale of 0 = no importance to 5 = great importance. Four items related to each of the six factors. The stem for each item was "How important is each of the following factors in contributing to audit department effectiveness at your institution?" (Traver, 1991, p. 126). The second part of the instrument, which went only to internal audit directors, collected demographic data and proportion of time spent on types of audits.

Findings were that 6% of directors reported to the board; 38%, to the president or chancellor; 41%, to the treasurer, comptroller, or vice president of finance; and 12%, to the vice president of administration or operations. Traver (1991) attributed differences in conclusions between him and Farbo (1985) to statistical tests used and sample sizes. He did not comment on the differences in arithmetic means, which were the basis of his tests. Means (rounded) were 3.8 versus 3.9, 4.4 versus 4.2, 3.9 versus 4.2, 3.3 versus 3.6, and 4.2 versus 3.9 on the five factors where he found a statistically significant difference between directors and their supervisors.

Traver (1991) specified the 24 items related to the six factors:

Performance: Understanding the academic cultural environment, acceptance of audit findings and implementation of recommendations by auditees, cost versus benefit analysis of audit recommendations, and the assessment of internal audit services by auditees.

Objectivity: Degree of compliance with professional standards, reporting relationship of the internal audit function to the top administrator, internal audit's control over form and content of every audit report, and support of the President/Chancellor for the work of the internal audit department.

Scope: Development of annual and long-range audit plans, establishment of appropriate audit priorities based on a formalized risk assessment, and the audit department's evaluation of the institution's system of internal control.

Audit management: Establishing a peer review program, completion of project assignments in the annual audit plan, completion of annual performance appraisals, and maintenance of an audit policy and procedure manual.

Independence: Independent determination of the scope and objectives of audits, review of the design and implementation of major administrative systems, complete access to information, and access to the governing board by the audit director.

Professionalism: Participation in continuing professional educational programs and in professional organizations, knowledge of institution's organization structure, and the ability to clearly communicate audit findings and recommendations. (pp. 89-90)

He stated his views:

Audit Directors and their immediate supervisors need to achieve consensus as to what is important to the audit function while working in an environment which is ambiguous, diverse, and which doesn't expect consensus. . . . [T]he professional commitment of internal audit staff members to attain professional certification in their career field may not be valued in an institutional environment whose mission is education, research, and public service. This is true, in part, because the entire administrative function in higher education may be barely tolerated by an academically oriented faculty. . . .

Auditors may be negatively evaluated on erroneous criteria at the same time standards are being upheld. Ineffective auditors may not receive

> appropriate guidance from their supervisors if supervisors have no idea what criteria the profession as a whole values. This study revealed that this might be a pervasive problem. (Traver, 1991, pp. 92-94)

Traver's (1991) points, while thought-provoking and important, should be put in context. Immediate superiors of internal audit directors typically provide a reporting chain; they do not supervise audits. If they did, internal audit independence, a core criterion for the function, would be in jeopardy. He speculated that their superiors may not want internal auditors to have unlimited independence, but the difference in means for independence was actually only .22, that is, 4.1548 and 3.9303, respectively, for directors and their superiors.

How audit directors perceived audit effectiveness did not show a statistically significant difference by institutional classification. Traver (1991) concluded that meant that organizing and performing the internal audit function should be the same no matter the size and type of institution. Traver also concluded that training need not involve different audit matters in different types of institutions. The connection was not discussed and did not appear clear in light of the fact that specific training needs were not addressed in his questionnaire or elsewhere in his dissertation.

In his dissertation, Bethea (1992) stated that his purpose was "to determine what, if any, impact selected audit and training attributes have on the role and responsibilities of internal auditing in higher education" (p. 11). He created a model using three areas deemed significant by "the auditing community and professional practice" (p. 7): audit funding, audit attributes, and training. He compared these areas between public and private institutions and by geographical regions, using and analyzing data collected via a questionnaire that he sent in 1989 to ACUA member chief internal auditors. He received

responses from 303 of them, representing 222 (73%) public and 81 (27%) private institutions.

He tested 10 null hypotheses, all with this stem: "There is no significant difference between chief internal auditors within the ACUA of the perceived importance of" (p. 9). The 10 hypotheses addressed, respectively,

1. selected attributes when controlled by public and private.
2. selected attributes when controlled by region.
3. selected attributes when controlled by public, private, and region.
4. selected attributes when controlled by public/private, region, and public/private/region.
5. training for internal auditors when controlled by public and private.
6. training for internal auditors when controlled by region.
7. training for internal auditors when controlled by public, private, and region.
8. training format for internal auditors when controlled by public and private.
9. training format for internal auditors when controlled by region.
10. training format for internal auditors when controlled by public, private, and region.

Bethea (1992) defined operational auditing as emphasizing efficiency and effectiveness and introduced performance auditing as a separate concept:

> In the opinion of many practicing auditors, many faculty members believe that performance auditing would allow the auditor to evaluate academic programs through cost/benefit analysis. However, to the practicing auditor, performance auditing is an examination and evaluation of the institution's operations exclusive of academic programs. (p. 17)

He later added "that the nature of internal auditing is quite broad and covers all organizational activities, whether they are financial, operational, or otherwise" (p. 28), appearing possibly to contradict his comments on performance auditing. He also noted that in 1980 ACUA stated, "The internal auditor is concerned with any phase of *business* activity where he or she can be of service to management" [emphasis added] (p. 33), which implied some limits.

He addressed these internal auditor personal attributes: education, experience, professional certification, and human relations skills. He argued that accounting, the quintessential area of education and experience for internal auditors, was not sufficient to meet the expectations of consumers of internal audit services. He cited Brink's (1982) recommendation that internal auditors "need to have technical qualifications of the broadest possible application" (Bethea, 1992, p. 41).

Also addressed were environmental attributes, which Bethea (1992) defined as factors "uniquely identifiable with institutions of higher education" (p. 43). He added that "effective internal auditing requires a complete . . . understanding of . . . characteristics unique to the organization and the industry" (p. 44). He claimed that some questioned whether internal auditors were qualified to assess performance in colleges and universities, quoting Pyhrr's (1969) observation that the internal auditor "needs to be an expert only at auditing, since it is the business aspect of the operation that he is most interested in" (Bethea, p. 47).

The audit attribute of reporting level was considered indicative of how much internal auditing was valued and able to accomplish its work without interference, and types of audits were thought to shed light on the scope of work, another audit attribute. Other audit attributes were the internal audit department's size and competence, certifications, independence, objectivity, continuing education, training, audit planning, audit programs, audit supervision, professional organizations, and academic culture. Bethea (1992) included this within his brief discussion of the last attribute: "Cultural knowledge is the information an individual requires to function effectively within an

organization. Auditors are expected to approach most audits from a cultural perspective" (p. 64).

There was a significant statistical difference between public and private institution respondents for all but three of the attributes, those being professional organizations, audit planning, and audit supervision. The 10 considered statistically different sometimes seemed quite similar. On a 5-point Likert scale, the mean was 4.89 for public and 4.98 for private institutions for organization reporting status. Both types of institutions clearly considered the status highly important.

He found significant differences in perceptions of the importance of the 13 attributes when controlled by regions. However, sample sizes were small, and just two of the seven regions differing would have been sufficient to provide the statistical result. To test his third hypothesis, he compared for each of the 13 attributes the three means for public, private, and regions (total), respectively. Significant differences were found for even the three attributes that were not statistically different under his first hypothesis, but differences between means were small, such as 3.03 versus 2.99 for one. Bethea (1992) rejected the null hypothesis with respect to perceptions of audit attributes between public and private institutions, but not by regions, or with respect to all three—public, private, and regions.

He found that public institutions provided their auditors with more training than did private schools and that there were regional differences in funds allotted to, value of, and method and timing of training between public and private colleges and universities. "The . . . role and responsibilities of Internal Auditing was [sic] consistently the principal focus of all training" (Bethea, 1992, pp. 93-94).

In a nonscholarly article, S. Johnson (1992), a manager with the then Big Six accounting firm, Coopers & Lybrand, reported on her firm's survey of 90 colleges and universities, 36 (40%) of which responded that they had an internal audit function. She noted that after World War II, internal auditing focused on preventing problems by advising on internal controls. In the 1970s and 1980s, operational audits increased, and by the early 1990s, demands from government and the public for greater accountability increased the incidence of compliance audits (as well as, apparently, journal articles on internal auditing in higher education).

She found that larger schools were more likely to have an internal audit department, and that such departments spent the most time on internal controls testing, followed in order by operational audits, institutional compliance reviews, regulatory compliance reviews, investigations, external auditor assistance, and information technology (IT) controls testing. Fifty-eight percent of the departments reported to financial officials, with the other 42% reporting to boards, board audit committees, presidents, or other nonfinancial senior officials (S. Johnson, 1992).

Forty-four percent of 4-year schools surveyed had internal audit functions, and they spent over half their time on internal controls testing and operational audits. Ninety-six percent of schools with over 10,000 students had internal audit departments, and the majority of their time was spent on institutional compliance and operational audits. While S. Johnson (1992) provided other data comparing research versus nonresearch as well as public versus private institutions, the small sample size of the survey limited the data's value.

For his article, G. G. Johnson (1992) sent surveys to 457 four-year colleges. Of 274 respondents, 106 (39%) were at public and 168 (61%) were at private institutions. Sixty-six (62%) of the former and 33 (20%) of the latter had an internal auditing function. Twenty-three percent of public and 36% of private institution internal auditors were CPAs or CIAs. At public institutions, 25% of internal audit departments reported to the board and 33% to the president, versus 32% and 42%, respectively, at private institutions.

The author explored why some institutions did not have an internal auditor, providing choices of possible reasons. Thirty-four percent of public and 26% of private institutions selected "lack of funds." "No perceived need" or "not perceived as cost beneficial" was the choice of 38% of public and 30% of private institutions. Seventeen percent of public colleges and universities and 24% of private schools chose "other titles handled function." Also asked was the priority for establishing the function in the future. Ninety-two percent of private and 73% of public schools indicated it was a low priority.

Within the context of an increased emphasis on internal auditing as a result of the Treadway Commission's 1987 Report of the National Commission on Fraudulent Financial Reporting and the 1991 AICPA Statement on Auditing Standards (SAS) No. 65, The Auditor's Consideration of the Internal Audit Function in an Audit of Financial Statements, Montondon and Meixner (1993) examined internal auditor independence and objectivity. Of 500 ACUA members surveyed, 288 (58%) responded. Three fourths of respondents were at public institutions, and two thirds of respondents were men. Average tenure of respondents was 6 and a half years. Montondon and Meixner used the attributes of professionalism, institutional support, and organizational position to gauge independence and objectivity.

Evidence of professionalism was considered extensive. Ninety-eight percent of respondents had bachelor's degrees; 40%, graduate degrees; and 87%, professional certifications. Only 12% had been in their jobs less than 2 years, almost 27% had over 10 years of tenure, and over 71% of those at public institutions had previous auditing experience. As to institutional support, respondents indicated on a scale of 0 to 100 their satisfaction with resources, number of staff, staff competence, and time to accomplish tasks. For resources and staff competency, 71% assigned a rating in the highest quartile (76-100). Number of staff was in the bottom two quartiles (0-50) for 59% of respondents, and time to accomplish tasks was in the top two quartiles (51-100) for 64% of respondents.

Characteristics and congruence of internal auditors' appointing and reporting officials provided insight on organizational position. Appointment was by someone below the president for 53% of institutions. At 52% of those institutions, the appointing official also supervised the internal auditor, potentially compromising objectivity and independence, especially if power to appoint equated to power to terminate. Montondon and Meixner (1993) saw a weakness in the organizational positioning of these audit departments, but a solution in proposed IIA guidelines recommending that departments report to board audit committees. Only 56% of responding institutions had audit committees.

The use of internal auditing to improve accountability and performance in the face of declining resources and enrollments and increasing publicity about financial mismanagement at many campuses was Chamberlain, Gordon, and Plunkett's (1993) focus. They noted that The IIA's 1991 Statement on Internal Auditing Standards (SIAS)

No. 10, Evaluating the Accomplishment of Established Objectives and Goals for Operations or Programs, "makes . . . clear that an internal auditor's responsibility includes . . . evaluation of program results and recommendations concerning . . . measurement criteria and controls" (p. 34). The authors defined a program or performance audit as an "investigation of the degree to which a unit's goals are achieved and the efficiency with which resources are employed" (p. 33). They compared the program evaluation model used in the higher education accrediting process to a performance audit.

The authors argued, "The conventional vehicle for accomplishing program improvements is a program audit" (Chamberlain et al., 1993, p. 34). They claimed administrators too often viewed internal auditors as police not consultants, and thus engaged external consultants, not their own internal auditors, to do performance reviews. The authors' survey of ACUA members in three Southern states found that most college and university internal auditors did few program audits, focusing instead on compliance audits, especially at public institutions.

Chamberlain et al. (1993) argued for higher education program audits of academic units and offered two models. The first, used by external consultants and similar to the accreditation model, included a self-study, review of self-study and on-site visit, draft report, and final report with recommendations. The second model was their proposed continuous control loop model, incorporating SIAS No. 10 guidance, for use by internal auditors: review of quantifiable objectives; advice on policies, procedures, and controls; measurement and comparison of performance; analysis of deviations and causes; and

report of results with recommendations. Their description of the control loop model did not address interaction with auditees, nonquantifiable factors, and organizational culture.

The authors recited reasons to use internal auditors for program audits. With no vested interest in program audit results, internal auditors brought detachment. Also, in contrast to external consultants, internal auditors had a "global perspective of the institution and are intimately familiar with the institution's mission" (p. 42). Internal auditors were also a sunk cost, meaning no added outlay was necessary for their services. Counter arguments were not made, but were obvious. Internal auditors lacked academic disciplinary expertise. Also there was an opportunity cost in using internal auditors in academic reviews rather than on other projects presenting greater risk or reward.

That higher education internal auditors could enhance academic programs by performing program or performance audits that were sensitive to academic units' autonomy was Gordon and Fischer's (1996) view. They noted that the IIA's SRIA promoted performance auditing in calling for appraising efficiency and determining whether goals were met. As did Chamberlain et al. (1993), Gordon and Fischer cited SIAS No. 10 as placing a responsibility on internal auditing to do program results audits. They speculated that internal auditors did not do such audits due to limited resources, independence concerns, and a management view that auditors were not qualified to assess program performance.

Using the 277 responses to their survey of 499 ACUA institutional members, the authors investigated kinds of audits higher education internal auditors performed as well as their independence and respect on campus. They asserted that performance auditing was a key control that could strengthen accountability and educational quality. They

defined control as "any action instituted by management that is designed to produce achievement of objectives and goals" (p. 53). The authors cited Penno's (1990) model of internal auditing as a resource to validate employee performance-based pay. "This is similar to preparing a self-study report that is audited by the internal auditor. The model simply formalizes the intuitive notion that an agent will perform as expected if he/she is monitored" (Gordon & Fischer, 1996, p. 53). That statement evoked a policing function for internal auditing. Because Penno's model made the assumption that information was verifiable and because the authors already noted education's immeasurable nature, the applicability of Penno's model to academic performance auditing appeared limited.

The authors cited previous research that found most ACUA members believed their departments had an insufficient number of staff members and that questioned internal auditing's independence because someone below the president appointed the internal audit director and served as the position's supervisor (Montondon & Meixner, 1993). Gordon and Fischer (1996) also noted an unpublished 1992 working paper by Montondon and Meixner that reported the ranking of the amount of time, from highest to lowest, spent on types of audit work as follows: compliance with accounting controls, compliance with administrative controls, compliance with external regulation, verify existence and safeguard assets, appraise economy and efficiency, and ascertain program effectiveness.

An unpublished work by Chamberlain, Gordon, and Plunkett (1992) served as a pilot study for Gordon and Fischer (1996). The three-state pilot study found on average that university internal auditors spent under 30% of their time "on economy and efficiency, and program audits for the institution as a whole" (Gordon & Fischer, p. 54)

and about the same percentage on these types of audits in academic units. Approximately 60% of these auditors did no performance or program audits of academic units. The pilot study also showed that public institutions "devote a greater percentage of their time to compliance audits while private institutions devote a greater percentage of their time to financial audits" (p. 54). Gordon and Fischer noted that the Coopers & Lybrand survey that S. Johnson (1992) based her article on implied more frequent instances of operational audits than did other research. As I have noted, S. Johnson's sample was small.

Survey responses came from 189 public and 59 private 4-year institutions. At private schools, internal auditors spent 30% of their time on compliance audits and 24% on financial audits. Also, 42% of these auditors conducted no efficiency audits, and 44% devoted 20% or less of their time to them. At public 4-year schools, internal auditors spent 37% of their time on compliance audits and 20% on financial audits. The percentage of public institution internal auditors performing efficiency audits was only slightly larger than for their private school counterparts. At both private and public institutions, most internal auditors did not conduct efficiency, program, or financial audits of academic units, focusing on compliance instead. Gordon and Fischer (1996) concluded that higher education internal auditors were not fulfilling the expectations of the SRIA with regard to performance and efficiency audits.

Gordon and Fischer (1996) found that most public institution respondents were hired by the board and/or president, but such was not the case for respondents at private institutions, possibly impairing independence. At public institutions, about one third of internal auditors met monthly or quarterly with the audit committee, but one third never met with or did not have an audit committee. No private institution internal auditor met

monthly with the audit committee, but the percentage of internal auditors that met with the audit committee at least once a year was higher for private institutions than for public schools. An institution's willingness to act on audit recommendations was a surrogate for respect for internal auditors. At about half of private institutions, but only at about a fourth of public ones, were recommendations always acted on. The authors urged that internal auditors do more efficiency and effectiveness audits of academic units, stating,

> for whatever reason, a significant percentage of internal auditors of colleges and universities are not conducting efficiency and program audits. . . . Internal auditors have the desire and expertise to conduct performance audits, and higher administration is interested in ways to increase educational effectiveness. . . .
>
> Therefore, internal auditors must aggressively promote themselves so that management becomes convinced of their duties and abilities. . . . If internal auditors feel respect and believe their work is relied upon, they may be more likely to perform a proactive role.
>
> The majority of all auditors believe that the administration relies on their recommendations; this finding . . . implies that the majority of administrations hold their internal auditors in high esteem. Through an aggressive promotional campaign, auditors should be able to convince their administration of the benefits to the institution of providing more resources and greater latitude to the internal auditor. In this way, internal auditors can more fully embrace the broad role envisioned by the SRIA and become a more valuable asset to their institution. (p. 57)

Internal auditor credibility and independence, types of audit work, and the use of audit findings were the subject matter of Montondon and Fischer's (1999) article. They noted that Carcello and Hermanson (1997) found five traits critical to internal auditing's credibility: access to the audit committee; regularity of reporting to the audit committee; not having scope limitations; having necessary knowledge, skill, experience, and education; and having unrestricted access to records and people.

The SRIA in 1981 implied a proactive role for internal auditors, to include performance auditing. Statement on Internal Auditing Standards No. 10 in 1983 noted "one of internal auditors' tasks is to evaluate programs or performance results" (Montondon & Fischer, 1999, p. 86). However, Gordon and Fischer (1996) found few higher education internal auditors doing program and efficiency audits or any types of audits of academic units other than compliance (Montondon & Fischer).

That public institutions, with more stakeholder groups than private schools, would have more independent and credible internal audit functions as well as be more likely to do program audits and audits of foundations and academic units was Montondon and Fischer's (1999) hypothesis. Responses to 1995 surveys of ACUA members provided data on appointments, supervisory/reporting practices, types of audits, areas audited, auditor status, institutional and individual demographics, perceptions about 16 statements based on a 5-point Likert scale of level of agreement (5 = agree completely and 1 = disagree completely), and implementation rates for recommendations.

Null hypotheses were "that the two populations, public and private, were the same for each variable of interest" (p. 87). The authors found that types of audits performed were similar for both populations. Auditors' perceptions, however, showed significant differences for 3 of the 16 statements. The three involved access to the governing board, encouragement to have a working relationship with regents, and how well respected by management internal audit was. For these three, respondents from private institutions had higher complete agreement scale scores than did public school respondents.

The authors asserted that internal auditors should do more audits of "performance of programs, efficiency and effectiveness evaluations and reviews of academic units and

foundations" (p. 90). However, they did not explore the cost of displacing compliance and financial internal audits or appear to recognize that private foundations often do not permit their college's or university's internal auditors access to foundation records.

As did Gordon and Fischer (1996), Montondon and Fischer (1999) found that internal audit directors at public institutions were more likely to be appointed by the president or board, even though directors of internal audit at private schools had more access to the board. Gordon and Fischer pointed out that

> often board members act on a system wide basis and are therefore more removed from the internal auditors. Less than 10% of the private [as opposed to 60% of the public] colleges and universities in the study must contend with a system organization [bracketed words in original]. (p.91)

Internal auditors at private schools were a little more likely to audit academic units, and internal auditors at public institutions were generally not permitted to do academic unit audits or spend much time doing program audits. Montondon and Fischer (1999) concluded that public colleges and universities, by not having their internal auditors perform more performance audits or audits of academic units, were not making the best use of internal auditors. The authors did not address academic culture or the alternatives employed or available to accomplish academic unit assessments.

Rezaee, Elmore, and Szendi (1999) assessed internal auditing's role in helping colleges and universities be more efficient and effective, addressing the function's status, areas of interest, and roles. They emphasized internal auditing's changing role, citing its going beyond compliance and control to advisory services and a focus on organizational objectives and goals. They noted Azad's (1992) conclusion that "reporting to the audit committee was the most important factor for improving independence" (p. 5) and Azad's (1994) expectation that operational auditing would increase.

Their survey went to a random sample of 1,000 financial administrators from the 1996 membership rolls of NACUBO, and resulted in 290 responses. Just over 60% of respondents were from private institutions, and almost 40% were from state-supported schools. Student population size varied widely, with just over 40% having fewer than 2,000 students, and about 10% having 20,000 or more. Faculty member numbers, numbers of colleges, and institutional budget amounts likewise varied, with public institutions tending to be bigger than private schools in all categories.

Based upon G. G. Johnson's (1992) research, Rezaee et al. (1999) hypothesized that differences in institutional size would result in significant differences in internal auditing's role. They found no such differences, however, which was consistent with Azad (1994), who did not find significant differences with respect to perceptions of operational auditing or of audit areas' relative importance between public and private institutions (Rezaee et al.).

Sixty-eight percent of respondents indicated that their institution did not have an internal auditing function. Although G. G. Johnson (1992) found about two thirds of public institutions and only one third of private schools had such functions, this study did not find a significant difference between public and private colleges and universities in whether or not they had an internal auditing function (Rezaee et al., 1999). Over 96% of institutions felt schools should have the function, which contrasted with G. G. Johnson's (1992) findings cited earlier that those institutions without the function assigned a low priority to establishing one.

Rezaee et al. (1999) found one third of internal audit directors reported to the president, 17% reported to the vice president for finance, 21% reported to the board, and

12% reported to the audit committee. Respondents, based on their selections on a 5-point Likert scale (1 = not important to 5 = very important), ranked audit types in the following order: compliance audits (4.6); financial fraud audits (4.4); financial reporting audits (4.1); efficiency, economy, and effectiveness audits (3.9); system development and technology audits (3.5); program results audits (3.2); scientific fraud audits (2.8); and joint venture audits (2.6). Using the same scale, respondents ranked importance of audit roles in this order: monitor internal controls (4.7); monitor compliance (4.5); assist management in responsibilities (3.9); ensure responsible governance and accountability (3.7); monitor athletics compliance (3.6); assess financial reports (3.5); advise board, president, and other administrators on financial matters (3.3); and assess effectiveness and efficiency of university programs (3.2).

In her dissertation, Reed (1999) addressed the problem that governing boards and management in higher education did not have a model to help them determine the size of their internal audit function. With rapid growth in the numbers and prominence of internal auditors, including an increase in ACUA membership from 13 institutions in 1958 to over 500 in 1996, describing the demand for internal audit services in higher education would be useful to internal audit directors in assessing and allocating staffing as well as to administrators and governing boards in determining the size and source of internal auditing resources.

She emphasized that higher education administrators confronted opposing needs: for accountability and for overhead cost reduction. Internal audit helped achieve the former, but as an overhead function itself, could be a target of the latter. She tested nine

hypotheses using a 5-component, 10-variable quantitative method. Her purpose was "to develop and test a descriptive model of demand for internal audit" (Reed, 1999, p. 4).

The model included the dependent variable of staff size and nine independent variables: number of students, Carnegie ranking, federal dollars for student financial aid and research, NCAA membership level, existence of a medical education program, whether public or private, internal audit's reporting level, certifications and experience of internal audit staff, and percent of audit recommendations implemented. Data were primarily from an ACUA survey conducted by an independent research and consulting concern within 3 years of the dissertation's publication.

Although she acknowledged limitations due to the lack of independence among independent variables, Reed (1999) emphasized that there was no problem with her model, only a data problem due to the multicollinearity of variables. "Principal components analysis to obtain a model that more clearly reflects the simple effects of the predictions" (p. 97) overcame the problem. The nine independent variables were accordingly combined into five principal components: wealth, federal regulation, size, authority, and competence. However, one of her defenses for the use of principal components analysis was its helpfulness to researchers dealing with experimental units. Because she did not conduct an experiment, raising that defense without further comment left me skeptical as to the method's applicability to her study.

Her nine initial hypotheses were embedded in the initial model's implied overarching question: Would demand for internal audit increase as size, complexity, federal funds, athletics, auditor competence, auditor objectivity, and perceived auditor performance increased and if the institution had a medical education program and was a

public institution? She eventually deferred to the principal components analysis which included under wealth, the variables of complexity and athletics; under federal regulation, the variables of federal funds and existence of a medical education program; under size, the variables of size and whether a public institution; under authority, the variables of auditor objectivity and perceived auditor performance; and under competence, the variable of auditor competence. All components except auditor competence were statistically significant within the context of determining the size of the internal audit staff. The author surmised that the accounting or auditing credentials used to measure competence might have been of lesser value to those determining the size of internal audit staffs than higher education experience would have been. The observation echoed Azad's (1988) comments that noncertified auditors consider knowledge of the higher education environment more important than certified auditors do.

Dissertation and Journal Articles in the 2000s

Woodard's (2000) dissertation addressed two issues: how university presidents and CFOs perceived their internal auditors' scope of work, and how the two groups and university internal audit directors perceived the effectiveness of internal auditing. The former issue addressed internal auditing roles, and the latter issue focused on criteria used to assess effectiveness. Woodard cited Barrett's (1986) view regarding internal auditing: "'effectiveness can be described, but it is difficult to quantify and in the final analysis . . . is determined by the perception of clients and auditees'" (Woodard, p. 2).

Listed by Woodard (2000) were six types of audit services: financial auditing, operational auditing, compliance auditing, information technology auditing, investigative (fraud) auditing, and internal consulting. The following description of operational

auditing that Woodard offered seemed to exclude operational audits of academic units: "the review of the economy, efficiency, and effectiveness of *administrative* operations" [emphasis added] (Woodard, p. 19).

The population for Woodard's (2000) study was Texas public universities and members of the Big Twelve conference. Four of the former were also a member of the latter. In total, there were 46 institutions, with the population of their presidents, CFOs, and audit directors totaling 162, indicating that organizational structures produced more than one of some position(s) at some institutions. Stratified random sampling eventually resulted in a sample size of 38 presidents, 41 CFOs, and 22 internal audit directors, or 101 (62%) of the 162-person population.

Woodard's (2000) survey instrument had three sections. The first section asked for ratings of the importance of eight internal auditing roles on a 5-point Likert scale, ranging from 1 = No Importance to 5 = Great Importance. The roles were from Rezaee et al.'s (1999) questionnaire. The second section asked for ratings on the same scale for 15 factors asserted to be related to evaluating internal auditing effectiveness. The factors were from a previous IIA study by Albrecht, Howe, Schueler, and Stocks (1988). The 15 factors included three items each for five broader factors: reasonable and meaningful findings and recommendations, auditee's response and feedback, professionalism of the internal audit department, adherence to audit plan, and absence of surprises. The third section collected demographic data on institutions.

Presidents and CFOs rated all roles average or higher. Following is my summary, with the first number the rating by the financial administrators in Rezaee et al.'s (1999) survey and the second and third numbers the ratings for presidents and CFOs,

respectively, in Woodard's (2000) survey: monitor internal controls (4.7, 4.4, 4.7); monitor compliance (4.5, 4.6, 4.5); assist management in responsibilities (3.9, 4.5, 4.7); ensure responsible governance and accountability (3.7, 4.6, 4.5); monitor athletics compliance (3.6, 3.8, 3.9); assess financial reports (3.5, 3.9, 3.7); advise board, president, and other administrators on financial matters (3.3, 3.4, 3.2); and assess effectiveness and efficiency of university programs (3.2, 3.5, 3.3).

As to effectiveness factors, Woodard (2000) found that internal audit directors perceived reasonable and meaningful findings and recommendations as more important than presidents and CFOs did. This tempered, but did not necessarily refute, Miller's (1974) assertion of the importance of well-conveyed consequential recommendations. As for the importance of auditee's response and feedback, Woodard found no significant difference among the three groups. As to professionalism of the internal audit department, internal audit directors perceived it more important than did the other two groups. With respect to adherence to audit plan and to absence of surprises, there was no significant difference among the groups. Both presidents and CFOs rated all five effectiveness factors of above average importance.

He also found that presidents and CFOs considered internal auditing's roles to be the traditional ones of monitoring controls and assuring compliance. The relatively low score given monitoring efficiency and effectiveness led to his conclusion that "presidents and chief fiscal officers gave low priority to operational and program results auditing" (p. 78). Eighteen percent of presidents rated as below average importance the roles of advising the board, president, and other administrators on financial matters and of assessing effectiveness and efficiency of university programs. The percentages of CFOs

who rated these two roles below average in importance were 24 and 20, respectively. Twenty percent of CFOs also rated the role of assisting management in meeting its responsibilities of below average importance.

Apparently because of his dissatisfaction with or disapproval of the relatively lower ratings presidents and CFOs gave to roles and effectiveness factors for internal auditing, Woodard (2000) further concluded that "opportunities for increasing the efficiency and effectiveness of operations and influencing organizational performance are being missed" (p. 88). This echoed the general content of much of the literature that more operational and performance auditing should be done.

Fischer and Montondon (2005), using Harrington's (2004) list of qualifications organizations should look for when hiring an internal audit director, assessed whether higher education internal auditing department directors had such qualifications and whether they differed by gender. The authors stressed that highly publicized corporate fraud highlighted the need for internal auditing in nonprofit organizations. Their citing of SOX and SAS No. 99, Consideration of Fraud in a Financial Statement Audit, (AICPA, 2002), may have exaggerated higher education internal audit departments' involvement in auditing financial statements, the purview of external auditors. But pointing out that the New York Stock Exchange required listed companies to have an internal audit function "to provide . . . ongoing assessments of . . . risk management processes and systems of internal control" (Harrington, 2004, p. 65) was relevant. Because of their experience in the commercial world and their recognition of the importance of risk management and internal controls to any organization, many college and university board members likely consider such a requirement pertinent to campuses.

Harrington's (2004) list of qualifications for internal audit directors was extensive, including an undergraduate degree in accounting or related area, 5 to 15 years of internal audit experience, being a CPA, possessing another certification such as CIA, experience interacting with senior management and board, ability to manage and motivate financial professionals, and Big Four audit experience. Her list also included financial and accounting background, experience in internal controls and SOX, strong expertise in financial systems and databases, proficiency in accounting and auditing computer software, high personal and professional ethics, strong analytical and problem-solving skills, and strong written and oral communication skills.

Readers of the *Journal of Accountancy*, an AICPA publication, in which Harrington's article was published, might take comfort in these qualifications, but a potential bias should be considered. Including the CPA designation and Big Four experience as qualifications for an internal audit director may have reflected a presumption that public accounting, a profession distinct from internal auditing, is a prerequisite for it.

Current research on college and university internal auditing and gender-related research also received attention from Fischer and Montondon (2005). They pointed out that public accountants performed auditing, tax, and management consulting services, with industry specialization not uncommon. They noted also that in commercial entities, accountants carried out a variety of duties, such as controllership, taxation, administration, and internal auditing. Such diversity of roles for accountants was also noted as common in government and nonprofit organizations.

Business press reports, Fischer and Montondon (2005) mentioned, were indicating that a significant amount of the internal control reviews generated by SOX had fallen to corporate internal auditors. They also related The IIA's having increased its membership from 21,000 in 1990 to 99,000 in 2002, the year SOX passed. During that same interval, the proportion of women in the internal auditing profession rose 15 percent. In 2002, most new internal auditing hires were expected in the manufacturing and educational services industries. The authors noted that the proportion of internal audit directors who were women rose from one fifth to one third between 1992 and 2002. In 2002, the sectors with the highest proportions of female internal auditors were state government (39%), educational services (38%), and the healthcare industry (37%). Studies in 1994 and 2002 found male and female directors similarly credentialed.

In Fischer and Montondon's (2005) judgment, higher education internal auditing was vital, providing presidents and boards with information about internal controls and "quality of operating performance" (p. 496). Internal auditors were responsible for validating internal controls, while management was responsible for designing and implementing them. The authors saw this distinction as assuring "that the internal audit function does not serve as a 'fraud police force' but instead provided critical value-added services . . . as an integral part of the management team" (p. 496). They believed that an organization's size may be determinative of whether an organization has an internal auditing function, citing S. Johnson (1992) who found larger colleges more likely to have the function. They also cited Chamberlain, Gordon, and Plunkett's (1993) proposal that campus internal auditors' responsibility be extended to include academic assessment.

Another observation of Fischer and Montondon (2005) was that previous research on the accounting and internal auditing professions had addressed gender differences, but had not reported differences specific to the college and university internal auditing community. The authors used questionnaires to obtain information about how college and university internal auditors perceived their working relationship with institutional management and the board and about types of audits conducted as well as to collect data on respondents, hiring practices for internal audit directors, sizes of audit staffs, and institutions.

