

Beyond the Spreadsheets:
An Analysis of the 150 Hour Requirement for Licensure as a Certified Public Accountant

by

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Beyond the Spreadsheets:
An Analysis of Undergraduate Accounting Education in America

by

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ABSTRACT

Undergraduate students looking to pursue careers in public accounting and hoping to earn a Certified Public Accountant (CPA) license are required to complete 150 hours of college credits before they can become CPAs. A typical undergraduate accounting curriculum consists of 120 credit hours, and leaves students with many options as to how to complete the additional 30 credit hours needed for licensure. In this study, the researcher surveys practicing public accountants in the hopes of identifying how undergraduate students can best use the additional 30 credits to bolster their future career success.

Chapter 1

INTRODUCTION

For undergraduate students aspiring to careers in public accounting, expectations are deceptively clear-cut: follow the standard accounting curriculum, meet certification requirements, and pass the Certified Public Accountant (CPA) certification examination. However, the recent implementation of a 150 credit-hour requirement, 30 credits beyond the number typically required to earn an undergraduate degree, indicates that the accounting profession demands an ever-increasing level of competency, one that cannot be reached solely through the completion of an undergraduate accounting curriculum. This new requirement is fitting, considering the enormous responsibility auditors bear to shareholders and the free market system. However, the additional required credits also introduce a level of flexibility and uncertainty into what used to be a well-defined path to professional certification.

There is no official recommendation from the American Institute of Certified Public Accountants (AICPA), the Federal Accounting Standards Board (FASB), or the Securities and Exchange Commission (SEC) regarding the use of the 150 credits, beyond the basic requirement that professionals seeking a CPA license obtain an undergraduate degree. Universities market graduate programs, but savvy students wonder if graduate degrees are worth the time and money, or if they could achieve the same results by taking AP classes in high school and extra undergraduate courses. The answer usually varies depending on who is asked, but is there one best path?

Using a tool developed from the findings of the Pathways Report, an assessment of accounting education by the American Accounting Association (AAA) and the AICPA, the researcher surveyed professionals in the accounting field to compare their assessments of the effectiveness of undergraduate accounting education in preparing auditors for their careers. From the survey responses and a literature review, the researcher attempts to offer some suggestions and gather advice to contribute to the current discussion of how accounting majors aspiring to become CPAs practicing in the audit field can best utilize their required 150 credit hours.

Chapter 2

CPA CERTIFICATION REQUIREMENTS

Like lawyers and medical doctors, Certified Public Accountants must pass a certification exam. The CPA exam, regarded as one of the hardest pre-professional exams, tests students' knowledge of a breadth of technical accounting topics. For undergraduate students pursuing degrees in accounting, the exam represents the culmination of four years of study and the beginning of life as a young professional. The current undergraduate accounting curriculum is designed based on the CPA exam to ensure that students have the skills they need to pass the exam and become certified public accountants.

Professional recognition of Certified Public Accountants is awarded through state regulatory agencies, while the uniform CPA examination is developed and supervised by the AICPA. To sit for the CPA exam, candidates must have attained an undergraduate degree, or, in some states, 120 credit hours of coursework on the way to an undergraduate degree, and passed a variety of required accounting and business classes. An additional 30 credit hours are required for certification.

The state licensing boards acknowledge that not all skills can be taught in a classroom, and require a year or two, depending on the state, of professional public accounting experience in addition to 150 credit hours and a passed CPA exam before a license is officially granted (Licensure). This requirement helps to ensure that the title of "CPA" carries the weight of experience and knowledge.

The CPA Exam

The CPA exam, first introduced in the early 1900s, has undergone several changes over the years. Many had to do with the way the exam is administered, but some have focused more on content, such as the most recent shift in 2017 to include more practical application and open-ended questions. The current version of the CPA examination is divided into four sections of four hours each, or “parts:” Auditing and Attestation, Business Environment and Concepts, Financial Accounting and Reporting, and Regulation, each testing a different core theme of accounting in relation to the skill levels identified in Bloom’s Revised Taxonomy, a tool which aids identification of levels of student understanding (American Institute of Certified Public Accountants, 2017). The revised Taxonomy helps educators to classify educational goals and standards on a spectrum from “Remember” to “Create” on a two-scale plane (Krathwohl, 2002).

Lower-Order Thinking			Higher-Order Thinking		
Remember	Understand	Apply	Analyze	Evaluate	Create

Figure 1 Bloom's Revised Taxonomy Scale

Each subject section of the CPA exam tests “Remembering,” “Understanding,” “Application,” and “Analysis,” but all focus most heavily on “Application.” Auditing and Attestation, commonly referred to as “AUD,” is the only section that challenges

students to rise to the “Evaluation” level, and none of the sections test students at the “Create” level (American Institute of Certified Public Accountants, 2017).

“Understand” through “Create” are generally considered the most important phases for mastery of material (Krathwohl, 2002). Although the CPA examination only touches on higher-level thinking, professional practice demands these skills.

AUD contains questions on ethics, professional responsibilities, and general principles, assessing risk and developing a planned response, performing further procedures and obtaining evidence, and forming conclusions and reporting (American Institute of Certified Public Accountants, 2017). Business Environment and Concepts, or “BEC,” is an overarching business section which tests knowledge of corporate governance, economic concepts and analysis, financial management, information technology, and operations management, all in relatively even proportions (American Institute of Certified Public Accountants, 2017). Financial Accounting and Reporting, or “FAR,” assesses a graduate’s understanding of the conceptual framework, standard-setting, financial reporting, select financial statement accounts, select transactions, and state and local governments (American Institute of Certified Public Accountants, 2017). Finally, Regulation, or “REG,” measures knowledge of federal tax procedures, business law, federal taxation of property transactions, federal taxation of individuals, and federal taxation of entities (American Institute of Certified Public Accountants, 2017). These sections may be taken in any order, and retaken until they are all passed. To pass a part of the CPA exam, a test taker must score a 75 or higher. The score is determined by a weighting formula, and does not represent the percentage of questions that a test taker answered correctly (Roger CPA Review). Once one part of the exam is passed, test takers have 18 months to complete the remaining parts, or they must

retake parts that have “lapsed.” Pass rates for the CPA exam are generally low, under 50% when considering all test takers and all parts, and have remained consistent throughout the last several years (Minnesota Society of Certified Public Accountants, 2016)

