

NECESSARY SKILLS FOR ACCOUNTING GRADUATES: AN EXPLORATORY STUDY TO DETERMINE WHAT THE PROFESSION WANTS

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ABSTRACT

This study obtains the viewpoints of two important constituent groups for higher education accounting programs: (1) public accountants and (2) non-public accountants, regarding the importance of accounting-related skills and topics to be covered in undergraduate curricula. Of 34 accounting-related skills and topics, statistically significant differences for 19 were found between the two groups. Implications for accounting educators are discussed.

INTRODUCTION

Many accounting practitioners have expressed dissatisfaction with the level of accounting knowledge and skills exhibited by their new hires upon graduation from college. In fact, according to Nelson (1995) impassioned cries for changes in accounting education have come from the accounting profession since the "inception of university programs." This issue has become more complex as accounting has moved beyond the use of pencils, erasers, and 12-column worksheet paper toward embracing the technology of today's modern business environment. In short, accounting graduates need to understand and master accounting-related skills and topics associated with technological innovations including hardware and software in order to be productive starting with their first day on the job. Further, in order to function in today's diverse business environment, other accounting-related skills and topics may be essential, such as proficiency in a second language and creativity in problem solving.

Many accounting programs and classes have been expanded beyond merely assisting students to obtain basic accounting knowledge; accounting curricula now incorporate business classes that help students obtain skills in software such as Excel, Word, and Access, and learn about technology such as telecommunication software, intranets, and client/server management. Other business courses help students become aware of the impact of diverse workplaces, as well as global, ethical, and environmental issues. Even so, accounting programs have been especially inundated in the past two and a half decades with studies and position papers addressing the quality of education available for accounting students and recommending changes in educators' approach to providing a more comprehensive knowledge of accounting. The 1980s and 1990s saw the release of the Bedford Committee's Report (1986), followed by the (then) Big 8 accounting firms' issuance of their White Paper, "Perspectives on Accounting Education," (Arthur Andersen & Co.) the creation of the Accounting Education Change commission (AECC), the creation and growth of the American Accounting Association's Teaching and Curriculum Section and the release of joint study results from the Institute of Management Accountants and

the Financial Executives Institute in 1994 (Siegel and Sorensen). Additionally, in 1998 the AICPA issued their top five issues for the public accounting profession in their Vision Project, also offering guidance for changes in higher education for aspiring CPAs.

Academic accountants have addressed some of the issues raised, albeit some believe with only a limited amount of success. The 2000 Albrecht and Sack (A&S) seminal study reporting that, in general, accounting education had not changed substantively in response to the demands of accounting practitioners and expressing concern about the future of accounting programs provided further fodder for discussion. Albrecht (2002) also took his concerns to the American Association of Collegiate Schools of Business (AACSB), which resulted in further upheaval in business schools. Later, Johnson and Halabi (2009) determined that A&S was cited in over 29% of published research papers during the seven-year period between the beginning of 2001 and the end of 2007, which is evidence of a strong reaction to their concerns on the part of the professoriate. During the same time period, inadequate accounting education was partially blamed for the corporate malfeasance apparent in the Enron, Equity Funding, WorldCom, Sunbeam, Arthur Andersen and HealthSouth debacles (Russell and Smith, 2003).

Joining the controversy, Lux (2000) expressed his opinion that accounting educators needed to change how they viewed curricula, their delivery methods, and how students learn if they expected to align their efforts with the AECC. In 2002 Gabbin decried the continued reluctance of accounting educators to embrace change and indicated there had been little improvement in accounting programs. He expressed concern that the accounting academic community's resistance to change had contributed toward the loss of top students to other business disciplines. However, as a result of the accounting scandals in recent years as well as the passage of Sarbanes-Oxley, neither the dire predictions of A&S nor Gabbin were fulfilled, because the need for high quality accountants actually increased (Hargadon & Fuller, 2007; Brausch, 2009). As expressed by Bisoux (2002), many stakeholders actually noticed students' newfound interest in accounting.