Surveys, sent to 490 ACUA members, yielded 209 responses. The authors found that higher education internal audit directors tended to hold most of Harrington's (2004) recommended qualifications. Sixty percent were CPAs: 56% of the men and 67% of the women. Surprisingly, none reported holding the CIA designation, although 31% had some other certification. Differences between men and women with respect to certifications other than the CPA were not significant. Two thirds of the internal audit directors were men. There were no significant differences between male and female directors with respect to public versus private or 2-year versus 4-year institutions. Male directors had significantly greater experience than women directors, but educational credentials did not significantly differ.

About half of the directors reported to the president or chancellor, and almost 38% reported to the CFO. Interesting to me was that the study spoke in terms of who supervises the director, not who is the reporting official for the director, possibly demonstrating an unappreciation of the function's independence. The study found that the majority of directors met with the audit committee quarterly or annually. Approximately

10% of the directors met with the audit committee monthly, and all of these were at public institutions. A like percentage of directors never met with the audit committee.

Fischer and Montondon (2005) concluded that

> male and female internal audit directors are very much alike. They perform comparable work and their recommendations are acted upon or relied upon in a similar fashion. They have comparable education, credentials and perceptions and are supervised by comparable officials. (pp. 511-512)

The authors countered earlier literature's promotion of operational auditing as well as that literature's concern about the dearth of performance auditing. They asserted that as a result of their institutions' adopting SOX provisions, "internal audit departments must shed some of their operational focus to perform new duties" (p. 516) and stated, "Internal audit directors in this study tend to conduct performance audits" (p. 516).

Summary and Comments on the Literature

The literature addressed a variety of aspects of internal auditing in higher education. Early studies with relatively small samples concluded that there was little operational auditing in private institutions (Streetman, 1966) and an insufficient amount in public institutions (Miller, 1974). A study with a much larger sample asserted that the use of internal auditing in higher education lagged that in private industry (Drucker, 1975), a conclusion refuted by a subsequent researcher based on comparable samples of institutions and businesses (Chapman, 1982). Studies published from the mid-1980s through the early 1990s included those of internal audit directors', their supervisors', and/or outside auditors' views of internal audit attributes and responsibilities (Farbo, 1985; Traver, 1991; Bethea, 1992) and directors' rankings of the importance of personal, organizational, and environmental factors affecting operational auditing (Azad, 1988,

1992, 1994; Azad & Skekel, 1990). Sample sizes for the former studies ranged from 3 dozen to just over 300. The sample size for the latter studies was 157, the same sample being the basis for all of them.

Two studies of just under 100 schools, one of top research universities and the other of a broad mix of institutions, confirmed a growing amount of compliance audits as federal research funding grew but still found operational audits the most common type of internal auditing work (Spruill, 1989; S. Johnson, 1992). A study of ACUA member institutions in three Southern states that examined internal auditing standards versus the accreditation model for evaluating performance in higher education institutions also found an emphasis on compliance audits (Chamberlain et al., 1993). All other scholarly assessments in the 1990s had over 250 respondents. Four of these studies addressed, respectively, the presence of the function and internal auditor certifications and reporting levels (G. G. Johnson, 1992); internal audit director certifications, degrees, experience, sense of institutional support, and reporting levels (Montondon & Meixner, 1993); types of audits and presence of audit committees (Gordon & Fischer, 1996); and internal audit credibility, audit committee access, scope limits, director experience and credentials, independence, and types of work (Montondon & Fischer, 1999). Two more determined, respectively, the presence of the function, types of audits, and audit roles from the college and university business officer perspective (Rezaee et al., 1999) and determinants of internal audit staff size (Reed, 1999).

Two studies in the 2000s included one that evaluated how presidents, CFOs, and internal audit directors at a few dozen primarily public universities in Texas and the Big Twelve conference perceived internal auditors' work and effectiveness (Woodard, 2000),

building on the earlier study of business officer perspectives (Rezaee et al., 1999). The other examined the qualifications of 209 internal audit directors, including an exploration of gender differences. Of the latter, the only significant difference was that male directors were more experienced (Fischer & Montondon, 2005).

Few of the journal article authors were or had been higher education internal auditing practitioners. By contrast, most of the 10 dissertation writers were or had been higher education internal auditors. The dissertations and articles provided a variety of assessments, ideas, proposals, and opinions on a higher education function continually growing, according to virtually all of these accounts, in scope and importance. Thus, new scholarly research on internal auditing in U.S. colleges and universities to assimilate, affirm, argue against, or advance aspects of these earlier efforts would seem appropriate.

In the 21st century, internal auditing has attracted significant political and media attention due to its role in the exposure of fraud in high-profile corporations such as Enron and WorldCom (Fischer & Montondon, 2005). The severe impact that these fraud cases had on the nation's economy and financial markets led to passage of SOX. In response to SOX, internal auditors in publicly traded corporations have taken on a central role in preventing and detecting financial fraud and in strengthening governance.

Although SOX applied only to publicly traded corporations, some government and nonprofit organizations, including higher education institutions, adopted provisions of the legislation (Menditto & Shedd, 2005). As a result, many college and university internal auditors expanded further their definitional role in risk management, control, and governance processes. Actually that role had been expanding for decades as evidenced by continual growth in the numbers of internal auditing departments and practitioners in

higher education. That evidence was perhaps clearest in the growth of the higher education internal auditing professional organization, ACUA.

My study examined internal auditing in higher education within the context of long-standing demands on colleges and universities for accountability; stewardship; and achievement of teaching, research, and public service missions. The study addressed how higher education internal auditors viewed the priorities and uses of internal auditing in terms of the relative importance they attached at their institutions to internal auditor attributes, types of internal auditing work, subject areas of internal auditing work, and determinants of the latter two as well as with respect to their level of agreement or disagreement with the appropriateness at their institutions of operational audits that addressed the accomplishment of missions and goals in research, teaching, and public service.

Operational audits include aspects of risk, control, and governance, but these three elements, especially the first two, might sometimes be viewed as being sufficiently addressed by financial and compliance audits. Operational audits typically have more breadth and depth, however, due to their focus on improving efficiency, effectiveness, and performance. In the commercial world, efficiency, effectiveness, and performance are increasingly viewed as being enhanced or sustained by enterprise risk management, sound internal controls, and accompanying board engagement and oversight.

But according to many writers and researchers, higher education operations occur within a distinct culture and involve unique missions. Based on such distinctness and uniqueness as well as my experience and research, it appeared that operational auditing,

especially as it has evolved in the business world, might not be considered appropriate for some aspects of college and university operations. My study addressed that issue.

According to the literature, an expanded role for college and university internal auditors was advocated well before SOX, including the performance of more operational audits. Some research reported that compliance and financial audits constituted the majority of a college or university internal auditing department's workload. Even where operational audits were being performed, some critics argued that operational audits were neglecting or not going far enough in evaluating academic areas and functions.

Yet, performance and outcomes of academic operations already received attention as part of accreditation, program evaluation, and program assessment processes. Self-study and peer review were integral to these reviews and processes. Internal auditing's involvement in examining performance and outcomes thus might have appeared duplicative, inappropriate, or dysfunctional to the academic units involved.

One of the hallmarks of internal auditing, not noted in any of the literature on the subject of higher education internal auditing, is getting to the root cause of problems so that recommendations addressing those causes can be made. Such recommendations, as opposed to alternative ones that do not address root causes (symptoms instead, perhaps), would be more likely to solve the problems and prevent their recurrence (Reding, Sobel, Anderson, Head, Ramamoorti, & Salamasick, 2007).

If internal auditing needed to perform more efficiency and effectiveness or performance audits but was not doing so, the appropriate next step would be to get at the root cause. I thought that understanding any cultural divide between business and higher education may offer a path to the root causes of why more such audits were not being

done. That understanding could also lead to better such audits once they were under way. Clarifying the cause required analysis; the internal auditor ultimately seeks "the cause that, upon removal, most directly corrects the condition" (Sawyer, 2003, p. 826).

As stated and elaborated on in Chapter 1, The Problem, my study addressed the role of higher education internal auditing within the context of academic culture and measuring achievement of academic missions. Administrative and support areas were also part of the context because, obviously, culture and missions are not confined to the classroom and laboratory but permeate the entire institution. My focus was on description and analysis of the perceived appropriate role of higher education internal auditing based on responses from internal audit directors or their equivalents. I hoped to encourage and inform future higher education internal auditing research. I especially sought to promote research that took academe's characteristics more into account and asked more thoughtful questions regarding internal auditing's role in the particularities of campus operations, both administrative and academic. My exploratory study was intended to be an exemplar of such research. After all, thoughtful questions not only are appropriate for research but also are central to internal auditing—and to higher learning.

CHAPTER 3

METHOD

Survey Research

My study employed a survey research quantitative methodology. A mail questionnaire was used. The guidelines of the Georgia State University Institutional Review Board (IRB) were followed for the protection of human subjects, and IRB approvals were obtained for the pilot study and research study protocols.

My survey research study explored internal audit directors' views of culture and measuring achievement differences between their respective institutions and a business. To assess views of measuring achievement differences, I used a construct based on the commonality and centrality of missions among universities and objectives among businesses. The study also addressed directors' perceptions of board members', senior administrators', and faculty members' views of culture and measuring achievement differences.

The construct used for obtaining views of measuring achievement differences was a contrast between measuring achievement of a university's missions and measuring achievement of a business's objectives. This construct provided context consistent with the second sentence in the IIA definition of internal auditing: "It helps an organization *accomplish its objectives* [emphasis added] by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes" (IIA, 2011, p. 2).

Moreover, as stated in Chapter 1, The Problem, the IIA's IPPF (2011) defines risk management, in part, as "a process to . . . control potential events . . . to provide

reasonable assurance regarding the *achievement of . . . objectives* [emphasis added]"; control, in part, as "any action . . . to manage risk and increase the likelihood that . . . *objectives . . . will be achieved* [emphasis added]"; and governance, in part, as "processes and structures . . . to inform, direct, manage, and monitor the activities of the organization toward the *achievement of its objectives* [emphasis added]" (pp. 42-43).

I used missions for the university side of the comparison for two reasons. First, missions, in the form of research, teaching, and public service, are fundamental to and common among the universities in my target and relevant populations. Secondly, these missions contextualize these institutions' core objectives, even though particular objectives might vary widely based on each university's initiatives and priorities. Yet, for businesses, missions would likely differ extensively due to the distinctiveness of industries and the dynamics of the commercial world. However, foundational business objectives, such as making a profit and remaining a going concern, would be common across commercial entities. Using missions for a university and objectives for a business framed the comparison of measuring achievement in a way that captured what were most essential to and commonly associated with each type of organization.

As also stated in Chapter 1, with higher education missions neither profit-oriented nor easily measured, many writers and scholars have questioned the suitability of business practices for colleges and universities (Barzun, 1968; Corson, 1975; Flexner, 1930; Millett, 1962; Rourke & Brooks, 1966; Slaughter, 1990; Veblen, 1917/1958). My construct avoided a simplistic, self-evident contrast between educational missions and commercial missions, which respondents might have considered totally different on their face.

My overarching research question was whether the internal audit directors' own views of culture and measuring achievement differences—not their perceptions of the three groups' views—were related to how they viewed the priorities and uses of internal auditing at their institutions. My initial primary research question was whether the directors' views of culture difference were related to their views of measuring achievement differences.

Other primary research questions were whether the directors' views of these culture and measuring achievement differences were related to

1. How the directors viewed the relative importance at their institutions of various internal auditing factors: internal auditor attributes, types of internal auditing work, subject areas of internal auditing work, and determinants of types and subject areas of internal auditing work.
2. The directors' level of agreement or disagreement as to the appropriateness at their institutions of operational audits that addressed the accomplishment of missions and goals in research, teaching, and public service, respectively.

Additional primary research questions were whether internal auditor attributes and types, subject areas, and determinants of internal auditing work were related to (a) each other and (b) levels of agreement or disagreement as to the appropriateness of operational audits in the three mission areas.

Secondary research questions addressed, on a limited basis, whether the directors' views of these culture and measuring achievement differences were related to the various characteristics that follow.

1. Directors' gender, race and ethnicity, age, education, certifications, and work experience; the organizational positions of the directors' reporting officials; genders of these officials; organizational placements of internal audit functions, boards, and audit committees; and how frequently directors met with boards and audit committees.
2. The number of professional staff positions in their internal audit departments; their institutions' enrollment, federal research funding, and total operations funding; and whether their institutions were private or public, or had a medical school.

Other secondary research questions explored on a limited exception basis were whether any of the characteristics above were related to rankings of internal auditing factors or levels of agreement and disagreement as to the appropriateness of operational audits in mission areas.

Internal audit directors' perceptions of board members', senior administrators', and faculty members' (a) views of culture and measuring achievement differences and (b) rankings of types of internal auditing work were also analyzed on a limited basis. These derived views and rankings were compared to each other and to those of the directors primarily to suggest questions that may warrant future research addressing the views of the three groups directly.

Population

The target population was composed of the 283 institutions that comprised the Carnegie Classification system's Doctorate-granting Universities category from 2005 to 2010. That category had three subcategories: Research Universities (very high research

activity) (RU/VH), Research Universities (high research activity) (RU/H), and Doctoral/Research Universities (DRU). The subcategories consisted of 96 universities, 103 universities, and 84 universities, respectively (Carnegie Foundation for the Advancement of Teaching, 2010).

The Carnegie Foundation for the Advancement of Teaching's 2010 reclassification, released in January 2011, increased the number of universities in the category to 296 (108 RU/VH, 98 RU/H, and 90 DRU). Thirty-three universities moved from one subcategory to another, 25 up and 8 down. For the category as a whole, 28 universities were added, and 15 removed. Of the 28 added, one was in the RU/VH subcategory, two were in the RU/H subcategory, and 25 were in the DRU subcategory. Of the 15 removed, two had been in the RU/H subcategory and 13 in the DRU subcategory.

During 2010, I searched the Web sites of the 283 institutions or of their university systems to find the names and addresses of the internal audit directors for the institutions in the target population. If unsuccessful in finding this information for an institution, I used the ACUA online membership directory as an alternative source. For 54 institutions (4 RU/VH, 14 RU/H, and 36 DRU), neither an internal audit director nor internal auditing function could be identified using Web sites or the ACUA membership directory. These 54 institutions were presumed not to have an internal audit director and were excluded from my research, leaving 229 universities as potential participants.

Exclusion of my institution and 10 schools in university systems that had the same internal audit director for more than one system institution in the target population reduced the number of potential participants, and thus the relevant population, to 218 (90

RU/VH, 87 RU/H, and 41 DRU). If a system internal audit director returned a questionnaire for more than one institution in the target population, only one of his or her questionnaires was included to assure that each questionnaire used in data analysis was independent of all others.

Thirteen of the 15 institutions removed from the Carnegie Doctorate-granting Universities category in the 2010 reclassification were in the segment of my target population presumed not to have an internal audit director. Therefore, only two (less than 1%) of the 218 institutions in my potential list of participants were no longer members of the category.

Testing and Development of the Survey Instrument

Pilot Study

I conducted a pilot study from May to July 2010. The pilot survey package included a consent letter, 58-item questionnaire, and a paid return envelope. The six pilot study participants included two retired internal audit directors, one who had served predominantly at a private university with a medical school and one who had served predominantly at a public university with a medical school; two current internal audit directors, one at a public university and one at a private university, both without a medical school; and two former internal audit directors, both of whom had served at public higher education institutions without a medical school and moved on to other positions at those institutions. The presence or absence of a medical school was a factor in a previous higher education internal auditing study about demand for internal auditing (Reed, 1999), and was to be an element in my study because of its potential relationship to views of culture and measuring achievement.

Validity and Reliability

Critiques by these experienced individuals helped strengthen the research study survey instrument's internal validity, defined as the relevance of results for the research questions being asked, and content validity, defined as the equivalence of the content to the items being measured (Vogt, 2007). Predictive validity and concurrent validity, which are concerned with, respectively, operationalization of outcomes and correlations with previously validated measures (Sapsford, 2007), could not be statistically evaluated a priori because my study focused on facets and influencers of higher education internal auditing not previously researched.

Similarly, a statistical evaluation of construct validity to determine whether the questionnaire measured what was intended (Litwin, 1995) was not feasible because there were no known comparable studies or survey instruments. However, in response to pilot study participants' comments, elements of construct validity were addressed by rewording questionnaire items to increase the likelihood of capturing what was intended.

External validity, which relates to how representative respondents are of the population (Vogt, 2007), was evaluated. Chi-square tests of independence, details of which appear later in this chapter, showed, with relatively minor qualifications, no relationship between whether an internal audit director responded and (a) what Carnegie subcategory his or her institution was in; (b) whether the institution was private or public; (c) whether the institution had a medical school; or (d) within each subcategory, whether the institution was, respectively, private or public, or had a medical school.

No relationship meant that in the relevant population by subcategory, type of institution, status of having or not having a medical school, or type or status within each

subcategory, the proportion of potential participants who responded was the same or no more different than would be expected by chance. To the extent respondents were representative of the relevant population, external validity was supported.

Reliability, defined as reproducibility or consistency of measurement (Litwin, 1995; Vogt, 2007), also was not measurable absent analogous studies or instruments. Moreover, assessment of reliability cannot be performed with nominal data (Suskie, 1996), data with values that "merely 'name' the category to which the thing under study belongs" (Minium, Clarke, & Coladarci, 1999, p. 7). My questionnaire collected predominantly nominal data. Some reliability factors were beyond my control, such as group homogeneity, which might have resulted in answers being largely the same for all respondents. Questionnaire reliability factors that I could control included motivation, clarity of directions, and clarity of questions (Suskie).

For the pilot study and the research study, consent letters, questionnaires, and reminder letters (see Appendix A) strove to motivate recipients to complete and return the questionnaires. The importance of each internal audit director's input in potentially shaping the use of internal auditing in U.S. research universities was emphasized. Moreover, in response to pilot study feedback, I made numerous changes to improve the clarity of questionnaire items for the research study. Those changes gave rise to changes in directions to make them clearer as well.

For example, items dealing with views of culture and measuring achievement differences between a university and a business were reworded to improve clarity and thus reliability and internal validity. An element of internal validity is whether survey questions address the views or opinions that the researcher intends to explore (Vogt,

2007). The pilot study questionnaire asked the respondent to indicate the extent of difference between his or her institution's culture and a business culture. One pilot study participant suggested that those words might elicit a comparison of the institution's culture with the institution's business components' culture, which was not what I intended. Therefore, I added "'s" after the word "business" so that the respondent would compare the culture of his or her university as an organization with that of a business organization, a comparison of organizational cultures, which was what was intended. The "'s" was added after the word "business" on all eight questionnaire items addressing culture and measuring achievement differences as viewed by internal audit directors—their own views and their perceptions of each of the three groups' views.

Three pilot study questionnaire items were intended to determine the level of agreement or disagreement as to the appropriateness of operational audits in the mission areas of research, teaching, and public service, respectively. Each of the three items was worded: "Internal audits that address the accomplishment of [mission area] missions and goals are appropriate at my institution." Directions for the items mentioned other types of internal audits, defined operational audits as audits that focus on performance, and noted that performance includes accomplishment of missions and goals. The five words "accomplishment of . . . missions and goals" and the words "Internal audits," which may have appeared to broaden the area of interest beyond operational audits, were also included in each of the three items themselves.

The redundancy in directions and in item content and the unintended broader question were eliminated in the research study questionnaire. The three items were changed to read: "Operational audits that address the accomplishment of [mission area]

missions and goals are appropriate at my institution." The directions read, "Please circle the number from 1 to 4 that best represents your level of agreement/disagreement."

Other changes improved the questionnaire's completeness. For example, two items were added, one to address determinants of types and subject areas of internal auditing work and the other to capture the respondent's age. The former was added as a result of two pilot study participants emphasizing the criticality of risk in determining what is audited. The latter item was added in response to this pilot study participant comment: "Nothing about age? Easy to throw in and might be informative."

Also at the suggestion of a pilot study participant, I removed midpoint choices from the 11 Likert scale items. In the pilot study version, the three items addressing whether the internal audit director believed operational audits in the mission areas of research, teaching, and public service were appropriate at his or her institution, had a midpoint choice that was a neutral position, "neither agree nor disagree." The other choices on the 5-point Likert scale were 1 = strongly agree, 2 = mildly agree, 4 = mildly disagree, and 5 = strongly disagree. The pilot study participant believed that many respondents would choose the neutral position, detracting from my getting a sense of whether internal audit directors tended to agree or disagree with the appropriateness of such audits. Forcing a choice would increase the number of respondents taking an agree or disagree position. Although many survey instruments include a midpoint, not including it is consistent with "contemporary general practice" (Bradburn, Sudman, & Wansink, 2004, p. 142).

The other eight Likert scale items (presented below with "'s" after "business" since the decision to make that change occurred first) that had a midpoint choice included

two items addressing the internal audit director's views of (a) the extent of difference between his or her institution's culture and a business's culture and (b) the extent of difference between measuring achievement of his or her institution's missions and measuring achievement of a business's objectives, respectively. The other six items were those addressing the internal audit director's perceptions of his or her board members', senior administrators', and faculty members' views of the same.

The midpoint choice for these eight items was a middle level of the extent of difference, not a neutral position. The midpoint choice was "more than somewhat different but less than very different." The other choices on the 5-point Likert scale were 1 = not at all different, 2 = somewhat different, 4 = very different, and 5 = completely different. Dropping the midpoint ultimately forced a choice between "not substantially different" and "substantially different," terms I applied in my analysis to the dichotomous categories created by combining the first two choices and last two choices, respectively.

Similarly, having four, not five, choices for the appropriateness of operational audits in mission areas enabled me to combine the first two (strongly agree and mildly agree) and last two (mildly disagree and strongly disagree) into dichotomous categories of "agree" and "disagree." Dichotomous variables expanded my statistical analysis options, as discussed later in this chapter. However, combining choices in this manner forfeits a portrait and assessment of the range of responses.

Asking respondents to remember even simple facts can reduce reliability and validity; more complex recollections raise that potential (Suskie, 1996). The pilot study questionnaire included six items that required respondents to recall time spent during the previous 2 years on training and on various categories of internal auditing work. Because

people are unlikely to report accurately occurrences several months in the past, and because they "do not usually categorize information by precise month or year" (Dillman, Smyth, & Christian, 2009, p. 71), I decided not to include these six items in the research study questionnaire.

The pilot study helped estimate the time it would take to complete the questionnaire, information important to have in e-mails and documents sent to potential participants. The stated estimated time, which was 30 to 45 minutes in pilot study documents, was reduced to 15 to 20 minutes for the research study based on pilot study feedback and changes made to the questionnaire to make it clearer and more concise.

Research Study Survey Instrument

Purpose

The questionnaire used in the research study is in Appendix A. This survey instrument collected information to address my research questions and to enable selected comparisons with results of previous higher education internal auditing research discussed in Chapter 2.

Priorities and Uses of Internal Auditing

To obtain information on how internal audit directors viewed the priorities and uses of internal auditing, the questionnaire began by asking each respondent to rank from 1 to 5 the following four sets of five internal auditing factors with respect to their importance at his or her institution, with 1 the most important, 2 the second most important, and so on:

1. Internal auditor attributes: awareness of higher education culture and missions, expertise in accounting, expertise in information technology (IT),

expertise in management and business subjects, and skills in human relations and in oral and written communication.

2. Types of internal auditing work: compliance audits, financial audits, IT audits, investigations, and operational (efficiency and effectiveness and/or performance) audits.
3. Subject areas of internal auditing work: academic operations, athletics, enrollment services, finance and administration, and sponsored research.
4. Determinants of types and subject areas of internal auditing work: audit risk assessment, breadth and balance of coverage, consulting/advisory service requests, fraud/other sensitive incidents, and management risk assessment.

The questionnaire next asked how the internal audit director perceived that his or her institution's board/audit committee members, senior administrators, and faculty members, respectively, would rank, with respect to importance at his or her institution, the five types of internal auditing work.

To obtain internal audit directors' views concerning the appropriateness at their institutions of operational audits in university mission areas, the questionnaire asked each respondent to indicate, using a 4-point Likert scale (1 = strongly agree, 2 = mildly agree, 3 = mildly disagree, 4 = strongly disagree), his or her level of agreement or disagreement with each of the following three statements:

1. Operational audits that address the accomplishment of research missions and goals are appropriate at my institution.
2. Operational audits that address the accomplishment of teaching missions and goals are appropriate at my institution.

3. Operational audits that address the accomplishment of public service missions and goals are appropriate at my institution.

Culture and Measuring Achievement Differences

To obtain information on views of culture difference between a university and a business, the questionnaire asked the internal audit director to indicate, using a 4-point Likert scale (1 = not at all different, 2 = somewhat different, 3 = very different, 4 = completely different), his or her view and his or her perception of each of the three groups' views of the extent of difference by completing these questionnaire stems:

1. I consider my institution's culture and a business's culture to be
2. Our board members consider our institution's culture and a business's culture to be
3. Our senior administrators consider our institution's culture and a business's culture to be
4. Our faculty members consider our institution's culture and a business's culture to be

To obtain information on views of measuring achievement difference between a university and a business, the questionnaire asked the internal audit director to indicate, using a 4-point Likert scale (1 = not at all different, 2 = somewhat different, 3 = very different, 4 = completely different), his or her view and his or her perception of each of the three groups' views of the extent of difference by completing these questionnaire stems:

1. I consider measuring achievement of my institution's missions and measuring achievement of a business's objectives to be

2. Our board members consider measuring achievement of my institution's missions and measuring achievement of a business's objectives to be
3. Our senior administrators consider measuring achievement of my institution's missions and measuring achievement of a business's objectives to be
4. Our faculty members consider measuring achievement of my institution's missions and measuring achievement of a business's objectives to be

Demographics and Organizational Characteristics

The survey instrument also included two questions to identify the position(s) and gender(s) of the internal audit director's reporting official(s). Two other questions asked (a) the organizational placements of the internal audit function and board or audit committee and (b) the frequency of the internal audit director's meetings with the board or audit committee.

Other survey questions collected demographic or organizational information on (a) the internal audit director, including work experience, education, certifications, gender, race and ethnicity, and age, and (b) his or her institution, including number of students, federally sponsored research funding, total operations funding, whether the institution was private or public, and whether it had a medical school.

Work experience questions were multifaceted. Information requested included the number of years the internal audit director had worked in internal auditing, in higher education internal auditing, and in internal auditing at his or her current institution. In addition, the director was asked whether he or she had worked in any higher education position(s) other than in internal auditing and if so, for how many years. The director was also asked whether he or she had worked 2 years or more outside of higher education and

if so, for how many years by type of organization, which included public accounting; commercial enterprise other than public accounting; military department or service; local, state, or federal government other than military department or service; and private nonprofit.

The survey closed by asking how many professional staff positions were in the internal audit department and then requested that the respondent provide any ideas or comments that he or she may have with respect to the survey.

Implementation of the Survey

Notifications and Mailings

Notifications and mailings of the survey instrument followed an approach that Salant and Dillman (1994) recommend for increasing the response rate. Accordingly, in September 2010, I sent an explanatory e-mail to internal audit directors just ahead of the first mailing. The first mailing included a consent letter, the 45-item questionnaire, and a paid return envelope.

Approximately three weeks after the first mailing, I sent an e-mail to those whose questionnaires I could not confirm as returned. The e-mail encouraged potential respondents to complete and return the questionnaire or to request another if they had not received or had misplaced the one I had sent previously. About two weeks later, I mailed a reminder letter, the consent form, questionnaire, and a paid return envelope to those whose questionnaires I still could not confirm as returned.

Respondents

Completed questionnaires were received from 144 internal audit directors. The response rate was 51% in relation to the target population of 283 and 66% in relation to

the potential number of participants or relevant population of 218. Two respondents who cut off the code key on their questionnaires were anonymous. Prospective respondents had been advised to cut off the code key if they preferred that neither they nor their institutions be identifiable for even the limited purpose of preventing sending reminders to those who had returned the questionnaire (Erdos, 1983). After checking off the name of the institution for each returned questionnaire with its code key intact, I cut off the code key to prevent responses from being identified to an institution or respondent, helping assure the confidentiality promised all respondents.

Response rate percentages for the relevant population were 66% (58 of 88), 74% (63 of 85), and 54% (21 of 39), respectively, for the RU/VH, RU/H, and DRU subcategories. Because the subcategories for two respondents could not be determined, I subtracted two from each subcategory total in the relevant population to compute response rate percentages. Using chi-square analysis, I tested the null hypothesis that the response rates were independent of, and thus not related to, subcategories. The chi-square test of independence indicated that there was not a statistically significant relationship between the institutional subcategory and whether the internal audit director responded to the survey, $\chi 2$ (2, $N = 212$) = 5.045, $p = .080$. That is, the proportions, or percentages of those that responded, differed among subcategories only to the extent they might by chance. Thus, I concluded that the response rates did not significantly differ by subcategory.

These test results must be qualified, however. Having two anonymous respondents led me to subtract two from each subcategory's total number of potential respondents. Depending on the two anonymous respondents' actual subcategory(ies),

there may have been a relationship between response rates and subcategories. However, assuming the most disproportion that the anonymous respondents would create if they were known, the effect size or strength of the relationship would have been small.

Of the 218 potential participants, 69 (32%) were at private institutions, and 149 (68%) were at public institutions. Of the 144 respondents, 40 (28%) were at private institutions, and 104 (72%) were at public institutions. The response rate for internal audit directors at private institutions was 58% (40 of 69), and, at public institutions, 70% (104 of 149). A chi-square test of independence indicated that there was not a statistically significant relationship between whether an institution was private or public and whether the internal audit director responded to the survey, $\chi 2$ (1, $N = 218$) = 2.942, $p = .086$. I concluded that whether the internal audit director responded did not significantly differ between private and public institutions. The two anonymous respondents were included in this chi-square test because they had responded to the questionnaire item asking whether their respective institutions were private or public.

Of the 218 potential participants, 92 (42%) were at institutions with medical schools, and 126 (58%) were not. Of the 144 respondents, 61 (42%) were at institutions with medical schools, and 83 (58%) were not. The response rate for internal audit directors at institutions with medical schools was 66% (61 of 92), and, at institutions without medical schools, 66% (83 of 126). A chi-square test of independence indicated that there was not a statistically significant relationship between whether an institution had a medical school and whether the internal audit director responded to the survey, $\chi 2$ (1, $N = 218$) = 0.004, $p = .947$. I concluded that whether the internal audit director responded did not significantly differ between institutions with or without a medical

school. The two anonymous respondents were included in this chi-square test because they had responded to the questionnaire item asking whether their respective institutions had a medical school.

In addition, I performed chi-square tests to determine within each Carnegie subcategory whether response rates differed between private and public institutions or between institutions that had and those that did not have medical schools. For five of the six tests, as shown in Table 2, there was not a statistically significant difference, enabling me to accept the null hypothesis that response rates did not differ between groups within the subcategory. However, there were too few DRU institutions with medical schools to permit a valid chi-square test of whether response rates differed between schools with or without medical schools in the DRU subcategory.

"It is more important to have respondents who are representative of the group from which you are sampling than to have a large return rate" (Suskie, 1996, p. 69). With respect to the characteristics tested, respondents appeared representative of the relevant population of 218 institutions. Generalizing results to that population was thus considered defensible to some degree.

The classificatory homogeneity of institutions within the single Carnegie Doctorate-granting Universities category could justify generalization of results to the larger target population as well. However, such generalizations would have to be especially cautionary because representativeness of respondents could not be tested for that larger population. Moreover, because of the possibility that respondents and nonrespondents differed in important, undeterminable ways, all generalizing to the target

Table 2

Within Carnegie Subcategories, Independence of Being Private or Public or Having a Medical School, and Responding to the Survey

Carnegie Doctorate-granting Universities subcategory (percentages responding)	Chi-square tests of independence results					
	df	*n*	χ2	*p*	Cramer's V	Effect
RU/VH (66%)						
Private/public (62%/68%)	1	88	0.284	.594		No
Med/no med school (65%/68%)	1	88	0.069	.792		No
RU/H (74%)						
Private/Public (72%/75%)	1	85	0.043	.836		No
Med/no med school (76%/73%)	1	85	0.065	.798		No
DRU (54%)						
Private/Public (47%/60%)	1	39	0.626	.429		No
Med/no med school (75%/51%)	1	39[a]				

Note. RU/VH = Research Universities (very high research activity); RU/H = Research Universities (high research activity); DRU = Doctoral/Research Universities.

[a]Chi-square test is invalid because two cells (50%) had an expected frequency less than 5.

and relevant populations was considered to require qualification. Generalizing results to colleges or universities in other Carnegie categories was considered inappropriate.

As indicated, I focused on a target population of 283 institutions and attempted a census of the 218 potential participants in the relevant population. The point of view that all differences in a census are statistically significant (Suskie, 1996) would not hold since a complete census was not achieved. Thirty-four percent of the relevant population did not respond. Moreover, statistically significant differences even in a census "may not be large enough for *practical* significance. Hypothesis tests . . . help eliminate the very small differences with no practical significance" (Suskie, 1996, p. 108).

Collection of Data

The types of data typically captured in survey research are ratio, interval, ordinal, and nominal, representing four measurement scales. Ratio scales have the same interval between each number and have a natural zero point, permitting multiplication, division, addition, and subtraction. Interval scales have equal intervals but no natural zero point, limiting mathematical manipulation of scale numbers to addition and subtraction. Ordinal scales have order based on a characteristic, such as level of agreement or disagreement, or extent of difference, as in this study. Intervals on an ordinal scale are not uniform. Nominal scales have labels or names for discrete categories, and if a label is a number, it has no mathematical meaning (Fink, 1995; Kerlinger, 1973; Sapsford & Jupp, 2006).

Data collected from questionnaire responses were generally quantitative. There were also qualitative data in the form of comments that some respondents wrote on their questionnaires. For 18 questionnaire items, data were ordinal. For seven items, these data were a ranking of internal auditor attributes, four rankings of types of internal auditing

work (the respondent's ranking and his or her perceptions of board members', senior administrators', and faculty members' rankings), a ranking of subject areas of internal auditing work, and a ranking of determinants of types and subject areas of internal auditing work.

For three items, ordinal data were the levels of agreement or disagreement as to the appropriateness of operational audits in the university mission areas of research, teaching, and public service. For the remaining eight of the 18 items, ordinal data were the extent of culture difference and measuring achievement difference, respectively, between a university and a business as viewed by the internal audit director and as he or she perceived the board members, senior administrators, and faculty members viewed these differences.