	Jan-Feb	Apr-May	July-Aug	Oct-Nov	Cumulative
AUD	45%	49%	45%	44%	46%
BEC	55%	56%	58%	53%	55%
FAR	45%	46%	48%	43%	46%
REG	48%	50%	50%	46%	48%

Table 1 CPA Exam Pass Rates 2016

The Undergraduate Curriculum

Because a CPA license is crucial for career development in the field, undergraduate curriculums often “teach to the exam” in order to increase pass rates (Williams, 1993). Traditionally, an accounting curriculum contains several accounting classes, from financial accounting to audit and tax, one or two finance classes, and the standard business core of the university, usually around 120 credit hours in total (National Business Education Association, 2016).

Accounting has always been an evolving field, but recent publications suggest that the undergraduate curriculum has failed to evolve along with the demands of the profession. A 2010 study found that public accounting firms are beginning to rank technical accounting skills as less important for new hires than soft skills like communication, or technological skills such as computer modeling (Lee and Blaszczynski 1999). As the accounting profession makes increasing use of technology,

the role of the modern auditor is developing as well. Now, in a professional environment where mastering “big data” is essential, accountants are expected to have a wide range of technical and data analysis skills, many of which fall beyond the scope of a traditional undergraduate accounting curriculum.

Still, the accounting curriculum at most major undergraduate institutions has remained unchanged for decades, and is viewed as outdated by many in the industry (Gabbin, 2002). This is especially problematic because the accounting profession has recently been experiencing some major shifts. Field auditors are now tasked with more data analysis than journal entries, and employers are finding new hires unprepared by their undergraduate institutions for these tasks (Bramwell, 2016). As a result, public accounting firms are forced to provide in-house training or hire those with specialized degrees for entry-level accounting jobs. Gabbin suggests that schools adopt an updated curriculum focused on analysis, citing a study in which progressive curriculums were instituted at several universities, and arguing that “proactive programs have relegated traditional financial-statement-preparation skills to a laboratory-science-type experience. The classroom focus is on interpretation and use of financial data as a source of information to make decisions about the future” (Gabbin, 2002). Although Gabbin acknowledges that curriculum changes can take a long time, especially when they are not part of a study or a pilot program, classes can be added, integrated, or supplemented to increase the impact of undergraduate accounting education. A survey of recent literature suggests that the additional 30 hours required for CPA certification present an opportunity to introduce new classes into the accounting curriculum.

The 150 Credit Hour Requirement

In the 1950s, the Carnegie Foundation first recommended that CPA candidates be required to complete 150 credit hours of coursework for certification. Standard bachelor's degrees usually require the completion of 120 credit hours, so the suggested switch would be a big change for the profession. The Foundation suggested the 150 credit hour rule as a way of requiring a graduate degree for CPA certification (National Association of State Boards of Accountancy 6). When this requirement was suggested, only three states required a college degree at all, much less an advanced degree (National Association of State Boards of Accountancy 6).

Following the Carnegie Foundation proposal, there was a pushback from professionals such as William Werntz, a member of the SEC, who posed the question of how much students can afford to and should learn in a classroom setting, and what people have to learn on the job or through self-study (Werntz, 1961). At the time, the profession was moving away from a more vocational trade-school approach that focused on bookkeeping and the mechanics of accounting, and toward a career-oriented education that emphasized the importance of managerial skills (Nelson, 1961). The topic was debated for decades before the requirement was finally implemented, beginning in Florida in 1983. In 2017, the US Virgin Islands is currently the only territory where 150 credit hours are not required for certification (National Association of State Boards of Accountancy 6.)

A 1984 report from the National Association of State Boards of Accountancy quotes Belverd E. Needles, Jr., the director of DePaul University's School of Accountancy, as saying that the accounting curriculum was about to "burst" due to

pressure coming from the changing profession and evolving demands of professional accountants (National Association of State Boards of Accountancy 8). In theory, some pressure could be relieved from the undergraduate curriculum if extra credit hours or graduate education was encouraged or required. The 150 credit hour requirement would suggest the completion of a graduate degree without requiring it. Most graduate programs comprise 30 credit hours, which, together with the standard 120 hours of an undergraduate curriculum, would total 150 credit hours. Additionally, many in the field saw the increased credit requirement as a way to elevate the profession to the educational standards of such disciplines as architecture and engineering, which often require more than four years of coursework (National Association of State Boards of Accountants 8).

Before 1988, the 150-hour requirement was left up to the state boards of accountancy to implement. In 1988, the AICPA voted to require 150 hours of coursework for all members joining after the year 2000. The AICPA voted for the requirement as a means to raise the standard of education for auditors in order to better protect the free market and stockholders (National Association of State Boards of Accountancy 9). The vote came before the Enron and WorldCom scandals in 2001 and 2002, respectively, which would eventually lead to the demise of Arthur Anderson, a prominent accounting firm, but still in a period of distrust in the markets. Around the same time as the vote, the ZZZZ Best Ponzi scheme, one of the biggest accounting frauds in history, was discovered. In this tumultuous time, the AICPA decided that more education was needed in order to practice as a CPA, and members voted to implement the requirement.

