



ELSEVIER

Contents lists available at SciVerse ScienceDirect

J. of Acc. Ed.

journal homepage: www.elsevier.com/locate/jaccedu



Main article

Teaching managerial responsibilities for internal controls: Perception gaps between accounting and management professors



Karen C. Miller^{a,*}, Thomas Y. Proctor^a, Benjamin Fulton^b

^aUnion University, 1050 Union University Drive, Jackson, TN 38305, United States

^bBlackman and Sloop, CPAs, PA, The Exchange West, 1414 Raleigh Road, Suite 300, Chapel Hill, NC 27517, United States

ARTICLE INFO

Article history:

Available online 8 January 2013

Keywords:

Internal control
Financial reporting
Managers
Auditors
Curriculum

ABSTRACT

An organization needs a proper managerial tone to maintain a sound control environment. However, managers cannot support a control environment they do not understand. This misunderstanding generates a perception gap between corporate managers and auditors concerning internal control responsibilities, which may extend to academia as well. This research examines the perceptions of accounting and management professors concerning the understanding of who is ultimately responsible for *establishing and maintaining internal controls over financial reporting* and finds a statistically significant difference of opinion between the two groups. A large number of management professors surveyed relegate this role to internal auditors instead of management. These findings indicate management professors may not be fully aware of the responsibilities placed on managers of publicly traded companies for internal controls over financial reporting by the Sarbanes–Oxley (SOX) Act of 2002. The survey also finds a statistically significant difference in the perceptions of accounting and management professors concerning where the topic of internal controls should be taught and who is most qualified to teach internal controls to non-accounting business majors. This disconnect between management and accounting professors could potentially generate a business curriculum that leaves non-accounting business majors with little or no exposure to the roles and responsibilities of managers concerning internal controls over financial reporting. This research highlights the important role of accounting professors to help minimize this disconnect and provides specific

* Corresponding author. Tel.: +1 731 661 5056; fax: +1 731 661 5540.

E-mail addresses: kcmiller@uu.edu (K.C. Miller), tproctor@uu.edu (T.Y. Proctor), bfulton@blackmansloop.com (B. Fulton).

recommendations to improve the exposure necessary for non-accounting business majors.

© 2012 Elsevier Ltd. All rights reserved.

1. Introduction

Prior research (e.g., Flesher & Zanzig, 2000; Gupta & Leech, 2006; Sarens & De Beelde, 2006; Schiff & May, 1990; Sobel, 2011; Spira & Page, 2003) identifies extensive debates and friction between managers, internal auditors, and external auditors concerning the responsibility for establishing, maintaining, monitoring, and evaluating internal controls over operations, systems, and financial reporting. Even though various commissions, organizations, and regulatory bodies have repeatedly emphasized the importance of internal controls and their requisite responsibilities, this friction and perception gap between managers and auditors remains. In 1987, the National Commission on Fraudulent Financial Reporting (Treadway Commission) reported a lack of agreement over who is responsible for internal controls and recommended that business and accounting curricula promote a better understanding of these controls (National Commission on Fraudulent Financial Reporting, 1987, p. 48, 81). If the business curriculum adequately addresses the roles and responsibilities for internal controls required of future managers and accountants, this perception gap could be minimized. However, management and accounting professors must first have a clear understanding of these roles. Conversely, a perception gap at the academic level could amplify the gaps reported at the corporate level. This study examines the perceptions of management and accounting professors responsible for designing and teaching this recommended curriculum to *non-accounting business majors*.

Specifically, this research examines accounting and management professors' perceptions of who bears the ultimate responsibility for internal controls over financial reporting—managers or internal auditors. This research also examines the perceptions of when, where, and from whom non-accounting business majors should learn about the internal control structure. The results of this research should identify any perception gaps in academia that could amplify perception gaps in the corporate world, and it should provide a better understanding of where the internal control structure should be included in the curriculum for non-accounting business majors. Although internal control over financial reporting is a very complex topic, such a curriculum can at least help provide future managers with a solid foundation for understanding the responsibilities and requirements placed upon them.

The passage of Sarbanes–Oxley (SOX) dramatically affected the auditing profession, but it also generated the need for a significant change in the core of both accounting and business curricula (Arens & Elder, 2006). The Sarbanes–Oxley (SOX) Act (2002) brings the roles and responsibilities of management to the regulatory forefront in an attempt to make substantive improvements in corporate financial reporting. With such regulatory governance of management responsibility for the internal control structure, managers at all levels must be educated as to their responsibilities for these internal controls, risk management, and the integrity of their corporate financial statements (Barton & Rockwell, 1991; Elson, O'Callaghan, Alleyne, Bernal, & Walker, 2007; Herremans, 1997; Sobel, 2011). Managers with an accounting background may receive education in this field, but non-accounting managers may receive in the business curriculum only minimal exposure to the topic of internal controls. Accordingly, future managers (accounting or non-accounting) should learn about their roles and responsibilities for the internal control structure and risk management by some combination of undergraduate, graduate, or workplace-training curricula. Such training could help minimize the perception gap between managers and auditors in the corporate world. Additional research could suggest the best practices for building upon this foundation in the corporate world with workplace training or additional graduate education.

Clearly, the business curriculum should teach managers, and not just accountants, the importance of a well-developed system of internal controls. Although accountants with significant internal control experience often play a role in management, other managers with no accounting background may lack the academic or workplace training needed to sufficiently understand internal controls over financial reporting. The roles and responsibilities for establishing and maintaining internal controls over

financial reporting generated by SOX do not segregate accounting managers from non-accounting managers, and both need sufficient training. Sobel (2011) calls for chief audit executives to educate and train risk managers on risk management and related concepts, which should include internal controls. Accounting professors may have an equal opportunity to provide training for management professors concerning these related issues. This training could improve the graduate and undergraduate curricula for non-accounting majors and help provide a foundation for their learning experience as future managers.

This research continues with a brief review of the literature, the research design, a discussion of the research method and data collection, an analysis of the survey results, and the conclusions and recommendations drawn from the analysis.