There were 21 additional items that collected only nominal data. These nominal data were demographic and organizational information about the internal audit director, the institution, and the internal audit department. Six questionnaire items collected ratio data; one of those items also collected nominal data.

Ratio data for five items were the number of years worked in (a) internal auditing, (b) higher education internal auditing, (c) higher education internal auditing at the current institution, (d) higher education positions other than in higher education internal auditing, and (e) organizations outside of higher education. The latter item also captured nominal data on types of organizations where the respondent worked outside of higher education. The sixth item that collected ratio data was the last numbered item, which asked how many professional staff positions were in the internal audit department.

Sapsford and Jupp (2006) point out that "in principle *anything* can be measured at least at the nominal level (e.g. as 'present' or 'absent', coded 1 or 0)" (p. 159) and note that nominal data are sometimes referred to simply as categorical data. For my statistical analyses and presentations, I considered my ordinal data—levels of importance, of agreement or disagreement, and of extent of difference—as categorical data. I also transformed my ratio data into a limited number of ranges or dichotomous categories. These ordinal and transformed ratio data are treated as categorical or nominal data in my statistical analyses and presentations.

Responses to the questionnaire, other than the narrative comments, were entered in SPSS, an analytical software package. Narrative comments were collected in a separate document for analysis.

Data Analysis

Primary Independent Variables

Primary independent variables were (a) internal audit directors' views of the extent of difference between their respective institutions' culture and a business's culture and (b) internal audit directors' views of the extent of difference between measuring achievement of their respective institutions' missions and measuring achievement of a business's objectives. To assess their own possible influencers or predictors, these views were also used as dependent variables for some analyses. Furthermore, the relationship between views of culture difference and views of measuring achievement difference were assessed. The former served as an independent variable, and the latter, a dependent variable for that assessment.

Secondary Independent Variables

Secondary independent variables included internal audit directors' gender, race and ethnicity, and age. Also included as secondary independent variables were internal audit directors' (a) education: bachelor's degrees and majors, master's degree types and majors, and doctoral degree types and majors and (b) certifications: CIA (certified internal auditor), CPA (certified public accountant), CISA (certified information systems auditor), CFE (certified fraud examiner), and others.

Additional secondary independent variables were the number of years that directors had worked in internal auditing, in higher education internal auditing, and in internal auditing at their institutions; whether the directors had worked in any higher education positions other than in higher education internal auditing, and if so, the number of years; the types of organizations the directors had worked in outside of higher education (public accounting, commercial enterprise other than public accounting, military, government other than military, private nonprofit, or other), and for each, the number of years.

Secondary independent variables also included internal audit directors' reporting officials; the reporting officials' genders; internal audit departments' and boards'/audit committees' organizational placements; and the frequencies of internal audit directors' meetings with their boards or audit committees.

Last, secondary independent variables included the number of professional staff positions in the internal audit department; the directors' institutions' enrollment, federal sponsored research funding, and total operations funding; whether the institutions were private or public; and whether they had a medical school.

Primary Dependent Variables

Primary dependent variables included internal audit directors' rankings of the relative importance at their respective institutions of internal auditing factors as follows.

1. Five internal auditor attributes: awareness of higher education culture and missions, expertise in accounting, expertise in IT, expertise in management and business subjects, and skills in human relations and in oral and written communication.
2. Five types of internal auditing work: compliance audits, financial audits, IT audits, investigations, and operational audits.
3. Five subject areas of internal auditing work: academic operations, athletics, enrollment services, finance and administration, and sponsored research.
4. Five determinants of types and subject areas of internal auditing work: audit risk assessment, breadth and balance of coverage, consulting/advisory service requests, fraud/other sensitive incidents, and management risk assessment.

Three additional primary dependent variables were the internal audit directors' levels of agreement or disagreement with the appropriateness at their respective institutions of operational audits that addressed the accomplishment of missions and goals in research, teaching, and public service, respectively.

In addition, the internal auditing factors of internal auditor attributes and types, subject areas, and determinants of internal auditing work were used as independent variables to assess their relationship with (a) each other and (b) levels of agreement or disagreement as to the appropriateness of operational audits in the three mission areas.

Secondary Dependent Variables

The primary independent variables—(a) internal audit directors' views of the extent of difference between their respective institutions' culture and a business's culture and (b) internal audit directors' views of the extent of difference between measuring achievement of their respective institutions' missions and measuring achievement of a business's objectives—were also considered secondary dependent variables in testing relationships with secondary independent variables.

Transforming Variables

Each value of the two primary independent variables that addressed culture and measuring achievement and of the three primary dependent variables that addressed the appropriateness of operational audits in mission areas was a category representing one of four levels on a Likert scale. As noted earlier, questionnaire items associated with these five variables were changed following the pilot study from 5-point to 4-point Likert scales. That change facilitated transformation of the variables into five dichotomous variables, with their two categories created by combining the first two values and last two values, respectively, of the original variables.

For the culture and measuring achievement variables, dichotomous variables were produced by combining not at all different and somewhat different into not substantially different, and very different and completely different into substantially different. Not substantially different was subsequently labeled "businesslike," and substantially different, "distinct," as explained in Chapter 4.

Values of the first four primary dependent variables were rankings of five internal auditor attributes and five types, subject areas, and determinants of internal auditing

work. Rankings of five factors yield 120 (5!) possible permutations. Therefore, for analytical practicality and clarity, each of the four variables was transformed into five new variables, each of which was one of the original variable's five factors to be ranked. Each of the 20 new factor variables had five categories: the ranks 1, 2, 3, 4, and 5.

From each of these 20 new factor variables, two dichotomous variables were produced. The first enabled addressing the extent a respondent considered a factor the most important among its respective group's five factors, and the second, one of the two most important. The two values for each of the two dichotomous variables were in the following forms: (a) "0 = did not rank [attribute, type, subject area, or determinant factor] 1" and "1 = ranked [attribute, type, subject area, or determinant factor] 1" and (b) "0 = did not rank [attribute, type, subject area, or determinant factor] 1 or 2" and "1 = ranked [attribute, type, subject area, or determinant factor] 1 or 2."

For the other three primary dependent variables that addressed the appropriateness of operational audits, dichotomous variables were created by combining strongly agree and mildly agree into agree, and mildly disagree and strongly disagree, into disagree. Another transformation of the operational audit variables was made to enable tests based on strength of opinion. For those tests, the four-category operational audit variables became variables with three categories: strongly agree, mildly agree or mildly disagree, and strongly disagree.

Secondary independent variables were largely nominal or categorical variables. Some secondary independent variables were ratio variables, whose values were numbers of years or numbers of professional positions. Ranges of values were created to transform these ratio variables into categorical variables, often dichotomous, for use in chi-square

tests. Categories of other variables were also transformed into dichotomous variables by creating from each of the variables' values another variable with two values, such as "0 = Not a certified internal auditor" and "1 = A certified internal auditor."

Primary Null Hypotheses

My initial primary null hypothesis was that internal audit directors' views of the extent of difference between their respective institutions' culture and a business's culture were unrelated to their views of the extent of difference between measuring achievement of their respective institutions' missions and measuring achievement of a business's objectives. I performed additional tests of this hypothesis using subsets of respondents based on my secondary independent variables.

The following were my 14 other primary null hypotheses, based on the two primary independent variables and seven primary dependent variables:

1. Internal audit directors' views of the extent of difference between their respective institutions' culture and a business's culture were unrelated to
    a. Their rankings of the relative importance at their institutions of internal auditing factors as follows.
        i. Five internal auditor attributes: awareness of higher education culture and missions, expertise in accounting, expertise in IT, expertise in management and business subjects, and skills in human relations and in oral and written communication.
        ii. Five types of internal auditing work: compliance audits, financial audits, IT audits, investigations, and operational audits.

iii. Five subject areas of internal auditing work: academic operations, athletics, enrollment services, finance and administration, and sponsored research.

iv. Five determinants of types and subject areas of internal auditing work: audit risk assessment, breadth and balance of coverage, consulting/ advisory service requests, fraud/other sensitive incidents, and management risk assessment.

b. Their level of agreement or disagreement with the appropriateness at their respective institutions of operational audits that addressed the accomplishment of

i. Research missions and goals.

ii. Teaching missions and goals.

iii. Public service missions and goals.

2. Internal audit directors' views of the extent of difference between measuring achievement of their respective institutions' missions and measuring achievement of a business's objectives were unrelated to

a. Their rankings of the relative importance at their institutions of

i. Five internal auditor attributes: awareness of higher education culture and missions, expertise in accounting, expertise in IT, expertise in management and business subjects, and skills in human relations and in oral and written communication.

ii. Five types of internal auditing work: compliance audits, financial audits, IT audits, investigations, and operational audits.

iii. Five subject areas of internal auditing work: academic operations, athletics, enrollment services, finance and administration, and sponsored research.

iv. Five determinants of types and subject areas of internal auditing work: audit risk assessment, breadth and balance of coverage, consulting/ advisory service requests, fraud/other sensitive incidents, and management risk assessment.

b. Their level of agreement or disagreement with the appropriateness at their respective institutions of operational audits that addressed the accomplishment of

i. Research missions and goals.

ii. Teaching missions and goals.

iii. Public service missions and goals.

The following were additional primary null hypotheses based on the seven primary dependent variables being used also as independent variables to test relationships among themselves:

1. Internal audit directors' rankings of the relative importance of internal auditor attributes and types, subject areas, and determinants of internal auditing work were unrelated to each other.
2. Internal audit directors' rankings of the relative importance of internal auditor attributes and types, subject areas, and determinants of internal auditing work were unrelated to their level of agreement or disagreement with the appropriateness at their respective institutions of operational audits that

addressed the accomplishment of missions and goals in the mission areas of research, teaching, and public service, respectively.

Secondary Null Hypotheses

My two sets of secondary null hypotheses were (a) that each of the two primary independent variables (views of culture and measuring achievement differences), treated here as secondary dependent variables, was unrelated to each of the secondary independent variables and (b) that each of the secondary independent variables was unrelated to each of the seven primary dependent variables (rankings of importance of auditor attributes and types, subject areas, and determinants of internal auditing work and levels of agreement or disagreement with appropriateness of operational audits in the three mission areas).

Chi-Square Test of Independence

As exhibited above with respect to whether respondents were representative of the relevant population, a chi-square test of independence evaluates whether there is a relationship between two categorical or nominal variables (Huck, 2004). I used chi-square tests of independence for all of my primary hypothesis testing. However, I considered the results of a chi-square test of independence to be questionable, although sometimes worthy of consideration, if one or more cells had an expected frequency below five but the percentage of cells with that low of a frequency did not exceed 25%. If over 25% of contingency table cells had an expected frequency less than five, I considered a chi-square test of independence to be invalid. However, I followed Sapsford (2007) by choosing to combine variable values or categories to reduce their number and accordingly the number of contingency table cells, often increasing cell frequencies to acceptable

levels for valid chi-square testing. The level of significance I used for chi-square testing was .05, thus a statistically significant result required a *p* value less than .05.

For 2 X 2 contingency tables (tables with two variables, each with two categories), some statisticians advocate Yates's continuity correction to reduce Type I error, that is, rejecting the null hypothesis when it is true. Other statisticians claim that the "Yates adjustment causes the pendulum to swing too far in the opposite direction . . . [and] makes the chi-square test overly conservative (thus increasing the chances of a Type II error[, that is, failing to reject the null hypothesis when it is false])" (Huck, 2004, p. 477). I considered chi-square test results that were statistically significant with *p* less than .05 to be questionable, although sometimes worthy of consideration, if Yates's continuity correction resulted in *p* being .05 or greater.

Phi and Cramer's V

Bivariate correlation provides additional insight into the relationship between two variables. Two bivariate correlation techniques used in conjunction with the chi-square test of independence are phi and Cramer's V. Phi is used for two dichotomous nominal variables, such as gender (male/female) and a two-choice opinion (agree/disagree). Cramer's V is used for two nominal variables with two or more categories each. If both variables have two categories, phi and Cramer's V yield the same result (Huck, 2004).

Computing phi requires giving the dichotomous variables numeric values of 0 and 1, respectively, and then using the Pearson correlation formula (Gravetter & Wallnau, 2004). Reporting of statistically significant results of a chi-square test of independence should include a measure of effect size (Gravetter & Wallnau) to show "the strength of the relationship . . . in the population" (Huck, 2004, p. 471). The phi coefficient measures

the effect size for 2 X 2 contingency tables. Cramer's V measures effect size for such tables and for tables with more than two columns or rows. (Gravetter & Wallnau; Huck).

A phi coefficient of .10 represents a small effect; .30, a medium effect; and .50, a large effect. Cramer's V effect size levels when one or both variables have two categories would be the same as those for phi, but if both variables have at least three categories, lower Cramer's V values would equate to small, medium, and large effects. For example, if both variables had three categories, .07 would represent a small effect; .21, a medium effect; and .35, a large effect (Gravetter & Wallnau, 2004).

Because Cramer's V has a formula identical to phi's for tests of two dichotomous variables (Gravetter & Wallnau, 2004), represents the same effect size as phi for such tests, and is appropriate also when one or both variables have more than two categories, I used only Cramer's V in reporting effect size in my study.

Descriptive Statistics

In Chapter 4, descriptive statistics summarize data collected from the 144 respondents. Vogt (2007) considered "descriptive statistics one of the most important tools researchers can use to conduct meaningful analyses" (p. 57). My descriptive statistics provide overviews of views that responding internal audit directors held about culture and measuring achievement differences between a university and a business (the two primary independent variables) and about the priorities and uses of internal auditing at their institutions (the seven primary dependent variables). Characteristics of internal audit directors, their institutions, and their departments are also provided within the contexts of these overviews and the results of tests of null hypotheses.

Comparisons With Previous Studies and Replication

My data enabled me to draw several comparisons with results of previous higher education internal auditing research discussed in Chapter 2. As Vogt (2007) acknowledged, "science depends on replication, or results verification. And replication depends upon detailed description" (p. 59). The more original aspects of my study, those dealing with views of culture and measuring achievement differences between a university and a business, were the subjects of detailed description and of a sizable number of statistical tests. These descriptions and test results should benefit those building on or replicating parts of my effort.

Additional Comments on Data Analysis

To my knowledge, internal audit directors' views of culture and measuring achievement differences between their universities and a business had not been the focus of any prior research. My results provide an initial understanding of those views and of their possible relationship to the priorities and uses of internal auditing in universities. My results also offer insights on potential influencers, or predictors, of those views. One of my goals was to advance ideas for future work along the lines of my study, the subjects of which are, I believe, not only distinctive but practically significant to a wide range of constituencies within and without the academy.

Moreover, I believe that further research on these themes should go beyond mine in the form not only of additional quantitative research but also of qualitative research. Qualitative research has been minimal with regard to higher education internal auditing, and I argue that my quantitative study has identified intriguing and important subject matter for such work.

CHAPTER 4

RESULTS

Culture and Measuring Achievement Differences

All 144 responding internal audit directors provided their views of (a) the extent of difference between their respective institutions' culture and a business's culture and (b) the extent of difference between measuring achievement of their respective institutions' missions and measuring achievement of a business's objectives. Table 3 shows numbers and percentages of responses for the four extents of difference for these two primary independent variables. The mode for the culture variable was very different, with 73 respondents (51%) making that choice, and for the measuring achievement variable, somewhat different, with 55 (38%) holding that view. For combinations of views for the two variables (cells of Table 3), the mode was very different for both, with 32 (22%) making those choices, followed closely by somewhat different for both, with 30 (21%) holding those views.

Table 4 displays the data in dichotomous categories of not substantially different (not at all or somewhat different) and substantially different (very or completely different). In keeping with my focus on universities, I labeled the former "businesslike" and the latter "distinct" from the perspective of the institution: its culture and its measuring achievement of its missions. Simply using "like" and "unlike" to describe how culture and measuring achievement compare would not have been as relevant or accurate. Some respondents' view of somewhat different could have meant unlike, and businesslike, by couching difference in terms of having some business characteristics without exhibiting actual or near sameness, encompassed that view.

Table 3

Views of Culture and Measuring Achievement Differences

Culture: Institution versus a business	Measuring achievement: Institution versus a business[a]				
	Not at all different	Somewhat different	Very different	Completely different	Total
	Number (%) of respondents				
Not at all different	6 (4%)	2 (1%)	0 (0%)	0 (0%)	8 (6%[b])
Somewhat different	17 (12%)	30 (21%)	8 (6%)	0 (0%)	55 (38%[b])
Very different	14 (10%)	20 (14%)	32 (22%)	7 (5%)	73 (51%)
Completely different	1 (1%)	3 (2%)	1 (1%)	3 (2%)	8 (6%)
Total	38 (26%[b])	55 (38%)	41 (28%[b])	10 (7%)	144 (100%[b])

[a]Measuring achievement comparison was between measuring achievement of each institution's missions and measuring achievement of a business's objectives. [b]Total percentage does not equal sum of row or column cell percentages due to rounding.

Table 4

Views of Culture and Measuring Achievement Differences – Dichotomous Categories

Culture: Institution versus a business	Measuring achievement: Institution versus a business[a]		
	Businesslike	Distinct	Total
	Number (%) of respondents		
Businesslike	55 (38%)	8 (6%)	63 (44%)
Distinct	38 (26%)	43 (30%)	81 (56%)
Total	93 (65%[b])	51 (35%[b])	144 (100%)

Note. The dichotomous categories of not substantially different (not at all or somewhat different) and substantially different (very or completely different) were labeled businesslike and distinct, from the institution's perspective: its culture and its measuring achievement of its missions.

[a]Measuring achievement comparison was between measuring achievement of each institution's missions and measuring achievement of a business's objectives. [b]Total percentages do not equal sum of column cell percentages due to rounding.

As Table 4 shows, the mode for the dichotomous culture variable was distinct, with 81 respondents (56%), and for the dichotomous measuring achievement variable, businesslike, with 93 respondents (65%). For combinations shown in Table 4's middle column cells, the mode was "both businesslike," with 55 respondents (38%). The combination with the second highest number of respondents was "both distinct," with 43 (30%), and with the third highest, "culture distinct and measuring achievement businesslike," with 38 (26%). Thus, the combination with the fewest respondents was "culture businesslike and measuring achievement distinct," with 8 (6%).

Initial Primary Null Hypothesis

Initial Chi-Square Tests and Hypothesis Test Conclusion

My initial primary null hypothesis was that internal audit directors' views of the extent of difference between their respective institutions' culture and a business's culture were unrelated to their views of the extent of difference between measuring achievement of their respective institutions' missions and measuring achievement of a business's objectives. A chi-square test of independence of the two variables using the four levels of extent of difference for both was not valid because over 25% of the contingency table's cells had an expected frequency less than five. As noted in Chapter 3, if as few as one cell had so low an expected frequency, I considered chi-square test results of questionable validity—although sometimes worthy of consideration if the percentage of such cells did not exceed 25%. If the percentage exceeded 25%, as here, I considered the test invalid.

Expected frequencies for the chi-square test of independence of the dichotomous culture and measuring achievement variables were high enough to avoid loss of validity. The test produced a statistically significant result, $\chi 2\ (1, N = 144) = 25.272, p = .000$. The

Cramer's V statistic was .419, indicating a medium effect size (Cramer's V at least .30 but less than .50) and medium strength of relationship between the variables. I thus rejected the null hypothesis and concluded that the directors' views of culture difference were related to their views of measuring achievement difference.

Rationale for Additional Tests

The sizable percentages (38%, 30%, and 26%) for three of the four combinations showed that respondents' views were quite heterogeneous. In addition, the medium effect size suggested that for respondents as a whole, the relationship between the culture and measuring achievement variables was neither weak nor strong. Therefore, I decided that additional chi-square tests of independence of the two dichotomous variables should be performed for subsets of respondents to attempt to identify and understand possible influencers or predictors of these views. Subsets were based on categories or values (primarily dichotomous) of my secondary independent variables. These variables represented internal audit director, reporting official, internal audit department, board, and institution characteristics discussed in Chapter 3. Before discussing subset tests, I present detailed descriptive statistics regarding these characteristics for my respondents.

Characteristics

Internal Audit Directors

Gender, age, race, and ethnicity data appear in Table 5. There were 55 (38%) females and 89 (62%) males. The women tended to be younger than the men. About half of the women were under 50 years old; just over a fourth of the men were. Respondents were homogeneous racially and ethnically. Of those indicating their race and ethnicity, 94% were white, and 97% were not Hispanic or Latino.

Table 5

Internal Audit Directors' Gender, Age, Race, and Ethnicity

Characteristics and categories			Number (%) of respondents
Gender			
Female			55 (38%)
Male			89 (62%)
Age	Female	Male	
30 to 39	6 (11%)	5 (6%)	11 (8%)
40 to 49	21 (38%)	19 (21%)	40 (28%)
50 to 59	19 (35%)	44 (49%)	63 (44%)
60 or over	9 (16%)	21 (24%)	30 (21%)
Race			
American Indian or Alaska Native			2 (1%)
Asian			2 (1%)
Black or African American			4 (3%)
Native Hawaiian or Other Pacific Islander			0 (0%)
White			134 (94%)
Ethnicity			
Hispanic or Latino			5 (3%)
Not Hispanic or Latino			139 (97%)

Table 6 summarizes respondents' degrees, majors, and certifications. Some commonality in education was evident. Approximately 78% of respondents with a bachelor's degree (111 of 143) had majored in accounting, and 80% of those with master's degrees (55 of 69) had a master of business administration (MBA) (41) or a non-MBA master's degree in accounting (14). Six of the MBAs were with an accounting major. Bachelor's degree data did not differ materially between genders. However, well over half (57%) of male respondents had a master's degree, while less than a third (33%) of female respondents did. Six of the seven respondents with a doctoral degree were men.

Also, 133 respondents (92%) had one or more certifications. Ninety-eight (68%) were CPAs; 59 (41%), CIAs; 29 (20%), CFEs; and 23 (16%), CISAs. Gender differences for other certifications were not pronounced, but the percentage of respondents who were CIAs was considerably higher for women than for men: 55% versus 33%. These percentages were similar to those for having a master's degree, but reversed by gender. Many respondents, as Table 7 reveals, had considerable experience in internal auditing, with 107 (75%) having over 10 years of experience, and 61 (43%), over 20. Experience in higher education internal auditing was also substantial, with 83 respondents (58%) having over 10 years, and 36 (25%), over 20. Tenures at their current institutions also were long for a number of respondents, with 69 (48%) having over 10 years, and 25 (17%), over 20. Such respondents might know their institutions well.

Forty-seven respondents (33%), as Table 7 shows, had worked in higher education positions other than in internal auditing. Of these, 25 (53%) had done so for at least 5 years. Respondents' experience outside of internal auditing and higher education was considerable and varied, as indicated in Table 8. One hundred twenty-eight

Table 6

Internal Audit Directors' Education and Certifications

Degrees, majors, and certifications	Number (%) of respondents		
	Female	Male	Total
Bachelor's degree	55 (100%)	88 (99%)	143 (99%)
Accounting with/w/o other major	45 (82%)	66 (74%)	111 (78%)
Finance with/w/o other major	5 (9%)	5 (6%)	10 (7%)
Management/business with/w/o other major	3 (5%)	8 (9%)	11 (8%)
Computer/IT with/w/o other major	2 (4%)	4 (4%)	6 (4%)
Master's degree	18 (33%)	51 (57%)	69 (48%)
MBA with/w/o a major	9 (50%)	32 (63%)	41 (59%)
Master's/MBA - accounting major	6 (33%)	14 (27%)	20 (29%)
Master's/MBA - computer/IT major	1 (6%)	8 (16%)	9 (13%)
Master's/MBA - management/business major	2 (11%)	5 (6%)	7 (10%)
Doctoral degree	1 (2%)	6 (7%)	7 (10%)
Any certification	51 (93%)	82 (92%)	133 (92%)
Certified public accountant	34 (62%)	64 (72%)	98 (68%)
Certified internal auditor	30 (55%)	29 (33%)	59 (41%)
Certified fraud examiner	10 (18%)	19 (21%)	29 (20%)
Certified information systems auditor	9 (16%)	14 (16%)	23 (16%)
Certified government financial manager	1 (2%)	6 (7%)	7 (5%)

Note. Majors, types of degrees, and certifications with a frequency of five or fewer are not included. w/o = without; IT = information technology; MBA = master of business administration. Percentages for flush categories are of all respondents: female: N = 55; male: N = 89; total: N = 144. Percentages for indented subcategories are of preceding category. Subcategories do not total 100% because they are incomplete or overlapping.

Table 7

Internal Audit Directors' Experience in Internal Auditing and in Higher Education

Categories and years (yrs.) of experience	Number (%) of respondents		
	Female	Male	Total
Internal auditing			
≤ 10	17 (31%)	20 (22%)	37 (26%)
11 to 20	23 (42%)	23 (26%)	46 (32%)
21 to 25	9 (16%)	15 (17%)	24 (17%)
≥ 26	6 (11%)	31 (35%)	37 (26%)
Higher ed internal auditing			
≤ 5	11 (20%)	20 (22%)	31 (22%)
6 to 10	14 (25%)	16 (18%)	30 (21%)
11 to 20	22 (40%)	25 (28%)	47 (33%)
≥ 21	8 (15%)	28 (31%)	36 (25%)
Higher ed internal auditing at current institution			
≤ 5	15 (27%)	26 (29%)	41 (28%)
6 to 10	14 (25%)	19 (21%)	33 (23%)
11 to 20	21 (38%)	23 (26%)	44 (31%)
≥ 21	5 (9%)	20 (22%)	25 (17%)
Higher ed position other than internal auditing	Number (%) in such position/by yrs.		
Yes	20 (36%)	27 (30%)	47 (33%)
< 5	8 (40%)	14 (52%)	22 (47%)
5 to 9	8 (40%)	6 (22%)	14 (30%)
≥ 10	4 (20%)	7 (26%)	11 (23%)

Note. Percentages are of all respondents: female: N = 55; male: N = 89; total: N = 144, except for Higher ed position other than internal auditing years subcategories, which are of preceding number who held such positions.

Table 8

Internal Audit Directors' Experience Outside of Internal Auditing and Higher Education

Years of outside experience and types of organization	Number (%) of respondents		
	Female	Male	Total
Years for all types of organizations			
≤ 5	19 (35%)	27 (30%)	46 (32%)
6 to 10	10 (18%)	25 (28%)	35 (24%)
11 to 20	16 (29%)	19 (21%)	35 (24%)
≥ 21	1 (2%)	11 (12%)	12 (8%)
Total	46 (84%)	82 (92%)	128 (89%)
Types of organizations			
Public accounting	26 (47%)	37 (42%)	63 (44%)
Commercial enterprise	23 (42%)	39 (44%)	62 (43%)
Government or military	18 (33%)	34 (38%)	52 (36%)
Private nonprofit	7 (13%)	7 (8%)	14 (10%)
Other type	3 (5%)	6 (7%)	9 (6%)

Note. The questionnaire collected information only about experience outside of higher education that was 2 years or longer. Percentages are of all respondents: female: N = 55; male: N = 89; total: N = 144.

respondents (89%) had at least 2 years of such experience (the minimum length asked to be reported). Eighty-two respondents (56%) had over 5 years, and 47 (32%), over 10. As to type of outside experience, 63 directors (44%) had worked in public accounting; 62 (43%), at a commercial enterprise; and 52 (36%), in the government or military.

Table 9 displays the years of experience variables in Tables 7 and 8 in dichotomous categories, which facilitate chi-square testing and, in this case, help highlight differences in years of experience between women and men. Table 10 provides mean years of experience by gender, further indicating that women, in the aggregate, had less experience in all areas than men did.

Reporting Officials

Internal audit directors' reporting officials encompassed 27 different individual positions or combinations of positions, and approximately 60% of respondents had multiple reporting officials. Nevertheless, reporting officials fell fairly logically into five categories and further into dichotomous categories, as indicated in Table 11. The five reporting official categories, to which each respondent was assigned to one and only one, were (a) the institution president or chancellor; (b) the institution vice president for finance or chief financial officer (VPF/CFO); (c) an institution official other than the president, chancellor, or VPF/CFO; (d) a system official with no institution official also; and (e) board/audit committee official(s) only. Respondents included in categories (a) through (d) may have had other reporting officials. For example, 70 respondents in these four categories had one or more board/audit committee members among their reporting officials. Thus in all, with 12 respondents reporting only to the board/audit committee, 82 respondents (57%) had a reporting relationship with the board/audit committee.

Table 9

Internal Audit Directors' Experience in Internal Auditing, in Higher Education, and Outside of Internal Auditing and Higher Education – Dichotomous Categories

Categories and years (yrs.) of experience	Number (%) of respondents		
	Female	Male	Total
Internal auditing			
< 20	37 (67%)	36 (40%)	73 (51%)
≥ 20	18 (33%)	53 (60%)	71 (49%)
Higher ed internal auditing			
< 13	31 (56%)	41 (46%)	72 (50%)
≥ 13	24 (44%)	48 (54%)	72 (50%)
Higher ed internal auditing at current institution			
< 11	29 (53%)	45 (51%)	74 (51%)
≥ 11	26 (47%)	43 (48%)	69 (48%)
Higher ed position other than internal auditing	Number (%) in such position/by yrs.		
Yes	20 (36%)	27 (30%)	47 (33%)
< 5	8 (40%)	14 (52%)	22 (47%)
≥ 5	12 (60%)	13 (48%)	25 (53%)
Position outside internal auditing/higher ed	Number (%) in such position/by yrs.		
Yes	46 (84%)	82 (92%)	128 (89%)
< 8 years	23 (50%)	37 (45%)	60 (47%)
≥ 8 years	23 (50%)	45 (55%)	68 (53%)

Note. The questionnaire collected information only about experience outside of higher education that was 2 years or longer. Percentages are of all respondents: female: N = 55; male: N = 89; total: N = 144, except for Higher ed position other than internal auditing and Worked outside internal auditing/higher ed years subcategories, which are of preceding number who held such positions.

Table 10

Mean Years of Experience in Internal Auditing, in Higher Education, and Outside of Internal Auditing and Higher Education by Gender

Area of experience and gender	Mean years of experience
Internal auditing	
Female	15.25
Male	20.00
Higher education internal auditing	
Female	12.25
Male	14.66
Higher education internal auditing at current institution	
Female	10.55
Male	12.13
Higher education position other than internal auditing	
Female	5.95
Male	6.93
Outside of internal auditing and higher education	
Female	9.35
Male	11.21

Table 11

Internal Audit Directors' Reporting Officials and Reporting Official Genders

Reporting officials	Number (%) of respondents		
	Private	Public	Total
Reporting officials - five categories			
Inst. president/chancellor (P/C) with/w/o other(s)	13 (33%)	50 (48%)	63 (44%)
Inst. VPF/CFO not P/C with/w/o other(s)	17 (43%)	16 (15%)	33 (23%)
Inst. official not P/C/VPF/CFO with/w/o other(s)	8 (20%)	10 (10%)	18 (13%)
System official & none at inst. with/w/o other(s)	0 (0%)	15 (14%)	15 (10%)
Board/audit committee (B/AC) official(s) only	1 (3%)	11 (11%)	12 (8%)
Reporting officials - two categories			
Inst. or inst. and other(s)	38 (95%)	76 (73%)	114 (79%)
System and/or B/AC only	1 (3%)	26 (25%)	27 (19%)
Reporting to the B/AC - two categories			
Reported to the B/AC	24 (60%)	58 (56%)	82 (57%)
Did not report to the B/AC	15 (38%)	43 (41%)	58 (40%)
Reporting officials' genders – five categories			
Female	3 (8%)	11 (11%)	14 (10%)
Male	12 (30%)	29 (28%)	41 (28%)
All Female	1 (3%)	2 (2%)	3 (2%)
All Male	14 (35%)	40 (38%)	54 (38%)
Female and Male	10 (25%)	21 (20%)	31 (22%)
Reporting officials' genders – two categories			
Female only or mixed	14 (35%)	34 (33%)	48 (33%)
Male only	26 (65%)	69 (66%)	95 (66%)

Note. Percentages are of all respondents: private: N = 40; public: N = 104; total: N = 144. Inst. = Institution; w/o = without; VPF = vice president for finance; CFO = chief financial officer.

I used an order of precedence to assign respondents to categories. Table 11's five category labels indicate the precedence. It favored reporting at the institution, likely the locus of most reporting official interaction, and to its top official and financial official—the officials most often and second most often named by respondents. No other institution position had over six mentions. Sixty-three respondents (44%) reported to the institution president or chancellor; 33 (23%) reported to the top financial official at the institution but not to its president or chancellor. Another 18 respondents (13%) reported to none of those but to another institution official. One set of dichotomous categories divided respondents into (a) those who reported to an institution official or to an institution official and others and (b) those who reported only to a system official and/or the board/audit committee. Another set of dichotomous categories divided respondents into those that did or did not report to the board/audit committee.

Table 11 also shows reporting officials' genders in five categories and in dichotomous categories. Reporting officials were predominantly male. For 95 respondents (66%), reporting officials were male only; for 17 (12%), female only; and for 48 (34%), female only or mixed.

Departments, Boards, and Institutions

For 93 respondents (65%), as shown in Table 12, both the internal audit department and board were at the institution level. This was the case for 37 (93%) of the 40 private institutions and for 56 (54%) of the 104 public institutions. For 21 respondents (15%), all at public institutions, both the department and board were at the system level. Seventeen respondents (12%), all but one at a public institution, had an institution department but a system board. Thirteen respondents (9%) had uncommon situations,

Table 12

Internal Audit Department and Board Organizational Levels and Frequency of Internal Audit Director Meetings With the Board/Audit Committee

Organizational levels and frequency of meetings with the board/audit committee	Number (%) of respondents		
	Private	Public	Total
Internal audit department and board levels			
Institution department and institution board	37 (93%)	56 (54%)	93 (65%)
System department and system board	0 (0%)	21 (20%)	21 (15%)
Institution department and system board	1 (3%)	16 (15%)	17 (12%)
Other	2 (5%)	11 (11%)	13 (9%)
Board			
Institution	37 (93%)	56 (54%)	93 (65%)
System	1 (3%)	37 (36%)	38 (26%)
Met with audit director – five categories			
Monthly	0 (0%)	10 (10%)	10 (7%)
Quarterly	30 (75%)	63 (61%)	93 (65%)
Semiannual	10 (25%)	11 (11%)	21 (15%)
Annual	0 (0%)	6 (6%)	6 (4%)
Not at all	0 (0%)	14 (13%)	14 (10%)
Met with audit director – two categories			
Monthly or quarterly	30 (75%)	73 (70%)	103 (72%)
Less often than quarterly	10 (25%)	31 (30%)	41 (28%)

Note. Percentages are of all respondents: private: N = 40; public: N = 104; total: N = 144.

such as being under a state, a medical center, or no board, thus not falling into any of the three categories.