Currently, many students will complete an advanced degree or take additional classes outside those required for the accounting major in order to meet the 150-hour requirement. Many educators see the 30 credit hour addition as an opportunity to develop the standard accounting curriculum and to introduce new courses that will help students in the workforce (Williams, 1993). For example, computer skills are becoming increasingly important in the field (Lee and Blaszczyński, 1999). Only some universities include courses in accounting information systems (AIS) in the undergraduate accounting curriculum, and even then, the class is usually offered as an elective and not as a part of the “core” accounting curriculum (Kearns, 2014). However, a survey conducted by Grover Kearns found that CPAs rank AIS skills as important, claiming that “educators who wish to design programs that are more attentive to the needs of employers should heed the message of this survey: AIS skills are highly valued by CPAs.” (Kearns, 2014). Additionally, employers today are placing increasing importance on “soft skills” such as communication and leadership. According to a 2013 study, nearly 60 percent of employers feel that their staff members lack proper communication skills (Kearns, 2014). In most undergraduate curriculums, however, there are no mandatory communications classes, and accounting courses are rarely structured in a way that would organically foster communication skills (Williams, 1993). Public accounting firms want to hire auditors who have the skills to succeed at their jobs, including skills that may be optional or unavailable in current accounting curriculums.

The final ruling regarding the 150 credit hour requirement is extremely vague, and raises the question of how to best use those additional credit hours. A student could earn a graduate degree, as suggested by the Carnegie Foundation when the idea

of an increased hour requirement was first proposed. They could use the opportunity to take additional ethics credits, helping to guard the profession against another Enron scandal. They could even take new courses that cover advanced information systems or a class in business communication. Alternatively, under the current CPA licensure requirements, students could accumulate 30 hours of AP credit or undergraduate courses far from any of those cited above. For example, credits in foreign language, art history, or even the University of Delaware's beloved "rocks for jocks" geology class would also meet the requirement. The options are endless, but is there a best path?

Chapter 3

THE PATHWAYS COMMISSION: A SUMMARY OF THE CURRENT DEBATE IN ACCOUNTING EDUCATION

The AICPA and leading firms in the profession acknowledge the need for change in accounting education. Curriculum evolution was a key focus of the Pathways Commission on Accounting Higher Education of 2012. The Pathways report is the result of a 2008 recommendation from the United States Treasury Department that the American Association of Accountants and the American Institute of Certified Public Accountants work together to examine accounting higher education and suggest improvements. Formed in 2010, the Pathways Commission spent 18 months collecting data from professionals and educators, eventually publishing a 2012 report containing recommendations for the profession and accounting education in the future. The report also identifies current impediments that could hinder future improvements in the hopes that those issues will be addressed going forward (Cohn, 2012). The report is not a static document, and has been updated since its release in 2012. Updates to the report help to keep the findings of the Pathways Commission relevant. This report and the updates that followed provide the foundation for the categories of skills discussed in this research.

The Pathways Commission asserts that undergraduate accounting educators are obligated to give accounting students a broad base of accounting knowledge, both technical and ethical, as well as a grasp on professional skills. The Pathways

Commission notes the growing gap between stagnant accounting curriculums and the rapidly evolving accounting profession:

Accounting education is challenged to keep pace with opportunities and expectations that students learn to think in new ways and develop the necessary skills and knowledge to maintain the profession's ability to meet these evolving opportunities. Without innovation and change, the discipline and profession risk becoming supplanted by technology or possibly rendered irrelevant because of mechanical rules and artificial contrivances (Pathways Commission, 2012)

One commonly-noted criticism about accounting education is that technology skills are not often taught in the classroom. In a 2015 update to the Pathways report which focused on curriculum, accounting professionals agreed that students looking to pursue careers in accounting should be proficient in spreadsheet technologies such as Microsoft Excel, but disagreed on what other technologies are important in the classroom and the workplace (Pathways Commission, 2015).

The 2015 update to the Pathways report also recommends integrating real-life accounting situations into the classroom. Accounting is a principles-based field, and the application of accounting principles will always be tinted with ambiguity. Auditors are expected to possess professional judgment skills, which allow them to take into consideration both the principles and circumstances and arrive at an opinion. According to the Pathways report, students' capacities to apply professional judgment increases as they progress in the accounting curriculum. A key step in developing professional skepticism is interaction with the accounting profession itself, which allows students to see the principles they have learned in the classroom in action (Pathways Commission, 2012). Many students will gain this exposure and experience through internships. However, outside of electives and internships, there is not usually

much interaction with accounting professionals in the standard accounting curriculum, leaving students to seek these experiences elsewhere. Realistically, every skill taught in the accounting curriculum has a practical application. The update to the Pathways report suggests using technology and other creative solutions to aid faculty in integrating practical experience in the classroom. In addition, there is a divide between accounting academia and the public accounting profession that deepens as faculty begin entering universities immediately after finishing graduate studies. In the past, accounting professors usually began classroom teaching careers with years of workplace experience, and their fresh perspective on the unique challenges of accounting in practice were beneficial for students (Pathways Commission, 2012). Through professors and personal experience, students benefit from exposure to the profession. Lesson plans that encourage real-life application of classroom skills allow students to practice in a more realistic environment. Relationships between universities and public accounting firms can be leveraged to create value for students and the profession. Firms that collaborate with universities or hire students as interns are able to help guide education and produce knowledgeable new hires prepared to contribute to the working world.

Finally, the Pathways Commission recommends sweeping curriculum development. The Commission points out that “while accounting programs and requirements look similar, accounting curriculums have evolved with limited commitment or agreement about core learning objectives in recent years” (Pathways Commission, 2012). Accounting education is lagging behind the accounting profession. However, even if the accounting curriculum was largely modernized, the profession is still developing at a pace that would require constant curriculum updates.