2. Literature review

2.1. History of internal control reporting

The SOX Act of 2002 is not unique in its attempts to define and assign responsibility for internal control. Section 404(a) indicates that management is responsible for establishing and maintaining internal control. The *Securities Act (1933)* and *The Securities Exchange Act (1934)* addressed internal controls when buying and selling securities and bonds. The *Foreign Corrupt Practices Act (1977)* attempted to more clearly define internal control responsibilities by requiring corporations to devise and maintain an adequate system of internal accounting controls. Although the *Foreign Corrupt Practices Act of 1977* attempted to place on management more responsibility for the organization's internal controls (Elson, O'Callaghan, Alleyne, Bernal, & Walker, 2007), the National Commission on Fraudulent Financial Reporting (NCFRR) report claimed there was still no clear answer to who actually owns internal control (Schiff & May, 1990). Even with the additional requirements of SOX in 2002, the debate continues.

Beyond actual legislation, in 1978, the Commission on Auditor's Responsibilities, better known as the Cohen Commission, called for managers to assume primary reporting responsibility for disclosing management's response to auditor suggestions for corrections of weaknesses in internal controls (*American Institute of Certified Public Accountants (AICPA), 1978*). In 1987, the NCFRR recommended the Securities Exchange Commission (SEC) require annual reports to acknowledge management's responsibilities for financial statements and internal controls, including an assessment of the effectiveness of the company's internal controls (*National Commission on Fraudulent Financial Reporting, 1987*). Prior to the release of the *Internal Control-Integrated Framework* by the *Committee of Sponsoring Organizations (COSO)* in 1992, the Treadway Commission placed the blame for fraudulent financial reporting on inadequate managerial involvement and a general failure of managers to have a clear understanding of internal control (Gauthier, 2006). Even if organizations recognize the importance of internal controls over financial reporting, these controls remain ineffective if there is no clear understanding of who is responsible for such controls. Accordingly, to improve the public understanding of the obligations of corporate management and public accountants, these commissions introduced regulatory requirements that emphasized management's primary responsibility for reliable financial reporting (NCFRR, 1987).

With more regulatory requirements for management responsibility for internal controls over financial reporting, future managers must be educated concerning their roles and responsibilities for these controls. The NCFRR (1987) noted the importance of educators to prepare both business and accounting students to recognize financial fraud, ethical values and good business practices. It is not enough for non-accounting managers to rely on the education and skill of their accountants and auditors to ensure that proper internal controls are in place. Managers must be able to identify whether good internal controls are in place.

After the failure of Enron, WorldCom, and multiple other major corporations due to massive fraudulent financial reporting, the SOX Act of 2002 permanently changed the business community in an attempt to improve corporate responsibility (Elson, O'Callaghan, Alleyne, Bernal, & Walker, 2007). The SEC believed SOX would enhance the quality of reporting and boost investor confidence in the

integrity of the securities markets and encourage companies to dedicate more attention to the maintenance of internal controls (Nagy, 2010; Securities Exchange Commission, 2003). Granted, the issuance of SOX may not have resolved the debate of who ultimately bears the responsibility for internal controls over financial reporting, but the Act does provide more structure that can be used to educate future managers and auditors concerning their relative roles.

SOX Section 302 requires managers of public companies to certify financial reporting controls and the effectiveness of disclosure controls and procedures in quarterly and annual reports. Section 404(a) requires managers of public companies to document management's responsibility for "establishing and maintaining" an adequate internal control structure and procedures for financial reporting along with disclosure in the annual report of an assessment of the effectiveness of these procedures. Section 404(b), which only applies to accelerated filers, requires the external auditor to attest to and report on management's assessment of internal controls over financial reporting.¹ The auditor's assessment includes an opinion on the effectiveness of internal control over financial reporting. The [Public Company Accounting Oversight Board \(PCAOB\) Auditing Standard No. 5 \(2007\)](#) specifies that this assessment be integrated with the audit of financial statements.

Gupta and Leech (2006) call for a better understanding of the roles of management and auditors to improve compliance with SOX Sections 302 and 404. These authors believe management needs better guidance to prepare and confirm control assessment and documentation. This guidance should ultimately be developed and shared in the workplace environment. However, the complexities of these corporate governance issues and the guidance needed for compliance should be of interest to all business students who will not only be part of the SOX process in the future, but will also someday be the future executives responsible for corporate governance (Elson, O'Callaghan, Alleyne, Bernal, & Walker, 2007).

Even though the regulatory compliance of SOX applies to publicly traded companies, nonpublic corporations, not-for-profit entities, and professional associations are implementing SOX as a best business practice (Seaman, 2006). These entities may benefit from the increased efficiencies with less or no associated regulatory cost. Following the 2002 Act, the Government Finance Officers Association took the position that government financial managers should obtain the training needed to meaningfully take responsibility of internal control (Gauthier, 2006). Some non-profit entities and universities have amended bylaws and incorporated best practices from the Act and achieved added value as a result of their documentation efforts (Seaman, 2006). PricewaterhouseCoopers found that 30% of fast-growth private companies are applying SOX principles as best business practices to head-off future or potential problems (PriceWaterhouseCoopers (PwC), 2006). Nagy (2010) found SOX Section 404 compliance reduces the risk of releasing materially misstated financial statements. By effectively implementing the best practices of SOX, organizations may benefit from the SEC's goal of improving the quality of reporting and may increase the effectiveness of their internal controls. Furthermore, using SOX as a best business practice may help managers to achieve some level of "control" excellence in addition to the goal of "operational" excellence (Gupta & Leech, 2006).

2.2. The role of managers and internal auditors

Documenting and establishing the importance of internal controls over financial reporting leads to another complicated issue. Who is ultimately responsible for these internal controls? In simple terms, "maintaining" internal controls is the domain of management while "judging" the adequacy of these controls is considered the domain of accountants (Barton & Rockwell, 1991). Although the auditor may be viewed as the expert regarding the internal control system, the ultimate responsibility rests with management (Schiff & May, 1990). In order to maintain independence, internal auditors can validate management's success with internal controls, but they cannot assume the role of management related to these controls. While the enactment of SOX does make the role of internal audit more prominent (Schneider, 2009), overall internal controls should be a fundamental tool used to achieve management objectives (Gauthier, 2006; Institute of Internal Auditors Research Foundation, 2009). The effectiveness and efficiency of operations is in no small part dependent on internal controls (Herremans, 1997).

¹ The Jobs Act of 2012 exempts emerging companies from Section 404(b).