The frequency of internal audit director meetings with the board/audit committee appears in Table 12 in five categories and in dichotomous categories. At the 40 private institutions, such meetings were quarterly for 30 (75%) and semiannual for 10 (25%). Meetings at the 104 public institutions were at more varied intervals or did not occur, but were quarterly, the most common frequency, for 63 (61%). I considered monthly or quarterly meetings, the case for 103 respondents (72%), indicative of ongoing interaction between directors and governing bodies. By contrast, less frequent meetings, the case for 41 respondents (28%), was considered indicative of a less interactive relationship. The dichotomous categories for frequency of meetings represent those two situations.

As Table 13 recaps, of the respondents' 144 institutions, 104 (72%) were public, and 40 (28%), private, and similar percentages of each type had a medical school: 45% and 41%, respectively. Table 13 also provides data on internal audit departments. Those that had only 1 or 2 professional positions, with one exception, were at universities without a medical school. Of the 39 departments with 10 or more professional positions, 29, almost three fourths, were at universities with a medical school. The numbers of private universities that had 1 or 2, 3 or 4, 5 to 9, or 10 or more professional positions were nearly identical, due in part to my selecting breakpoints to balance categories. However, only for the latter three categories were numbers of public universities almost identical. The proportion of public universities with 1 or 2 professional positions was 18%, while the proportion of private universities in this category was 25%. Dichotomous

Table 13

Type of Institution, Presence or Absence of a Medical School, and Size of Internal Audit Department

Characteristic and categories	Number (%) of institutions				
					Total
Type of institution					
Private					40 (28%)
Public					104 (72%)
Medical school			Private	Public	
Yes			18 (45%)	43 (41%)	61 (42%)
No			22 (55%)	61 (59%)	83 (58%)
Professional positions in internal audit department	Medical School				
	Yes	No			
1 or 2	1 (2%)	28 (34%)	10 (25%)	19 (18%)	29 (20%)
3 or 4	13 (21%)	25 (30%)	10 (25%)	28 (27%)	38 (26%)
5 to 9	18 (30%)	20 (24%)	9 (23%)	29 (28%)	38 (26%)
10 or more	29 (48%)	10 (12%)	11 (28%)	28 (27%)	39 (27%)
Professional positions in internal audit department					
≤ 4	14 (23%)	53 (64%)	20 (50%)	47 (45%)	67 (47%)
> 4	47 (77%)	30 (36%)	20 (50%)	57 (55%)	77 (53%)

Note. Percentages are of all respondents: total: N = 144; private: N = 40; public: N = 104; with medical school: N = 61; without medical school: N = 83.

categories of numbers of positions broke at four or fewer and more than four positions, as shown.

Table 14 categorizes respondents' institutions by graduate and undergraduate enrollment, federal sponsored research funding, and total operations funding. Private institutions had smaller enrollments; 73% (29) had 15,000 or fewer students. By comparison, 86% (89) of the public universities had enrollments over 15,000. All 26 institutions with over 35,000 students were public universities.

Forty-three percent (17) of the private institutions and 28% (29) of the public institutions had federal research funding of $50 million or less. By contrast, 30% (12) of the private universities and 45% (48) of the public ones had over $50 million up to $300 million in such funding. Percentages of private and public institutions with federal research funding over $300 million were similar: 28% (11) and 25% (26), respectively. Percentages of universities with a medical school were increasingly higher for the five federal research funding levels moving from lowest to highest: 15%, 25%, 45%, 69%, and 73%, respectively (see Table 14 footnote).

Twenty-three percent (9) of the private institutions and 8% (8) of the public institutions had total operations funding of $100 million or less. Percentages of private and public universities with over $100 million up to $1 billion in such funding were similar: 61% (24) and 64% (67), respectively. The percentage of institutions with total operations funding over $1 billion was higher for public institutions than for private ones: 27% (28) versus 15% (6), respectively. Percentages of universities with a medical school were increasingly higher for the five total operations funding levels moving from lowest to highest: 18%, 29%, 31%, 48%, and 76%, respectively (see Table 14 footnote).

Table 14

Graduate and Undergraduate Enrollment, Federal Sponsored Research Funding, and Total Operations Funding

Characteristics and levels	Number (%) of institutions				
	Medical School				
	Yes	No	Private	Public	Total
Graduate/undergraduate students					
≤ 10,000	4 (7%)	16 (19%)	16 (40%)	4 (4%)	20 (14%)
10,001 to 15,000	8 (13%)	16 (19%)	13 (33%)	11 (11%)	24 (17%)
15,001 to 25,000	13 (21%)	25 (30%)	8 (20%)	30 (29%)	38 (26%)
25,001 to 35,000	18 (30%)	18 (22%)	3 (8%)	33 (32%)	36 (25%)
> 35,000	18 (30%)	8 (10%)	0 (0%)	26 (25%)	26 (18%)
Federal sponsored research funding[a]					
≤ $50 M	7 (11%)	39 (47%)	17 (43%)	29 (28%)	46 (32%)
> $50 M but ≤ $100 M	6 (10%)	18 (22%)	4 (10%)	20 (19%)	24 (17%)
> $100 M but ≤ $200 M	9 (15%)	11 (13%)	6 (15%)	14 (13%)	20 (14%)
> $200 M but ≤ $300 M	11 (18%)	5 (6%)	2 (5%)	14 (13%)	16 (11%)
> $300 M	27 (44%)	10 (12%)	11 (28%)	26 (25%)	37 (26%)
Total operations funding[a]					
≤ $100 M	3 (5%)	14 (17%)	9 (23%)	8 (8%)	17 (12%)
> $100 M but ≤ $300 M	10 (16%)	24 (29%)	10 (25%)	24 (23%)	34 (24%)
> $300 M but ≤ $600 M	11 (18%)	25 (30%)	9 (23%)	27 (26%)	36 (25%)
> $600 M but ≤ $1 B	10 (16%)	11 (13%)	5 (13%)	16 (15%)	21 (15%)
> $1 B	26 (43%)	8 (10%)	6 (15%)	28 (27%)	34 (24%)

Note. Percentages are of all respondents: with medical school: N = 61; without medical school: N = 83; private: N = 40; public: N = 104; total: N = 144. M = million; B = billion.

[a]Percentages of universities with a medical school for the five federal research and total operations funding levels were 15%, 25%, 45%, 69%, and 73% and 18%, 29%, 31%, 48%, and 76%, respectively.

Table 15 presents the institution enrollment, research funding, and total funding variables in dichotomous categories, which facilitate chi-square testing and, in this case, help highlight differences in enrollments and funding levels based on whether an institution had a medical school or was private or public. Universities that had medical schools tended to have higher enrollments, research funding, and total funding than institutions that did not. The same was true for public vis-à-vis private institutions, although differences with respect to research funding were not pronounced.

Characteristics Excluded From Some Tests and Data Analysis

Some secondary independent variables or their values, because they applied to too few or too many respondents, were excluded from tests involving subsets of respondents as well as from other aspects of my data analysis. One such value was work experience in private nonprofits, which only 14 respondents had. Also excluded were whether or not respondents had a bachelor's or had a doctoral degree. Almost all (99%) had a bachelor's degree, and few (6%) had a doctoral degree. Also, because of their homogeneity or small numbers, bachelor's and master's degree majors and types were not used in my analyses. Of the 143 respondents with a bachelor's degree, 100 (70%) majored only in accounting, and another 11 (8%) in accounting and another field. No other major was cited by more than 11 individuals. Of the 69 respondents (48%) who possessed a master's degree, 41 (59%) had an MBA degree and 14 (20%) a non-MBA master's degree in accounting. No other master's degree type or major was cited by more than nine respondents. Race and ethnicity were also excluded because of homogeneity of respondents. Only five (3%) were Hispanic/Latino; four (3%), Black or African American; two (1%), American Indian or Alaska Native; and two (1%), Asian.

Table 15

Graduate and Undergraduate Enrollment, Federal Sponsored Research Funding, and Total Operations Funding – Dichotomous Categories

Characteristics and levels	Number (%) of institutions				
	Medical School				
	Yes	No	Private	Public	Total
Graduate & undergraduate enrollment					
≤ 25,000 students	25 (41%)	57 (69%)	37 (93%)	45 (43%)	82 (57%)
> 25,000 students	36 (59%)	26 (31%)	3 (8%)	59 (57%)	62 (43%)
Federal sponsored research funding					
≤ $100 M	13 (22%)	57 (69%)	21 (53%)	49 (48%)	70 (49%)
> $100 M	47 (78%)	26 (31%)	19 (48%)	54 (52%)	73 (51%)
Total operations funding					
≤ $600 M	24 (40%)	63 (77%)	28 (72%)	59 (57%)	87 (61%)
> $600 M	36 (60%)	19 (23%)	11 (28%)	44 (43%)	55 (39%)

Note. M = million.

Initial Primary Null Hypothesis by Subsets of Respondents

As explained earlier, I conducted additional chi-square tests of independence of the dichotomous culture and measuring achievement variables for subsets of respondents. Subsets were based on characteristics associated with my secondary independent variables. My complete test results for these characteristics are in Appendix B. The following discussion is limited to those eight characteristics that met two criteria: indicated a large effect size and were not of questionable validity. The eight characteristics and their test results appear in Table 16.

Internal Audit Director Characteristics

There was a large effect size (Cramer's V at least .50) for the 65 males who were at least 50 years old. The effect size was also large for the 62 respondents who had worked in a commercial enterprise for at least 2 years and for the 59 respondents who were CIAs.

Reporting Official and Department Characteristics

For the 48 respondents with at least one female reporting official, the effect size was also large. In addition, it was large for the 38 respondents whose department had five to nine professional positions.

Institution Characteristics

Furthermore, for the 73 respondents at institutions with federal research funding over $100 million, the 61 respondents at institutions with a medical school, and the 57 respondents at institutions with both, the effect size was large.

Table 16

Independence of Views of Culture and Measuring Achievement Differences (Dichotomous Categories) by Characteristics Evidencing Large Effect Sizes

Characteristics	Chi-square tests of independence results					
	df	*n*	$\chi 2$	*p*	Cramer's V	Effect
Male ≥ 50 years	1	65	16.307	.000*	.501	Large
Worked in commercial entity ≥ 2 years	1	62	16.541	.000*	.517	Large
Certified internal auditor (CIA)	1	59	17.307	.000*	.542	Large
Reporting officials' genders female only or mixed	1	48	12.501	.000*	.510	Large
Internal auditing staff had 5 to 9 professional positions	1	38	12.477	.000*	.573	Large
Federal research funding > $100M	1	73	23.025	.000*	.562	Large
Medical school	1	61	19.054	.000*	.559	Large
Federal research funding > $100M and medical school	1	47	19.796	.000*	.649	Large

*$p<.05$

Culture/Measuring Achievement Views by Subsets of Respondents

Combinations of Views

Table 4 showed in businesslike and distinct rows percentages of respondents who viewed (a) both culture and measuring achievement businesslike, (b) culture businesslike and measuring achievement distinct, (c) culture distinct and measuring achievement businesslike, and (d) both culture and measuring achievement distinct, respectively.

To gain further insights, I compared the percentages for respondents as a whole, shown in Table 17, to corresponding percentages for those eight subsets or groups of respondents, shown in Tables 17, 18, and 19, for which a chi-square test of independence of the dichotomous culture and measuring achievement variables indicated a large effect size and was not of questionable validity (Table 16). The results of these comparisons are discussed below along with some comments as to what might have contributed to percentages for some subsets being different from comparable percentages for respondents as a whole.

For three groups (two in Table 17 and one in Table 18), the both businesslike percentage differed from that for all respondents by 6 or more percentage points. For all respondents, it was 38%, but for CIAs, it was 32%; for respondents whose departments had five to nine professional positions, 45%; and for males 50 years old or older, 48%. For three groups (one in Table 17 and two in Table 19), the both distinct percentage exceeded that for all respondents by 8 or more percentage points. For all respondents, the percentage was 30%, but for respondents whose institution had a medical school, it was 38%; for those whose institution had federal research funding over $100 million and a medical school, 38%; and for CIAs, 41%.

Table 17

Percentages of Views of Culture and Measuring Achievement Differences (Dichotomous Categories) for All Respondents and by Internal Audit Director Characteristics

Culture: Institution versus a business	Measuring achievement: Institution versus a business[a]		
	Businesslike	Distinct	Total
	All respondents (N = 144)		
Businesslike	38%	6%	44%
Distinct	26%	30%	56%
Total	65%[b]	35%[b]	100%
	Male and 50 years old or older (N = 65)		
Businesslike	48%	8%	55%[b]
Distinct	17%	28%	45%
Total	65%	35%[b]	100%
	CIA (N = 59)		
Businesslike	32%	2%	34%
Distinct	25%	41%	66%
Total	58%[b]	42%[b]	100%

[a]Measuring achievement comparison was between measuring achievement of each institution's missions and measuring achievement of a business's objectives. [b]Total percentage does not equal sum of row or column cell percentages due to rounding.

Table 18

Percentages of Views of Culture and Measuring Achievement Differences (Dichotomous Categories) by Director, Reporting Official, and Department Characteristics

Culture: Institution versus a business	Measuring achievement: Institution versus a business[a]		
	Businesslike	Distinct	Total
	Worked in commercial enterprise ≥ 2 years ($N = 62$)		
Businesslike	40%	2%	42%
Distinct	27%	31%	58%
Total	68%[b]	32%[b]	100%
	Female reporting official(s) or mix of female & male ($N = 48$)		
Businesslike	38%	2%	40%
Distinct	27%	33%	60%
Total	65%	35%	100%
	Internal audit department with 5 to 9 professionals ($N = 38$)		
Businesslike	45%	3%	47%[b]
Distinct	21%	32%	53%
Total	66%	34%[b]	100%

[a]Measuring achievement comparison was between measuring achievement of each institution's missions and measuring achievement of a business's objectives. [b]Total percentage does not equal sum of row or column cell percentages due to rounding.

Table 19

Percentages of Views of Culture and Measuring Achievement Differences (Dichotomous Categories) by Institution Characteristics

Culture: Institution versus a business	Measuring achievement: Institution versus a business[a]		
	Businesslike	Distinct	Total
	Federal research funding > $100 million ($N$ = 73)		
Businesslike	41%	1%	42%
Distinct	25%	33%	58%
Total	66%	34%	100%
	Medical school (N = 61)		
Businesslike	38%	3%	41%
Distinct	21%	38%	59%
Total	59%	41%	100%
	Federal research funding > $100 million & med school (N = 47)		
Businesslike	40%	0%	40%
Distinct	21%	38%	60%[b]
Total	62%[b]	38%	100%

[a]Measuring achievement comparison was between measuring achievement of each institution's missions and measuring achievement of a business's objectives. [b]Total percentage does not equal sum of row or column cell percentages due to rounding.

For one group (in Table 17), the culture distinct and measuring achievement businesslike percentage was 9 percentage points less than that for all respondents. For all respondents, the percentage was 26%, but for males 50 years old or older, it was 17%. For two groups (in Table 19), the culture businesslike and measuring achievement distinct percentage was 5 or more percentage points less than that for all respondents. For all respondents, the percentage was 6%, but for respondents whose institution had federal research funding over $100 million, it was 1%, and for those whose institution had federal research funding over $100 million and a medical school, 0%.

There is reason to consider that a CIA would be more likely to hold a view that both culture and measuring achievement were distinct rather than businesslike. As noted in Chapter 1, the IIA Code of Ethics within the IPPF (2011) indicates that internal auditors are supposed to consider all pertinent circumstances in their work. Such circumstances might well include organizational culture and measuring achievement practices peculiar to an organization. Internal audit directors who were CIAs might have been more conscious than others of this aspect of the Code of Ethics.

Offering a reason why respondents whose departments had five to nine professional positions would have a both businesslike percentage higher than respondents as a whole would be speculative. Perhaps five to nine members was simply a purposeful group size to recognize value in or favor such views. Being male and 50 years old or older were characteristics that appeared to have greatest relevance in terms of culture views, as will be discussed in the next section. Comments on respondents at institutions with a medical school, respondents at institutions with higher research funding, and respondents at institutions with higher research funding and a medical

school will be addressed as part of my comments in the Conclusions section of Chapter 5.

For two groups (in Table 18), three of the four combinations of views differed by 3 percentage points or less from those of all respondents. For the fourth combination, culture businesslike and measuring achievement distinct, the percentage differed from that of all respondents by 4 percentage points. For all respondents, it was 6%, but for these two groups, it was 2%. I found it logical that having over 2 years of commercial work experience might have fostered a view that measuring achievement in a businesslike fashion fits a businesslike culture. That having one or more female reporting officials encouraged such a viewpoint did not seem logical, but may warrant further research.

Culture Views

To find and assess factors that might have affected respondents' culture view, I compared percentages in the total column in Table 17 for all respondents with percentages in the total columns of Tables 17, 18, and 19 for the eight subset groups. For only two groups did the percentage of respondents who saw a businesslike culture differ from the percentage for all respondents by more than 4 percentage points. For males 50 years old or older, the percentage was 11 points higher; for CIAs, 10 points lower.

To evaluate further, I conducted chi-square tests of independence of each of the two group characteristics and the dichotomous culture view variable. The first test indicated a statistically significant relationship between whether a respondent was or was not a male at least 50 years old and the respondent's culture view, $\chi 2$ (1, N = 144) = 6.517, p = .011. The Cramer's V statistic was .213, indicating a small effect size

(Cramer's V at least .10 but less than .30). The second test showed a statistically significant relationship between whether or not a respondent was a CIA and the respondent's culture view, $\chi 2$ (1, N = 144) = 3.942, p = .047. The Cramer's V statistic was .165, also indicating a small effect size. However, the Yates's continuity correction statistic was .070, rendering the test of questionable validity.

I considered that older males might have a tendency to favor a traditional business perspective while CIAs might, as I indicated previously, have a greater appreciation for relevant circumstances. Other data appeared to bolster the former and qualify the latter explanation. For example, males 50 years old or older had a both businesslike percentage of 48%, the highest of any subset group and 10 percentage points higher than that for respondents as a whole. However, in the case of CIAs, gender had to be considered as a factor because, as noted earlier, over half (55%) of female respondents were CIAs, while less than a third (33%) of male respondents were. I found that gender did contribute to the low businesslike culture percentage, but so did being a CIA.

The percentage of female CIAs who viewed their institution's culture businesslike was 23%, which was much less than the percentage for male CIAs, which was 45%, about the same as that for all respondents. However, a CIA effect was evident. The percentage of all female respondents who viewed culture businesslike was 33%, a percentage 10 points higher than that for female CIAs, and the percentage of all male respondents who viewed culture businesslike was 51%, a percentage 6 percentage points higher than that for male CIAs.

In sum, older male respondents showed a greater tendency to view culture businesslike than did respondents generally. Certified internal auditors, while more

likely to be female, for both genders showed a lesser tendency to view culture businesslike than did respondents of their gender generally.

Measuring Achievement Views

To identify and evaluate factors that might have affected respondents' measuring achievement view, I compared percentages in the total row in Table 17 for all respondents with the percentages in the total rows of Tables 17, 18, and 19 for the eight subset groups. For only two groups did the percentage of respondents who viewed measuring achievement businesslike differ from the percentage for all respondents by more than 3 percentage points. For CIAs, the percentage was 7 points lower; for those at institutions with a medical school, 6 points lower. Chi-square tests of independence of each of these characteristics and the dichotomous measuring achievement variable did not produce statistically significant results, however.

Perceived Views – Board, Administration, and Faculty

Table 20 summarizes internal audit directors' perceived board members', senior administrators', and faculty members' views of culture and measuring achievement differences. The format is the same one used to compare views of subsets of respondents with those of respondents as a whole (Tables 17, 18, and 19). Table 20 shows that, in the aggregate, respondents' own views of culture and measuring achievement difference departed noticeably from the views they perceived these three constituency groups held.

Because the three groups' views were derived views, chi-square testing was not considered appropriate. The following brief comparative analysis highlights points, including relatively obvious ones, that may warrant future research that addresses views obtained from board members, senior administrators, and faculty members directly.

Table 20

Percentages of Views of Culture and Measuring Achievement Differences (Dichotomous Categories) for All Respondents and for Board Members, Senior Administrators, and Faculty Members as Perceived by Respondents

Culture: Institution versus a business	Measuring achievement: Institution versus a business[a]		
	Businesslike	Distinct	Total
	All respondents (N = 144)		
Businesslike	38%	6%	44%
Distinct	26%	30%	56%
Total	65%[b]	35%[b]	100%
	Board members (N = 142)		
Businesslike	61%	8%	70%[b]
Distinct	15%	15%	30%
Total	77%[b]	23%	100%
	Senior administrators (N = 143)		
Businesslike	41%	12%	52%[b]
Distinct	25%	22%	48%[b]
Total	66%	34%	100%
	Faculty members (N = 142)		
Businesslike	10%	5%	15%
Distinct	12%	73%	85%
Total	22%	78%	100%

[a]Measuring achievement comparison was between measuring achievement of each institution's missions and measuring achievement of a business's objectives. [b]Total percentage does not equal sum of row or column cell percentages due to rounding.

As indicated in the total columns of Table 20, for two groups, the percentage perceived to see a businesslike culture differed considerably from that for respondents themselves. For board members, who predominantly reside in the business world (Ricci, 1999), the percentage was 70%. For faculty members, the percentage was 15%. Respondents' own percentage was 44%, about midway between. The percentage for senior administrators leaned toward the board and business at 52%.

As shown in the total rows of Table 20, for two groups, the percentage perceived to see measuring achievement businesslike differed considerably from respondents' own percentage of 65%. For board members, the percentage was 77%; for faculty members, 22%. For senior administrators, it was 66%, virtually matching the respondents.

Rankings of Internal Auditing Factors

One hundred forty-two respondents ranked each of four sets of five internal auditing factors from 1 to 5 with regard to their importance at their respective institutions. Tables 21, 22, 23, and 24 summarize these rankings, which were of internal auditor attributes and types, subject areas, and determinants of internal auditing work, respectively.

Internal Auditor Attributes

As Table 21 shows, 39% of respondents considered the most important attribute to be skills in human relations and in oral and written communication; 27%, awareness of higher education culture and missions; and 20%, expertise in management and business subjects. Seventy-nine percent of respondents ranked skills in human relations and in oral and written communication first or second, and 50% and 45% so ranked awareness of

Table 21

Rankings of Importance of Internal Auditor Attributes

Internal auditor attributes	Rankings by respondents					
	1	2	3	4	5	Total
	Frequencies (Percentages[a])					
Human relations/ communication	56 (39%)	56 (39%)	17 (12%)	8 (6%)	5 (4%)	142
Culture & missions Awareness	38 (27%)	33 (23%)	31 (22%)	15 (11%)	25 (18%)	142
Management/ business expertise	28 (20%)	36 (25%)	46 (32%)	16 (11%)	16 (11%)	142
Accounting Expertise	20 (14%)	12 (8%)	26 (18%)	43 (30%)	41 (29%)	142
IT expertise	0 (0%)	5 (4%)	22 (15%)	60 (42%)	55 (39%)	142
	Percentage ranked 1 or 2					
Human relations/ communication	79%					
Culture & missions Awareness	50%					
Management/ business expertise	45%					

Note. Human relations/communication = Skills in human relations and in oral and written communication; Culture & missions awareness = Awareness of higher education culture and missions; Management/business expertise = Expertise in management and business subjects.

[a]Row totals do not always equal 100% due to rounding.

higher education culture and missions, and expertise in management and business subjects, respectively.

Types of Internal Auditing Work

As Table 22 indicates, 59% of respondents ranked operational audits the most important type of internal auditing work, and 23% ranked compliance audits first. Seventy-seven percent ranked operational audits first or second, and 64% ranked compliance audits first or second in importance.

Subject Areas of Internal Auditing Work

Table 23 shows that 66% of respondents considered the most important subject area of internal auditing work to be finance and administration, and 22% viewed sponsored research as most important. Eighty-eight percent ranked finance and administration first or second, and 70% so ranked sponsored research.

Determinants of Internal Auditing Work

As Table 24 reveals, 71% of respondents considered the most important determinant of internal auditing work to be audit risk assessment, and 13% ranked management risk assessment highest. Eighty-nine percent ranked audit risk assessment first or second in importance, and 45% ranked management risk assessment first or second.

Perceived Rankings – Board, Administration, and Faculty

Table 25 summarizes respondents' own rankings and what they perceived board members', senior administrators', and faculty members' rankings to be of the importance of types of internal auditing work. The summary is limited to rankings of 1 and 2. As is

Table 22

Rankings of Importance of Types of Internal Auditing Work

Types of internal auditing work	Rankings by respondents					
	1	2	3	4	5	Total
	Frequencies (Percentages[a])					
Operational audits	84 (59%)	25 (18%)	11 (8%)	13 (9%)	9 (6%)	142
Compliance audits	32 (23%)	58 (41%)	29 (20%)	18 (13%)	5 (4%)	142
Investigations	14 (10%)	21 (15%)	32 (23%)	39 (27%)	36 (25%)	142
Financial audits	10 (7%)	16 (11%)	21 (15%)	35 (25%)	60 (42%)	142
IT audits	2 (1%)	22 (15%)	49 (35%)	37 (26%)	32 (23%)	142
	Percentage ranked 1 or 2					
Operational audits	77%					
Compliance audits	64%					

Note. IT = Information technology.

[a]Row totals do not always equal 100% due to rounding.

Table 23

Rankings of Importance of Subject Areas of Internal Auditing Work

Subject areas of internal auditing	Rankings by respondents					
	1	2	3	4	5	Total
	Frequencies (Percentages[a])					
Finance and administration	94 (66%)	31 (22%)	12 (8%)	3 (2%)	2 (1%)	142
Sponsored Research	31 (22%)	68 (48%)	21 (15%)	15 (11%)	7 (5%)	142
Academic Operations	12 (8%)	18 (13%)	42 (30%)	40 (28%)	30 (21%)	142
Athletics	4 (3%)	12 (8%)	46 (32%)	37 (26%)	43 (30%)	142
Enrollment Services	1 (1%)	13 (9%)	21 (15%)	47 (33%)	60 (42%)	142
	Percentage ranked 1 or 2					
Finance and administration	88%					
Sponsored Research	70%					

[a]Row totals do not always equal 100% due to rounding.

Table 24

Rankings of Importance of Determinants of Internal Auditing Work

Determinants of types and subject areas of internal auditing work	Rankings by respondents					
	1	2	3	4	5	Total
	Frequencies					
Audit risk assessment	101 (71%)	26 (18%)	7 (5%)	5 (4%)	3 (2%)	142
Management risk assessment	18 (13%)	46 (32%)	25 (18%)	25 (18%)	28 (20%)	142
Breadth/balance of coverage	8 (6%)	31 (22%)	38 (27%)	29 (20%)	36 (25%)	142
Fraud/sensitive Incidents	9 (6%)	27 (19%)	45 (32%)	37 (26%)	24 (17%)	142
Consult/advisory Requests	6 (4%)	12 (8%)	27 (19%)	46 (32%)	51 (36%)	142
	Percentage ranked 1 or 2					
Audit risk assessment			89%			
Management risk assessment			45%			

[a]Row totals do not always equal 100% due to rounding

Table 25

Rankings of Importance of Types of Internal Auditing Work by Respondents and by Board Members, Senior Administrators, and Faculty Members as Perceived by Respondents

Types of internal auditing work	Rankings by respondents							
	Directors		Board members		Senior administrators		Faculty members	
	1	2	1	2	1	2	1	2
	Percentages[a]							
Operational audits	59%	18%	26%	23%	33%	19%	23%	17%
Compliance audits	23%	41%	23%	31%	22%	31%	21%	31%
Investigations	10%	15%	19%	19%	23%	20%	28%	21%
Financial audits	7%	11%	29%	19%	21%	15%	27%	21%
IT audits	1%	15%	3%	9%	1%	15%	1%	9%
	Percentage ranked 1 or 2[b]							
Operational audits	77%		49%		52%		40%	
Compliance audits	64%		54%		53%		52%	
Investigations	25%		38%		43%		49%	
Financial audits	18%		48%		36%		48%	
IT audits	16%		12%		16%		10%	

[a]Column totals do not always equal 100% due to rounding.

[b]Column totals do not always equal 200% due to rounding.

evident, all three constituency groups' perceived rankings differed considerably from the directors' own rankings for all types of internal auditing work except for IT audits.

Because the three groups' views were derived views, chi-square testing was not appropriate. Following is a brief comparative analysis. Differences between directors' rankings and the perceived constituency group rankings may provide ideas for future research that captures views of board members, senior administrators, and faculty members directly.

Board members, senior administrators, and faculty members, in the aggregate, were not perceived to favor operational audits as much as directors did. Fifty-nine percent of the latter ranked operational audits first in importance, compared to 26%, 33%, and 23%, respectively, for the three constituency groups. For rankings of 1 and 2 for operational audits, the four percentages were 77%, 49%, 52%, and 40%, respectively.

Disregarding IT audits, the range of percentages for the other four types of work with respect to ranking them first was 52 percentage points for directors: 59% for operational audits and 7% for financial audits. For board members, it was 10 percentage points: 29% for financial audits and 19% for investigations; for senior administrators, 12 points: 33% for operational audits and 21% for financial audits; and for faculty members, 7 percentage points: 28% for investigations and 21% for compliance audits. The type of internal auditing work having the highest percentage of constituency group members ranking it first or second in importance, as perceived by respondents, was compliance audits for all three groups.

Operational Audits in Mission Areas

One hundred forty-three respondents indicated their level of agreement or disagreement with the appropriateness at their institutions of operational audits that address the accomplishment of research missions and goals. All 144 indicated their level of agreement or disagreement with respect to such audits of teaching and public service missions and goals. Table 26 summarizes responses for all three mission areas.

Fifty-nine directors (41%) strongly agreed and 48 (34%) mildly agreed that operational audits of research were appropriate, while 24 (17%) mildly disagreed and 12(8%) strongly disagreed. Twenty-five directors (17%) strongly agreed and 62 (43%) mildly agreed that operational audits of teaching were appropriate, whereas 36 (25%) mildly disagreed and 21 (15%) strongly disagreed. Twenty-seven directors (19%) strongly agreed and 60 (42%) mildly agreed that operational audits of public service were appropriate, while 41 (28%) mildly disagreed and 16 (11%) strongly disagreed.

Thus, about 75% of respondents agreed that operational audits of research missions and goals were appropriate. Approximately 60% agreed that such audits of teaching and public service missions and goals were appropriate. Regarding the appropriateness of operational audits in research, about half the directors had strong views. Of these, 84% were that the audits were appropriate. As to the appropriateness of such audits in the teaching and public service areas, under a third had strong views. Of those, 53% and 63%, respectively, were that the audits were appropriate.

Table 26

Agreement/Disagreement as to Appropriateness of Operational Audits in Mission Areas

	Level of agreement or disagreement as to appropriateness of operational audits				
	Agree		Disagree		
Mission area	Strongly	Mildly	Mildly	Strongly	Total
	Number (%) of respondents				
Research	59 (41%)	48 (34%)	24 (17%)	12 (8%)	143
Teaching	25 (17%)	62 (43%)	36 (25%)	21 (15%)	144
Public service	27 (19%)	60 (42%)	41 (28%)	16 (11%)	144

Primary Null Hypotheses – Culture

Rankings of Internal Auditing Factors

My next primary null hypotheses were that internal audit directors' views of the extent of difference between their respective institutions' culture and a business's culture were unrelated to their rankings of internal auditor attributes and types, subject areas, and determinants of internal auditing work. Chi-square tests of independence of the four-category (not at all, somewhat, very, and completely different) culture variable and each of the 20 five-category (ranked 1 through 5) internal auditing factors were not valid because in each instance, over 25% of contingency table cells had an expected frequency less than five. Therefore, I conducted additional chi-square tests with the culture variable in dichotomous categories of businesslike and distinct, first with each factor ranked 1 through 5 and then with each in two dichotomous ranked categories: ranked 1/not ranked

1 and ranked 1 or 2/not ranked 1 or 2. Table 27 displays the statistically significant results that were not of questionable validity.

Ranked 1 through 5. Using the dichotomous culture variable did not prevent similarly invalid tests for three internal auditing factors ranked 1 through 5: skills in human relations and in oral and written communication, finance and administration, and audit risk assessment. Tests with the other 17 factors ranked 1 through 5 yielded two with statistically significant results that were not of questionable validity, both with a small effect size: awareness of higher education culture and missions and expertise in management and business subjects.

However, for both, percentages of respondents who ranked the attributes 1, 2, or 3 did not appreciably differ between respondents who saw a businesslike culture and those who saw a distinct culture. For awareness of higher education culture and missions, percentages were 66% and 76%, respectively, and for expertise in management and business subjects, 79% and 76%, respectively. I focused on ranks 1, 2, or 3 because ranks 1 and ranks 1 or 2 were assessed by separate tests. Moreover, ranks of 4 or 5 indicated a factor was less important to respondents, and thus it was also to my research objectives.

Ranked 1/not ranked 1. Tests of the dichotomous culture variable and factors ranked 1 or not ranked 1 yielded one with statistically significant results: awareness of higher education culture and missions. The effect size was small. There was a notable difference between respondents who saw their institutions' culture businesslike and those who saw it distinct. The percentage of the businesslike group that ranked awareness of higher education culture and missions most important was 15%. The percentage of the distinct group that did was 36%, a percentage almost two and a half times greater.