There is a need to create a curriculum that is adaptive to changes in the profession, so the curriculum will not quickly become obsolete. A 2012 AICPA whitepaper on the future of auditing asserts that

Auditing has made great strides in the past decade, but it has not seemingly kept pace with the real-time economy... [To keep pace with the real-time economy, auditors] would need to possess substantial technical and analytical skills that are currently not components of most traditional four-year university accounting programs (Byrnes et al., 2012)

The Pathways Commission identified several potential impediments to curriculum development. The first was that educators who focus on teaching and curriculum development are sometimes considered less important or compensated more poorly than faculty members who generate revenue for their universities through research and publishing. The Pathways Commission also noted that the common attitude in higher education is that all courses stand alone. The Pathways Commission recommended integrating abstract concepts and more concrete course material, but this would require a commitment on the part of educators to look outside their own stand-alone classes and examine the comprehensive curriculum (Pathways Commission, 2012). This could mean a major curricular overhaul for universities as classes integrate with the professional world. Bringing the cutting-edge technology that accountants use in the field into the classroom is also under-incentivized, which goes along with a lack of recognition for innovative classroom teachers. Finally, any curriculum changes risk becoming lost in administrative limbo.

Learning Objective Categories

The Pathways Commission examined recent literature on the topic of accounting education and job preparedness from across the accounting profession and compiled a composite list of general skills accountants need to succeed in the profession. The Pathways Commission broke down those competencies into three categories: Technical Knowledge, Professional Skills, and Professional Integrity, Responsibility, and Commitment. Technical Knowledge includes financial accounting and reporting, operation and management accounting, governmental accounting and reporting, auditing and attestation services, and “other areas,” including strategic planning, globalization, and business law (Pathways Commission, 2012). Technical skills are skills traditionally taught in the core of the undergraduate accounting curriculum. Professional skills include critical thinking, problem solving, judgment and decision making, communications, collaboration, leadership skills, managerial skills, technology skills, commitment to learning, and people skills and personality (Pathways Commission, 2012). These skills help auditors succeed on the client-service side of the business. The Pathways Report also uses the Professional skills section to identify specific characteristics desirable in an accountant, including the ability to multitask, a positive attitude, and a flexibility regarding change. Finally, the Professional Integrity, Responsibility, and Commitment skills identified by the Commission include ethical judgment and reasoning, ethical knowledge, professional and legal responsibilities, an attitude and behaviors that are consistent with core values, and commitment to the accounting profession’s broad societal and economic purposes (Pathways Commission, 2012). In a post-Enron world, trust in the free market and independent auditors is key, and the AICPA encourages ethics training to

and equip auditors to do the responsible thing and to reassure anxious shareholders that companies are being monitored by third parties. Although some of these skills and characteristics can come naturally, the Pathways Commission believes that “education can enhance these characteristics and build skills in ethical decision-making and responsible judgment.” (Pathways Commission, 2012).

Terminology used to define skills required of auditors can vary depending on the source. This research will use the categories defined in the Pathways report because the findings represent a recent comprehensive survey of professional literature and because the report was written by the AAA and AICPA, the professional authority in the field. As such, the Pathways report represents a current consensus of industry professionals. To this end, the researcher developed a survey of audit professionals. The researcher hopes that this survey, which provides access to the thoughts and feelings of those in the public accounting profession, combined with the literature review of the Pathways report, will identify the most beneficial way or ways for undergraduate accounting students to obtain 150 credit hours.

Chapter 4

METHODOLOGY

Survey Design and Development

Although the core of the undergraduate accounting curriculum is beyond the control of the undergraduate student, the additional 30 credit hours required for CPA licensure above the accounting degree requirements offer students seeking careers in audit the opportunity to obtain some of the skills described above, including communication and technology skills. In addition, many students arrive at universities with college credits from AP classes and could complete 150 credits in four years if properly advised. Students with the financial and academic ability to pursue a graduate degree may well wonder which specific program to choose.

Thirty credit hours of coursework, or roughly ten classes, could be extremely helpful to an accounting student if used prudently. A student could specialize in a growing area such as management information systems, double-major, or even obtain a graduate degree. Unfortunately, there has not been much agreement or guidance on how that extra year of schooling should be spent. There are two schools of thought on the topic: the first argues that the additional credit hours should be used to help a student become more well-rounded and equipped to enter an increasingly global profession; the other sees the 150-hour requirement as a way to ensure that new accounting hires are even more technically proficient in accounting (National Association of State Boards of Accountancy 10). To the first point, some of the remaining 150 credit hours would be well-spent if allocated to classes that emphasized

communication and teamwork. These courses would not necessarily have to be communications classes, but rather should emphasize communication in some way. Classes that encourage “active learning” allow students to practice skills in an environment that mirrors life after graduation (Williams, 1993). These courses could be debate-style, case-based, or even just encourage group work.

The literature reviewed above provides some insight into how these 30 hours might be invested. However, in light of the expense of academic credits, students aspiring to careers as audit CPAs would be well-served to seek the advice of industry professionals. To facilitate this, the researcher distributed a survey to professionals in the field of public accounting.

Survey questions were designed to collect non-identifying demographic information as well as opinions on undergraduate accounting education. Using the learning objectives identified in the 2012 Pathways report, the survey was constructed to gauge how those objectives are or are not being met in the current undergraduate accounting curriculum. The categories in the Pathways report were used in this paper because they represent the result of a survey of current industry literature. However, in the survey, the categories identified in the Pathways Report were broken down in order to clarify the questions. For example, the Pathways Report broadly identifies “technical skills” as an area of needed improvement, and gives examples of auditing, business law, and financial reporting as areas that fall into “technical skills.” In the survey, respondents were asked about auditing, business law, and financial reporting separately in acknowledgement that preparation across those areas may vary. When presented in aggregate, the responses from these questions represent the Pathways Report-defined “technical skills.”

Participants responded to a series of questions presented in Qualtrics, an online survey platform. Participants were informed that the results would be presented anonymously. Most survey questions required a Likert-scale response, while some were open-ended in order to allow for a range of responses. The survey was distributed to accounting professionals under the condition of a nondisclosure agreement. This project was deemed exempt under IRB guidelines due to the low level of risk associated with participation.

The survey was distributed through contacts at the University, at various accounting firms and via Facebook.