Some have obtained information from accounting students as to their motives and expectations regarding their higher education experience (Byrne and Flood, 2005; Arquero, Byrne, Flood and Gonzalez, 2009). Others have expressed concern that accounting programs in general have geared their accounting curricula solely for students interested in public accounting, thus excluding students who are more interested in the non-public accounting arena (Tatikonda, 2004; Ahadiat, 2008). However, there does not seem to be a great deal of consensus about the courses that should be completed in order to ensure success in the non-public accounting arena (see, for example, Frecka, Morris and Ramanan, 2004; Cheng, 2007; and Hurt, 2007). Further, resource limitations, especially with many states cutting higher education budgets, prevent many accounting programs from offering more than a limited number of non-accounting classes that may nonetheless be essential for all accounting students, thus being unable to fully satisfy the needs of both professional groups. The purpose of this paper is to report the findings of a study examining the viewpoints of public accounting and non-public accounting professionals regarding accounting-related skills and topics they feel students should have prior to employment. Perspectives of practicing accountants, both in public accounting and in other areas of accounting, were gathered in order to gain insight into this question.

METHOD

Several studies have attempted to replicate the work of A&S or have addressed the issues they raised. The current study was also based on their questionnaire, but was expanded to include accounting-related skills and topics. Other surveys that used the A&S approach include Burnett (2003), who surveyed West Texas CPAs and employers regarding their ranking of specific skills

desired of new accounting hires and Ulrich, Michenzi, and Blouch (2003), who performed a nationwide survey of public accounting firms to determine specific skills (as identified by the AECC, 1990) they desired of entry-level accountants, and their assessment of how well academic accounting developed those skills. Madison, Cory and Persellin (2008) based their survey about required knowledge and skills of accounting graduates on A&S and Cory (2009) used the A&S questionnaire as the basis for her investigation of course topics that practicing CPAs believed were essential in accounting education and their preference as to what kind of degree should be earned by accounting graduates.

Welch, Madison and Welch (2010) surveyed accounting professionals to ascertain the value of entry level IT skills they felt were essential for accounting graduates, and analyzed their results based on responses from accountants employed in public accounting and those employed in industry or government, but did not inquire about importance of other topics. Finally, as recently as 2011, Cory and Huttenhoff based their investigation of the educational interests of non-public accountants on the A&S study.

Currently practicing accountants should be well-informed about the skills that are critical for new hires to possess in order to ensure success in their respective fields and topics that should be part of an accounting program. Lending further support to this methodology, A&S indicate that each accounting program has the responsibility of determining the needs of its own key stakeholders, incorporating internal and external environments that are unique to each. Finally, AACSB accreditation standards reinforce the concept that curricula must consider constraints and opportunities that may be specific to a particular business program, based on its mission.

Surveying local accounting professionals regarding perceptions as to the importance of accounting-related skills and topics needed by their new-hires should provide valuable insight into the curriculum required of accounting programs in the local area. The results presented by Burnett (2003) are most likely limited to the West Texas employment environment, and Ulrich *et al.*'s (2003) use of a nationwide sample makes it difficult to extrapolate their results with a strong promise of being effective locally. Neither the Burnett nor the Ulrich *et al.* studies distinguished between accountants employed in public accounting and those employed in non-public accounting careers. Cory (2009) reported results of her study about course topics and degree preference, but limited the analysis of responses from her survey participants to only those currently practicing public accounting. Similarly, Cory and Huttenhoff (2011) based their analysis solely on responses from non-public accountants. This study compares perspectives of both groups of external stakeholders and focuses on accounting-related skills and topics which may also lend support to a successful accounting career.

Practicing public and non-public accountants represent members of the group to survey in this particular instance. However, in the case of public accountants, the size of the public accounting firm in which they are employed is of importance. For example, the A&S (2000) study has been criticized for concentrating on the concerns of large public accounting firms and only the views of large research universities. Many accounting students do not matriculate in large, research institutions and only a small proportion of graduates will be employed in Big Four firms. Alternatively, because small firms are the predominant form of public accounting practice, as reported by Huefner (1998), samples drawn from CPA membership lists will likely be primarily composed of members practicing in small firms. Similar issues may arise with accountants practicing in the non-public sector. Therefore, size of company where the non-public accountant is employed is also of interest.

The survey was distributed to 2,300 individuals who were either members of a large, regional CPA society in south Texas, members of the Institute of Management Accountants in the same area, or employers who had interviewed on a south Texas university campus during the previous three years. A total of 464 usable surveys was returned, which is a response rate of approximately 19%. This rate is comparable to that reported in similar studies (20% for A&S (2000), 27.7% and 21.75 for Burnett (2003), 27.2% for Ulrich *et al* (2003) and 16% for Sedki, Madison and Treacy (2003). Approximately 46% of the surveys were completed by individuals currently practicing public accounting and 54% by individuals who were employed in the non-public accounting arena.