Table 27

Statistically Significant Relationships Between Views of Culture Difference (Dichotomous Categories) and Ranked Internal Auditing Factors

Ranking categories and ranked internal auditing factors	Chi-square tests of independence results					
	df	*n*	$\chi 2$	*p*	Cramer's V	Effect
Ranked 1 through 5						
Culture and missions awareness	4	142	10.503	.033*	.272	Small
Management/business expertise	4	142	11.252	.024*	.281	Small
Ranked 1/not ranked 1						
Culture and missions awareness	1	142	8.418	.004*	.243	Small
Ranked 1 or 2/not ranked 1 or 2						
Operational audits	1	142	5.400	.020*	.194	Small

Note. Culture and missions awareness = Awareness of higher education culture and missions; Management/business expertise = Expertise in management and business subjects. Three tests of independence of the dichotomous culture variable and each of the ranked factors were performed: one using five categories, ranked 1 through 5, and two using dichotomous categories, ranked 1/not ranked 1 and ranked 1 or 2/not ranked 1 or 2.

*$p<.05$

Ranked 1 or 2/not ranked 1 or 2. For tests of the dichotomous culture variable and internal auditing factors ranked 1 or 2 or not ranked 1 or 2, one had statistically significant results that were not of questionable validity: operational audits. Effect size was small. Eighty-six percent of directors who saw culture businesslike ranked operational audits first or second, while 69% of those who saw a distinct culture did. An implication was that a businesslike culture view might lead to more operational audits.

Management risk assessment ranked 1 or 2 or not ranked 1 or 2 had statistically significant results here that were of questionable validity because of Yates's continuity correction. Descriptive statistics showed that 55% of respondents who saw a businesslike culture ranked management risk assessment first or second, compared to 38% of those who saw a distinct culture. An implication was that viewing a university's culture businesslike might lead to more interest in and reliance on management's own risk assessment in audit planning. Also, an inference might be that viewing the culture distinct could result in internal audit planning that incorporates a broader range of factors and perspectives.

Hypothesis test conclusions. As a result of these tests, I rejected the null hypotheses that internal audit directors' views of culture difference and their rankings of the relative importance of internal auditor attributes and types of internal auditing work, respectively, were not related. For awareness of higher education culture and missions, expertise in management and business subjects, and operational audits, there were statistically significant differences, albeit with small effect sizes. I accepted the null hypotheses that directors' views of culture difference and their rankings for subject areas of internal auditing work and determinants of types and subject areas of internal auditing

work were not related, doing so for the latter because the statistically significant difference for management risk assessment was of questionable validity.

Operational Audits in Mission Areas

My next primary null hypotheses were that internal audit directors' views of the extent of difference between their respective institutions' culture and a business's culture were unrelated to their level of agreement or disagreement with the appropriateness at their respective institutions of operational audits that address accomplishment of research missions and goals, teaching missions and goals, and public service missions and goals, respectively. Chi-square tests of independence of the four-category culture difference variable and the three operational audit variables with four levels of agreement or disagreement were not valid because in each instance, over 25% of the contingency table's cells had an expected frequency less than five. Therefore, I conducted additional chi-square tests of independence using the dichotomous culture variable and three constructs of the operational audit variables: first with the four levels of agreement or disagreement; then with two categories of agree (combined strongly agree and mildly agree) and disagree (combined mildly disagree and strongly disagree); and last with three categories of strongly agree, mildly agree or disagree (combined mildly agree and mildly disagree), and strongly disagree. The last construct focused on the strength of opinion.

Four levels of agreement or disagreement. Tests of the dichotomous culture variable and the three mission area operational audits variables with four levels of agreement or disagreement yielded no statistically significant results. Differences in levels of agreement or disagreement by businesslike and distinct culture groups were not sizable, as Table 28 shows. For research, the largest difference between the groups was 7

Table 28

Levels of Agreement or Disagreement as to Appropriateness of Operational Audits in Mission Areas by Businesslike and Distinct Culture Groups

	Level of agreement or disagreement as to appropriateness of operational audits				
	Agree		Disagree		
Mission area by culture group	Strongly	Mildly	Mildly	Strongly	Total
	Percentage of respondents				
Research					
Businesslike	44%	30%	21%	5%	100%
Distinct	39%	36%	14%	11%	100%
Teaching					
Businesslike	19%	49%	22%	10%	100%
Distinct	16%	38%	27%	19%	100%
Public Service					
Businesslike	24%	40%	29%	8%	101%[a]
Distinct	15%	43%	28%	14%	100%

Note. The dichotomous culture group labels of businesslike and distinct categorize respondents based on their choices for the culture difference questionnaire item. The labels are from the institution's perspective: its culture.

[a]Row total does not equal 100% due to rounding.

percentage points for mildly disagree. For teaching, the largest difference was 11 points for mildly agree, and for public service, 9 points for strongly agree. For all three, the higher percentage was for the businesslike group.

Agreement versus disagreement and strength of views. Tests of the dichotomous culture variable and the mission area operational audits variables with two categories of agree and disagree also yielded no statistically significant results. However, as Table 28 indicates, respondents who saw a businesslike culture more often viewed operational audits of teaching and public service missions and goals appropriate, 68% and 64%, respectively, than did respondents who saw a distinct culture, 54% and 58%, respectively. Culture view did not appear to matter for research; approximately three fourths of both culture groups agreed such operational audits were appropriate.

Tests of the dichotomous culture variable and operational audits variables with three categories of strongly agree, mildly agree or disagree, and strongly disagree yielded no statistically significant results. Culture group differences, as Table 28 shows, were not substantial. For research, the difference in percentages for those mildly agreeing or disagreeing was 1 percentage point; for teaching, 6 points; and for public service, 2 points. No culture group difference for strongly agree or strongly disagree was more than 9 points for any mission area.

Hypothesis test conclusions. I thus accepted the null hypotheses that directors' views of culture difference and their levels of agreement or disagreement with the appropriateness at their respective institutions of operational audits that address the accomplishment of research missions and goals, teaching missions and goals, and public service missions and goals, respectively, were unrelated.

Primary Null Hypotheses – Measuring Achievement

Rankings of Internal Auditing Factors

My next primary null hypotheses were that internal audit directors' views of the extent of difference between measuring achievement of their respective institutions' missions and measuring achievement of a business's objectives were unrelated to their rankings of internal auditor attributes and types, subject areas, and determinants of internal auditing work. Chi-square tests of independence of the four-category (not at all, somewhat, very, and completely different) measuring achievement variable and each of the 20 five-category (ranked 1 through 5) internal auditing factors were not valid because in each instance, over 25% of the contingency table's cells had an expected frequency less than five. Therefore, I conducted additional chi-square tests of independence with the measuring achievement variable in dichotomous categories of businesslike and distinct, first with each factor ranked 1 through 5 and then with each in two dichotomous ranked categories: ranked 1/not ranked 1 and ranked 1 or 2/not ranked 1 or 2. Table 35 displays results that were statistically significant.

Ranked 1 through 5. Using the dichotomous measuring achievement variable did not prevent similarly invalid tests for seven factors ranked 1 through 5: skills in human relations and in oral and written communication, operational audits, athletics, enrollment services, finance and administration, audit risk assessment, and consulting/ advisory requests. Tests for the other 13 factors ranked 1 through 5 produced no statistically significant results.

Ranked 1/not ranked 1. Tests of the dichotomous measuring achievement variable and factors ranked 1 or not ranked 1 yielded none with statistically significant

results that were not of questionable validity. Both expertise in accounting and skills in human relations and in oral and written communication ranked 1 or not ranked 1 had statistically significant results here that were of questionable validity because of Yates's continuity correction. Descriptive statistics showed that 22% of respondents who saw measuring achievement distinct ranked expertise in accounting most important, while 10% of respondents who saw it businesslike did. Forty-six percent of those who saw measuring achievement businesslike ranked skills in human relations and in oral and written communication most important, compared to 28% of respondents with a distinct measuring achievement view.

That expertise in accounting was more valued when measuring achievement was viewed distinct might have been due to the perceived value of accounting expertise for measuring achievement in uncommon situations. That skills in human relations and in oral and written communication were more valued when measuring achievement was viewed businesslike might have arisen from a belief that such skills would be helpful in obtaining and relating businesslike mission achievement data and information within and among university units. Tests of the dichotomous measuring achievement variable and factors ranked 1 or 2 or not ranked 1 or 2 yielded no statistically significant results.

Hypothesis test conclusions. Because statistically significant results for expertise in accounting and skills in human relations and in oral and written communication were of questionable validity, I was unable to reject the null hypothesis that internal audit directors' views of measuring achievement difference and their rankings of the relative importance of internal auditor attributes were unrelated. I also accepted null hypotheses that directors' views of measuring achievement difference and their rankings for types of

internal auditing work, subject areas of internal auditing work, and determinants of the types and subject areas of internal auditing work, respectively, were not related.

Operational Audits in Mission Areas

My next three primary null hypotheses were that internal audit directors' views of the extent of difference between measuring achievement of their respective institutions' missions and measuring achievement of a business's objectives were unrelated to their level of agreement or disagreement with the appropriateness at their respective institutions of operational audits that address accomplishment of research missions and goals, teaching missions and goals, and public service missions and goals, respectively. Chi-square tests of independence of the four-category measuring achievement difference variable and the research and public service operational audit variables with four levels of agreement or disagreement were not valid because in each instance, over 25% of the contingency table's cells had an expected frequency less than five. Results for the test with the teaching operational audit variable were not statistically significant.

Therefore, I conducted additional chi-square tests of independence using the dichotomous measuring achievement variable and three constructs of the operational audit variables: first with the four levels of agreement or disagreement, then with two categories of agree and disagree, and last with three categories of strongly agree, mildly agree or disagree, and strongly disagree. Table 29 shows results that were statistically significant. Table 30 displays differences in levels of agreement or disagreement by businesslike and distinct measuring achievement groups.

Four levels of agreement or disagreement. As indicated in Table 29, tests of the dichotomous measuring achievement variable and operational audits variables with four

Table 29

Independence of Views of Measuring Achievement Difference (Dichotomous Categories) and Appropriateness of Operational Audits in Mission Areas

	Chi-square tests of independence results					
Agreement/disagreement levels for appropriateness of operational audits in mission areas	*df*	*n*	$\chi 2$	*p*	Cramer's V	Effect
Strongly agree/mildly agree/mildly disagree/strongly disagree						
Teaching	3	144	10.215	.017*	.266	Small
Public service	3	144	9.316	.025*	.254	Small
Agree/disagree						
Research	1	143	4.783	.029*	.183	Small
Teaching	1	144	7.749	.005*	.232	Small
Public service	1	144	7.749	.005*	.232	Small
Strongly agree/mildly agree or disagree/strongly disagree						
Teaching	2	144	8.193	.017*	.239	Small
Public service	2	144	6.472	.039*	.212	Small

*$p<.05$

Table 30

Levels of Agreement or Disagreement as to Appropriateness of Operational Audits in Mission Areas by Businesslike and Distinct Measuring Achievement Groups

Mission area by measuring achievement group	Levels of agreement or disagreement as to appropriateness of operational audits				
	Agree		Disagree		
	Strongly	Mildly	Mildly	Strongly	Total
	Percentage of respondents				
Research					
Businesslike	48%	32%	12%	8%	100%
Distinct	28%	36%	26%	10%	100%
Teaching					
Businesslike	20%	48%	23%	9%	100%
Distinct	12%	33%	29%	25%	99%[a]
Public Service					
Businesslike	24%	45%	24%	8%	101%[a]
Distinct	10%	35%	37%	18%	100%

Note. The dichotomous measuring achievement group labels of businesslike and distinct categorize respondents based on their choices for the measuring achievement difference questionnaire item. The labels are from the institution's perspective: measuring achievement of its missions.

[a]Row total does not equal 100% due to rounding.

levels of agreement or disagreement yielded statistically significant results only for teaching and public service. Effect sizes were small. As Table 30 shows, 20% of the businesslike group strongly agreed and 48% mildly agreed that operational audits of teaching missions and goals were appropriate, while 12% and 33%, respectively, of the distinct group did. Moreover, strong disagreement was more often expressed by those in the distinct group, with 25% taking that position, compared to 9% for the businesslike group.

As Table 30 also shows, 24% of the businesslike group strongly agreed and 45% mildly agreed that such audits of public service were appropriate, while 10% and 35%, respectively, of the distinct group did. Here again, strong disagreement was more often expressed by those in the distinct group, with 18% taking that position, compared to 8% for the businesslike group. Despite no statistically significant result for operational audits of research missions and goals, 48% of the businesslike group strongly agreed that such audits were appropriate, while 28% of the distinct group did. Little strong disagreement was expressed by the two groups, with 8% and 10%, respectively, taking that position.

In summary, for all three mission areas, respondents who viewed measuring achievement businesslike more often found operational audits appropriate than did respondents who viewed measuring achievement distinct. As chi-square testing confirmed, differences between the two measuring achievement groups were more pronounced than were the differences between the two culture groups. The majority of respondents holding a distinct measuring achievement view—about 55%—considered operational audits of teaching and of public service missions and goals inappropriate.

Agreement versus disagreement and strength of views. As also indicated in Table 29, tests of the dichotomous measuring achievement variable and operational audits variables with two categories of agree and disagree produced statistically significant results for all three mission areas, all with a small effect size. Tests of the dichotomous measuring achievement variable and operational audits variables with three categories of strongly agree, mildly agree or disagree, and strongly disagree yielded no statistically significant result for research. For teaching and public service, results were statistically significant with a small effect size.

For teaching, the difference between the two measuring achievement groups in percentages mildly agreeing or disagreeing was 9 percentage points, with the businesslike group at 71% and the distinct group at 62%. For public service, the difference was 3 points, with the distinct group at 72% and the businesslike group at 69%. Strength of opinion was thus somewhat similar between the two groups in this respect.

For research, however, the difference between the two groups in percentages mildly agreeing or disagreeing was 18 percentage points, with the distinct group at 62% and the businesslike group at 44%. The businesslike group thus had stronger viewpoints on the appropriateness of operational audits of research, and that viewpoint was predominantly strongly agree, a view that 48% of those group members held.

Hypothesis test conclusions. I rejected the null hypotheses that internal audit directors' views of measuring achievement difference and their levels of agreement or disagreement with the appropriateness at their respective institutions of operational audits that address the accomplishment of research missions and goals, teaching missions and

goals, and public service missions and goals were unrelated. I concluded that they were related for all three mission areas.

Primary Null Hypotheses – Internal Auditing Factors

For the primary null hypotheses above involving views of culture and measuring achievement differences, some chi-square test results that were statistically significant but of questionable validity were noted, described, and briefly discussed, albeit none were used to reject a null hypothesis. These results related to the study's overarching research question introduced in Chapter 1 and had descriptive or comparative value within that context.

However, for the additional primary null hypotheses addressed next, chi-square test results are presented and discussed only if they were statistically significant and not of questionable validity. Commentary and implications for these additional primary null hypotheses will be deferred to Chapter 5 as part of the summary discussion for this research study.

Rankings of Internal Auditing Factors

My next primary null hypotheses were that internal audit directors' rankings of internal auditor attributes and types, subject areas, and determinants of internal auditing work were unrelated to each other. Chi-square tests of independence were performed of each of the 20 five-category (ranked 1 through 5) internal auditing factors (a) with each of the 15 factors in the three factor groups of five outside of its own factor group (that is, no factor was tested with a factor in its own factor group of attributes, types, subject areas, or determinants) in five categories and (b) with each of those factors in two dichotomous ranked categories: ranked 1/not ranked 1 and ranked 1 or 2/not ranked 1 or

2. In addition, chi-square tests were performed of each of the 20 factors in each of the two dichotomous ranked categories with each of the 15 factors outside of its factor group in each of the two dichotomous ranked categories.

Tables 31 and 32 show the 11 chi-square test results that indicated a statistically significant relationship. All 11 involved an internal auditor attribute, five with a type of internal auditing work (Table 31) and six with a subject area of internal auditing work (Table 32). The following narrative addresses results by attribute.

Accounting expertise. Thirty-four percent of respondents who ranked expertise in accounting 1 or 2 ranked financial audits 1 or 2, while 14% of respondent who did not rank expertise in accounting 1 or 2 ranked financial audits 1 or 2 (Table 31). Ninety percent of respondents who ranked expertise in accounting 1 ranked the subject area of finance and administration first in importance, while 62% of respondents who did not rank expertise in accounting 1 did so (Table 32). Seventy-five percent of respondents who did not rank expertise in accounting 1 or 2 ranked the subject area of sponsored research first or second, while 53% of respondents who ranked expertise in accounting 1 or 2 ranked sponsored research first or second (Table 32). All effect sizes were small.

Culture and missions awareness. Twenty-nine percent of respondents who ranked awareness of higher education culture and missions 1 ranked IT audits 1 or 2, while 13% of respondents who did not rank awareness of higher education culture and missions 1 ranked IT audits 1 or 2 (Table 31). Eighty-three percent of respondents who did not rank awareness of higher education culture and missions 1 ranked operational audits 1 or 2, while 61% of respondents who ranked awareness of higher education culture and missions 1 ranked operational audits 1 or 2 (Table 31).

Table 31

Rankings of Internal Auditor Attributes Related to Rankings of Types of Internal Auditing Work

Internal auditor attributes (ranking)	Chi-square tests of independence results					
	df	*n*	$\chi 2$	*p*	Cramer's V	Effect
	Types of internal auditing work (ranking)					
	Financial audits (1 or 2/not 1 or 2)					
Accounting expertise (1 or 2/ not 1 or 2)	1	142	7.128	.008*	.224	Small
Human relations/ communication skills (1 or 2/ not 1 or 2)	1	142	15.923	.000*	.335	Medium
	IT audits (1 or 2/not 1 or 2)					
Culture and missions awareness (1/not 1)	1	142	5.360	.021*	.194	Small
	Operational audits (1 or 2/not 1 or 2)					
Culture and missions awareness (1/not 1)	1	142	7.665	.006*	.232	Small
Human relations/ communication skills (1/not 1)	1	142	13.430	.000*	.308	Medium

Note. Rankings were tested using dichotomous categories as indicated. Accounting expertise = Expertise in accounting; Human relations/communication skills = Skills in human relations and in oral and written communication; Culture and missions awareness = Awareness of higher education culture and missions; IT = Information technology.

*$p<.05$

Table 32

Rankings of Internal Auditor Attributes Related to Rankings of Subject Areas of Internal Auditing Work

Internal auditor attributes (ranking)	Chi-square tests of independence results					
	df	*n*	χ2	*p*	Cramer's V	Effect
	Types of internal auditing work (ranking)					
	Academic operations (1 thru 5)					
Management/business expertise (1 or 2/not 1 or 2)	4	142	11.142	.025*	.280	Small
	(1 or 2/not 1 or 2)					
Management/business expertise (1 or 2/not 1 or 2)	1	142	5.124	.024*	.190	Small
	Finance and administration (1/not 1)					
Culture and missions awareness (1 thru 5)	4	142	10.979	.027*	.278	Small
Culture and missions awareness (1/not 1)	1	142	6.083	.014*	.207	Small
Accounting expertise (1/not 1)	1	142	5.894	.015*	.204	Small
	Sponsored research (1 or 2/not 1 or 2)					
Accounting expertise (1 or 2/ not 1 or 2)	1	142	5.387	.020*	.195	Small

Note. Rankings were tested using five categories and dichotomous categories as indicated. Management/ business expertise = Expertise in management and business subjects; Culture and missions awareness = Awareness of higher education culture and missions.

*$p<.05$

Eighty-three percent of respondents who did not rank awareness of higher education culture and missions 1, 2, or 3 (based on the ranked 1 thru 5 test) ranked finance and administration first in importance, while 60% of respondents who ranked awareness of higher education culture and missions 1, 2, or 3 ranked finance and administration first (Table 32). Likewise, 72% of respondents who did not rank awareness of higher education culture and missions first ranked the subject area of finance and administration first, while 50% of respondents who ranked awareness of higher education culture and missions first ranked finance and administration first (Table 32). All effect sizes were small.

Human relations/communication skills. Forty-three percent of respondents who did not rank skills in human relations and in oral and written communication 1 or 2 ranked financial audits first or second, while 12% of respondents who ranked skills in human relations and in oral and written communication 1 or 2 ranked those types of audits first or second (Table 31). By contrast, 93% of respondents who ranked skills in human relations and in oral and written communication first in importance ranked operational audits first or second in importance, while 66% of respondents who did not so rank skills in human relations and in oral and written communication ranked operational audits first or second (Table 31). Effect sizes were medium.

Management/business expertise. Sixty-six percent of respondents who ranked expertise in management and business subjects first or second in importance ranked the subject area of academic operations 1, 2, or 3 (based on a ranked 1 thru 5 test), while 38% of respondents who did not rank expertise in management and business subjects first or second in importance ranked that area 1, 2, or 3 (Table 32). Likewise, 30% of

respondents who ranked expertise in management and business subjects first or second in importance ranked the subject area of academic operations first or second also, while 14% of respondents who did not rank expertise in management and business subjects first or second ranked academic operations first or second in importance (Table 32). Effect sizes were small.

Hypothesis test conclusions. As a result of these tests, I rejected the null hypotheses that internal audit directors' rankings of the relative importance of internal auditor attributes were not related to their rankings of types and subject areas of internal auditing work. I accepted the null hypotheses that directors' rankings of the relative importance of internal auditor attributes were not related to their rankings of determinants of internal auditing work. I also accepted the null hypotheses that directors' rankings of the relative importance of determinants were not related to their rankings of types and subject areas of internal auditing work, and that their rankings of types of internal auditing work were not related to their rankings of subject areas of internal auditing work.

Operational Audits in Mission Areas

My last primary null hypotheses were that internal audit directors' rankings of internal auditor attributes and types, subject areas, and determinants of internal auditing work were unrelated to their level of agreement or disagreement with the appropriateness at their respective institutions of operational audits that address accomplishment of research missions and goals, teaching missions and goals, and public service missions and goals, respectively.

Chi-square tests of independence were performed of each of the 20 five-category (ranked 1 through 5) internal auditing factors with the three constructs of the operational audit variables: first with the four levels of agreement or disagreement, then with two categories of agree and disagree, and last with three categories of strongly agree, mildly agree or disagree, and strongly disagree. In addition, chi-square tests were performed of each of the 20 factors in each of the two dichotomous ranked categories with the three constructs of the operational audit variables.

Table 33 shows the seven chi-square test results that indicated a statistically significant relationship. Two of the seven involved the internal auditor attribute of awareness of higher education culture and missions and operational audits of research. The other five involved that attribute and three types of internal auditing work—investigations, compliance audits, and operational audits—and operational audits of teaching.

Culture and missions awareness. Of respondents who ranked awareness of higher education culture and missions first or second, 55% strongly agreed, 27% mildly agreed, 10% mildly disagreed, and 8% strongly disagreed that operational audits of research were appropriate. By contrast, of those who did not rank awareness of higher education culture and missions first or second, 26% strongly agreed, 41% mildly agreed, 24% mildly disagreed, and 9% strongly disagreed such audits were appropriate. Strength of opinion percentages were thus 55% strongly agreed, 37% mildly agreed or disagreed, and 8% strongly disagreed, and 26% strongly agreed, 66% mildly agreed or disagreed, and 9% strongly disagreed, respectively, for the two groups. Effect sizes were medium.

Table 33

Rankings of Internal Auditor Attributes and Types of Internal Auditing Work Related to Views of the Appropriateness of Operational Audits of Research and Teaching

Internal auditor attribute or type of internal auditing work (ranking)	Chi-square tests of independence results					
	df	*n*	$\chi 2$	*p*	Cramer's V	Effect
Appropriateness of operational audits of research missions/goals						
Strongly agree/mildly agree/mildly disagree/strongly disagree						
Culture and missions awareness (1 or 2/not 1 or 2)	3	141	13.980	.003*	.315	Medium
Strongly agree/mildly agree or disagree/strongly disagree						
Culture and missions awareness (1 or 2/not 1 or 2)	3	141	13.286	.001*	.307	Medium
Appropriateness of operational audits of teaching missions/goals						
Strongly agree/mildly agree/mildly disagree/strongly disagree						
Culture and missions awareness (1/not 1)	3	142	11.120	.011*	.280	Small
Agree/disagree						
Investigations (1 thru 5)	4	142	11.391	.023*	.283	Small
Compliance audits (1/not 1)	1	142	4.889	.027*	.186	Small
Operational audits (1 or 2/ not 1 or 2)	1	144	6.890	.009*	.219	Small
Appropriateness of operational audits of teaching missions/goals						
Strongly agree/mildly agree or disagree/strongly disagree						
Culture and missions awareness (1/not 1)	2	142	10.361	.006*	.270	Small

Note. Rankings were tested using dichotomous categories and five categories as indicated. Appropriateness of operational audits was tested using four categories, three categories, and two categories as indicated. Culture and missions awareness = Awareness of higher education culture and missions.

*$p<.05$

Of respondents who ranked awareness of higher education culture and missions first in importance, 34% strongly agreed, 32% mildly agreed, 26% mildly disagreed, and 8% strongly disagreed that operational audits of teaching were appropriate. By contrast, of those who did not rank awareness of higher education culture and missions first, 12% strongly agreed, 47% mildly agreed, 25% mildly disagreed, and 16% strongly disagreed. Strength of opinion percentages were thus 34% strongly agreed, 58% mildly agreed or disagreed, and 8% strongly disagreed, and 12% strongly agreed, 72% mildly agreed or disagreed, and 16% strongly disagreed, respectively, for the two groups. Effect sizes were small.

Types of internal auditing work. Of respondents who did not rank investigations 1, 2, or 3 (based on a ranked 1 thru 5 test), 71% agreed and 29% disagreed that operational audits of teaching were appropriate. By contrast, of those who ranked investigations 1, 2, or 3, forty-nine percent agreed and 51% disagreed that such audits were appropriate. Of respondents who did not rank compliance audits first in importance, 65% agreed and 35% disagreed that operational audits of teaching were appropriate. By contrast, of those who did rank compliance audits first, 44% agreed and 56% disagreed that such audits were appropriate. Of respondents who ranked operational audits first or second in importance, 66% agreed and 34% disagreed that operational audits of teaching were appropriate. By contrast, of those who did not rank operational audits first or second, 41% agreed and 59% disagreed. Effect sizes were small.

Hypothesis test conclusions. As a result of these tests, I rejected the null hypotheses that internal audit directors' rankings of the relative importance of internal auditor attributes were not related to their levels of agreement or disagreement with the

appropriateness at their respective institutions of operational audits that address the accomplishment of research and teaching missions and goals. I also rejected the null hypotheses that internal audit directors' rankings of the relative importance of types of internal auditing work were not related to their levels of agreement or disagreement with the appropriateness at their respective institutions of operational audits that address the accomplishment of teaching missions and goals.

I accepted the null hypotheses that directors' rankings of the relative importance of types of internal auditing work were not related to levels of agreement or disagreement with the appropriateness at their respective institutions of operational audits that address the accomplishment of research missions and goals. Also, I accepted the null hypotheses that directors' rankings of the relative importance of internal auditor attributes and types of internal auditing work were not related to levels of agreement or disagreement with the appropriateness at their respective institutions of operational audits that address the accomplishment of public service missions and goals. I also accepted the null hypotheses that directors' rankings of the relative importance of subject areas and determinants of internal auditing work were not related to levels of agreement or disagreement with the appropriateness at their respective institutions of operational audits that address the accomplishment of research, teaching, and public service missions and goals.

Secondary Null Hypotheses

Secondary null hypotheses were (a) that respondents' views of culture difference and measuring achievement difference were unrelated to each secondary independent variable and (b) that each secondary independent variable was unrelated to (i) rankings of

the importance of internal auditor attributes and types, subject areas, and determinants of internal auditing work and (ii) levels of agreement or disagreement with the appropriateness at their respective institutions of operational audits that address the accomplishment of research, teaching, and public service missions and goals.

As already noted, secondary independent variables represented characteristics of internal audit directors, reporting officials, internal audit departments, boards, and institutions. The narrative and tables following address and show only the Cramer's V statistic and accompanying effect size for statistically significant relationships. The Cramer's V bivariate correlation technique, as explained in Chapter 3, is used for two nominal variables with two or more categories each. Some of my variables had more than two categories. Commentary and implications for these secondary null hypotheses will be addressed in Chapter 5, focusing primarily on relationships with medium effect sizes.

Culture

Pointed out earlier was a statistically significant relationship between whether respondents were or were not male and 50 years old or older and their views of culture difference. The Cramer's V statistic was .213, indicating a small effect size. Fifty-five percent of male respondents 50 years old or older considered culture businesslike, while 34% of respondents without those characteristics held that view. Tests of other characteristics and views of culture difference disclosed no statistically significant results. I thus accepted the null hypotheses that all other director characteristics and all reporting official, internal audit department, board, and institution characteristics were unrelated to respondents' views of culture difference between their respective institutions and a business.

Measuring Achievement

None of the tests of characteristics and views of measuring achievement difference yielded statistically significant results. I thus accepted the null hypotheses that director, reporting official, internal audit department, board, and institution characteristics were unrelated to respondents' views of measuring achievement difference between their respective institutions and a business.

Rankings of Internal Auditor Attributes

Awareness of higher education culture and missions. I rejected null hypotheses that a combination of gender and age, gender, reporting official(s), size of department, and enrollment were unrelated to rankings of the importance of internal auditors' being aware of higher education culture and missions. Directors who were not male and 50 years old or older, were female, reported only to a board and/or system official, had departments with more than four professional positions, or were at institutions with more than 25,000 students tended to consider such awareness more important than those in opposite categories did. Table 34 shows test results.

Eighty-one percent of respondents who were not males 50 years old or older ranked awareness of higher education culture and missions 1, 2, or 3, and 63% of them ranked it 1 or 2. By contrast, sixty-one percent of respondents who were males 50 years old or older ranked this attribute 1, 2, or 3, and 34% ranked it 1 or 2. The percentages for ranked 1, 2, or 3, were taken from the ranked 1 through 5 test, which indicated a medium effect size. The other tests for this attribute indicated small effect sizes.

Thirty-seven percent of female respondents ranked this attribute most important, and 65% ranked it first or second. Comparable percentages for male respondents were

Table 34

Characteristics Related to Rankings of Awareness of Higher Education Culture and Missions

Characteristics	Statistically significant results*	
	Cramer's V	Effect
	Awareness of higher education culture and missions	
	Ranked 1 through 5	
Male ≥ 50 years old	.302	Medium
	Ranked 1/not ranked 1	
Gender	.182	Small
Reported to institution or only board/system official	.188	Small
Audit staff (≤ 4 or > 4)	.212	Small
Enrollment	.206	Small
	Ranked 1 or 2/not ranked 1 or 2	
Gender	.232	Small
Male ≥ 50 years old	.283	Small
Audit staff (≤ 4 or > 4)	.226	Small

Note. Characteristics were in dichotomous categories: male 50 years old or older or not; female or male; reported to an institutional official or reported only to board and/or system official(s); enrollment: ≤ 25,000 or > 25,000 students; and number of professional positions as shown for audit staff. Rankings were tested using five categories and dichotomous categories as indicated.

*$p<.05$

20% and 41%. Also, 44% of respondents who reported only to a system and/or board official ranked awareness of higher education culture and missions most important, compared to 23% of respondents who had an institution reporting official.

Thirty-six percent of directors whose departments had more than four professional positions ranked awareness of higher education culture and missions most important, and 61% ranked it first or second. By comparison, 17% of directors whose departments had four or fewer professional positions ranked it first, and 41%, first or second. Also, 37% of directors at institutions with more than 25,000 students ranked such awareness as the most important attribute, while 19% of those with smaller enrollments did.

Expertise in management and business subjects. I rejected null hypotheses that a combination of gender and age, gender, a combination of certifications, amount of research funding, a combination of research funding and the absence or presence of a medical school, and type of institution were unrelated to rankings of the importance of internal auditors' having expertise in management and business subjects.

Respondents who were males 50 years old or older, were males, were both a CPA and a CIA, were at institutions with over $100 million in federal research funding, were not at institutions that had $100 million or less in such funding and no medical school, or were at private institutions tended to consider such expertise more important than those in opposite categories did. Table 35 displays test results.

Eighty-six percent of respondents who were male and 50 years old or older ranked expertise in management and business subjects 1, 2, or 3, while 33% ranked it first, and 59%, first or second. Seventy-one percent of those who were not males 50 years old or older ranked this attribute 1, 2, or 3, while 10% ranked it first, and 33%, first or

Table 35

Characteristics Related to Rankings of Expertise in Management and Business Subjects

Characteristics	Statistically significant results*	
	Cramer's V	Effect
	Expertise in management and business subjects	
	Ranked 1 through 5	
Male ≥ 50 years old	.317	Medium
Gender	.285	Small
Federal research funding	.338	Medium
Federal research funding ≤ $100M & no med school	.345	Medium
	Ranked 1/not ranked 1	
Male ≥ 50 years old	.263	Small
Gender	.206	Small
Private or public	.250	Small
	Ranked 1 or 2/not ranked 1 or 2	
Male ≥ 50 years old	.260	Small
Gender	.272	Small
CPA and CIA	.205	Small
Private or public	.204	Small

Note. Characteristics were in dichotomous categories: female or male; male 50 years old or older or not; federal research funding: ≤ $100M or > $100M; federal research funding ≤ $100M and no medical school, or not; private or public; and CPA and CIA or not. Rankings were tested using five categories and dichotomous categories as indicated. M = million.

*$p<.05$

second. The ranked 1 through 5 test from which percentages for ranked 1, 2, or 3 were taken indicated a medium effect size. The other two test results had small effect sizes.

Eighty-three percent of male respondents ranked expertise in management and business subjects 1, 2, or 3, while 26% ranked it 1, and 56%, 1 or 2. Comparable percentages for female respondents were 69%, 9%, and 28%. Also, 50% of respondents who were not both a CPA and a CIA ranked this expertise first or second, while 26% of respondents who held both credentials did so. Effect sizes were all small.

Eighty-seven percent of respondents who were at institutions with over $100 million in federal research funding ranked this expertise 1, 2, or 3, while 67% of those who were at institutions with $100 million or less in such funding did. Also, 86% of respondents who were not at institutions that had $100 million or less in research funding and no medical school ranked this expertise 1, 2, or 3, compared to 65% of those who were at such institutions. Each of these two tests indicated a medium effect size.

Thirty-six percent of directors at private institutions ranked expertise in management and business subjects most important, and 62%, first or second. Fourteen percent of directors at public institutions ranked it first, and 39%, first or second. Both tests showed small effect sizes.