Response Metrics

There were 110 responses to the survey. Of these, 28 responses were incomplete, meaning that the respondent answered only answered the first question agreeing to the survey. This left 82 responses as usable data. All questions were optional, so not every survey participant answered every question. All the responses were downloaded from Qualtrics as a .CSV file, which is compatible with Microsoft Excel, the program used for analysis. The incomplete responses, while ignored, were not removed to maintain data integrity.

Before beginning analysis, the data was standardized for ease of comparison. For example, when asked for the number of years they have worked in public accounting, some respondents entered just digits, while other respondents entered digits plus the word “years.” In this case, the word “years” was removed to allow for mathematical calculations based on the population. Similarly, when asked to provide a job title, some respondents specified the firms they work for instead of just their job

titles. This survey stated that no identifying information would be collected, including unintentional collection, so the identifying information was deleted, leaving only the job titles.

Respondents were asked to provide their undergraduate major, and many provided double majors. Some of these respondents, even with a double major in a field related to accounting, indicated that they completed the 150 credit hours required to obtain CPA licensure in classes that were not related to accounting. To account for this, the “accounting” major results were broken into two groups—those with and without a second major. Those results will then be analyzed with the 150 credit hour results.

Although job titles and progressions are relatively consistent among the “Big Four” accounting firms, some smaller firms use different job titles. Using data from the number of years the respondent has been in accounting, job titles that did not follow the standard progression --associate to senior to manager to senior manager to partner-- were grouped with comparable standard responses. For example, a respondent from a firm with under 1,000 people who listed job position as “staff accountant” and had one year of audit experience was grouped with “associates” from other firms for analysis.

This paper is focused on accounting education specifically as a means of preparation for a career in auditing; however, results were also collected from employees who work in tax and advisory/consulting. These responses were not included as a part of the population when analyzing responses specifically related to auditing, but may provide interesting insight elsewhere. For example, tax accountants often have the same undergraduate education as auditors and take the CPA exam.

These respondents provide additional information regarding CPA exam preparation and the undergraduate accounting curriculum.

Because large portions of the survey included Likert-type questions, the responses came back as words represented on the scale, such as “agree” or “strongly disagree.” To aid with analysis, these responses were translated into numerical values.

Likert Response	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Numerical Equivalent	1	2	3	4	5

Figure 2 Likert-Type Conversions

This translation allows for mathematical calculations that help identify trends. For example, an average of greater than 3 indicates that respondents tended to agree more with the statement.

Not all respondents chose to answer the open-ended questions at the end of the survey. The responses that were collected were examined for trends and counted accordingly. For example, several survey participants indicated that “critical thinking” is a skill necessary to succeed in the profession. The number of similar responses was noted to display a proportionate emphasis.

Chapter 5

ANALYSIS OF RESULTS

Demographic Data

Participants were asked how they earned the extra 30 credit hours necessary for CPA licensure. The majority of the participants earned the hours over the course of their undergraduate educations, and several respondents had become CPAs before the 150 hour requirement was instated.

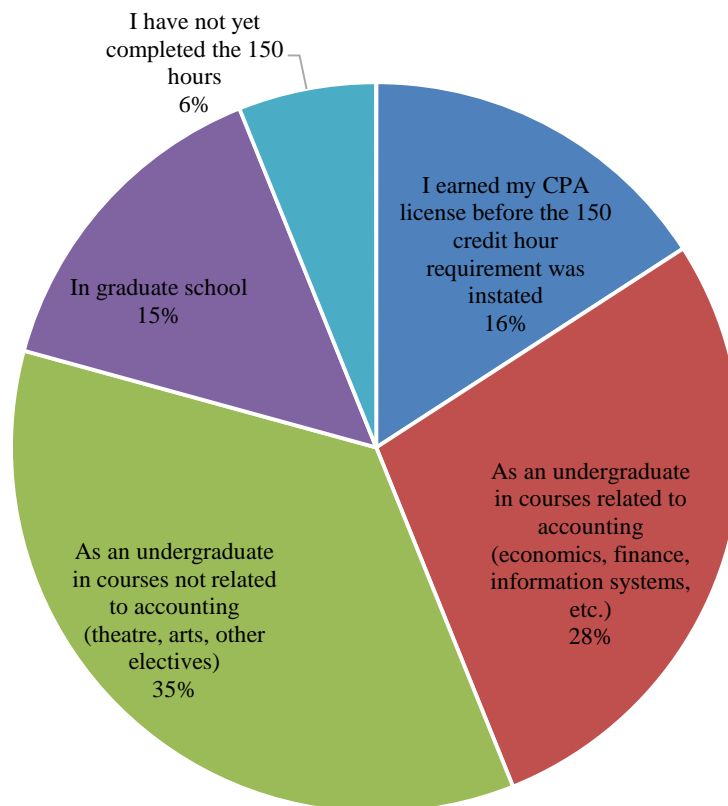


Figure 3 How Participants Reached 150 Credit Hours

When asked about their undergraduate majors, 61.72% of respondents reported that they were accounting majors. An additional 32.10% were double majors with accounting and another major. All but one respondent majored in subjects that would be considered to be housed in the business school.