The sample is limited to a geographic area, but the respondents should provide a broad viewpoint of accounting education and thus provide insight regarding the accounting-related skills and topics to which an accounting student should be exposed prior to graduation. Analysis of firm size for the public accounting respondents indicated the median number of full-time employees was 11, but 46 of these respondents reported being employed with firms with at least 50 employees. The median company size for non-public accountants was 155 full-time employees, but 45 worked for companies that employed at least 100 on a full-time basis. Respondents were also asked to indicate the most recent year in which they had been enrolled in a college or university course. The median year was 1987, which indicated that a typical respondent should have sufficient employment experience in order to express an opinion as to the topics in courses to which recent accounting graduates should be exposed.

Respondents were asked to indicate, from the standpoint of their organization's business, how important it was for accounting students to have obtained certain accounting-related skills prior to graduation. Respondents were provided with a list of 34 skills and asked to rank each one on a three-point scale, with one indicating "not important," two indicating "important, but not critical" and three indicating "critical." If the respondent did not know how critical a skill was, they chose "4" as the answer. The responses were coded according to the number chosen for each skill and any response in the "Do Not Know" column was eliminated from analysis.

RESULTS

The mean average for both groups for each of the 34 skills is shown in the second and third columns of Table 1. Keeping in mind that a rating of "2" indicates that the skill is "important, but not critical," 14 skills in the in the public accountants' column had a mean of at least 2 and 13 skills in the non-public accountants' column had a mean of at least 2. Further, 11 skills had a mean of at least 2 for both groups. The lowest mean for both groups was associated with web design (1.191 and 1.294, e.g., "not important"). Likewise, the two groups were in agreement as to the "critical" skill with the highest mean is spreadsheet software (Excel), with means of 2.913 and 2.969.

However, differences between several mean averages between the two groups were also apparent. Therefore, t-scores were computed to determine whether the difference in the means for each skill was significantly different between the two groups. T-scores are shown in the third column of Table 1 and their level of significance is shown in the last column. For the 34 skills, the means of 19 were significantly different between the two groups, but they were in basic agreement on the remaining 15. For example, as stated previously, both groups agreed that spreadsheet software (Excel) skills are critical, but the non-public accountants felt it was more critical than did the public accountants. In three instances (auditing through the computer, internet research and sales/marketing), the public accountants determined that the skill was statistically more important than did the non-public accountants. In all other instances of significant differences, the non-public accountants placed more emphasis on the skill.

TABLE 1
Means T-Tests

Skill/Topic	Means, Public Accountants	Means, Non-Public Accountants	T-test	Level of Significance
Auditing through the computer	2.070	1.896	2.93	.0036
Telecommunication software	1.815	1.767	0.38	*
Computer hardware	2.000	1.948	1.00	*
Database software (e.g. Access)	2.141	2.352	-3.82	.0002
Data analysis/use of Audit Command Language	1.931	2.080	-2.27	.0240
Web design	1.191	1.294	-2.50	.0127
Graphics software (e.g. Adobe)	1.500	1.513	-0.26	*
Intranets	1.571	1.775	-3.48	.0006
Extranets	1.523	1.661	-2.34	.0198
Windows	2.639	2.692	-1.25	*
Presentation Software (e.g. PowerPoint)	2.211	2.392	-3.42	.0007
Programming languages	1.200	1.295	-2.24	.0254
Spreadsheet software (e.g. Excel)	2.913	2.969	-2.58	.0103
Technology security and controls	2.000	2.119	-1.98	.0479
Technology terminology	2.065	2.165	-1.82	*
Operating systems other than Windows.	1.412	1.477	-1.26	*
Word processing software (e.g. Word)	2.746	2.726	0.47	*
Internet research	2.515	2.403	2.19	.0287
Client/Server management	1.508	1.539	-0.49	*
Information systems planning	1.506	1.619	-1.97	.0491
Information systems auditing	1.714	1.742	-0.40	*
Project management	1.972	2.133	-2.62	.0092
Systems analysis	1.568	1.703	-2.28	.0230
Technology management and budgeting	1.581	1.809	-3.87	.0001
Collaboration software (e.g. Lotus notes)	1.671	1.607	1.12	*
Process/Operational Improvement	1.676	1.951	-4.29	<.0001
Foreign language	1.504	1.500	0.11	*
Awareness of global issues	1.831	1.799	0.68	*
Sensitivity to cultural diversity	2.004	2.118	-2.01	.0455
Awareness of changing demographics	1.896	1.944	-0.76	*
Awareness of ethical issues	2.634	2.587	0.90	*
Sensitivity to environmental issues	1.673	1.867	-3.45	.0006
Creativity in problem solving	2.684	2.726	-0.91	*
Sales/Marketing	2.023	1.710	5.32	<.0001