Expertise in accounting. I rejected null hypotheses that size of internal audit department and amount of research funding were unrelated to rankings of the importance of internal auditors' having expertise in accounting. Respondents who had departments with four or fewer professional positions or were at institutions with $100 million or less in federal research funding tended to consider expertise in accounting more important than those in opposite categories did. Also, respondents in departments with one or two

professional positions tended to rank accounting expertise higher than did those in larger departments. Table 36 shows test results, all indicating a small effect size.

Fifty-six percent of directors whose departments had four or fewer professional positions ranked expertise in accounting 1, 2, or 3, and 32% ranked it 1 or 2. Comparable percentages for directors whose departments had more than four professional positions were 28% and 14%. Testing with number of positions in four categories found that 46% of respondents in departments with one or two professional positions ranked expertise in accounting first or second. By comparison, 21% of those with three or four, 16% with 10 or more, and 13% with five to nine positions, ranked accounting expertise first or second. Fifty-three percent of respondents who were at institutions with $100 million or less in federal research funding ranked expertise in accounting 1, 2, or 3, while 30% of those at institutions with more than $100 million in such funding ranked it so.

Skills in human relations and in oral and written communication. I rejected the null hypothesis that a combination of certifications was unrelated to rankings of the importance of internal auditors' having skills in human relations and in oral and written communication. Directors who were both a CPA and CIA tended to consider skills in human relations and in oral and written communication more important than did those who did not hold both certifications. Of the former, 94% ranked this attribute first or second; of the latter, 75% did. Table 36 displays test results, indicating a small effect size.

Rankings of Types of Internal Auditing Work

Compliance audits. I rejected null hypotheses that age and department size were unrelated to rankings of compliance audits' importance. Directors under 50 years old and

Table 36

Characteristics Related to Rankings of Expertise in Accounting and Skills in Human Relations and in Oral and Written Communication

Characteristics	Statistically significant results*	
	Cramer's V	Effect
	Expertise in accounting	
	Ranked 1 through 5	
Audit staff (≤ 4 or > 4)	.293	Small
Federal research funding	.272	Small
	Ranked 1 or 2/not ranked 1 or 2	
Audit staff (≤ 4 or > 4)	.207	Small
Audit staff (1-2/3-4/5-9/≥ 10)	.292	Small
	Skills in human relations and in oral and written communication	
	Ranked 1 or 2/not ranked 1 or 2	
CPA and CIA	.190	Small

Note. Audit staff was in two and four categories of number of professional positions as shown. The following characteristics were in dichotomous categories: federal research funding: ≤ $100M or > $100M, and CPA and CIA or not. Rankings were tested using five categories and dichotomous categories as indicated. M = million.

*$p<.05$

those whose departments had four or fewer professional positions tended to consider compliance audits more important than those in opposite categories did. Table 37 shows test results, indicating a small effect size. Thirty percent of the younger directors ranked compliance audits most important; 10% of the older ones did. Of directors in the smaller departments, 73% ranked such audits first or second; of those in the larger departments, 55% did.

Investigations. I rejected null hypotheses that internal auditing experience, internal auditing experience in higher education, and amount of research funding were unrelated to rankings of the importance of investigations as a type of internal auditing work. Respondents who had less than 20 years of internal auditing experience, had less than 13 years of internal auditing experience in higher education, or were at institutions with more than $100 million in federal research funding tended to consider investigations more important than those in opposite categories did. Table 37 displays test results, all of which showed small effect sizes.

Fifty-four percent of respondents with less than 20 years of internal auditing experience and 59% with less than 13 years of such experience in higher education ranked investigations 1, 2, or 3. Comparable percentages for those with 20 or more years and 13 or more years of these respective types of experience were 40% and 35%. Of respondents at institutions with more than $100 million in federal research funding, 49% ranked investigations 1, 2, or 3, and 16% ranked them first. Of those at institutions with $100 million or less in such funding, 46% ranked them 1, 2, or 3, and 4%, first.

IT audits. I rejected the null hypothesis that the size of the internal audit department was unrelated to rankings of the importance of IT audits as a type of internal

Table 37

Characteristics Related to Rankings of Compliance Audits, Investigations, and IT Audits

Characteristics	Statistically significant results*	
	Cramer's V	Effect
	Compliance audits	
	Ranked 1/not ranked 1	
Age (< 50 or ≥ 50 years old)	.228	Small
	Ranked 1 or 2/not ranked 1 or 2	
Audit staff (≤ 4 or > 4)	.181	Small
	Investigations	
	Ranked 1 through 5	
Years internal auditing (YIA) (< 20 or ≥ 20 years)	.286	Small
YIA in higher education (< 13 or ≥ 13 years)	.283	Small
Federal research funding	.260	Small
	Ranked 1/not ranked 1	
Federal research funding	.192	Small
	IT audits	
	Ranked 1 or 2/not ranked 1 or 2	
Audit staff (≤ 4 or > 4)	.232	Small

Note. Characteristics were in dichotomous categories: as shown for age, number of professional positions for audit staff, years in internal auditing, and years in internal auditing in higher education, and for federal research funding: ≤ $100M or > $100M. Rankings were tested using five categories and dichotomous categories as indicated. IT = information technology. M = million.

*$p<.05$

auditing work. Respondents whose departments had more than four professional positions tended to consider IT audits more important than did those whose departments had fewer such positions. Twenty-five percent of the former ranked IT audits first or second; 8% of the latter did. Table 37 displays test results, showing a small effect size.

Rankings of Subject Areas of Internal Auditing Work

Sponsored research. I rejected null hypotheses that the size of the internal audit department, amount of research funding, and combinations of research funding and the absence or presence of a medical school were unrelated to rankings of the importance of sponsored research as a subject of internal auditing work. Respondents who had departments with more than four professional positions, were at institutions that had over $100 million in federal research funding, were at institutions that had over $100 million in federal research funding and a medical school, or were not at institutions that had $100 million or less in such funding and no medical school tended to consider sponsored research more important than those in opposite categories did. Also, respondents whose departments had 10 or more professional positions tended to consider this area more important than did those whose departments were smaller. Table 38 shows test results.

Thirty percent of directors whose departments had more than four professional positions ranked sponsored research most important, and 80% ranked it first or second. By contrast, 12% of directors whose departments had four or fewer professional positions ranked it first, and 58%, first or second. Effect size was small. Testing with number of department professional positions in four categories found that 45% of respondents with 10 or more positions ranked sponsored research the most important subject area, and 87% ranked it first or second in importance. By comparison, 16% and 74% of those with five

Table 38

Characteristics Related to Rankings of Audits of Sponsored Research

Characteristics	Statistically significant results*	
	Cramer's V	Effect
	Sponsored research	
	Ranked 1/not ranked 1	
Audit staff (≤ 4 or > 4)	.219	Small
Audit staff (1-2/3-4/5-9/≥ 10)	.338	Medium
Federal research funding	.315	Medium
	Ranked 1 or 2/not ranked 1 or 2	
Audit staff (≤ 4 or > 4)	.246	Small
Audit staff (1-2/3-4/5-9/≥ 10)	.327	Medium
Federal research funding	.219	Small
Federal research funding > $100M & med school	.194	Small
Federal research funding ≤ $100M & no med school	.305	Medium

Note. These characteristics were in dichotomous categories: federal research funding: ≤ $100M or > $100M; federal research funding > $100M and medical school, or not; and federal research funding ≤ $100M and no medical school, or not. Audit staff was in two and four categories of number of professional positions as shown. Rankings were tested using dichotomous categories as indicated. M = million.

*$p<.05$

to nine; 13% and 68%, with three or four; and 11% and 43%, with one or two positions ranked sponsored research most important and first or second in importance, respectively. Effect size was medium.

Thirty-one percent of directors who were at institutions with over $100 million in federal research funding ranked sponsored research most important, and 85% ranked it first or second. Comparable percentages for directors who were at institutions with $100 million or less in federal research funding were 13% and 56%. The effect size for the most important ranking was medium, and for the first or second ranking, small. Eighty-three percent of respondents who were at institutions that had over $100 million in research funding and a medical school ranked sponsored research first or second, while 64% of those not at such institutions ranked it so. Effect size was small. In addition, 81% of respondents not at institutions that had $100 million or less in research funding and no medical school ranked sponsored research first or second, while 53% of those at such institutions ranked it first or second. Effect size was medium.

Finance and administration. I rejected null hypotheses that internal audit department size and internal auditing experience were unrelated to rankings of the importance of finance and administration as a subject area of internal auditing work. Respondents who had departments with three or four professional positions tended to consider finance and administration more important than did those whose departments had one or two, five to nine, or 10 or more such positions. In addition, respondents who had 20 years or more of internal auditing experience tended to consider finance and administration more important than did those with less such experience. Table 39 shows test results, indicating a small effect size for both tests.

Table 39

Characteristics Related to Rankings of Audits of Finance and Administration, Athletics, Academic Operations, and Enrollment Services

Characteristics	Statistically significant results*	
	Cramer's V	Effect
	Finance and administration	
	Ranked 1/not ranked 1	
Audit staff (1-2/3-4/5-9/≥ 10)	.272	Small
	Ranked 1 or 2/not ranked 1 or 2	
Years internal auditing (YIA) (< 20 years or ≥ 20 years)	.190	Small
	Athletics	
	Ranked 1 or 2/not ranked 1 or 2	
Age (< 50 or ≥ 50 years old)	.197	Small
Federal research funding > $100M and medical school	.199	Small
	Academic operations	
	Ranked 1 or 2/not ranked 1 or 2	
YIA in higher education (< 13 years or ≥ 13 years)	.207	Small
	Enrollment services	
	Ranked 1 or 2/not ranked 1 or 2	
Federal research funding	.223	Small

Note. Characteristics other than audit staff were in these dichotomous categories: as shown for age, years in internal auditing, and years in internal auditing in higher education; federal research funding >$100M and medical school, or not; and federal research funding: ≤ $100M or > $100M. Audit staff was in four categories of number of professional positions as shown. Rankings were tested using dichotomous categories as indicated. M = million.

*$p<.05$

Eighty-two percent of respondents with three or four positions ranked finance and administration most important. By comparison, 71% of those with five to nine, 64% with one or two, and 47% with 10 or more positions, ranked this subject area most important. Of respondents with 20 years or more of internal auditing experience, 94% ranked finance and administration, first or second; 82% of those with less such experience did.

Athletics. I rejected null hypotheses that age and a combination of research funding and the absence or presence of a medical school were unrelated to rankings of the importance of athletics as an internal auditing subject area. Respondents who were under 50 years old or not at institutions that had over $100 million in research funding and a medical school tended to consider audits of athletics more important than did those in the opposite categories. Table 39 shows test results and effect sizes, which were small. Twenty percent of respondents who were under 50 years old ranked athletics first or second in importance as a subject area of internal auditing work, while 7% of those 50 years old or older did. Sixteen percent of respondents who were at institutions that did not have over $100 million in research funding and a medical school ranked audits of athletics first or second, while 2% of those who were at such institutions ranked it so.

Academic operations. I rejected the null hypothesis that internal auditing experience in higher education was unrelated to rankings of the importance of academic operations as a subject area of internal auditing work. Respondents with less than 13 years of higher education internal auditing experience tended to consider audits of academic operations more important than did those with 13 years or more of such experience. Thirty percent of the former group ranked academic operations first or

second, while 13% of the latter group did. Table 39 shows test results, indicating a small effect size.

Enrollment services. I rejected the null hypothesis that amount of research funding was unrelated to rankings of the importance of enrollment services as a subject area of internal auditing work. Respondents at institutions with $100 million or less in federal research funding tended to consider audits of enrollment services more important than did those at institutions with over $100 million in such funding. Sixteen percent of the former group ranked enrollment services first or second; 3% of the latter group did. Table 39 displays test results, showing a small effect size.

Rankings of Determinants of Internal Auditing Work

Audit risk assessment. I rejected null hypotheses that whether or not internal audit directors reported to the board/audit committee and internal audit department size were unrelated to rankings of the importance of audit risk assessment as a determinant of internal auditing work. Respondents who reported to the board/audit committee and respondents who had departments with more than four professional positions tended to consider audit risk assessment more important than did those who did not report to the board/audit committee and those that had departments with fewer professional positions. In addition, a four-category test showed that respondents who had departments with 10 or more professional positions tended to view audit risk assessment more important than did those who had departments with a smaller number of professional positions. Table 40 displays test results, indicating a small effect size for reporting to the board/audit committee and medium effect sizes for both tests addressing department size.

Table 40

Characteristics Related to Rankings of Audit Risk Assessment, Management Risk Assessment, and Fraud/Other Sensitive Incidents as Determinants of Internal Auditing Work

Characteristics	Statistically significant results*	
	Cramer's V	Effect
	Audit risk assessment	
	Ranked 1/not ranked 1	
Reported to board/audit committee	.210	Small
Audit staff (≤ 4 or > 4)	.310	Medium
Audit staff (1-2/3-4/5-9/≥ 10)	.356	Medium
	Management risk assessment	
	Ranks 1 thru 5	
Federal research funding ≤ $100M & no med school	.264	Small
	Ranked 1 or 2/not ranked 1 or 2	
Private or public	.204	Small
Federal research funding ≤ $100M & no med school	.182	Small
	Fraud/other sensitive incidents	
	Ranked 1 or 2/not ranked 1 or 2	
Institution or system board	.192	Small

Note. These characteristics were in dichotomous categories: federal research funding ≤ $100M and no medical school, or not; private or public; and as shown for level of board. Audit staff was in two and four categories of number of professional positions as shown. Rankings were tested using dichotomous categories and five categories as indicated. M = million.

*$p<.05$

Seventy-nine percent of respondents who reported to the board/audit committee ranked audit risk assessment most important; 60% of those who did not report to the board/audit committee did. Eighty-four percent of directors whose departments had more than four professional positions ranked audit risk assessment most important, while 56% of directors whose departments had four or fewer professional positions ranked it first. Eighty-nine percent of respondents with 10 or more positions ranked audit risk assessment most important. By comparison, 79% of those with five to nine, 68% with one or two, and 47% with three or four positions, ranked the determinant most important.

Management risk assessment. I rejected null hypotheses that a combination of research funding and the absence or presence of a medical school, and type of institution were unrelated to rankings of the importance of management risk assessment as a determinant of internal auditing work. Respondents at institutions that had $100 million or less in federal research funding and no medical school or at private institutions tended to consider management risk assessment more important than those in opposite categories did. Table 40 shows test results, indicating small effect sizes.

Sixty-seven percent of respondents at institutions that had $100 million or less in research funding and no medical school ranked management risk assessment 1, 2, or 3, and 56%, ranked it first or second. Comparable percentages for those not at such institutions were 60% and 38%, respectively. Sixty-two percent of directors at private institutions ranked management risk assessment, first or second; 39% of those at public institutions did.

Fraud/other sensitive incidents. I rejected the null hypothesis that the organizational level of the board was unrelated to rankings of the importance of fraud/

other sensitive incidents as a determinant of internal auditing work. Respondents at institutions with a system board tended to consider fraud/other sensitive incidents as more important as a determinant of internal auditing work than did those at institutions with their own board. Thirty-nine percent of respondents who were at institutions with a system board ranked fraud/other sensitive incidents 1 or 2, while 21% of those who were at institutions with their own board did. Table 40 shows test results and indicates a small effect size.

Operational Audits in Mission Areas

Research. I rejected null hypotheses that a combination of gender and age, size of department, enrollment, amount of research funding, and frequency of meetings with the board/audit committee were unrelated to views of the appropriateness of operational audits of research missions and goals. Directors who were not male and 50 years old or older, had departments with more than four professional positions, were at institutions with more than 25,000 students, or were at institutions with more than $100 million in federal research funding tended to consider operational audits of research appropriate to a greater degree and to have stronger opinions about their appropriateness than did those in opposite categories. In addition, respondents who met with their board/audit committee monthly or quarterly tended to consider these operational audits appropriate to a greater degree than those who met with their board/audit committee less often. Table 41 displays test results.

Of respondents who were not males 50 years old or older, 45% strongly agreed, 33% mildly agreed, 9% mildly disagreed, and 13% strongly disagreed that operational audits of research were appropriate. By contrast, of those that were 50 years old or older

Table 41

Characteristics Related to Views of Appropriateness of Operational Audits of Research

Characteristics	Statistically significant results*	
	Cramer's V	Effect
	Operational audits of research missions/goals	
	Strongly agree/mildly agree/mildly disagree/strongly disagree	
Male ≥ 50 years old	.275	Small
Audit staff (≤ 4 or > 4)	.356	Medium
Enrollment	.241	Small
Federal research funding	.279	Small
	Agree/disagree	
Frequency met with B/AC	.238	Small
	Strongly agree/mildly agree or disagree/strongly disagree	
Male ≥ 50 years old	.217	Small
Audit staff (≤ 4 or > 4)	.349	Medium
Enrollment	.241	Small
Federal research funding	.249	Small

Note. Characteristics were in dichotomous categories: male 50 years old or older or not; number of professional positions as shown for audit staff; enrollment: ≤ 25,000 or > 25,000 students; federal research funding: ≤ $100M or > $100M; and monthly or quarterly, or less often than quarterly for frequency met with board/audit committee (B/AC). Appropriateness of operational audits of research was tested using four categories, two categories, and three categories as indicated. M = million.

*$p<.05$

males, 37% strongly agreed, 34% mildly agreed, 26% mildly disagreed, and 3% strongly disagreed. Strength of opinion percentages were thus 45% strongly agreed, 42% mildly agreed or disagreed, and 13% strongly disagreed, and 37% strongly agreed, 60% mildly agreed or disagreed, and 3% strongly disagreed, respectively, for the two groups. Effect sizes were small.

Of respondents whose departments had more than four professional positions, 57% strongly agreed, 22% mildly agreed, 14% mildly disagreed, and 6% strongly disagreed that operational audits of research were appropriate. By comparison, of those whose departments had four or fewer positions, 23% strongly agreed, 47% mildly agreed, 20% mildly disagreed, and 11% strongly disagreed. Strength of opinion percentages were thus 57% strongly agreed, 36% mildly agreed or disagreed, and 6% strongly disagreed, and 23% strongly agreed, 67% mildly agreed or disagreed, and 11% strongly disagreed, respectively, for the two groups. Effect sizes were medium.

Of respondents at institutions with more than 25,000 students, 53% strongly agreed, 29% mildly agreed, 15% mildly disagreed, and 3% strongly disagreed that operational audits of research were appropriate. By contrast, of those at institutions with smaller enrollments, 32% strongly agreed, 37% mildly agreed, 19% mildly disagreed, and 12% strongly disagreed. Strength of opinion percentages were thus 53% strongly agreed, 44% mildly agreed or disagreed, and 3% strongly disagreed, and 32% strongly agreed, 56% mildly agreed or disagreed, and 12% strongly disagreed, respectively, for the two groups. Effect sizes were small.

Of respondents at institutions with more than $100 million in federal research funding, 53% strongly agreed, 23% mildly agreed, 18% mildly disagreed, and 5%

strongly disagreed that operational audits of research were appropriate. By comparison, those who were at institutions with $100 million or less in such funding, 29% strongly agreed, 45% mildly agreed, 16% mildly disagreed, and 10% strongly disagreed. Strength of opinion percentages were thus 53% strongly agreed, 41% mildly agreed or disagreed, and 5% strongly disagreed, and 29% strongly agreed, 61% mildly agreed or disagreed, and 10% strongly disagreed, respectively, for the two groups. Effect sizes were small.

Of respondents who met with their board/audit committee monthly or quarterly, 81% agreed and 19% disagreed that operational audits of research were appropriate. By contrast, of those who met with their board/audit committee less often than quarterly, 59% agreed and 41% disagreed. Effect size was small.

Teaching. I rejected null hypotheses that frequency of meetings with the board/audit committee and outside work experience, respectively, were unrelated to views of the appropriateness of operational audits of teaching missions and goals. Respondents who met with their board/audit committee monthly or quarterly tended to consider operational audits of teaching appropriate to a greater degree than those who met with their board/audit committee less often. Also, directors who had not worked in a commercial enterprise for at least 2 years tended to more strongly agree and to more strongly disagree that operational audits of teaching were appropriate than did those who had such experience. Table 42 displays test results. Effect sizes were small.

Of respondents who met with their board/audit committee monthly or quarterly, 67% agreed and 33% disagreed that these operational audits of teaching were appropriate. By contrast, of those who met with their board/audit committee less often than quarterly, 44% agreed and 56% disagreed. Of respondents who had not worked in a

Table 42

Characteristics Related to Views of Appropriateness of Operational Audits of Teaching and Public Service

Characteristics	Statistically significant results*	
	Cramer's V	Effect
	Operational audits of teaching missions/goals	
	Agree/disagree	
Frequency met with B/AC	.213	Small
	Strongly agree/mildly agree or disagree/strongly disagree	
Commercial work experience	.205	Small
	Operational audits of public service missions/goals	
	Strongly agree/mildly agree/mildly disagree/strongly disagree	
Male ≥ 50 years old	.242	Small
Total operations funding	.272	Small
	Agree/disagree	
Federal research funding ≤ $100M & no med school	.187	Small
	Strongly agree/mildly agree or disagree/strongly disagree	
Male ≥ 50 years old	.227	Small

Note. Characteristics were in dichotomous categories: monthly or quarterly, or less often than quarterly for frequency met with the board/audit committee (B/AC); worked in commercial enterprise for at least 2 years or did not; male 50 years old or older or not; total operations funding: ≤ $600M or > $600M; and federal research funding ≤ $100M and no medical school, or not. Appropriateness of operational audits was tested using four categories, two categories, and three categories as indicated. M = million.

*$p<.05$

commercial enterprise for at least 2 years, 22% strongly agreed, 60% mildly agreed or disagreed, and 18% strongly disagreed that these audits were appropriate. Of those who had worked in a commercial enterprise for at least 2 years, 11% strongly agreed, 79% mildly agreed or disagreed, and 10% strongly disagreed.

Public service. I rejected null hypotheses that a combination of gender and age, amount of total operations funding, and a combination of research funding and the absence or presence of a medical school were unrelated to views of the appropriateness of operational audits of public service missions and goals. Directors who were not male and 50 years old or older tended to consider operational audits of public service appropriate to a greater degree and to have stronger opinions about their appropriateness than those who were 50 years old or older males.

Directors who were at institutions with $600 million or less in total operations funding tended to a greater degree to strongly agree that operational audits of public service were appropriate than those who were at institutions with greater operations funding. However, directors who were at institutions with more than $600 million in total operations funding tended to a greater degree to mildly agree that such audits were appropriate. In addition, respondents who were not at institutions that had $100 million or less in federal research funding and no medical school tended to consider these operational audits appropriate to a greater degree than those who were at such institutions. Table 42 displays test results, all indicating small effect sizes.

Of respondents who were not males 50 years old or older, 24% strongly agreed, 39% mildly agreed, 22% mildly disagreed, and 15% strongly disagreed that operational audits of public service were appropriate. By contrast, of those that were 50 years old or

older males, 12% strongly agreed, 45% mildly agreed, 37% mildly disagreed, and 6% strongly disagreed. Strength of opinion percentages were thus 24% strongly agreed, 61% mildly agreed or disagreed, and 15% strongly disagreed, and 12% strongly agreed, 82% mildly agreed or disagreed, and 6% strongly disagreed, respectively, for the two groups.

Of respondents at institutions with $600 million or less in total operations funding, 21% strongly agreed, 32% mildly agreed, 37% mildly disagreed, and 10% strongly disagreed that operational audits of public service were appropriate. By contrast, of those at institutions with more than $600 million of such funding, 15% strongly agreed, 56% mildly agreed, 16% mildly disagreed, and 13% strongly disagreed. Of respondents who were not at institutions with $100 million or less in federal research funding and no medical school, 68% agreed and 32% disagreed that operational audits of public service were appropriate. By contrast, of those who were at such institutions, 49% agreed and 51% disagreed.

Basis for Conclusions, Implications, and Ideas for Future Research

My overarching research question addressed possible relationships in the academy between (a) internal audit directors' views of culture and measuring achievement of missions and (b) the priorities and uses of internal auditing. Other research questions inquired of factors, practices, and characteristics that might provide insights on what influenced those relationships and associated others. This chapter's descriptive information, results of null hypothesis testing, and initial commentary are the basis for my discussion in Chapter 5.

CHAPTER 5

DISCUSSION

Conclusions

As noted in Chapter 1, culture and measuring achievement are pervasive concepts in the academy. My study addressed views of them and the potential impact of those views on internal auditing in research universities within the context of comparisons with a business. Understanding these views could be vitally important to universities. Clashes between an academic culture and a business culture and different perspectives on measuring achievement might ultimately impact how well these institutions accomplish their missions. My survey found that these views varied widely and appeared related to a host of factors and various levels of agreement and disagreement as to the place of internal auditing in evaluating and advising on primary university mission areas. I begin with a summary of the culture and measuring achievement views and their relationship.

A majority of respondents, 56%, saw university culture distinct. A larger majority, 65%, considered measuring achievement of university missions businesslike. Thirty-eight percent viewed culture and measuring achievement businesslike; 30%, both distinct; 26%, culture distinct and measuring achievement businesslike; and 6%, culture businesslike and measuring achievement distinct. How directors saw university culture was moderately related to how they viewed measuring achievement. Culture and measuring achievement views were more strongly related for directors who had or whose reporting officials, departments, or whose institutions had certain characteristics.

In addition, how respondents viewed university culture was related to the importance they attached to (a) internal auditors' awareness of higher education culture

and missions and (b) operational audits. How respondents viewed measuring achievement was related to how they viewed the appropriateness of operational audits in the mission areas of research, teaching, and public service.

Views of culture difference were also found related to whether or not respondents were older males. In addition, the importance respondents attached to some internal auditing factors, that is, internal auditor attributes and types, subject areas, and determinants of internal auditing work, were related to the importance they attached to others. Moreover, characteristics of directors and of their reporting officials, departments, boards, and institutions were related to the importance directors attached to some internal auditing factors and to their views of the appropriateness of operational audits in research, teaching, and public service.

After presenting a narrative commentary with summary tables, I will address the implications of my findings and suggest areas for future research. In this exploratory study, conclusions are necessarily preliminary and tentative. I use the term "favor" to refer to statistically significant relationships and associations. With effect sizes commonly small, only occasionally medium, and rarely large, favor seems appropriately descriptive. To convey, based on the underlying data for a statistically significant relationship, that respondents in one dichotomous category were more likely to have held a view, assigned a rank or ranks, or indicated a level or levels of agreement or disagreement, etc., than did respondents in the opposite category, I typically mention only the respondent category that was more likely to and not the opposite category.

Culture and Measuring Achievement

For eight respondent subsets with certain characteristics, the culture and measuring achievement relationship was stronger (large effect) than that for all respondents (medium effect). The eight characteristics were male and 50 years old or older (older male), CIA, worked in a commercial enterprise for at least 2 years (commercially experienced), had female reporting official(s), department had five to nine professional positions (upper midsize), institution had over $100 million in federal research funding (higher research funding), institution had a medical school, and institution had higher research funding and a medical school.

As Table 43 depicts, six of the eight subsets differed noticeably from respondents as a whole in percentages holding a combination of culture and measuring achievement views, a culture view, or a measuring achievement view. These percentages, from Tables 17, 18, and 19 in Chapter 4, appear in parentheses in the following paragraphs.

For older males (48%) or respondents who had upper midsize departments (45%), the percentage that saw both culture and measuring achievement businesslike was noticeably higher, and for CIAs (32%), noticeably lower than that for all respondents (38%). For CIAs (41%), respondents at institutions that had a medical school (38%), and respondents at institutions that had higher research funding and a medical school (38%), the percentage that saw both distinct was noticeably higher than that for all respondents (30%).

For older males (17%), the percentage that saw culture distinct and measuring achievement businesslike was noticeably lower than that for all respondents (26%). For respondents at institutions that had higher research funding (1%) and those at institutions

Table 43

Subsets of Respondents With Culture and/or Measuring Achievement View Percentages Noticeably Different From Those of Respondents as a Whole

Subsets of respondents by characteristic(s)	Percentage holding businesslike/distinct view(s) noticeably higher or lower than respective percentage for respondents as a whole							
	Culture/measuring achievement				Culture		Measuring Achievement	
	B/B*	D/D*	D/B	B/D	B	D	B	D
Male 50 years old or older	H*		L		H	L		
CIA	L*	H			L	H	L	H
Internal audit department had 5 to 9 professional positions	H							
Institution had federal research funding > $100 million				L				
Institution had a medical school		H					L	H
Institution had federal research funding > $100 million and a medical school		H		L				

Note. "Noticeably" was determined judgmentally for each comparison. For each of the eight columns, a noticeable difference higher or lower was at least 6, 8, 9, 5, 10, 10, 6, or 6 percentage points, respectively.

*B = businesslike; D = distinct; H = noticeably higher; L = noticeably lower.

that had higher research funding and a medical school (0%), the percentage that saw culture businesslike and measuring achievement distinct was noticeably lower than that for all respondents (6%).

The percentage of older males (55%) who saw culture businesslike and the percentage of CIAs (66%) who saw culture distinct were noticeably higher than the respective percentages for all respondents (44% and 56%). Also, the percentage of CIAs (42%) and the percentage of respondents at institutions that had a medical school (41%) who saw measuring achievement distinct were noticeably higher than the comparable percentage for all respondents (35%).

Older males. Chapter 1 recounted businessmen's founding and funding of universities and their following and continuing high representation on boards. Perhaps internal audit directors who mirrored their board members' demographics might have tended to mirror some of their viewpoints as well. To my knowledge, gender and age effects have not been previously examined in higher education internal auditing research, with one exception. Fischer and Montondon (2005) addressed gender and found little difference between male and female higher education internal audit directors in terms of the work they did and how it was acted on. They found education levels and certifications similar but males significantly more experienced.

I too found that male directors had more experience, but I found that a male was more likely to have a master's degree, and a female to be a CIA. Gender and having a master's degree were correlated. The Cramer's V statistic was .239, indicating a small effect. Likewise, gender and being a CIA were correlated. The Cramer's V statistic was .217, also indicating a small effect.

Absent more research, I offer internal auditing traditionalism as possibly explaining why older male audit directors tended to be more likely to view both culture and measuring achievement businesslike and culture businesslike than did respondents generally. Traditionalism does not imply outmodedness. Traditionalism imbues both the academy and culture itself. Internal auditing's tradition lies in business, and older males might have been more likely to embrace that tradition.

CIAs. The IIA Code of Ethics within the IPPF (2011) includes an expectation that internal auditors consider relevant circumstances, which might encompass organizational culture and measuring achievement, as I contended in Chapter 4. That the respondent subset with the highest percentage viewing both culture and measuring achievement distinct, culture distinct, and measuring achievement distinct was CIAs might have been due to their having a greater appreciation for, or ability to discern, relevant circumstances. The apparent association of this appreciation or ability with internal audit directors who are CIAs is worthy of further investigation. As noted in Chapter 2, G. G. Johnson (1992) found that 23% of internal auditors at public institutions and 36% at private institutions were CIAs. My study of internal audit directors found comparable percentages by type of institution to be 39% and 48%, increases not unexpected after two decades. Nonetheless, none of Fischer and Montondon's (2005) 209 respondents reported holding the CIA designation.

Upper midsize internal audit departments. I conjectured in Chapter 4 that five to nine professional positions in an internal audit department might have been a purposeful group size to recognize value in or favor businesslike views. The subset of respondents with an upper midsize department had a higher percentage finding a

businesslike culture and measuring achievement match and a higher percentage making the culture choice of businesslike than did any other of the subsets except older males. As addressed later, audit department size was associated with several other statistically significant relationships.

Higher research funding and medical schools. That respondents at institutions with higher research funding were less likely to have held the views of culture businesslike and measuring achievement distinct might have been related to commercialization initiatives, such as technology transfer, at these institutions. If seeing culture businesslike was due to such initiatives, measuring achievement businesslike might have been viewed as only fitting. Such initiatives might also have fed demand for auditing of a type that would focus on businesslike measurement.

Slaughter and Rhoades (2004) capture the breadth and depth of research universities' business involvement within the context of the evolution of technology transfer since passage of the Bayh-Dole Act in 1980. That "law allowed universities to own and profit from federally funded research performed by faculty" (p. 20). During the 1980s, technology transfer officials entered the marketplace by licensing patents to corporations in exchange for royalties, and during the 1990s, universities gained equity positions "in start-up companies based on intellectual property discovered by faculty members" (p. 25). By 2000, the authors noted, university officials, already virtually venture capitalists, were involved in licensing, receiving milestone payments, holding shares and options for more, making agreements to transfer research materials, selling products, and keeping trade secrets.

Farbo's (1985) study noted that types of internal audits were expanding at public and private institutions, with 32% of the former and 46% of the latter having done audits of federally sponsored programs. Moreover, due to the rapid growth in such funding from the 1960s to the 1980s, a high amount of federal sponsored research funding was the key criterion for Spruill's (1989) target population in his study of variables impacting internal and external audit costs. He found federal research funding significantly correlated to such costs. Reed (1999) also found federal dollars a significant factor in determining internal audit department size.

For respondents whose institutions had a medical school, there were noticeably higher percentages viewing both culture and measuring achievement distinct and measuring achievement alone distinct. Such views might have been due to the community service and income producing initiatives of a medical school carrying over to respondents' institutional perceptions, especially of measuring achievement practices. Physician practice logically would have some businesslike characteristics, but educating caregivers and caregiving, some perhaps eleemosynary, might have contributed to a sense of distinctness.

Reed (1999) included the existence of a medical education program as one of nine independent variables in developing a model to predict internal audit department size. She ultimately combined these variables into five components, one of which was federal regulation, within which medical education was included along with federal funding. She found that component statistically significant in determining the size of internal audit departments. Spruill (1989) included hospital revenue as part of revenue from auxiliaries, one of seven independent variables he considered as predictors of external and internal

audit costs. He found a correlation between that variable and internal audit costs but not between it and external audit costs.

For respondents at institutions with higher research funding and a medical school, noticeable differences for combinations of culture and measuring achievement mirrored those for institutions with higher research funding and for institutions with a medical school. The higher measuring achievement distinct percentage for respondents at institutions with a medical school did not carry over, however, perhaps diluted by the high level of commercialization at some institutions with higher research funding.