While the board of directors and audit committee may view the internal audit function as that of an assurance provider, corporate management may view the role of the internal auditor more as a consultant (Schneider, 2008). However, the *International Standards for the Professional Practice of Internal Auditing*, issued by the Institute of Internal Auditors (IIA), requires internal auditors to be objective in performing their work (Institute of Internal Auditors, 2012). This objectivity can be impaired when management asks internal auditors to provide consulting services or assume operational responsibilities. The IIA Standards mandate that internal auditors should “not assume management responsibility” (Schneider, 2008).

Managers with minimal accounting background may give internal auditors equal, if not greater, responsibility for internal controls over financial reporting. This highlights the importance of educating current and future managers concerning their level of responsibility for these controls. Managers must be thoroughly educated and prepared to take on their responsibility for establishing, maintaining and monitoring internal controls (Barton & Rockwell, 1991). Gauthier (2006) clearly sums up the need for management education and training, “management can hardly be supportive of something it does not understand” (12).

2.3. Incorporating the internal control structure into the business curriculum

The Treadway Commission recommended that both business and accounting students at the graduate and undergraduate levels gain a deeper understanding of the importance of internal controls (NCFRR, 1987). Anderson (1992) made a call for change in the business education curriculum almost 20 years ago by requesting the inclusion of internal controls in the core curriculum taken by all students, whether graduate or undergraduate. Professional organizations also recognized weaknesses that required change. The Association to Advance Collegiate Schools of Business (AACSB) International criticized the business curriculum for insufficient integration across functional areas where students tend to view situations as accounting problems or management problems instead of business problems (Anderson, 1992; Herremans, 1997). The American Institute of Certified Public Accountants also called for cross-functional academic training (Ammons & Mills, 2005). These recommendations acknowledge the need for business curriculum to integrate the functional areas of accounting and management to help students, accounting and non-accounting, to recognize the importance of both functional areas when analyzing business issues, and these often include internal controls.

Unfortunately, many professors still identify SOX legislation as an accounting issue only. Consequently, accounting, specifically auditing, curricula provide the most coverage. Accounting professors and practitioners tend to agree that understanding audit risk and internal controls is crucial for auditing classes (Armitage & Poyzer, 2010). Between 2000 and 2005, internal control was one of the topics with the largest increase in importance for inclusion in auditing classes (Armitage, 2008). A separate survey of accounting educators in 2004 found SOX coverage primarily in auditing related courses with minimal coverage in financial reporting and accounting information systems (Johnson, 2005). Many colleges have adopted new curricula reflecting the need to incorporate SOX coverage in classes such as internal auditing, forensic accounting, financial statement analysis, and even ethics. The new curricula provide great opportunities for accounting majors. Unfortunately, this coverage leaves non-accounting business majors unexposed to internal controls unless they choose to enroll in elective accounting or auditing classes.

Other professors have also recognized the need to incorporate internal controls into the business curriculum. Feng, Li, and McVay (2009) propose SOX coverage in the business curriculum that includes basic coverage in each of the business disciplines: Business Foundation, Marketing, Accounting, Management, Information Systems, Finance, Business Law, and Economics. Herremans (1997) introduces techniques to teach internal controls to Master of Business Administration students using the COSO and Criteria of Control (CoCo) models. Lehmann (2010) and Fleak, Harrison, and Turner (2010) provide internal control cases, but these may need to be restructured for incorporation in a business curriculum for non-accounting majors. These curriculum proposals and cases provide evidence of an awareness of the change needed to adequately educate non-accounting business majors of the complexities and of the responsibilities for internal controls over financial reporting.

While it is encouraging to have new proposals and course material, these recommendations may need very successful marketing strategies to penetrate the current business curriculum. The implementation of such recommended changes will encounter a curriculum environment where professors recognize the need to include more contemporary topics such as internal controls. However, these professors struggle with the issue of dropping traditional topics in favor of the newer material. The implementation faces a roadblock where it is impossible to add more to already overburdened courses (Herremans, 1997). The recognition of the need for change, the proposals for change, and the suggested course materials for change require the support of both accounting and management professors to garner enough attention for true incorporation into the business curriculum. Support from professors in other business disciplines would also help incorporate internal controls into more cross-functional areas of business as well. However, this research specifically focuses on encouraging this change among accounting and management professors.

As noted above, and to repeat Barton and Rockwell (1991), managers must be educated at all levels to reduce the discrepancies in management's view of its role and responsibility for the integrity of financial statements and the related internal controls over financial reporting. Unfortunately, this education is currently severely limited in the current business curriculum for non-accounting majors and future managers. Change is necessary to adequately prepare managers for their future leadership roles in our corporate governance system. This change may need to include a partnership between accounting and management professors with accounting professors leading the charge to help share information and curriculum related to internal controls over financial statement reporting with management professors.

3. Research design

Prior literature emphasizes the perception gap between actual corporate managers and auditors, but no current research addresses the perception gap between the accounting and management professors actually educating our future managers and auditors. Inadequate college training for non-accounting managers concerning internal controls, especially over financial reporting, could contribute to the perception gap between managers and auditors in the corporate environment. The previously discussed literature indicates the need for non-accounting managers to be adequately trained and educated concerning the complexities of SOX and the roles managers should assume for internal controls in their respective organizations. This need for adequate training and education of managers is predicated on an educational process for accounting and non-accounting business majors that provides such training and education. Therefore, this research focuses on the perceptions and knowledge of the professors bearing the responsibility of educating these future non-accounting managers and auditors. Although comprehensive coverage of the complexities of SOX lies far beyond the realm of the graduate and undergraduate business curriculum, foundational coverage could still prove very beneficial to non-accounting majors faced with the responsibilities of internal controls over financial reporting.

Accordingly, this research focuses primarily on the perceptions of accounting and management professors concerning who is most responsible for establishing and maintaining an organization's internal controls over financial reporting. The survey examines perceptions for multiple areas of internal controls, but the two primary categories of interest examine the proficiency of the professors with the legislative requirements of SOX related to "*establishing and maintaining*" internal controls over financial reporting.² The primary research questions read as follows:

R1a: Do the opinions of accounting and management professors differ concerning manager and internal auditor responsibilities for *establishing* an organization's internal controls over financial reporting?

² The research instrument breaks the responsibility for internal controls down into four categories: (1) establishing, (2) maintaining, (3) monitoring, and (4) evaluating internal controls over three separate areas: (1) operations, (2) systems, and (3) financial reporting. Since businesses rely upon internal controls in multiple areas of the corporate environment, the research instrument includes a range of these areas, as identified by Schiff and May (1990), in an attempt to segregate the internal controls responsibilities over financial statement reporting from other areas of internal control.