*not significant

TABLE 2
Ranking

Skill/Topic	Rank, Public Accountants	Rank, Non-Public Accountants
Auditing through the computer	9	17
Telecommunication software	19	22
Computer hardware	13	15
Database software (e.g. Access)	8	8
Data analysis/use of Audit Command Language	16	13
Web design	34	34
Graphics software (e.g. Adobe)	31	30
Intranets	25	21
Extranets	27	26
Windows	4	4
Presentation Software (e.g. PowerPoint)	7	7
Programming languages	33	33
Spreadsheet software (e.g. Excel)	1	1
Technology security and controls	14	11
Technology terminology	10	9
Operating systems other than Windows.	32	32
Word processing software (e.g. Word)	2	2
Internet research	6	6
Client/Server management	28	29
Information systems planning	29	27
Information systems auditing	20	23
Project management	15	10
Systems analysis	26	25
Technology management and budgeting	24	19
Collaboration software (e.g. Lotus notes)	23	28
Process/Operational Improvement	21	14
Foreign language	30	31
Awareness of global issues	18	20
Sensitivity to cultural diversity	12	12
Awareness of changing demographics	17	16
Awareness of ethical issues	5	5
Sensitivity to environmental issues	22	18
Creativity in problem solving	3	3
Sales/Marketing	11	24

Next, as shown in Table 2, the skills were ranked for each component of the sample. As indicated previously, the two groups were in agreement regarding Excel as the number one skill required of accounting graduates. They were also in agreement as to the rank of the next seven skills: (1) word processing software, (2) creativity in problem solving, (3) Windows, (4) awareness of ethical issues, (5) internet research, (6) presentation software, and (7) database software. However, in four out of the eight identical rankings, the level of importance of the skills was statistically different between the two groups. Thus, non-public accountants felt that Excel is the number one skill required of new accounting graduates, presentation software as seventh and database software as eighth, but place more importance on those skills than do the

public accountants. In contrast, the public accountants placed more importance on internet research, the skill that both groups ranked sixth. As indicated previously, both groups ranked web design last. Three other skills were equally ranked by the two groups: (1) programming languages were ranked second to last, (2) operating systems other than Windows was ranked as 33 and (3) sensitivity to cultural diversity was ranked as 12.

There may be several reasons for these differences in the perception of how critical these accounting-related skills and topics are for new hires in accounting. We first suggest reasons for the three instances where accountants placed more importance on accounting-related skills and topics. The first difference is for auditing through the computer, ranked ninth by public accountants and seventeenth by non-public accountants. As reported by Cerullo and Cerullo (2003), public accountants placed more importance on auditing through the computer after SAS 94 was widely adopted. Thus, the number of audit firms utilizing these techniques would logically be expected to increase, resulting in an increased need for that skill, although there would be no corresponding increase in demand for this skill from the non-public sector. Second, both groups ranked internet research as sixth, although the public accounting sector placed more importance on this skill. With increased demand for research skills both on the CPA exam and in practice, (Burke, Katz, Handy and Polimeni, 2008), it would seem logical for public accountants to rate the importance of internet research skills higher than non-public accountants. The reason behind the third difference, which is sales/marketing, is more difficult to readily ascertain. However, it is well known that in order to succeed in public accounting, the ability to solicit and retain clients is essential, thus requiring exposure to good sales and marketing skills. Therefore, public accountants' emphasis on sales and marketing skills is logical.

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Turning to the skills of greater importance to non-public accountants, we look first at database software (Access) and project management. Our findings with these skills are in accordance with Welch et al. (2008), which found that database software and management skills are more important in the non-public sector than in public accounting. Welch et al. indicated that the greater importance of project management skills in the non-public sector makes sense due to the differing job functions of each group. Non-public accountants are more likely to be involved in project management than public accountants. The difference between the two groups regarding the importance of data analysis/use of Audit Command Language (ACL) is slightly more troublesome to explain. According to ACL (2011), the majority of the Fortune 500 (89%) use

this form of data analysis, as well as all Big 4 accounting firms and hundreds of national, state and local governments, although the emphasis seems to be on internal audit activities. Additionally, given the expense of this audit analytic system, and the steep learning curve required for its use, smaller public accounting firms may not be able to afford the monetary and time investments required to allow their employees to become truly proficient in its use. Further, increased use of Excel to extract and analyze data may be a strong substitute for ACL in smaller public accounting firms. Although ranked last by both groups, web design was of more importance in the non-public sector. This could simply be a matter of increased usage within individual corporations rather than a potential service provided to public accounting clients.