Culture and Internal Auditing Factors

Views of culture difference were related to the importance attached to awareness of higher education culture and missions, expertise in management and business subjects, and operational audits. Effects were small. However, because 79% of respondents with a businesslike culture view ranked expertise in management and business subjects 1, 2, or 3, and 76% with a distinct culture view did, the statistical result for the chi-square test using ranks 1 through 5 appeared of no practical significance. Table 44 shows relevant percentages for the two remaining factors and the culture views that favored them.

Respondents with a distinct culture view were more likely than those with a businesslike culture view to have ranked awareness of higher education culture and missions the most important internal auditor attribute. More than a third of directors with a distinct culture view considered this attribute more important than know-how in accounting, IT, management and business, and human relations and communication. No attribute was ranked number 1 more often by respondents with a distinct culture view. Yet, only about one seventh of directors with a businesslike culture view ranked such

Table 44

Culture Views Favoring Awareness of Higher Education Culture and Missions and Operational Audits

Internal auditing factor - ranking	Percentages of respondents by culture view ranking factor as shown		Culture view favoring
	View of institution's culture		
	Businesslike	Distinct	
Culture/missions awareness – 1	15%	36%	Distinct
Operational audits – 1 or 2	86%	69%	Businesslike

awareness first. Of course, respondents who viewed institution culture businesslike might have thought such culture so inbred in internal auditors that awareness of it was of little importance.

Of directors who saw a businesslike culture, 86% ranked operational audits first or second; of those who saw a distinct culture, 69% did. Directors holding a businesslike culture view thus tended to consider operational audits more important than did those holding a distinct culture view and might have performed more such audits.

Measuring Achievement and Mission Operational Audits

Respondents with a businesslike measuring achievement view were more likely than those with a distinct measuring achievement view to consider operational audits in research, teaching, and public service mission areas appropriate. Table 45 shows relevant percentages and this favoring measuring achievement view. Respondents with a

Table 45

Measuring Achievement View Favoring Mission Area Operational Audits

Mission area – view(s) of whether operational audits are appropriate	Percentages of respondents by measuring achievement view whose views of appropriateness of mission area operational audits were as shown at left		Measuring achievement view favoring
	View of institution's measuring achievement of its missions		
	Businesslike	Distinct	
Research – agree	80%	64%	Businesslike
Teaching – agree	68%	45%	Businesslike
Public service – agree	69%	45%	Businesslike
Teaching – strongly agree/ strongly disagree	20%/ 9%	12%/ 25%	Businesslike
Public service – strongly agree/ strongly disagree	24%/ 8%	10%/ 18%	Businesslike

businesslike measuring achievement view also were more likely than those with a distinct view to have strongly agreed that operational audits of teaching and public service were appropriate. By contrast, a majority of directors with a distinct measuring achievement view disagreed that operational audits in those two mission areas were appropriate. All effects were small.

Culture and Characteristics

Respondents who were male and 50 years old or older were more likely than respondents who did not have those characteristics to have held a businesslike culture view. Respective percentages were 55% and 34%. The effect was small.

Internal Auditing Factors

Internal auditor attributes. Table 46 displays rankings of internal auditor attributes that favored financial, IT, and operational audits. Effects were small except for relationships involving skills in human relations and in oral and written communication, which had medium effects.

Respondents who ranked expertise in accounting among the top two attributes were more likely to have ranked financial audits 1 or 2 in importance as a type of internal auditing work, as were those who did not rank skills in human relations and in oral and written communication among the top two attributes. Thus, financial audits appeared to be viewed by many as most importantly about debits, credits, and accounting principles. Respondents who ranked awareness of higher education culture and missions first were more likely to have ranked IT audits among the top two types of internal auditing work. Those who ranked that awareness high also tended to be younger males and females. Thus favoring IT audits could be considered to be possibly age and/or gender related.

Table 46

Rankings of Internal Auditor Attributes Favoring Financial, IT, and Operational Audits

Type of internal auditing work – ranking	Percentages of respondents ranking internal auditor attribute as shown below who ranked type of internal auditing work as shown at left		Ranking of internal auditor attribute favoring
	Accounting expertise		
	Ranked 1 or 2	Not ranked 1 or 2	Accounting expertise – 1 or 2
Financial audits – 1 or 2	34%	14%	
	Human relations/ communication skills		
	Ranked 1 or 2	Not ranked 1 or 2	Human relations/ communication skills – not 1 or 2
Financial audits – 1 or 2	12%	43%	
	Culture/missions awareness		
	Ranked 1	Not ranked 1	Culture/missions awareness – 1
IT audits – 1 or 2	29%	13%	
Operational audits – 1 or 2	61%	83%	Culture/missions awareness – not 1
	Human relations/ communication skills		
	Ranked 1	Not ranked 1	Human relations/ communication skills – 1
Operational audits – 1 or 2	93%	66%	

Those not ranking such awareness first were more likely to have ranked operational audits among the top two. The latter appeared consistent with the tendency of respondents who held a businesslike culture view to favor operational audits and of those with a businesslike measuring achievement view to favor operational audits in mission areas. The awareness attribute might have been less important to some with businesslike views because they might have been unaware of culture and missions differences that would matter to auditors.

Also, respondents who ranked skills in human relations and in oral and written communication most important were more likely to have ranked operational audits first or second in importance. Operational audits tend to include and go well beyond financial principles, technology matters, and compliance concerns in helping to improve operations, so relating and communicating with others might have been viewed as vital. This is reflected in Azad and Skekel's (1990) study; respondents considered the human relations attribute of more than above average importance in encouraging management to devise solutions to deficiencies, one of only three factors, among 17, to be considered of that high importance to respondents within the study's context of operational auditing success.

Shown in Table 47 are rankings of internal auditor attributes that favored audits in the subject areas of academic operations, finance and administration, and sponsored research. Effects were small. Respondents who ranked expertise in management and business subjects among the top two attributes were more likely to have ranked audits of academic operations similarly high. That relationship appeared consistent with other study results. Doing audit work in academic operations, given its nomenclature, might

Table 47

Rankings of Internal Auditor Attributes Favoring Academic Operations, Finance and Administration, and Sponsored Research Subject Areas

Subject area of internal auditing work – ranking	Percentages of respondents ranking internal auditor attribute as shown below who ranked subject area as shown at left		Ranking of attribute favoring
	Management/business expertise		
	Ranked 1 or 2	Not ranked 1 or 2	Management/business expertise – 1 or 2
Academic operations – 1 or 2	30%	14%	
Academic operations – 1, 2, or 3	66%	38%	Management/business expertise – 1 or 2
	Culture/missions awareness		
	Ranked 1	Not ranked 1	Culture/missions awareness – not 1
Finance & administration – 1	50%	72%	
	Ranked 1, 2, or 3	Not ranked 1, 2, or 3	Culture/missions awareness – not 1, 2, or 3
Finance & administration – 1	60%	83%	
	Accounting expertise		
	Ranked 1	Not ranked 1	Accounting expertise – 1
Finance & administration – 1	90%	62%	
	Ranked 1 or 2	Not ranked 1 or 2	Accounting expertise – not 1 or 2
Sponsored research – 1 or 2	53%	75%	

have implied an operational audit, a type of audit favored by those with businesslike culture and measuring achievement views. Table 45 indicates this as well. Over half of Azad's (1994) respondents reported having performed academic operational audits. He emphasized that academic functions had relevant and assessable elements for such reviews.

Respondents who did not rank awareness of higher education culture and missions most important or did not rank the attribute in the top three were more likely to have ranked finance and administration as the most important subject area of internal auditing work, as were those who ranked expertise in accounting most important. The latter was a logical link. Not attaching importance to awareness of higher education culture and missions might have favored internal auditing work in finance and administration because the subject area's predominately business nature might have been viewed as not having culture and missions implications.

Respondents who did not rank expertise in accounting among the top two attributes were more likely to have ranked sponsored research among the top two subject areas of internal auditing work. Knowledge of debits, credits, and accounting principles apparently were not considered important for auditing sponsored research. With sponsored research somewhat endemic to universities, this result appeared consistent with Reed's (1999) suggestion that accounting credentials might have been less influential than higher education experience for those building an internal audit department.

Table 48 displays rankings of awareness of higher education culture and missions that favored strong opinions on the appropriateness of operational audits in the mission

Table 48

Rankings of Awareness of Higher Education Culture and Missions Favoring Strong Opinions on the Appropriateness of Operational Audits of Research and Teaching

Mission area – view(s) of whether operational audits are appropriate	Percentages of respondents ranking awareness of higher education culture and missions as shown who viewed appropriateness of operational audits of research and teaching as shown at left		Ranking of attribute favoring
	Ranked 1 or 2	Not ranked 1 or 2	Culture/missions awareness – 1 or 2
Research – strongly agree	55%	26%	
	Ranked 1	Not ranked 1	
Teaching – strongly agree/ strongly disagree	34%/8%	12%/16%	Culture/missions awareness – 1

areas of research and teaching. Respondents who ranked such awareness the most or second most important attribute were more likely to have strongly agreed that operational audits of research missions and goals were appropriate. Effect was medium. Respondents who ranked the attribute most important were more likely to have strongly agreed and less likely to have strongly disagreed that such audits of teaching missions and goals were appropriate. Effect was small. Given that research and teaching are primary mission areas, priority placed on awareness of them might well lead to strong views that they were appropriate subjects of operational audits.

Types of internal auditing work. Presented in Table 49 are rankings of types of internal auditing work that favored considering that operational audits in the teaching mission area were appropriate. Respondents who did not rank investigations first, second, or third in importance, did not rank compliance audits most important, or ranked operational audits first or second were more likely to consider operational audits of teaching missions and goals appropriate. Effect sizes were small.

A connection between operational audits generally and those in teaching might have implied that the core mission of educating was viewed as an important part of any program of operational auditing at a major university. The connections to not doing investigations and compliance audits might have indicated that operational audits of teaching were viewed as warranting a priority over those two types of internal audit work to improve university operations. Future research might address such possibilities. Drucker (1975) advocated that higher education internal auditors should evaluate faculty workload. Azad (1994) reported that 16% of his respondents had audited faculty teaching loads; 6%, faculty promotion and tenure; and 5%, faculty development.

Table 49

Rankings of Types of Work Favoring Operational Audits of Teaching

Mission area – view of whether operational audits are appropriate	Percentages of respondents ranking types of work as shown below who viewed appropriateness of operational audits of teaching as shown at left		Ranking of type of work favoring
	Investigations		
	Ranked 1, 2, or 3	Not ranked 1, 2, or 3	Investigations – not 1, 2, or 3
Teaching – agree	49%	71%	
	Compliance audits		
	Ranked 1	Not ranked 1	Compliance audits – not 1
Teaching – agree	44%	65%	
	Operational audits		
	Ranked 1 or 2	Not ranked 1 or 2	Operational audits – 1 or 2
Teaching – agree	66%	41%	

Characteristics

Characteristics that favored the attribute awareness of higher education culture and missions are shown in Table 50: not older male, female, reported to board and/or a system official only, larger department, and larger enrollment. For not older male, the effect was medium; for the other four, small. Noted earlier were that older males were more likely to have held a businesslike culture view and that respondents holding a distinct culture view were more likely to have ranked awareness of higher education culture and missions the most important attribute. That it was the directors who were not older males who were more likely to have ranked awareness of higher education culture and missions high was thus not unexpected. Females, who constituted 70% of these directors, thus might also have been expected to be more likely to have ranked such awareness high.

The other three characteristics would logically attach to universities that were part of a system or were large. Being more likely to rank awareness of higher education culture and missions high could have lain simply in respondents' recognizing it important that they be aware of their large institutions' vital cultures and broad, impactful missions.

Characteristics that favored the attribute expertise in management and business subjects appear in Table 51: older male, male, not a CPA and CIA, private institution, higher research funding, and not lower research funding without a medical school. For the first and last two, the effect was medium; for the other three, small.

Because older males favored a businesslike culture view, older males and males might be expected to be more likely to have ranked this attribute high. Respondents holding the two most prominent accounting and internal auditing professional

Table 50

Characteristics Favoring Awareness of Higher Education Culture and Missions

Internal auditor attribute – ranking	Percentages of respondents with characteristics as shown who ranked awareness of higher education culture and missions as shown		Characteristic favoring
	Male ≥ 50 years old		
	Yes	No	
Culture/missions awareness – 1 or 2	34%	63%	
Culture/missions awareness – 1, 2, or 3	61%	81%	Not older male
	Gender		
	Female	Male	
Culture/missions awareness – 1	30%	14%	
Culture/missions awareness – 1 or 2	65%	41%	Female
	Report to		
	Institution official	Board/ system only	Reported to board/ system only
Culture/missions awareness – 1	23%	44%	
	Size of audit department		
	≤ 4	> 4	
Culture/missions awareness – 1	17%	36%	Larger department
Culture/missions awareness – 1 or 2	41%	61%	
	Enrollment		
	≤ 25,000	> 25,000	
Culture/missions awareness – 1	19%	37%	Larger enrollment

Table 51

Characteristics Favoring Expertise in Management and Business Subjects

Internal auditor attribute – ranking	Percentages of respondents with characteristics as shown who ranked expertise in management and business subjects as shown		Characteristic favoring
	Male ≥ 50 years old		
	Yes	No	
Management/business expertise – 1	33%	10%	
Management/business expertise – 1 or 2	59%	33%	
Management/business expertise – 1, 2, or 3	86%	71%	Older male
	Gender		
	Female	Male	
Management/business expertise – 1	9%	26%	
Management/business expertise – 1 or 2	28%	56%	
Management/business expertise – 1, 2, or 3	69%	83%	Male
	CPA and CIA		
	Both	Not both	Not CPA and CIA
Management/business expertise – 1 or 2	26%	50%	
	Type of institution		
	Private	Public	
Management/business expertise – 1	36%	14%	Private institution
Management/business expertise – 1 or 2	62%	39%	
	Federal research funding		Higher research funding
	≤ $100M	> $100M	
Management/business expertise – 1, 2, or 3	67%	87%	
	Federal research funding ≤ $100M & no med school		Not lower research funding and no med school
	Yes	No	
Management/business expertise – 1, 2, or 3	65%	86%	

Note. M = million.

certifications, CPA and CIA, were more likely to have ranked skills in human relations and in oral and written communication high, as will be addressed below. That those without both certifications might be more likely to have ranked expertise in management and business subjects high might simply have been due to their attaching less importance to human relations and communication skills. Azad (1988) found that noncertified auditors considered the higher education environment more important than certified auditors did. In my study, less certified respondents were more likely to have ranked expertise in management and business subjects high. Ramifications of certifications appear to warrant further research attention to clarify, reconcile, or expound on such findings.

Audit directors at private schools might have valued management and business expertise more because their institutions are typically more self-supporting and self-governed than public institutions. Universities with higher research funding or those not characterized by lower research funding and the absence of a medical school tended to be larger institutions. Magnitude might have led respondents at such schools to have been more likely to have ranked expertise in management and business subjects high. However, size factors in Table 50, larger department and enrollment, were associated with respondents' being more likely to have ranked awareness of higher education culture and missions high. It might have been that the research funding component accounted for Table 51 size factors' contributing to respondents being more likely to have ranked expertise in management and business subjects high.

In Table 52 are characteristics that favored the attribute expertise in accounting: smaller department, department with one or two positions, and lower research funding.

Table 52

Characteristics Favoring Expertise in Accounting and Skills in Human Relations and in Oral and Written Communication

Internal auditor attribute – ranking	Percentages of respondents with characteristics as shown who ranked attribute as shown				Characteristic favoring
	Size of audit department				
	≤ 4	> 4			
Accounting expertise – 1 or 2	32%	14%			
Accounting expertise – 1, 2, or 3	56%	28%			Smaller department
	1 - 2	3 - 4	5 - 9	≥ 10	
Accounting expertise – 1 or 2	46%	21%	13%	6%	1 or 2 positions
	Federal research funding				
	≤ $100M	> $100M			Lower research funding
Accounting expertise – 1, 2, or 3	53%	30%			
	CPA and CIA				
	Both	Not both			
Human relations/communication skills – 1 or 2	94%	75%			CPA and CIA

Note. M = million.

Effects were small. When university operations apparently required or had fewer internal auditors or included less federal research funding, internal auditing emphasis might have been more likely to gravitate toward accounting operations or accounting aspects of other operations. Also in Table 52 is the characteristic that favored skills in human relations and in oral and written communication: both a CPA and a CIA. Respondents with both of these certifications apparently were more likely to see greater value in human relations and communication skills, perhaps considering them especially essential for a highly qualified auditing professional. Effect was small.

Characteristics that favored compliance audits, IT audits, and investigations appear in Table 53. Effects were small. Directors who were younger and those with smaller departments were more likely to have ranked compliance audits high; directors who had larger departments were more likely to have ranked IT audits high. Respondents less experienced in internal auditing or in internal auditing in higher education—more so the latter—were more likely to have ranked investigations high, as were respondents at schools with higher research funding.

With the low priority most respondents assigned to IT audits, having a larger department might be necessary to get to them. S. Johnson (1992) also found that higher education internal audit departments spent less time on IT controls testing than on operational, compliance, investigative, and financial work. Furthermore, ranking IT audits higher might not have even been an option without the expertise on staff to perform them. A larger department would probably be more likely to have such expertise. Younger directors who might also have been less experienced might have found compliance audits more straightforward to perform. That less experienced directors might

Table 53

Characteristics Favoring Compliance Audits, IT Audits, and Investigations

Type of work – ranking	Percentages of respondents with characteristics as shown who ranked type of work as shown		Characteristic favoring
	Age		
	≤ 50	> 50	
Compliance audits – 1	30%	10%	Younger
	Size of audit department		
	≤ 4	> 4	Smaller department
Compliance audits – 1 or 2	73%	55%	
IT audits – 1 or 2	8%	25%	Larger department
	Years in internal auditing (YIA)		
	< 20	≥ 20	Less experienced in internal auditing
Investigations – 1, 2, or 3	54%	40%	
	YIA in higher education		Less experienced in higher education internal auditing
	< 13	≥ 13	
Investigations – 1, 2, or 3	59%	35%	
	Federal research funding		
	≤ $100M	> $100M	
Investigations – 1	4%	16%	Higher research funding
Investigations – 1, 2, or 3	46%	49%	

Note. M = million.

be more likely to rank investigations high would require more focused research to confirm, deny, or explain. Higher research funding might have simply raised the opportunity for and size of misappropriations or malfeasances requiring investigating.

Characteristics favoring internal auditing work in the area of sponsored research are listed in Table 54: larger department, 10 or more positions in the department, higher research funding, higher research funding and a medical school, and not lower research funding without a medical school. Effects were medium for all except for larger department and higher research funding and a medical school, which had small effects.

Research funding and size of internal audit department were correlated using two categories (≤ 4, > 4) and using four categories (1-2, 3-4, 5-9, ≥ 10) of numbers of professional positions for department size. Cramer's V statistics were .609 and .636, respectively, each indicating a large effect. The statistically significant relationship was direct: the higher the research funding, the larger the audit department. Identical tests of department size in two and in four categories of number of professional positions with (a) higher research funding and a medical school, or not and (b) not lower research funding absent a medical school, or not, respectively, showed a comparable statistically significant and direct relationship for all four tests. Effects were large for all but the test of department size in four categories with higher research funding and a medical school, or not, which had a medium effect.

That characteristics in Table 54 were related and that respondents whose departments or institutions had these characteristics were more likely to have ranked sponsored research high as a subject area of internal auditing work were logical. Moreover, this subject area was ranked the second most important by respondents as a

Table 54

Characteristics Favoring Sponsored Research Subject Area

Subject area – ranking	Percentages of respondents with characteristics as shown who ranked sponsored research subject area as shown				Characteristic favoring
	Size of audit department				
	≤ 4		> 4		
Sponsored research – 1	12%		30%		
Sponsored research – 1 or 2	58%		80%		Larger department
	1 - 2	3 - 4	5 – 9	≥ 10	
Sponsored research – 1	11%	13%	16%	45%	
Sponsored research – 1 or 2	43%	68%	74%	87%	≥ 10 positions
	Federal research funding				
	≤ $100M		> $100M		
Sponsored research – 1	12%		31%		Higher research funding
Sponsored research – 1 or 2	56%		85%		
	Federal research funding > $100M and med school				Higher research funding and med school
	Yes		No		
Sponsored research – 1 or 2	83%		64%		
	Federal research funding ≤ $100M and no med school				Not lower research funding and no med school
	Yes		No		
Sponsored research – 1 or 2	53%		81%		

Note. M = million.

whole, of whom, 22% considered it most important, and 70%, most or second most important. Still, statistical results and comparative percentages in Table 54 show that these favoring characteristics might have influenced considerably the priority of internal auditing in the area of sponsored research.

Characteristics favoring audits in the finance and administration, athletics, academic operations, and enrollment services subject areas appear in Table 55. Effects were small. Departments with three or four professional positions (lower midsize) and directors more experienced in internal auditing were more likely to have ranked finance and administration high as a subject of internal auditing work. This subject area was ranked the most important by respondents as a whole, of whom, 66% considered it so, and 88%, most or second most important. Table 55 percentages for these characteristics for finance and administration do not show considerable differences.

Athletics, academic operations, and enrollment services were considered of relatively low importance as internal auditing subject areas. These three areas had top/top two ranking percentages for all respondents of 3%/11%, 8%/21%, and 1%/10%, respectively.

Younger directors and those at institutions that did not have both higher research funding and a medical school were more likely to have ranked athletics operations high as a subject area of internal auditing work. These two characteristics were correlated. The Cramer's V statistic was .237, indicating a small effect. That is, institutions that did not have higher research funding and a medical school also tended to have younger directors. Not having higher research funding and a medical school might have made it more likely than otherwise for internal auditing resources to be available for athletics audits. Also,

Table 55

Characteristics Favoring Finance and Administration, Athletics, Academic Operations, and Enrollment Services as Subject Areas of Internal Auditing Work

Subject area – ranking	Percentages of respondents with characteristics as shown who ranked subject area as shown				Characteristic favoring
	Size of audit department				
	1 - 2	3 - 4	5 - 9	≥ 10	
Finance and administration – 1	64%	82%	71%	47%	3 or 4 positions
	Years in internal auditing (YIA)				
	< 20		≥ 20		More experienced in internal auditing
Finance and administration – 1 or 2	82%		94%		
	Age				
	< 50		≥ 50		
Athletics – 1 or 2	20%		7%		Younger
	Federal research funding > $100M and med school				
	Yes		No		Not higher research funding and med school
Athletics – 1 or 2	2%		16%		
	YIA in higher education				Less experienced in higher education internal auditing
	< 13		≥ 13		
Academic operations – 1 or 2	30%		13%		
	Federal research funding				
	≤ $100M		> $100M		Lower research funding
Enrollment services – 1 or 2	16%		3%		

Note. M = million.

younger directors might have been more sensitive to or more interested in risks relevant to athletics, such as risks associated with National Collegiate Athletic Association compliance. As noted earlier, younger directors were more likely to rank compliance audits high. They may also have been less cynical regarding compliance's utility. History has shown that compliance cannot reform athletics. "If there is an epitaph for the demise of educationally sound athletic programs on the American campus, it will read, 'The rules were unenforceable'" (Thelin, 1994, p. 202).

Those that had less experience in higher education internal auditing were more likely to have ranked academic operations high as a subject area of internal auditing work. That might portend more audits of academic operations in the future at research universities. However, it might also have been that a director earlier in his or her higher education internal auditing career might have viewed academic operations as an appropriate area for internal auditing until more experience tempered that view.

Respondents at institutions with lower research funding were more likely to have ranked enrollment services high as a subject of internal auditing work, perhaps because they had more resources available for reviews in that area due to their institutions' having smaller research enterprises. In addition, schools with lower research funding tended to have lower enrollments. Research funding and enrollment were correlated. The Cramer's V statistic was .292, indicating a small effect. A lower enrollment might have warranted audit attention in enrollment services, for example, to provide advice to help enrollment grow or assure it did not go too low.

Characteristics favoring audit risk assessment, management risk assessment, and fraud/other sensitive incidents as determinants of internal auditing work are shown in

Table 56. Respondents who reported to the board/audit committee, had larger departments, or had departments with 10 or more professional positions were more likely to have ranked audit risk assessment high. Such assessments might have been called for by boards/audit committees. Often resource intensive, the assessments might have required and/or benefitted from having more professional staff members. Effects were small for whether or not directors reported to the board/audit committee and medium for both sets of categories for size of the internal audit department.

Respondents at institutions with lower research funding and no medical school were more likely to rank management risk assessment high, as were those at private institutions. Effects were small. The former respondents might have been more likely to interact with management on nonresearch and nonmedical areas and on risk profiles in those areas. As already pointed out, respondents at private institutions were more likely to have ranked expertise in management and business subjects high. I cited those schools' greater self-support and self-governance as possible contributing factors. That such respondents were more likely to rank management risk assessments high appeared consistent with that premise and the possibility that there was a closer connection between management and internal auditing at private institutions. Bethea (1992) found no statistical difference between private and public institutions in the importance attached to audit planning, although he did not address planning methodology. Separate studies by Gordon and Fischer (1996) and Montondon and Fischer (1999) reported evidence that respondents at private institutions were more respected by management than were respondents at public schools.

Table 56

Characteristics Favoring Audit Risk Assessment, Management Risk Assessment, and Fraud/Other Sensitive Incidents as Determinants of Internal Auditing Work

Determinant – ranking	Percentages of respondents with characteristics as shown who ranked determinant as shown				Characteristic favoring
	Report to board/audit committee				Reported to board/audit committee
	Yes		No		
Audit risk assessment – 1	79%		60%		
	Size of audit department				
	≤ 4		> 4		Larger department
Audit risk assessment – 1	56%		84%		
	1 - 2	3 - 4	5 - 9	≥ 10	≥ 10 positions
Audit risk assessment – 1	68%	47%	79%	89%	
	Federal research funding ≤ $100M and no med school				Lower research funding and no med school
	Yes		No		
Management risk assessment – 1 or 2	56%		38%		
Management risk assessment – 1, 2, or 3	67%		60%		
	Type of institution				
	Private		Public		Private institution
Management risk assessment – 1 or 2	62%		39%		
	Board level				
	Institution		System		System board
Fraud/other sensitive incidents – 1 or 2	21%		39%		

Note. M = million.

Respondents with a system board, almost exclusively characteristic of public institutions, were more likely to rank fraud/other sensitive incidents high as a determinant of internal auditing work. Effect was small. A system board's wider span of control and accompanying broader fiduciary and stewardship responsibilities might have caused it to emphasize more than an institution's board would the need for audit directors to consider and attend to fraud and other sensitive matters as part of their program of internal auditing work. Miller's (1974) literature review pointed out that corporations with widely dispersed operations were among the first to adopt internal auditing in the U.S., with vulnerability to fraud a key reason.

Characteristics favoring operational audits in the mission area of research are summarized in Table 57: larger department, larger enrollment, higher research funding, and met at least quarterly with board/audit committee. The effect was medium for larger department, and small for the others. Respondents whose institutions had any of the first three of these four characteristics were more likely to have strongly agreed that these audits were appropriate at their institutions, and respondents who had the last characteristic were more likely to have agreed that they were. Views were inconsistent between respondents who were and respondents who were not older males. Of the former, 37% strongly agreed, and 2% strongly disagreed that research operational audits were appropriate. Of the latter, 45% strongly agreed, but 13% strongly disagreed. Older male directors did not have as strong opinions as did directors who were not older males.

Respondents with larger departments might have been more likely to have the resources to conduct operational audits in research and those with higher research funding, the substantial research enterprises that made research an area of consequential

Table 57

Characteristics Favoring Operational Audits of Research

Mission area – view(s) of whether operational audits are appropriate	Percentages of respondents with characteristics as shown who viewed appropriateness of operational audits of research as shown		Characteristic favoring
	Male ≥ 50 years old		
	Yes	No	Neither but not older males have stronger views
Research – strongly agree/ strongly disagree	37%/2%	45%/13%	
	Size of audit department		
	≤ 4	> 4	
Research – strongly agree/ strongly disagree	23%/11%	57%/6%	Larger department
	Enrollment		
	≤ 25,000	> 25,000	
Research – strongly agree/ strongly disagree	32%/12%	53%/3%	Larger enrollment
	Federal research funding		
	≤ $100M	> $100M	
Research – strongly agree/ strongly disagree	29%/10%	53%/5%	Higher research funding
	Frequency met with board/audit committee		
	Monthly or quarterly	Less often	
Research – agree	81%	59%	Met at least quarterly with board/audit committee

Note. M = million.

risk to the university. As was noted earlier, research funding and enrollment had a statistically significant relationship with a small effect. Enrollment was correlated with whether the internal audit department was smaller or larger. The Cramer's V statistic was .389, indicating a medium effect. The variables were directly related: the higher the enrollment, the higher the research funding and the larger the audit department. Enrollment itself, however, likely had no direct impact on whether or not operational audits in research were considered appropriate or were done.

Meeting at least quarterly with the board/audit committee might have fostered agreement that the audit department address this primary mission area. Efficiency and effectiveness in research might have been considered by board/audit committee members as being highly important and so conveyed to the internal audit director at these meetings.

The characteristic of met at least quarterly with board/audit committee also favored operational audits in the mission area of teaching, as indicated in Table 58. Effect was small. For teaching, just as for research, meeting at least quarterly with the board/audit committee might have inspired an awareness of the need to meet board expectations that internal audit help improve and streamline operations in a primary mission area. With respect to respondents who were and respondents who were not commercially experienced, views were inconsistent regarding whether operational audits of teaching were appropriate. Of the former, 11% strongly agreed, and 10% strongly disagreed. Of the latter, 22% strongly agreed, but 18% strongly disagreed. Those directors who were not commercially experienced apparently had strong opinions. Not affected by experiences others had in commercial enterprises, they perhaps were more able to form firm opinions on the appropriateness of operational audits of teaching.

Table 58

Characteristics Favoring Operational Audits of Teaching and Public Service

Mission area – view(s) of whether operational audits are appropriate	Percentages of respondents with characteristics as shown who viewed appropriateness of operational audits of teaching and public service as shown		Characteristic favoring
	Frequency met with board/audit committee		
	Monthly or quarterly	Less often	Met at least quarterly with board/audit committee
Teaching - agree	67%	44%	
	Commercial work experience ≥ 2 years		
	Yes	No	
Teaching – strongly agree/ strongly disagree	11%/10%	22%/18%	Neither but not commercially experienced have stronger views
	Male ≥ 50 years old		
	Yes	No	
Public service – strongly agree/ strongly disagree	12%/6%	24%/15%	Neither but not older males have stronger views
	Total operations funding		
	≤ $600	> $600	
Public service – strongly agree/ strongly disagree	21%/10%	15%/13%	Lower operations funding
	Federal research funding ≤ $100M and no med school		Not lower research funding and no med school
	Yes	No	
Public service – agree	49%	68%	

Note. M = million.

Characteristics favoring operational audits in the mission area of public service also appear in Table 58: lower operations funding and the combination of lower research funding and no medical school. Respondents whose institutions had the former characteristic were more likely to have strongly agreed that these audits were appropriate at their respective institution, and respondents who had the latter characteristic were more likely just to have agreed that they were. Respondents at schools with smaller overall operations or with smaller research operations and no medical school might have had a greater proportion of their resources available to conduct operational audits of public service. Public service might also have represented a relatively greater proportion of university operations at these schools. Views of whether operational audits of public service were appropriate were inconsistent between respondents who were and respondents who were not older males. Of the former, 12% strongly agreed, and 6% strongly disagreed. Of the latter, 24% strongly agreed, but 15% strongly disagreed. Older male directors apparently were not as likely to hold strong opinions, perhaps due to the unbusinesslike and less quantifiable nature of many public service missions and goals.

Implications

Flexner (1930) suggested that a university's spirit provided greater assurance of a high standard than any manual method or organizational scheme could. Thelin (2004) argued that between 1920 and 1940 the greatest risk of corporatism in higher education was that it fostered accountability in a conforming way that ran counter to inspirational teaching and primary research. Even in the 21st century's second decade, these views, initially cited in Chapter 1, incisively depict if not define elements of a distinct culture and of a businesslike culture for a university, along with potential outcomes. The

outcomes as the commentators conveyed them also contextualize if not capture components of differences between measuring achievement of university missions and measuring achievement of a business's objectives.

My study did not take a position on what view of university culture or what view of measuring achievement of university missions was correct or preferable. My purpose was to explore whether internal audit directors' views of culture and measuring achievement were related to how they viewed the priorities and uses of internal auditing at their institutions.

Culture and measuring achievement differences between a research university and a business were new ground for a higher education internal auditing research study. They had not been much more than incidentally addressed in any of the many studies of this area during the last 46 years. Internal auditor attributes and types, subject areas, and determinants of internal auditing work had been more commonly addressed, albeit the first three more often and directly than the last. Operational auditing, in general and in academic mission areas, had been widely examined and touted in these studies. Likewise, characteristics of internal audit directors and their reporting officials, boards, departments, and institutions were touched on routinely, but to my knowledge, gender had been only once and age not at all.

Relationship Between Culture and Measuring Achievement

A moderate relationship between culture and measurement achievement views was initially indicated statistically and analyzed from several angles. Sixty-eight percent of all respondents had a view of measuring achievement that matched their culture view. That percentage was at least 71% for each of the eight subsets for which the relationship

was stronger. For older males and for respondents at institutions with a medical school, the percentage was 76%; for those with upper midsize departments, 77%; and for those with higher research funding and a medical school, 78%.

Accordingly, a major implication of my results is that because how culture is viewed might be determinative of how measuring achievement is viewed at major U.S. research universities, internal auditor awareness of higher education culture and missions might warrant greater emphasis. To assess relevant circumstances as required by the IIA Code of Ethics and to help an organization accomplish its objectives as called for by the IPPF definition of internal auditing, internal auditors likely would want to understand organizational culture and would have to know how achievement is measured. A strong connection between culture and measuring achievement views might thus elevate "want to understand" to "have to know" for culture also.

Respondents holding a distinct culture view were more likely to rank awareness of higher education culture and missions the most important internal auditor attribute. However, these respondents tended to be divided in what measuring achievement view they perceived; respondents holding a businesslike culture view tended consistently to hold a businesslike measuring achievement view.