R1b: Do the opinions of accounting and management professors differ concerning manager and internal auditor responsibilities for *maintaining* an organization's internal controls over financial reporting?

The primary focus of R1a and R1b is to identify a potential perception gap between management and accounting professors concerning managers in general and the internal auditors, and the business education implications of any such differences uncovered. The following research questions focus on educating those non-accounting majors who may one day become managers and face the roles and responsibilities of internal controls over financial reporting.

Initially, this research proposes to identify and provide an awareness of any possible perception gap in the academic realm between management and accounting professors. Concurrently, the research gathers information from these professors to examine additional issues related to when, where, and by whom internal controls *should* be taught in the non-accounting business curriculum. The second research question addresses the curriculum level professors believe to be most appropriate for educating future business managers concerning the appropriateness of an internal control structure. This question attempts to determine the perceptions (and any differences therein) of accounting and management professors concerning when to incorporate internal controls into the curriculum for non-accounting business majors: the undergraduate level, the graduate level, or in the workplace environment. The second research question reads as follows:

R2: At which level(s) should internal control information be taught to future business managers: the undergraduate level, the graduate level, or the workplace environment?

The next research question attempts to identify which classes in the curriculum should cover the content of internal control responsibility along with any differences between the perspectives of the accounting and management professors. Undergraduate principles of accounting classes may contain a brief introduction of internal controls, but should the topic also be included in principles of management, and if so, to what extent? Internal controls covered in upper-level accounting classes provide needed information for accounting majors but little or no benefit to non-accounting business majors who are very unlikely to enroll in these classes. Accordingly, is the topic covered in upper-level management classes that are tailored for the non-accounting business major? Further consideration includes the possibility of teaching internal controls to non-accounting business majors in the graduate curriculum as future managers pursue the Masters of Business Administration (MBA) degree. Participants listed the classes that would most effectively cover this content. The third research question reads as follows:

R3: Which classes should cover information related to internal controls for future business majors?

The final research question addresses the issue of who is most qualified to teach the topic of internal controls to non-accounting business majors. This research question asks whether accounting or management professors are most qualified to teach internal controls to non-accounting majors and measures the perception gap between the professors concerning who is most qualified. Research question four reads as follows:

R4: Who is most qualified to teach information concerning internal controls to non-accounting business majors?

4. Research method and data collection

This research surveys accounting and management professors from universities across the United States using a web-based survey through Qualtrics. The sample selection included randomly chosen accounting professors using the Accounting Faculty Directory authored by Hasselback (2010). After identifying the first university on every other page, we proceeded to the university's website to identify all accounting and management professors at that university. This sample selection does

not attempt to generate a matched-pair sample of accounting and management professors from each university. The sample simply involves a random selection of both types of professors from each university, which includes a total of 1334 professors (631 accounting and 703 management). The survey generated responses from 222 participants for an overall response rate of approximately 17% (20% from accounting and 13% from management). Responses from 10 participants were deleted due to incomplete data leaving a complete data set of 212 responses. Accounting professors represent 58% of the total population (124 responses), and management professors make up the remaining 42% (88 responses).

Demographics indicate that accounting professor responses include 43 auditing and 81 non-auditing responses, which generate 20% and 38% of the total sample respectively. Of the 212 responses, management professors generate 43 responses from the sub-discipline of strategy and policy (20%), 25 responses from organizational behavior and human resource management (12%), 15 responses from theory (7%), and 5 responses from other potentially non-management specific fields (3%) such as marketing and business law. Since the management operations, strategy, and policy courses may be more likely to cover strategic thinking in operations, quality, and integrating business plans than the theory, organizational behavior, and human resource professors, we believe the sample generates equal representation between the auditing professors (20%) and the strategy and policy professors (20%), who may be more likely to cover the topic of internal controls. Approximately 70% of the sample reported a minimum of 6 or more years of practical (non-teaching) experience with 44% reporting 11 or more years of practical experience.

The research utilizes crosstabs and a Pearson chi-square analysis to determine the statistically significant difference between accounting and management professor perceptions concerning who is most responsible for internal controls over financial reporting. These statistics also measure the difference in perceptions concerning when, where, and by whom this information should be taught to non-accounting business majors. As an exploratory study used to identify a possible perception gap in the academic realm, the chi-square analysis identifies significant differences in perception and not the actual knowledge of professors or the actual best curriculum practices. A significant perception gap among these professors could signify the need for additional research to actually measure the specific knowledge of professors and students concerning internal controls as well as the specific levels, content, and courses used to incorporate internal controls into the non-accounting major curriculum in business schools.

5. Results

5.1. Primary research question

The chi-square analysis indicates significant differences ($p < 0.001$) of the perceptions of accounting and management professors concerning whether the manager or the internal auditor is most responsible for “establishing” and “maintaining” internal controls over financial reporting. Almost 39% of management professors (observed exceeds expected responses) surveyed incorrectly assign the responsibility of “establishing” internal controls over financial reporting to the internal auditor instead of managers. In addition, 44% of the management professors (observed exceeds expected responses) incorrectly assign internal auditors the responsibility for “maintaining” internal controls over financial reporting as well. Management professors, as well as corporate management, may assume that any responsibility related to financial reporting belongs to the internal auditor, the highly skilled expert in this area. Approximately 90% of the accounting professors surveyed accurately recognized the role and responsibility of management for “establishing” internal controls over financial reporting, and 88% accurately recognized the role and responsibility of management for “maintaining” internal controls over financial reporting. Unfortunately, this leaves 10% and 12% of accounting professors who incorrectly indicated that internal auditors should bear the responsibility for “establishing” and “maintaining” internal controls over financial reporting instead of managers. See the related crosstabs in Table 1, Panels A and B below.

Since the total population in the sample could include management and accounting professors who do not deal directly with the topic of internal controls over financial reporting, we examine the chi-square analysis between the sub-disciplines of auditing in accounting and strategy/policy in management to improve the rigor of the analysis. The observed versus expected patterns and the statistical significance of these models consistently holds true ($p < 0.001$) when examined within these sub-disciplines. In this analysis, 45% of strategy/policy professors (compared to 39% and 44% above) incorrectly assign the responsibilities of “establishing” and “maintaining” internal controls over financial reporting to the internal auditor as well. The percentage of auditing professors who correctly identify managers as the most responsible for “establishing” and “maintaining” internal controls over financial reporting increases to 95% and 98% respectively (an increase from 90% and 88% above). See the related crosstabs in Table 2, Panels A and B below.