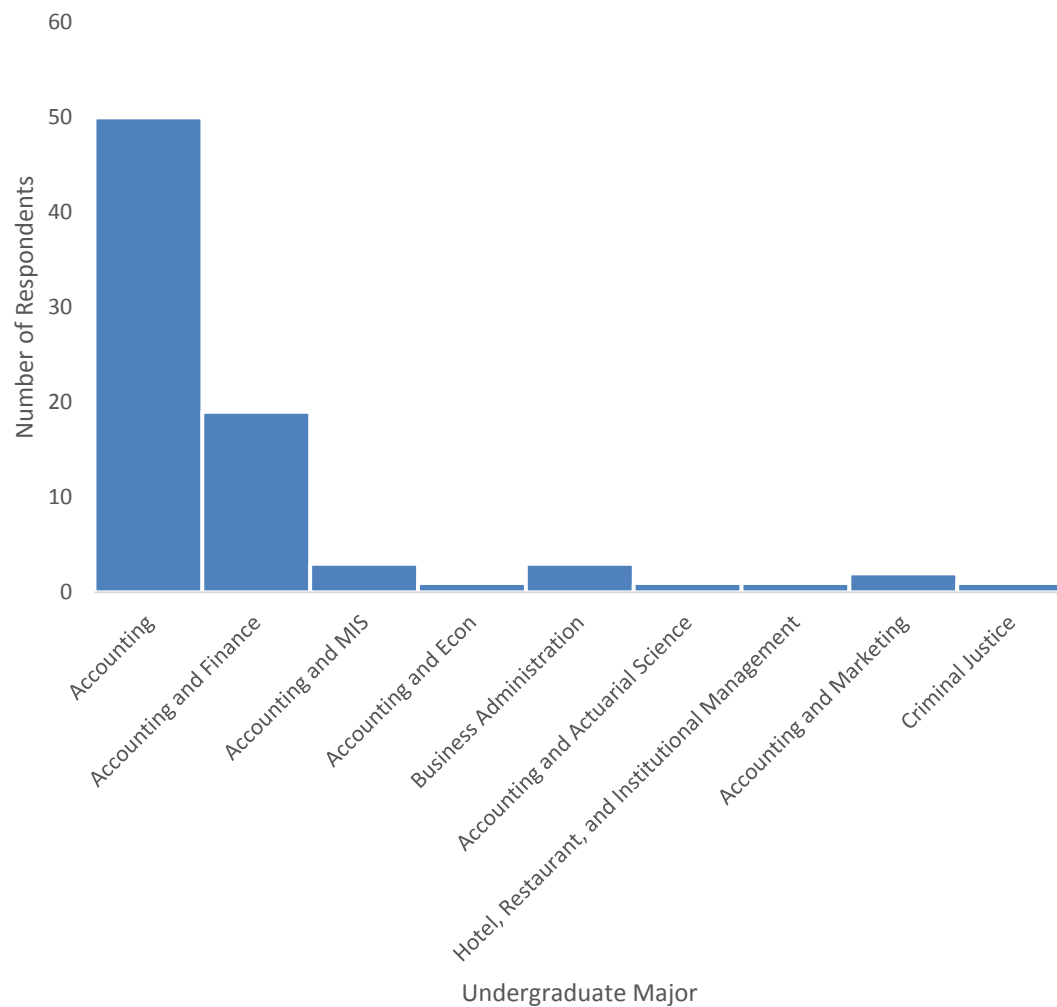


Figure 4 Undergraduate Major

The Graduate Degree Difference

Thirteen respondents indicated that they received graduate degrees. Of the 13 respondents who indicated that they received graduate degrees, 12 received Masters of

Science degrees in Accounting, and one earned an MBA with a concentration in Finance. Twelve respondents reported that their graduate degree allowed them to reach 150 credit hours, but only 11 answered the Likert-type questions that followed. Of those 11, 70.30% agreed or strongly agreed that their graduate degree improved at least some of their skills related to the accounting profession.

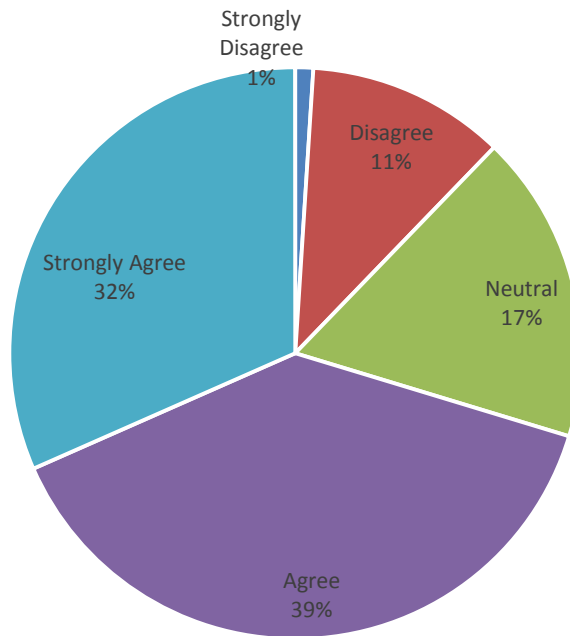


Figure 5 Overall Preparation After Graduate Graduation

However, there was a wide fluctuation depending on the skill. When asked to judge their improvement in critical thinking, 54.55% of participants strongly agreed that their graduate degree was beneficial, and 36.36% agreed. When asked about improvements in statistical modeling, though, 54.55% of respondents disagreed that their graduate degree was helpful. 9.09% responded that they strongly disagreed that their graduate degree improved their understanding of statistical modeling, and 0% strongly agreed that their degree was beneficial in that area. The variation in these

results suggests that graduate degrees help with the development of certain skills, but not others, which is not surprising in such focused programs. It is, however, important to note that information was not collected as to the year these programs were completed. It is possible that recent graduate school offerings have expanded their coursework and include programs such as data and analytics.