An argument might be made that CIAs exhibited the most discernment because they had the highest percentages viewing culture distinct and viewing both culture and measuring achievement distinct, even though those with businesslike views might argue the opposite. Interestingly, none of the 209 college and university internal audit directors responding to Fischer and Montondon's (2005) survey had that certification. Fischer and Montondon noted Harrington's (2004) view that being a CPA was a qualification that an

organization should look for when hiring an internal audit director, as was having another certification, of which CIA was an example.

Internal auditing is not public accounting. At universities, not enough attention may be being paid and not enough importance may be being attached to being a CIA. Internal auditing and academe have much in common, exemplified by their respective emphases on independence and detachment and by the breadth, depth, and implicit limitlessness of their work. Being a CIA appears to warrant consideration as a favored characteristic, if not qualification, for an internal audit director at a research university.

Multiple Factors and Variables

Nonetheless, almost a third of CIAs saw culture and measuring achievement businesslike. An implication, further supported by the mix of views respondents held, is that no single or even several factors or variables can readily indicate much less conclusively explain the origin or nature of culture and measuring achievement views or their outcomes at a research university. Yet, certain characteristics such as being a CIA or an older male or having an upper midsize department or combination of higher research dollars and a medical school might have pivotal influence at some institutions.

Hypothetically, an internal audit director who was an older male CIA might provide a balance or beneficial creative abrasion of tendencies. However, if the balance or abrasion did not fit where a university in the eyes of its senior leadership, faculty, or board wanted or needed to go in terms of its culture-driven, achievement-assessed mission performance, then a younger, female, and/or differently or more broadly certified director might be a better fit. So long as there is no age or gender discrimination,

recognizing that age and gender could impact priorities and uses of internal auditing at research universities appears warranted.

Of course if ages or genders of internal audit directors were to trend younger or female, views of culture and measuring achievement might change accordingly. Fischer and Montondon (2005) noted that the proportion of internal audit directors who were female increased from one fifth in 1992 to one third in 2002, with the highest percentages of female internal auditors being in state government, 39%, and in educational services, 38%. My respondents were 38% female.

Operational Audits in General and in Mission Areas

Operational audits were considered the most important type of internal auditing work by 59% of respondents, and first or second most important by 77%. Respondents holding a businesslike culture view were more likely to rank operational audits first or second. Those with a businesslike measuring achievement view were more likely to deem operational audits in mission areas appropriate.

An implication of a businesslike culture view favoring operational audits is that such audits might emphasize a type of efficiency and managerialism historically decried by many higher education scholars and commentators as ill-fitting an academy. Conversely, an implication may be that such a view fosters a type of audit that preserves limited resources by helping ascertain how to use them most prudently. Greater resources then available could enhance academic practices and outcomes. Further research, including qualitative, might provide ideas to avoid the downsides and amplify the safeguards that operational auditing in any cultural context might produce.

An implication of a businesslike measuring achievement view favoring operational audits in mission areas is that it runs the same risks and encourages the same benefits as the businesslike culture connection just cited. An implication of the less favorable view of operational audits in mission areas held by those with a distinct measuring achievement view is that respondents believe the existing academic assessment processes provide the best measure of mission accomplishment. That implication is supported by my data showing that for teaching and public service, a majority of respondents with a distinct measuring achievement view did not believe such operational audits were appropriate at their institutions. Furthermore, teaching and public service, less quantifiable than research, would be more difficult to measure.

Other Relationships Involving Internal Auditing Factors and Characteristics

Respondents who ranked awareness of higher education culture and missions first were more likely to have ranked IT audits high. These individuals were more likely to have a distinct view of culture, thus somewhat more likely to have a distinct view of measuring achievement, and thus possibly not as likely to consider operational audits in mission areas appropriate, especially in the areas of teaching and public service. Thus, priorities or uses of internal auditing resources might have shifted to other work such as IT audits. As already noted, those who ranked this awareness high also tended to be younger males and females. Holding distinct views of culture and measuring achievement as opposed to businesslike views, which older males disproportionately held, could also be seen as more typical of younger males and females. Thus there are further indications that favoring IT audits could be considered to be possibly age and/or gender related. With younger internal audit directors possibly more technology-connected and technology-

comfortable than older directors, IT audits might receive higher priority as a type of internal auditing work.

Senior administrators, board members, and perhaps faculty members should be aware of such implications and factors. Trade-offs between operational audits and IT audits might warrant discussion during internal audit directors' interactions with constituencies during audit planning. Such interactions can influence or guide understanding of relevant aspects of culture and measuring achievement views, especially those that affect whether or not internal auditing work addresses the most critical risks and needs for the institution.

One respondent commented, "Since audit staffs at colleges are small, prioritizing work is the most important task. Also, as a result, our providing advice, consulting, serving on committees . . . may yield better coverage and more results than simply adhering to an audit schedule." Advising, consulting, and so serving can be highly interactive activities. As such, they could inculcate a better understanding of institution culture and missions that could improve the setting of internal auditing work priorities.

Ranking skills in human relations and in oral and written communication high favored operational audits, and being a CPA and a CIA favored those skills. Thus, there appeared to be professional expectations for skills that might enhance the breadth, depth, clarity, and value of operational audits as well as increase their number.

Respondents who ranked expertise in management and business subjects high favored audits of academic operations, implying that business methods apply to such reviews. That is consistent with the favoring of operational audits by those with businesslike culture and measuring achievement views. Again the implication is that

those with distinct views might find assessment and specialized outside reviews sufficient for academic operations, precluding or limiting the need for internal audits. As prior research studies of higher education internal auditing inferred, such restrictions underestimate and depreciate internal auditing.

The definition and standards of internal auditing do not set limits on practitioners in choosing subject areas or in accomplishing their work. In essence, irrelevance and illegality might be the only inhibitors. Professional standards, however, do require internal auditors to have appropriate skills to accomplish their work. However, to presume that an internal auditor could or would not develop or obtain the skills needed to address mission areas that are part of a research university's raison d'être could call into question internal auditing's own raison d'être.

That rankings of awareness of higher education culture and missions favored strong opinions that operational audits in the mission areas of research and teaching were appropriate was intriguing. However, there was no statistically significant relationship not of questionable validity between rankings of such awareness and views in the dichotomous categories of agree or disagree that operational audits in these mission areas were appropriate. Therefore, favoring this awareness and favoring the appropriateness of such mission area audits was not clearly statistically supportable. Nevertheless, these strong opinions were held by respondents whose favoring this attribute was associated with a distinct culture view. Moreover, these strong opinions favored agreement with the appropriateness of operational audits specifically in research and teaching. An implication might be that those with a distinct view of culture, CIAs for example, might have thought that internal auditors have an obligation to address primary mission areas.

Any respondents that did not think that or otherwise had no strong opinion might have often enough opted for mild disagreement to preclude a relationship for agree/disagree being found. In addition, those with distinct culture views were almost as likely to have held a businesslike measuring achievement view as a distinct one, further confounding a clear understanding of their preferences.

Noted earlier was that a businesslike culture view might have been more likely to result in a businesslike measuring achievement view at universities with higher research funding because of research commercialization initiatives. Further support for a link between businesslike views and research was that management and business expertise appeared more likely to be ranked high at institutions with higher research funding and those not with lower research funding and the absence of a medical school.

Favoring internal auditing work in the area of sponsored research were the characteristics of department size—bigger and biggest—and research funding—greater amounts and greater amounts with a medical school. Relationships appeared logical, reflecting a need to do internal auditing work in sponsored research when there is more such research and to have a sufficient number of auditors to do the work.

Characteristics that favored audit risk assessment included reporting to a board/audit committee and having a larger department; both were logical. The former indicated that the board/audit committee might have valued such an independent risk assessment over one primarily management's doing. According to International Standards for the Professional Practice of Internal Auditing, 2010.A1, "The internal audit activity's plan of engagements must be based on a documented risk assessment, undertaken at least annually. The input of senior management and the board must be

considered in this process" (IIA, 2011, p. 27). One respondent asserted, "If audit does not report to the Board, it is staffed as a token office with little impact." A token or smaller department might be less likely or less able to comply with standards.

Certain characteristics favoring operational audits in the mission area of research—larger department, higher research funding, and met at least quarterly with board/audit committee—were also logical. Larger departments provide the resources to do operational audits in the mission area of research, and higher research funding, the reason. Both characteristics were associated with strong agreement that these audits were appropriate. Moreover, federal interest in auditing research had been long-standing and expanding since the 1960s (Spruill, 1989). That meeting more frequently with the board/audit committee favored these audits and operational audits in teaching implied that such routine interaction might tend to surface and assure fulfillment of the need for internal audit involvement in mission areas.

Favoring operational audits in the mission area of public service were the characteristics of lower operations funding and the combination of lower research funding and no medical school. The relationship likely reflected a trade-off in where to apply internal auditing resources, favoring this mission area because overall operations and other audit areas were relatively smaller at institutions with these characteristics.

Future Research

Respondent comments serve as part of the context for my suggestions for specific areas for future research. For some respondents, universities' distinctness from a business was clear-cut. According to an older male, "universities are very different from for profit organizations. Their mission, revenues, incentives, compliance issues are different in

almost all respects. . . . Faculty and staff have a completely different mentality." A younger female added,

> One of the challenges internal audit in higher education has to deal with is board members who come from a business background and don't understand the culture of higher ed[ucation]. When there is an issue, their response is why don't we just fire them all . . . . They don't understand the legal and policy challenges that exist with regard to tenured faculty.

Another younger female respondent stated,

> There is a fundamental difference in governance/authority/accountability in higher ed[ucation] vs. a corporate entity. I suppose it stems back to . . . the concept of tenured faculty. Effective methods of influencing change are different, and ramifications of wrong-doing are different. This makes for some intriguing complicating factors when it comes to internal auditing. After a year and a half in this role, I have not yet mastered them but hope to in time.

One younger male respondent saw his university increasingly businesslike:

> I think as our management infrastructure matures, it becomes more and more business-like. Academic strategic goals are finally being linked to financial plans designed to achieve those goals. Board members are increasingly making decisions more "business-like" than academic-like. And faculty, mostly due [to] the presence of audits, are becoming aware they too have obligations to meet.

Another younger male respondent stated,

> I believe that over time, the differences in how groups view businesses vs. universities have narrowed. Newer regulations that affect universities are requiring a more business-like approach to issues. Boards and upper management, especially in tight funding environments, are seeing the need for more business-like efficiencies in higher ed[ucation] departments and processes. Our audit focus has shifted more toward compliance and process improvement audits.

One older male respondent, who viewed his institution's culture as very different (the modal value) or distinct (the majority view) and measuring achievement as somewhat different (the modal value) or businesslike (the majority view) and perceived his board members to have those same views, claimed that the "audit committee [is] not

much concerned over difference between business and higher ed[ucation].” This claim suggested that some of those with whom internal audit directors interact might have only latent concerns which future research might draw out. Thus, senior administrators, board/audit committee members, and faculty members should be participants in future research on culture and measuring achievement differences between universities and a business.

Future research along these lines should also address how higher education internal auditors are perceived by senior administrators, board/audit committee members, and faculty members. Is the image of higher education internal auditors one of compliance and control, of risk assessment and mitigation, or of debits and credits and green eye shades? Broader and more precise issues might be addressed. Are culture and measuring achievement views actually related or are there discrete influences for each? Are culture and measuring achievement views opinions, observations, or preferences? To what extent are these views fixed, evolving, or changeable? Are academic mission operations considered the sole purview of assessment professionals? What factors underlie the insistence or reluctance of some internal auditors and others to advocate for operational audits in academic areas? Are such factors malleable? Age, gender, certifications, audit department size, and trade-offs between types of internal auditing work should be incorporated in future research. One example would be an examination of age and gender as they relate to the priority internal audit directors attach to IT audits. Such characteristics might reflect generational differences in adaptation to technology.

Subjects and respondents might also include vice presidents of research, who might have considerable economic development and technology transfer responsibilities,

or medical school leaders, who oversee community service and income producing initiatives that might noticeably affect the university's image and measurable success. Qualitative research delving into the experiences and attitudes of internal audit directors on the subject matter of my quantitative survey could also be promising. Such research could capture in-depth views and rationales that an exploratory survey instrument cannot.

Qualitative research presents numerous possibilities of gaining in-depth insight on critical topics. Examples would include whether there is a danger of investigating the sacred cow, that is, any aspect of the academic enterprise, its missions, and practices that are considered so strongly formed and favored that they are closed to critique. Further subject matter might include the nuances of reporting structure, audit committee actions and interactions, and potential duplications of internal auditing efforts with the assessment and accountability programs of accreditors and the Department of Education.

Qualitative research might also include inquiry regarding the apparent racial and ethnic homogeneity of internal audit directors in U.S. research universities. What causes it and how can it be changed?

My study focused on institutions in the Carnegie Classification system's Doctorate-granting Universities category. My results cannot be generalized to other types of higher education institutions. Future research should explore separately and comparatively similar research questions for colleges and universities in other categories. Moreover, as noted in Chapter 3, dichotomous variables expanded my statistical analysis options but forfeited a portrait and assessment of the range of responses. Descriptive statistics along with the use of three or more categories for some variables in my

statistical analyses compensated to some degree, but future research might strive to achieve and assess a broader range or continuum of views and other factors.

Internal auditors, generally generalists, often are new not only to academic methods and operations, but also to other functions as well, relying on audit research, personal study, and open interaction with those who do the work in an area to get themselves productively under way. Nevertheless, culture clashes and professional differences regarding assessing success in risk management, control, compliance, governance, and operations will likely always complicate the internal auditing process.

I sought to understand internal audit directors' views of culture and measuring achievement differences between U.S. research universities and a business and how those views might affect the priorities and uses of internal auditing in the academy. My success will ultimately and best be measured by the value of future research that builds on mine. I have brief additional advice for those who will do higher education internal auditing research. It, like internal auditing itself, should not be inhibited or self-important.

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APPENDIX A

Questionnaire on Higher Education Internal Auditing

Exploring Perceived Cultural and Mission Differences
Between Universities and Businesses

WHO: To be completed by the university's internal audit director, chief audit executive, or equivalent, after reviewing the informed consent cover letter.

Note 1: If the university has no internal audit department and a System office provides internal auditing services, a System audit official should complete the questionnaire.
Note 2: If internal audit is outsourced, a liaison official may complete the questionnaire.

TIME: The survey should take **15 to 20 minutes.** Thanks very much for giving of your time to complete it.
WHY: Your views on cultural and mission differences between universities and businesses have unique value. Participants in this survey research will help explore and perhaps shape how internal auditing should be employed in U.S. universities.

Section 1
Instructions for 1 through 4: **Rank order from 1 to 5** each set of items with respect to their **importance to you at your institution**, with 1 most important, 2 second most, etc.

1. Attributes of an internal auditor.
   _____ Awareness of higher education culture and missions
   _____ Expertise in accounting
   _____ Expertise in information technology
   _____ Expertise in management and business subjects
   _____ Skills in human relations and in oral and written communication

2. Types of internal auditing work.
   _____ Compliance audits
   _____ Financial audits
   _____ Information technology (IT) audits
   _____ Investigations
   _____ Operational (efficiency and effectiveness and/or performance) audits

3. Subject areas of internal auditing work.
   _____ Academic Operations
   _____ Athletics
   _____ Enrollment Services
   _____ Finance and Administration
   _____ Sponsored Research

4. Determinants of types and subject areas of internal auditing work.
   _____ Audit risk assessment
   _____ Breadth and balance of coverage
   _____ Consulting/advisory service requests
   _____ Fraud/other sensitive incidents
   _____ Management risk assessment

Section 1 (continued)
Instructions for 5 through 7: Please **rank order from 1 to 5** how you **perceive** each group **would rank order** the **importance** of the **types of internal auditing work** listed.

5. Your board or audit committee members' rank order.
   _____ Compliance audits
   _____ Financial audits
   _____ IT audits
   _____ Investigations
   _____ Operational audits

6. Your senior administrators' rank order.
   _____ Compliance audits
   _____ Financial audits
   _____ IT audits
   _____ Investigations
   _____ Operational audits

7. Your faculty members' rank order.
   _____ Compliance audits
   _____ Financial audits
   _____ IT audits
   _____ Investigations
   _____ Operational audits

Instructions for 8 through 10: Please **circle the number from 1 to 4** that best represents **your level of agreement/disagreement**.

8. Operational audits that address the **accomplishment of research missions and goals** are appropriate at my institution.
   1 – Strongly Agree
   2 – Mildly Agree
   3 – Mildly Disagree
   4 – Strongly Disagree

9. Operational audits that address the **accomplishment of teaching missions and goals** are appropriate at my institution.
   1 – Strongly Agree
   2 – Mildly Agree
   3 – Mildly Disagree
   4 – Strongly Disagree

10. Operational audits that address the **accomplishment of public service missions and goals** are appropriate at my institution.
    1 – Strongly Agree
    2 – Mildly Agree
    3 – Mildly Disagree
    4 – Strongly Disagree

Section 1 (continued)

Instructions for 11 through 14: Please **circle the number from 1 to 4** that best indicates **your view or your perception of others' views** of **the extent of difference between your institution's culture and a business's culture**.

11. I consider my institution's culture and a business's culture to be:
    1 – Not at all different
    2 – Somewhat different
    3 – Very different
    4 – Completely different

12. Our board members consider our institution's culture and a business's culture to be:
    1 – Not at all different
    2 – Somewhat different
    3 – Very different
    4 – Completely different

13. Our senior administrators consider our institution's culture and a business's culture to be:
    1 – Not at all different
    2 – Somewhat different
    3 – Very different
    4 – Completely different

14. Our faculty members consider our institution's culture and a business's culture to be:
    1 – Not at all different
    2 – Somewhat different
    3 – Very different
    4 – Completely different

Instructions for 15 through 18: Please **circle the number from 1 to 4** that best indicates **your view or your perception of others' views** of **the extent of difference between measuring achievement of your institution's missions and measuring achievement of a business's objectives**.

15. I consider measuring achievement of my institution's missions and measuring achievement of a business's objectives to be:
    1 – Not at all different
    2 – Somewhat different
    3 – Very different
    4 – Completely different

16. Our board members consider measuring achievement of our institution's missions and measuring achievement of a business's objectives to be:
    1 – Not at all different
    2 – Somewhat different
    3 – Very different
    4 – Completely different

Section 1 (continued)

17. Our senior administrators consider measuring achievement of our institution's missions and measuring achievement of a business's objectives to be:
    1 – Not at all different
    2 – Somewhat different
    3 – Very different
    4 – Completely different

18. Our faculty members consider measuring achievement of our institution's missions and measuring achievement of a business's objectives to be:
    1 – Not at all different
    2 – Somewhat different
    3 – Very different
    4 – Completely different

Instructions for 19 through 22: Please **circle the appropriate choice(s)** below each question. Also, please **provide fill-in information** where applicable.

19. Who is (are) your reporting official(s)? (If more than one, choose "g" and specify.)
    a. President or chancellor at my institution.
    b. Vice president for finance at my institution.
    c. Chief legal officer at my institution.
    d. Other institutional official (please specify position)_____
    e. A university System official (please specify position) _____
    f. A member of board/audit committee (please specify position)_____
    g. I have more than one reporting official (please specify their positions) _____
    _____

20. Is your reporting official female or male? (If you have more than one reporting official, choose "c" and specify.)
    a. Female
    b. Male
    c. I have more than one reporting official (please specify female or male for each)
    _____

21. Which best describes your situation with respect to a board or its audit committee?
    a. We are a System audit function with a System board or audit committee.
    b. We are an institutional audit function with a System board or audit committee.
    c. We are an institutional audit function with an institution board/audit committee.
    d. Other (please describe)_____

22. Approximately how often do you meet with the board or audit committee?
    a. Monthly
    b. Quarterly
    c. Semiannually
    d. Annually
    e. N/A, our institution does not have a board or audit committee.

Section 2

Instructions for 23 through 45: Please **provide fill-in information and/or circle the appropriate choice(s)** below each question, as applicable.

23. How many years have you worked in internal auditing?

    _____ years

24. How many were in higher education internal auditing?

    _____ years

25. How many were in higher education internal auditing at your current institution?

    _____ years

26. Have you worked in any higher education position(s) other than in higher education internal auditing?
    a. Yes
    b. No

27. If yes, for how long in total did you work in any higher education position(s) other than in higher education internal auditing? (If no to 26, skip to 28.)

    _____ years

28. If you worked 2 years or more outside of higher education, indicate the approximate number of years you worked in each of the types of organizations listed below:
    a. ___ years - Public accounting (either in a firm or your own practice)
    b. ___ years - Commercial enterprise other than public accounting
    c. ___ years - Military department or service
    d. ___ years - Local, state, or federal government, other than military dept/service
    e. ___ years - Private nonprofit
    f. ___ years - Other (please specify)_____
    g. N/A. All my employment, or all but under 2 years, has been in higher education

29. Do you have a bachelor's degree?
    a. Yes
    b. No

30. If yes, what was your major? (If your answer to 29 is no, skip to 35.)
    a. Accounting
    b. Finance
    c. Management
    d. Computer Information Systems, Computer Science, or Information Technology
    e. Other (please specify)_____

31. Do you have a master's degree?
    a. Yes
    b. No

Section 2 (continued)

32. If yes, what best describes your master's degree? (If answer to 31 is no, skip to 35.)
    a. My master's degree is an MBA. (Specify MBA major, if applicable:_____)
    b. My master's degree is in accounting.
    c. My master's degree is in (please specify the area)_____

33. Do you have a doctoral degree?
    a. Yes
    b. No

34. If yes, what best describes your doctoral degree? (If answer to 33 is no, skip to 35.)
    a. I have a Juris Doctor or equivalent.
    b. My doctoral degree is in (please specify the area)_____

35. With regard to certifications, please circle or indicate any you have.
    a. CFE
    b. CIA
    c. CISA
    d. CPA
    e. Other(s) (please specify)_____

36. Are you female or male?
    a. Female
    b. Male

37. Do you consider yourself to be Hispanic/Latino?
    a. Yes
    b. No

38. Select one or more of the following racial categories to describe yourself.
    a. American Indian or Alaska Native
    b. Asian
    c. Black or African American
    d. Native Hawaiian or Pacific Islander
    e. White

39. What is your age?
    a. Under 30
    b. 30 to 39
    c. 40 to 49
    d. 50 to 59
    e. 60 or over

40. What is the total graduate and undergraduate enrollment at your institution?
    a. 10,000 or fewer
    b. 10,001 to 15,000
    c. 15,001 to 25,000
    d. 25,001 to 35,000
    e. More than 35,000

Section 2 (continued)

41. Approximately how much federally sponsored research funding did your institution have for the most recent fiscal year?
    a. Zero to $50 million
    b. Over $50 million but not more than $100 million
    c. Over $100 million but not more than $200 million
    d. Over $200 million but not more than $300 million
    e. Over $300 million

42. Approximately how much total funding, including federally sponsored research funding, did your institution have for the most recent fiscal year's budgeted operations?
    a. Zero to $100 million
    b. Over $100 million but not more than $300 million
    c. Over $300 million but not more than $600 million
    d. Over $600 million but not more than $1 billion
    e. Over $1 billion

43. Is your institution private or public?
    a. Private
    b. Public

44. Does your institution have a medical school?
    a. Yes
    b. No

45. How many professional staff positions, including your own, make up the internal audit department? Include the entire department when internal audit is combined with investigations, compliance, and/or other functions in a single department.

    _____ professional staff positions

Your Personal Insights: Now that you have completed the survey, you may have ideas to offer or comments to make. Please enter them below, on the back, or on separate sheets.

_____
_____
_____
_____
_____
_____
_____
_____
_____

Thank you again for giving of your time to respond to this survey questionnaire. Please return it in the pre-paid envelope to Sterling Roth, 403 Misty Ridge Way, Woodstock GA 30189. (Home #: 770-924-0177; Cell #: 770-331-8611; E-mail: sterlingroth@aol.com)

Georgia State University
Department of Educational Policy Studies
Informed Consent

Title: Relating Perceptions of Cultural and Mission Differences Between Universities and Businesses to Higher Education Internal Auditing

Principal Investigator: Philo Hutcheson
Student PI: Benjamin Sterling Roth

I. Purpose:

You are invited to participate in a research study. This study will look at what people think about differences between universities and businesses. We will examine how these ideas are related to internal auditing's use in universities.

You are invited to be in the study because you oversee internal auditing at a major U.S. university. About 283 people will be asked to be in the study. Participation should take about 15 to 20 minutes of your time.

II. Procedures:

If you decide to be in the study, you will fill out the questionnaire and return it in the pre-paid envelope.

III. Risks:

In this study, you will not have any more risks than you would in a normal day of life.

IV. Benefits:

Being in this study may not benefit you personally. We hope the study will help improve the practice and value of higher education internal auditing.

V. Voluntary Participation and Withdrawal:

Participation in research is voluntary. You do not have to participate. If you decide to start the study and change your mind, you have the right to drop out at any time. You may skip questions or stop participating any time. Whatever you decide, there will be no repercussions.

VI. Confidentiality:

We will keep your records private to the extent allowed by law. We will use a code consisting of the study number and a number representing your institution rather than your name on study records. The code prevents sending reminders to those who have returned the questionnaire.

The code key will be stored separately from your information to protect privacy. The key will be destroyed upon study completion. If you prefer that neither you nor your institution be identified in this limited way, you may cut off the code on the questionnaire. The principal investigator (PI), Philo Hutcheson, and Student PI, Sterling Roth, will have access to the information you provide. Information may also be shared with those who make sure the study is done correctly (GSU Institutional Review Board and the Student PI's Dissertation Advisory Committee).

The information you provide will be stored on a password- and firewall-protected computer. Paper copies of data, critiques, or other information you provide will be kept in a locked room or container. Your name and other facts that might point to you or your institution will not appear when we present this study or publish its results. The findings will be summarized and reported in group form. Neither you nor your institution will be identified.

VII. Contact Persons:

Contact Philo Hutcheson at 404-413-8284 or phutches@gsu.edu or Sterling Roth at 770-331-8611 or sterlingroth@aol.com if you have questions about this study. If you have questions or concerns about your rights as a participant in this research study, you may contact Susan Vogtner in the Office of Research Integrity at 404-413-3513 or svogtner1@gsu.edu.

VIII. Consent:

If you agree to participate, please keep this informed consent document and continue with the questionnaire. Please use the pre-paid envelope to send your completed questionnaire to Sterling Roth at 403 Misty Ridge Way, Woodstock, Georgia, 30189. And please accept our sincere thank you for participating.

Reminder Letter – Please Read First

Date: October 16, 2010

To: Internal Audit Director, Chief Audit Executive, or Equivalent

Subject: Questionnaire on Higher Education Internal Auditing

Several weeks ago, I requested your participation in a survey research study, Relating Perceptions of Cultural and Mission Differences Between Universities and Businesses to Higher Education Internal Auditing. To the best of my knowledge, your questionnaire has not yet been returned.

Because your input is important to the success of the study, I have enclosed another copy of both the consent form and questionnaire. If you have not already completed and returned the questionnaire (thank you, if you have) and are willing to do so now, it would be greatly appreciated.

The questionnaire should take about 15 to 20 minutes to complete.

Please use the enclosed pre-paid envelope to return the questionnaire. The study is intended to help improve the practice and value of higher education internal auditing. Thank you so much for considering participating. If you have any questions, please contact me by e-mail at sterlingroth@aol.com or by phone at 770-331-8611.

Sincerely,

Sterling Roth

APPENDIX B

CHI-SQUARE TESTS OF INDEPENDENCE RESULTS BY CHARACTERISTICS OF SUBSETS OF RESPONDENTS

Independence of Views of Culture and Measuring Achievement Differences (Dichotomous Categories) by Gender, Age, and Outside Work Experience

Respondents	Chi-square tests of independence results					
	df	*n*	$\chi 2$	*p*	Cramer's V	Effect
Gender						
Female	1	55	8.307	.004*	.389	Medium
Male	1	89	16.910	.000*	.436	Medium
Age						
< 50 years	1	51	4.227	.040*[a]	.288	Small
≥ 50 years	1	93	22.624	.000*	.493	Medium
Gender/Age						
Female < 50 years	1	27	1.918	.166[b]		No[b]
Male ≥ 50 years	1	65	16.307	.000*	.501	Large
Work outside higher education						
Public accounting ≥ 2 years	1	63	7.458	.006*	.344	Medium
Commercial entity ≥ 2 years	1	62	16.541	.000*	.517	Large
Gov't/military ≥ 2 years	1	52	3.957	.047*[c]	.276	Small
< 8 years	1	60	14.848	.000*	.497	Medium
≥ 8 years	1	68	8.333	.004*	.350	Medium

[a]Chi-square test is of questionable validity because Yates's continuity correction yielded a *p* value of .080.

[b]Chi-square test is of questionable validity because one cell (25%) had an expected frequency below five.

[c]Chi-square test is of questionable validity because Yates's continuity correction yielded a *p* value of .091.

*$p<.05$

Independence of Views of Culture and Measuring Achievement Differences (Dichotomous Categories) by Internal Auditing and Other Higher Education Experience

Layers	Chi-square tests of independence results					
	df	*n*	χ2	*p*	Cramer's V	Effect
Years in internal auditing (IA)						
< 20 years	1	73	11.757	.001*	.401	Medium
≥ 20 years or more	1	71	13.443	.000*	.435	Medium
Years in higher ed IA						
< 13 years	1	72	9.524	.002*	.364	Medium
≥ 13 years	1	72	16.112	.000*	.473	Medium
Years in IA current institution						
< 11 years	1	74	12.675	.000*	.414	Medium
≥ 11 years	1	69	12.046	.001*	.418	Medium
Years in higher ed not in IA						
< 5 years	1	22[a]				
≥ 5 years	1	25	8.766	.003*[b]	.592[b]	Large[b]

[a]Chi-square test is invalid because two cells (50%) had an expected frequency less than five. [b]Chi-square test is of questionable validity because one cell (25%) had an expected frequency below five.

*$p<.05$

Independence of Views of Culture and Measuring Achievement Differences (Dichotomous Categories) by Certifications and Master's Degree

Layers	Chi-square tests of independence results					
	df	*n*	χ2	*p*	Cramer's V	Effect
CPA						
Yes	1	98	19.183	.000*	.442	Medium
No	1	46	6.225	.013*	.368	Medium
CIA						
Yes	1	59	17.307	.000*	.542	Large
No	1	85	8.392	.004*	.314	Medium
CPA and CIA						
Both	1	31	12.314	.000*[a]	.630	Large
Neither	1	18[b]				
Master's degree						
Yes	1	69	13.399	.000*	.441	Medium
No	1	75	11.932	.001*	.399	Medium

Note. CPA = certified public accountant; CIA = certified internal auditor.

[a]Chi-square test is of questionable validity because one cell (25%) had an expected frequency below five.

[b]Chi-square test is invalid because two cells (50%) had an expected frequency less than five.

*$p<.05$

Independence of Views of Culture and Measuring Achievement Differences (Dichotomous Categories) by Reporting Officials, Reporting Official Genders, Board Level, and Meetings With the Board/Audit Committee

Layers	Chi-square tests of independence results					
	df	*n*	χ2	*p*	Cramer's V	Effect
Reporting officials						
Institution or institution and other(s)	1	114	18.791	.000*	.406	Medium
System and/or board/audit committee (B/AC) only	1	27	6.075	.014*[a]	.474	Medium
Reporting to the B/AC						
Reported to B/AC	1	82	12.950	.000*	.397	Medium
Did not report to B/AC	1	58	11.147	.001*	.438	Medium
Reporting official genders						
Female only or mixed	1	48	12.501	.000*	.510	Large
Male only	1	95	14.096	.000*	.385	Medium
Board level						
Institution	1	93	16.692	.000*	.433	Medium
System	1	38[b]				
Meetings with B/AC						
Monthly or quarterly	1	103	20.708	.000*	.448	Medium
Less often than quarterly	1	41	5.837	.016*[a]	.377	Medium

[a]Chi-square test is of questionable validity because one cell (25%) had an expected frequency below five.

[b]Chi-square test is invalid because two cells (50%) had an expected frequency less than five.

*$p<.05$

Independence of Views of Culture and Measuring Achievement Differences (Dichotomous Categories) by Number of Professional Positions in the Internal Audit Department

Layers	Chi-square tests of independence results					
	df	*n*	$\chi 2$	*p*	Cramer's V	Effect
Size of internal auditing staff						
1 or 2 professionals	1	29	2.773	.096		No
3 or 4 professionals	1	38	5.788	.016*	.390	Medium
5 to 9 professionals	1	38	12.477	.000*	.573	Large
10 or more professionals	1	39	6.171	.013*[a]	.398	Medium
Size of internal auditing staff						
≤ 4 professionals	1	67	8.199	.004*	.350	Medium
> 4 professionals	1	77	17.874	.000*	.482	Medium

[a]Chi-square test is of questionable validity because one cell (25%) had an expected frequency below five.

*$p<.05$

Independence of Views of Culture and Measuring Achievement Differences (Dichotomous Categories) by Institution Characteristics

Layers	Chi-square tests of independence results					
	df	*n*	χ2	*p*	Cramer's V	Effect
Graduate & undergrad enrollment						
≤ 25,000 students	1	82	15.804	.000*	.439	Medium
> 25,000 students	1	62	9.106	.003*	.383	Medium
Federal research funding						
≤ $100M	1	70	5.886	.015*	.290	Small
> $100M	1	73	23.025	.000*	.562	Large
Total budget funding						
≤ $600M	1	87	16.304	.000*	.433	Medium
> $600M	1	55	8.944	.003*	.403	Medium
Type of institution						
Private	1	40	8.827	.003*	.470	Medium
Public	1	104	16.199	.000*	.395	Medium
Existence of a medical school						
Medical school	1	61	19.054	.000*	.559	Large
No medical school	1	83	7.864	.005*	.308	Medium
Research > $100M & med school						
Yes to both	1	47	19.796	.000*	.649	Large
No to both	1	57	4.279	.039*[a]	.274	Small

Note. M = million.

[a]Chi-square test is of questionable validity because Yates's continuity correction yielded a *p* value of .074.

*$p<.05$