This statistically significant difference between accounting and management professors may indicate an educational need for accounting professors to help educate business professors identify and clearly discern the roles of management versus internal auditors. These findings confirm recommendations by Gupta and Leech (2006), which call for a clear understanding of these very different roles to improve compliance with SOX. Apparently, such understanding is necessary in the academic realm as well. Business professors, management and accounting, can hardly be effective teachers of something they do not understand.

5.2. Research question 2

Additional data gathered in this survey involves an analysis of the accounting and management professors' perceptions of which curriculum level should be used to teach future managers information concerning the internal control structure: undergraduate, graduate, or workplace environment. The chi-square analysis indicates a statistically significant difference ($p = 0.043$) in the perceptions of accounting and management professors concerning the inclusion of internal controls at the undergraduate level. Of the professors surveyed, more accounting professors and fewer management professors than expected identified the need to include the topic of internal controls at the undergraduate level for non-accounting majors. However, 95% of accounting professors and 87% of management professors believe the undergraduate curriculum should contain information concerning the internal control structure. Although a majority of all the professors recognize the undergraduate curriculum as an appropriate level to teach internal controls, the higher percentages for accounting

Table 1

Panel A: Crosstabs for establishing internal controls over financial reporting, Panel B: Crosstabs for maintaining internal controls over financial reporting.

		Professor type			Total		
		Accounting		Management			
<i>(A) Establishing internal control over financial reporting</i>							
Manager	Observed	112.0	90%	54.0	61%	166	78%
	Expected	97.1		68.9		166	
Internal auditor	Observed	12.0	10%	34.0	39%	46	22%
	Expected	26.9		19.1		46	
Total	Observed	124.0	100%	88.0	100%	212	100%
	Expected	124.0		88.0		212	
<i>(B) Maintaining internal control over financial reporting</i>							
Manager	Observed	109.0	88%	49.0	56%	158	75%
	Expected	92.4		65.6		158	
Internal auditor	Observed	15.0	12%	39.0	44%	54	25%
	Expected	31.6		22.4		54	
Total	Observed	124.0	100%	88.0	100%	212	100%
	Expected	124.0		88.0		212	

Pearson chi-square value 25.406, Cramer's V 0.346 ($p < 0.001$).

Pearson chi-square value 28.150, Cramer's V 0.364 ($p < 0.001$).

Table 2

Panel A: Crosstabs for establishing internal controls over financial reporting within the sub-disciplines of auditing and strategy/policy, Panel B: Crosstabs for maintaining internal controls over financial reporting within the sub-disciplines of auditing and strategy/policy.

		Professor type				Total	
		Auditing		Strategy/policy			
<i>(A) Establishing internal control over financial reporting</i>							
Manager	Observed	40.0	95%	24.0	55%	64	74%
	Expected	31.6		32.4		64	
Internal auditor	Observed	2.0	5%	20.0	45%	22	26%
	Expected	10.4		11.6		22	
Total	Observed	42.0	100%	44.0	100%	86	100%
	Expected	42.0		44.0		86	
<i>(B) Maintaining internal control over financial reporting</i>							
Manager	Observed	41.0	98%	24.0	55%	65	76%
	Expected	31.7		33.3		65	
Internal auditor	Observed	1.0	2%	20.0	45%	21	24%
	Expected	10.3		10.7		21	
Total	Observed	42.0	100%	44.0	100%	86	100%
	Expected	42.0		44.0		86	

Pearson chi-square value 17.753, Cramer's V 0.457 ($p < 0.001$).

Pearson chi-square value 21.602, Cramer's V 0.501 ($p < 0.001$).

Table 3

Panel A: Crosstabs for teaching internal controls at the undergraduate level, Panel B: Crosstabs for teaching internal controls at the graduate level, Panel C: Crosstabs for teaching internal controls at the workplace level.

		Professor type				Total	
		Accounting		Management			
<i>(A) Teaching internal controls at the undergraduate level</i>							
Not identified	Observed	6.0	5%	11.0	13%	17	8%
	Expected	9.9		7.1		17	
Identified	Observed	118.0	95%	77.0	87%	195	92%
	Expected	11431		80.9		195	
Total	Observed	124.0	100%	88.0	100%	212	100%
	Expected	124.0		88.0		212	
<i>(B) Teaching internal controls at the graduate level</i>							
Not identified	Observed	61.0	49%	35.0	40%	96	45%
	Expected	56.2		39.8		96	
Identified	Observed	63.0	51%	53.0	60%	116	55%
	Expected	67.8		48.2		116	
Total	Observed	124.0	100%	88.0	100%	212	100%
	Expected	124.0		88.0		212	
<i>(C) Teaching internal controls at the workplace level</i>							
Not identified	Observed	55.0	44%	36.0	41%	91	43%
	Expected	53.2		37.8		91	
Identified	Observed	69.0	56%	52.0	59%	121	57%
	Expected	70.8		50.2		121	
Total	Observed	124.0	100%	88.0	100%	212	100%
	Expected	124.0		88.0		212	

Pearson chi-square value 4.096, Cramer's V 0.139 ($p = 0.043$).

Pearson chi-square value 1.844, Cramer's V 0.093 ($p = 0.175$).

Pearson chi-square value .249, Cramer's V .034 ($p = 0.617$).

professors could involve the consideration of principles of accounting to cover this material for non-accounting business majors. See Table 3, Panel A for the related crosstabs.

Additional findings do not indicate any disagreement between the perceptions of accounting and management professors concerning the inclusion of internal control related topics at the graduate level ($p = 0.175$) or in the workplace environment ($p = 0.617$). Of accounting professors surveyed, approximately 51% and 56% respectively believe the topic of internal controls should be taught at the graduate and workplace levels. Approximately 60% and 59% of management professors believe this information should be taught at these same levels respectively. See Table 3, Panels B and C for the related crosstabs. These overall findings identify the undergraduate curriculum as the most popular level to include the topic of internal controls with more emphasis placed on this level by accounting professors. In addition, both types of professors recognize the need for some inclusion of internal controls at the graduate curriculum level as well. This information should be beneficial to professors considering a redesign or new implementation of curriculum to include internal controls for non-accounting business majors.