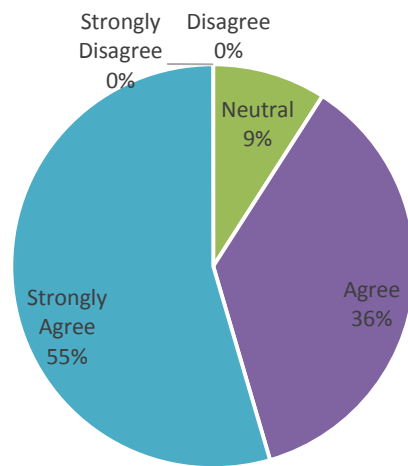


Figure 6 Graduate Degrees and Critical Thinking Improvements

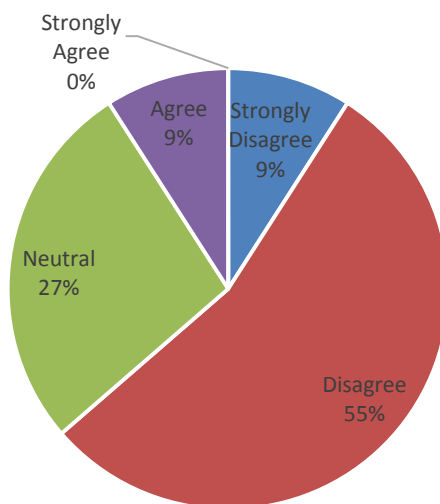


Figure 7 Graduate Degrees and Statistical Modeling Improvements

In terms of the overall benefits of graduate school, 72.73% agreed that the information and skills they learned in graduate school were instrumental to their success in public accounting. The same percentage agreed that their graduate degrees prepared them better for success in public accounting than their undergraduate degrees alone. However, 80.52% of the total respondents agreed or strongly agreed that it is possible to succeed in the profession without an advanced degree. This suggests that while a graduate degree can improve job performance, it is not critical to success in the field.

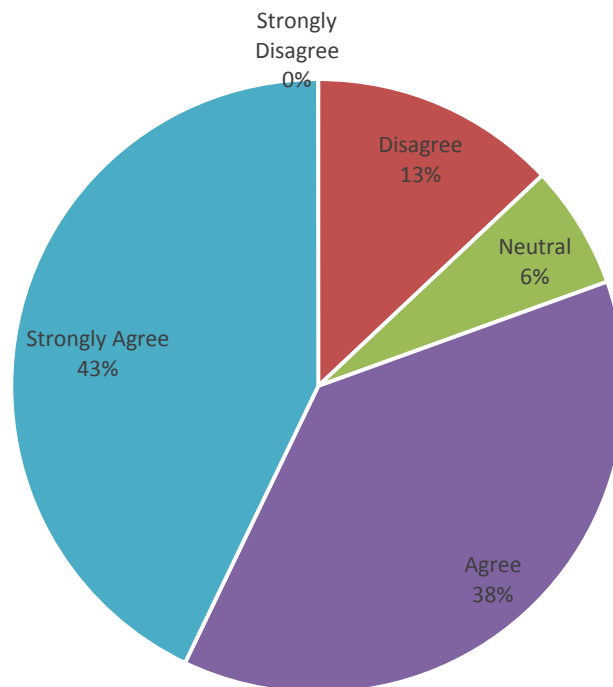


Figure 8 Success Without A Graduate Degree

When asked about success as a result of the required accounting curriculum alone, the results were more split. Over a quarter of respondents, 26.92%, strongly disagreed, disagreed, or were neutral as to if it is possible to succeed in accounting

after taking only the core classes included in the accounting curriculum. This could mean that, while success in the field is possible without a graduate degree, practitioners should have some kind of experience outside of the accounting curriculum, such as additional courses in finance, statistics, or even communications.

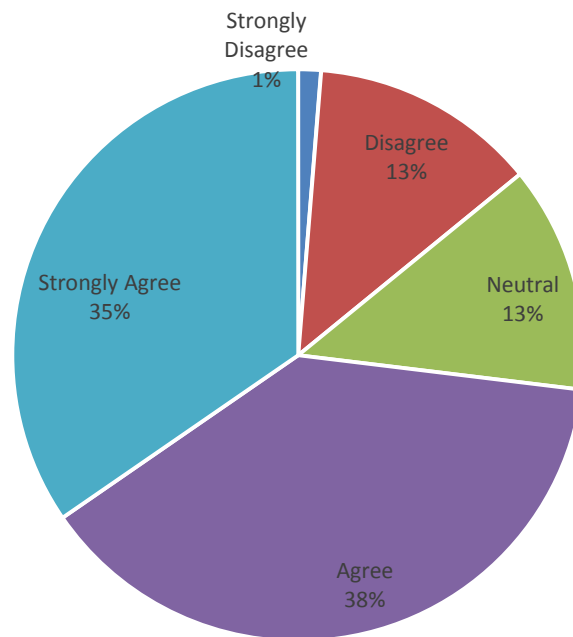


Figure 9 Success With Only The Undergraduate Curriculum

Supervisors vs Self-Reports

Survey respondents were asked to answer a series of questions about how they felt their undergraduate degrees prepared them for a career in public accounting. Later in the survey, participants were asked if they were supervisors. Those who answered “yes” were directed to a similar set of preparedness questions, this time asking them to assess the competence of their new staff members. Fifty-two respondents indicated that they were supervisors, and 29 indicated that they had not yet reached a supervisory role.