Intranets and extranets are both of more importance to non-public accountants, as are programming languages, technology security and controls, information systems planning and systems analysis. Given that intranets may be considered to be elements of extranets and both require use of programming languages, we can look at these three differences simultaneously. Extranets are easy to use, but their design must be carefully considered and security measures implemented dutifully. These are unlikely services to be provided by public accounting firms in the course of providing accounting services, but more likely to be developed internally by the non-public sector. Technology security and controls, information systems planning and systems analysis may be more important to non-public accountants due to requirements placed on management by Sarbanes-Oxley (Wallace, Lin and Cefaratti, 2011). Intranets, extranets, technology security and controls were all ranked fairly low by both groups in the study, and programming languages was ranked second to last.

Presentation skills (Powerpoint) and spreadsheet software (Excel) were of more importance in the non-public sector, although both were rated seventh and first in the list of 34, respectively. These two differences are more problematic to explain, because both are of significant importance to these two groups in the accounting profession. Perhaps the frequency of internal presentations in the non-public accounting sector exceeds the number of presentations using Powerpoint in the public accounting sector. Also, more reliance may be placed on Excel skills for non-public accountants because they rely on that software extensively.

Technology management and budgeting are primarily in the domain of non-public accountants. Specifically, this career field is most definitely outside of public accounting. Hence, it is not surprising that non-public accountants place more importance on it. Process/operational improvements relate primarily to manufacturing (de Arbulo-Lopez and Fortuny-Santos, 2010) and thus would be more likely to be valuable accountants working in the industrial sector.

Finally, we turn to the two softer accounting-related skills where differences were found between the two groups in the study: sensitivity to cultural diversity and sensitivity to environmental issues. The first was ranked by both groups as 12, thus indicating that it is an important skill to develop in accounting students, but was of more importance to the non-public accountants. Cultural diversity is a topic that is relevant when learning how to operate within a multi-cultural, diverse workforce and is especially relevant in developing the ability to work in teams. Given that these skills are necessary in almost all organizations, it is difficult to surmise why non-public accountants placed more importance on this skill, especially due to the fact that public accounting has strived to recruit a diverse workforce for many years. Additionally, most companies are equal opportunity employers. Sensitivity to environmental issues was ranked as 22 by public accountants and 18 by non-public accountants. There may be a stronger perceived need in the non-public sector for these skills due to the corporate cultures in which those respondents operate. For example, individuals employed by companies involved in industries which have the potential

to pollute the environment may be more sensitive regarding environmental threats, thus wishing to ensure that new hires are also aware of this issue.

CONCLUSION

Implications for accounting educators are vast, especially because the debate over accounting curricula has continued for decades and it seems that it will continue into the foreseeable future. As is the case for specific accounting courses, it may be difficult to provide courses covering the range of accounting-related skills and topics that will satisfy both sectors of the accounting profession. However, it seems that ensuring certain accounting-related skills and topics are included in the accounting curriculum would be essential. Eight skills/topics deemed to be critical were ranked equally by both groups: (1) spreadsheet software (Excel), (2) work processing software (Word), (3) creativity in problem solving, (4) Windows, (5) awareness of ethical issues, (6) internet research, (7) presentation software (Powerpoint), and (8) database software (Access). It should be readily apparent that a separate course where the use of Windows products is taught would cover five of the top eight. Technology terminology, ranked 10 by public accountants and 9 by non-public accountants is also related to this field and could be addressed in the same course. In a curriculum already tightly packed with accounting classes necessary to sit for various certification exams and also to comply with accreditation standards, it may be difficult to fit one more course into degree requirements, but the advantage of doing so is that it would help prepare students for both a career in the non-public and the public accounting sector. Creativity in problem-solving is a skill that can be imbedded in current accounting courses, along with awareness of ethical issues. In fact, it is likely that these two skills are being addressed currently in existing required accounting courses. Helping students attain these skills is a matter of thoughtful class preparation and promotion of activities, both inside and outside the classroom.

Finally, this study has some limitations that should be addressed. Responses were obtained from individuals in only one geographical area, which may make findings difficult to generalize to a wider population. Only 34 skills were listed on the survey, but additional information could have been gathered with the research instrument. Further, information about the viewpoints of recently hired accounting graduates regarding the necessary skills they feel are necessary for a successful career in accounting and whether they had those skills upon arrival to their first accounting position could be gathered. These can certainly be the seeds for future research.

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