5.3. Research question 3

The third research question addresses the specific classes that accounting and management professors believe should cover the topic of internal controls for future managers. Professors listed the most

Table 4

Panel A: Crosstabs for teaching internal controls in principles of accounting courses, Panel B: Crosstabs for teaching internal controls in principles of management courses, Panel C: Crosstabs for teaching internal controls in management major specific courses, Panel D: Crosstabs for teaching internal controls in accounting major specific courses.

		Professor type				Total	
		Accounting		Management			
<i>(A) Teaching internal controls in principles of accounting</i>							
Not identified	Observed	52.0	50%	26.0	38%	78	45%
	Expected	46.9		31.1		78	
Identified	Observed	52.0	50%	43.0	62%	95	55%
	Expected	57.1		37.9		95	
Total	Observed	104.0	100%	69.0	100%	173	100% ^a
	Expected	104.0		69.0		173	
<i>(B) Teaching internal controls in principles of management</i>							
Not identified	Observed	82.0	79%	44.0	64%	126	73%
	Expected	75.7		50.3		126	
Identified	Observed	22.0	21%	25.0	36%	47	27%
	Expected	28.3		18.7		47	
Total	Observed	104.0	100%	69.0	100%	173	100% ^a
	Expected	104.0		69.0		173	
<i>(C) Teaching internal controls in management major courses</i>							
Not identified	Observed	73.0	70%	29.0	42%	102	59%
	Expected	61.3		40.7		102	
Identified	Observed	31.0	30%	40.0	58%	71	41%
	Expected	42.7		28.3		71	
Total	Observed	104.0	100%	69.0	100%	173	100% ^a
	Expected	104.0		69.0		173	
<i>(D) Teaching internal controls in accounting major courses</i>							
Not identified	Observed	15.0	14%	34.0	49%	49	28%
	Expected	29.5		19.5		49	
Identified	Observed	89.0	86%	35.0	51%	124	72%
	Expected	74.5		49.5		124	
Total	Observed	104.0	100%	69.0	100%	173	100% ^a
	Expected	104.0		69.0		173	

Pearson chi-square value 2.5420, Cramer's V 0.121 ($p = 0.111$)

Pearson chi-square value 4.766, Cramer's V 0.166 ($p = 0.029$)

Pearson chi-square value 13.597, Cramer's V 0.280 ($p < 0.001$)

Pearson chi-square value 24.818, Cramer's V 0.379 ($p < 0.001$)

^a Only 173 of the 212 respondents listed suggested courses.

appropriate courses. Approximately 50% of accounting professors and 62% of management professors identified principles of accounting as a relevant course to address internal controls for non-accounting majors. No perception gap exists between the professors in this study concerning the introduction of internal controls in the principles of accounting class ($p = 0.111$). Both types of professors may realize the potential to introduce the topic of internal controls in principles of accounting, but the introductory coverage may not provide enough exposure to the topic for freshman and sophomore non-accounting majors who might not encounter this material again prior to completion of their undergraduate degree. See Table 4, Panel A for the related crosstabs.

The chi-square analysis does indicate a difference ($p < 0.05$) in opinion between these professors concerning the inclusion of internal controls in principles of management courses, management major specific courses, and accounting major specific courses. More management professors than expected identified principles of management courses ($p = 0.029$) and/or management major specific courses ($p < 0.001$) as an outlet for the topic of internal controls while fewer accounting professors than expected listed those classes as relevant. Approximately 58% of management professors surveyed listed management major specific courses as appropriate courses to cover internal controls for non-accounting business majors compared to 30% of accounting professors. Only 27% of the total population selected principles of management as an appropriate outlet for the topic of internal controls. See Table 4, Panels B and C for the related crosstabs.

These findings might indicate that management professors expect non-accounting business majors to be better prepared to comprehend the management responsibilities of internal controls in their management major specific courses. From the accounting professor perspective, 50% identified principles of accounting as a relevant class to cover this material compared to 30% who identified management major specific courses and 21% who identified principles of management. With the emphasis on principles of accounting, perhaps accounting professors should be willing to integrate the topic of internal controls more thoroughly in the principles class, which would impact all business majors and provide a foundation needed to build upon in the management major specific courses later. Management professors could also implement more cross-functional training of managers concerning their responsibility for internal controls over financial reporting in the upper-level management classes. However, 39% and 44% of all management professors in this study incorrectly identified the roles of establishing and maintaining internal controls over financial reporting to the internal auditor instead of managers. Accounting professors may need to lead the charge to help cross-train management professors concerning the most basic and foundational rules and regulations of SOX necessary for implementation into the management major specific classes.

Interestingly, 86% of accounting professors identified accounting major specific courses as appropriate courses to cover internal controls for non-accounting majors. More accounting professors and fewer management professors than expected selected accounting major specific courses as relevant courses. This perception gap is statistically significant ($p < 0.001$). If internal controls are covered in upper-level accounting courses, non-accounting business majors would only receive this subject coverage if they enrolled in the class as an elective. These results might indicate that accounting professors were identifying the courses they commonly use to cover this topic in the current accounting curriculum. However, with the emphasis on the accounting major specific courses, perhaps accounting professors could design an elective, upper-level, cross-functional accounting course appropriate for both accounting and non-accounting business majors that addresses internal controls over operations, systems, and financial reporting. This type of course could allow both accounting and non-accounting majors to work together in the classroom on responsibilities that they will share in the corporate environment. See Table 4, Panel D for the related cross tabs.

Based on this research, more professors recognize principles of accounting than principles of management as a relevant outlet for the topic of internal controls. However, accounting professors (86%) identify the accounting major courses as appropriate courses to cover this material while management professors (58%) place more emphasis on upper-level courses for management majors. In reality, non-accounting business majors are probably more likely to participate in upper-level management courses, which leads to the next research question. Who is most qualified to teach internal controls to non-accounting business majors?

Table 5
Crosstabs for most qualified to teach internal controls.

Establishing internal control over financial reporting		Professor type				Total	
		Accounting		Management			
Management	Observed	73.0	60%	30.0	34%	103	49%
	Expected	59.8		43.2		103	
Accounting	Observed	8.0	7%	35.0	40%	43	20%
	Expected	25.0		18.0		43	
Accounting information systems	Observed	39.0	32%	16.0	18%	55	26%
	Expected	32.0		23.0		55	
Other	Observed	2.0	2%	7.0	8%	9	4%
	Expected	5.2		3.8		9	
Total	Observed	122.0	100%	88.0	100%	210	100% ^a
	Expected	122.0		88.0		210	

Pearson chi-square value 15.802, Cramer's V 0.452 ($p < 0.001$).

^a Only 210 of the 212 respondents provided most qualified professors.

5.4. Research question 4

The fourth research question measures the significant differences ($p < 0.001$) between accounting, accounting information systems, and management professors concerning who is most qualified to teach the topic of internal controls to non-accounting business majors. In this study, more management professors than expected recognize accounting professors (40% observed) and accounting information systems professors (18% observed) as most qualified to teach the topic of internal controls to non-accounting business majors. This finding is interesting since 58% (Table 4) of management professors identified management major specific classes as the appropriate courses to cover this material. See Table 5 for the related crosstabs.³

Accounting professors present similarly intriguing responses between research questions two and three. Approximately 60% of accounting professors (see Table 5) recognize management professors as the most qualified professor to teach internal controls to non-accounting business majors, while approximately 86% (Table 4, Panel D) of these professors also list upper-level courses for accounting majors as relevant courses to cover internal controls. Another interesting aspect of research question four is that accounting professors recognize Accounting Information Systems professors (32% observed) as the most qualified accounting professor to teach internal controls. With so much emphasis placed on information systems in the internal controls process, this finding should not be surprising.

6. Conclusion

This research identifies a striking difference between the perceptions of accounting and management professors concerning who is most responsible for establishing and maintaining internal controls over financial reporting. Prior literature recognizes the need to educate future managers concerning their roles for establishing and maintaining internal controls over financial reporting, especially in the light of regulatory requirements implemented by SOX. Unfortunately, those responsible for educating our future managers may not be aware of the perception gap that appears to exist between management and accounting professors. This research identifies the need for more awareness of and clarity in discerning the complex roles of managers and internal auditors in the academic realm, which may improve the discernment and clarity of managers and auditors in the corporate environment.

While the vast majority of management and accounting professors identify the undergraduate curriculum level as an appropriate level to implement curricula concerning internal controls, fewer management professors than expected recognize the undergraduate curriculum as a primary foundation

³ Once again, the observed versus expected patterns are consistent, and the chi-square analysis is still statistically significant when measured within the sub-disciplines of auditing and strategy/policy with a p value $< .001$. The data are available upon request.

for teaching internal controls. These management professors do, however, recognize principles of accounting as a relevant undergraduate class for teaching internal controls (62%) compared to principles of management (36%). This might indicate a need to include more material in the already overburdened accounting principles class, or at least a better integration of basic internal control requirements. On the other hand, accounting professors could help management professors begin integrating cross-functional, related internal control material into the principles of management courses as well. Perhaps accounting professors can lead this movement by sharing relevant internal control case studies adapted to the management perspective. Ideally, internal controls could be integrated throughout the various disciplines in the business curriculum. However, this research focuses on this cross-functional integration involving accounting and management professors. Future research might consider the integration of internal controls in other business disciplines as well.

In this study, accounting and management professors generate differences of opinion regarding whether internal control should be covered in the upper-level accounting major or upper-level management courses. Interestingly, accounting professors view management professors as the most qualified to teach non-accounting business students the topic of internal controls, while management professors view accounting professors as the most qualified. Management professors may recognize the expertise of accounting professors in the area of internal controls, but accounting professors do not typically teach management major courses, which management professors view as relevant courses for covering internal controls. In the same respect, accounting professors may acknowledge the role of management professors in educating their own non-accounting business majors, but management professors do not teach the accounting major specific courses noted by accounting professors as relevant courses for internal controls.

This disconnect between accounting and management professors may result in a curriculum that insufficiently addresses the role of internal controls for non-accounting business students, sending our future managers into the world of corporate governance with inadequate training. With the awareness of this disconnect identified by this research, management and accounting professors can work toward together to improve the curriculum. Future managers clearly need some integration of internal controls in either management courses or accounting courses appropriate for both accounting and non-accounting majors. Once again, accounting professors may take the lead in the integration by using their expertise to host seminars to cross-train management professors in the role of internal controls, especially those related to establishing and maintaining internal controls over financial reporting. In addition, accounting professors could support management professors by teaching or co-teaching internal control related classes to both accounting and non-accounting majors where students could work together in a simulated process equivalent to the corporate experience.

This study provides a strong foundation for those beginning to restructure the business curriculum to cover internal controls. However, this study uses chi-square analyses to determine significant differences in the perceptions of accounting and management professors and does not attempt to determine the causality of the identified perception gaps. The findings related to where, when, and who should teach internal controls for non-accounting business majors generate grounds for a future pilot study with more structured research to address the results. In addition, defining internal controls and the responsibilities for these internal controls can be very complex. A misunderstanding of the definition of internal controls over financial reporting could contribute to the perception gap between management and accounting professors. Finally, the random selection of accounting and management professors does not limit the participants to specific fields of accounting or management. However, all accounting and management professors may be involved in the principles of accounting or management courses where the topic of internal controls may be covered and should hold some accountability for the knowledge of internal controls.

This study provides information beneficial to those seeking to redesign or implement new curricula to adequately address the complex responsibilities managers must assume in the corporate world. First, accounting and management professors must come to an agreement and understanding of the roles and responsibilities of managers for internal controls over financial reporting. Next, these professors should work together to determine the most appropriate curriculum level and courses that will adequately cover the topic of internal controls for the non-accounting business students. Although a difference of opinion currently exists between these professors concerning who is most qualified to

teach internal controls, both accounting and management professors should be sufficiently qualified to teach the basic roles and responsibilities of internal controls to non-accounting business students. With a more thorough understanding of these responsibilities, management professors may be better equipped to integrate the topic into the current management courses, especially at the upper level. Perhaps the accounting professors, who primarily teach internal controls to accounting students, should take the lead in providing additional training for management professors. Accounting professors might even consider a truly cross-functional accounting course suitable for both accounting and non-accounting business students. Through concerted effort, accounting and management professors can design the curricula needed to integrate adequate cross-functional learning for our non-accounting business students.

Acknowledgements

We would like to thank our research assistants, Michael Anderson and Eboni Murphy, for their contribution to this study and the editor (David E. Stout) and anonymous reviewers at the *Journal of Accounting Education* for their helpful recommendations and suggestions.

References

- American Institute of Certified Public Accountants (AICPA) (1978). *The commission on auditors' responsibilities: Report, conclusions and recommendations*. AICPA: New York, NY, xxiii.
- Ammons, J. L., & Mills, S. K. (2005). Course-embedded assessments for evaluating cross-functional integration and improving the teaching–learning process. *Issues in Accounting Education*, 20(1), 1.
- Anderson, U. (1992). Internal control and the business education curriculum. *Internal Auditing*, 9(1), 64–68.
- Arens, A. A., & Elder, R. J. (2006). Perspectives on auditing education after Sarbanes–Oxley. *Issues in Accounting Education*, 21(4), 345–362.
- Armitage, J. (2008). Changes in the importance of topics in auditing education: 2000–2005. *Managerial Auditing Journal*, 23(9), 935–959.
- Armitage, J., & Poyzer, J. K. (2010). Academicians' and practitioners' views on the importance of the topical content in the first auditing course. *American Journal of Business Education*, 3(1), 71–82.
- Barton, M. F., & Rockwell, L. M. (1991). Who's responsible for the content of financial statements? *Management Accounting*, 72(7), 24–26.
- Committee of Sponsoring Organizations (COSO) of the Treadway Committee (1992). *Internal control integrated framework*. Jersey City, NJ: COSO, p. 7.
- Elson, R., O'Callaghan, S., Alleyne, B., Bernal, S., & Walker, J. (2007). An innovative approach for integrating the Sarbanes Oxley Act into the undergraduate business curriculum. *Academy of Educational Leadership Journal*, 11(3), 59–66.
- Feng, M., Li, C., & McVay, S. (2009). Internal control and management guidance. *Journal of Accounting and Economics*, 48(2/3), 190–209.
- Fleak, S. K., Harrison, K. E., & Turner, L. A. (2010). Sunshine Center: An instructional case evaluating internal controls in a small organization. *Issues in Accounting Education*, 25(4), 709–720.
- Flesher, D. L., & Zanzig, J. S. (2000). Management accountants express a desire for change in the functioning of internal auditing. *Managerial Auditing Journal*, 15(7), 331–337.
- Foreign Corrupt Practices Act of 1977 (1977). 15 U.S.C. §§ 78dd-1, et seq. <<http://www.justice.gov/criminal/fraud/fcpa/docs/fcpa-english.pdf>>.
- Gauthier, S. (2006). Understanding internal control. *Government Finance Review*, 22(1), 10–16.
- Gupta, P., & Leech, T. (2006). Making Sarbanes Oxley 404 work: Reducing cost, increasing effectiveness. *International Journal of Disclosure and Governance*, 3(1), 27–48.
- Hasselback, J. (2010). *Prentice-Hall accounting faculty directory*. Prentice-Hall. <<http://www.facultydirectories.com/AtgDir/A2009-2010.pdf>>.
- Herremans, I. M. (1997). Integrating internal control in MBA programmes using the COSO and CoCo models. *Managerial Auditing Journal*, 12(2), 60–66.
- Institute of Internal Auditors (2012). *International standards for the professional practice of internal auditing*. Altamonte Springs, FL: IIA. <<http://www.theiia.org/guidance/standards-and-guidance/ippf/standards/full-standards/>>.
- Institute of Internal Auditors Research Foundation (2009). *Internal auditing: Assurance and consulting services*. 2nd ed. Altamonte Springs, FL: IIA, 6–14.
- Johnson, G. (2005). The Sarbanes–Oxley Act and undergraduate courses. *The CPA Journal August*, 68–69.
- Lehmann, C. M. (2010). Internal controls: A compendium of short cases. *Issues in Accounting Education*, 25(4), 741–754.
- Nagy, A. (2010). Section 404 compliance and financial reporting quality. *Accounting Horizons*, 24(3), 441–454.
- National Commission on Fraudulent Financial Reporting (1987). *Report of the national commission on fraudulent financial reporting*. <<http://www.coso.org/Publications/NCFRR.pdf>>.
- Public Company Accounting Oversight Board (PCAOB) (2007). Auditing Standard No. 5. <http://pcaobus.org/Standards/Auditing/Pages/Auditing_Standard_5.aspx>.

- PriceWaterhouseCoopers (PwC) (2006). Though opposed to new regulations, fast-growing private companies voluntarily adopt Sarbanes–Oxley principles, PricewaterhouseCoopers finds. *Trendsetter Barometer Survey*. <[http://www.barometersurveys.com/production/BarSurv.nsf/vwResources/PR_PDF_Files_2006/\\$file/tb060110.pdf](http://www.barometersurveys.com/production/BarSurv.nsf/vwResources/PR_PDF_Files_2006/$file/tb060110.pdf)>.
- Sarbanes Oxley Act of 2002 (2002). PL 107-204, 116 Stat 745. <http://pcaobus.org/About/History/Documents/PDFs/Sarbanes_Oxley_Act_of_2002.pdf>.
- Sarens, G., & De Beelde, I. (2006). The relationship between internal audit and senior management. *International Journal of Audit*, 10(3), 219–241.
- Schiff, J., & May, C. (1990). What is internal control? Who owns it? *Management Accounting*, 72(5), 37–40.
- Schneider, A. (2008). The relationship between internal audit and corporate management. *Internal Auditing*, 23(5), 12.
- Schneider, A. (2009). The roles of internal audit in complying with the Sarbanes–Oxley Act. *International Journal of Disclosure and Governance*, 6(1), 69–79.
- Seaman, J. (2006). What works best. *The Internal Auditor*, 63(1), 42–49.
- Securities Exchange Commission (2003). *Management's report on internal control over financial reporting and certification of disclosure in exchange act periodic reports*. Washington, DC: Government Printing Office.
- Securities Act of 1933 (1933). 15 U.S.C. §78a et seq. <<http://www.sec.gov/about/laws/sa33.pdf>>.
- Securities Exchange Act of 1934 (1934). 15 U.S.C. §78a et seq. <<http://www.sec.gov/about/laws/sea34.pdf>>.
- Sobel, P. J. (2011). *Internal auditing's role in risk management. The Institute of Internal Auditors Research Foundation White Paper*. Altamonte Springs, FL: IIA RF.
- Spira, L. F., & Page, M. (2003). Risk management: The reinvention of internal control and the changing role of internal audit. *Accounting, Auditing and Accountability Journal*, 16(4), 640–661.