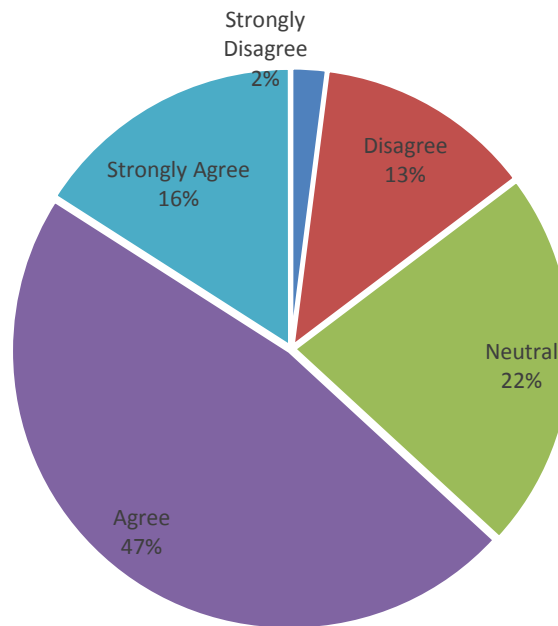


Figure 10 Overall Preparation After Undergraduate Graduation

When the results were analyzed, it was identified that 63.16% of participants agreed or strongly agreed that their undergraduate degrees prepared them well for careers in public accounting, whereas only 48.06% of supervisors agreed or strongly agreed that their staff were well-prepared for the job with just an undergraduate degree. This difference, which is statistically significant when $\alpha = 0.01$, could be attributed to several factors. It is possible that, since participants were asked to self-report, the survey is subject to self-enhancement bias, which would mean that the number of “agrees” and “strongly agrees” is inflated (Sedikides, 1997). Because this survey was designed to measure participants’ perception of their own preparedness, this bias was expected and the results are valid. It is also possible that, since supervisors are often removed from the day-to-day workings of their staff, the staff are more able to adequately judge their preparedness for the tasks that they regularly complete. Conversely, supervisors, who have at least 3 years of experience, may be

more equipped to judge if staff work is sufficient and meets industry and company standards and expectations.

Professional Advice

The survey also contained several open-ended questions. The first asked respondents which areas they felt well-prepared in after completing their undergraduate degrees. Many respondents reported feeling prepared in regards to accounting basics, including debits and credits, basic financial reporting, and financial statement structure. Some also felt prepared with a good work ethic and critical thinking skills. One respondent responded to the question by saying that their undergraduate education “really didn’t” prepare them well for a career in public accounting but went on to say that they learned everything they needed with “OJT,” or on-the-job training. Many accounting firms have extensive on-the-job training programs in order to familiarize staff accountants with company-specific systems and policies. However, these training programs are not meant to re-teach skills and concepts learned in college.

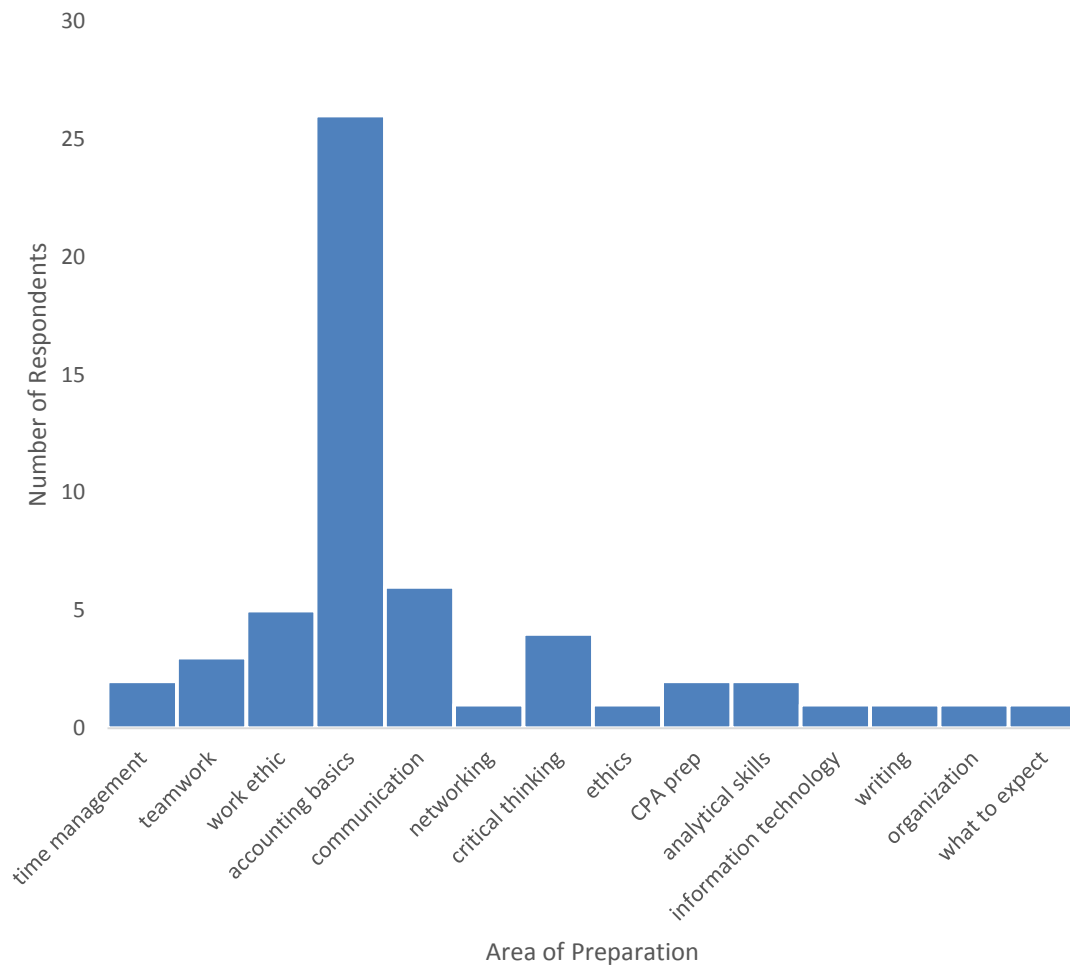


Figure 11 Areas of Preparation Following Undergraduate Graduation

In fact, multiple participants mentioned in their additional comments that the accounting foundation that was enforced in their undergraduate careers was crucial in enabling on-the-job learning, since their understanding of accounting fundamentals allowed them to pick up on more complex systems and procedures. One respondent simply stated that “accounting education is crucial [sic] to have the basic knowledge in order to effectively learn the on-the-job portion [of the role].”

If accounting education's role in the profession is simply to lay the foundations necessary for success in the field, this small sample suggests that that goal is being met. However, the additional 30 credit hours required for licensure provide a unique opportunity to provide even more value to an accounting degree and better-prepare students for success in the profession. Though respondents said that they were well-prepared in the area of accounting basics, when asked about the skills they use most on the job, they overwhelmingly mentioned non-technical skills, such as communication and critical thinking.

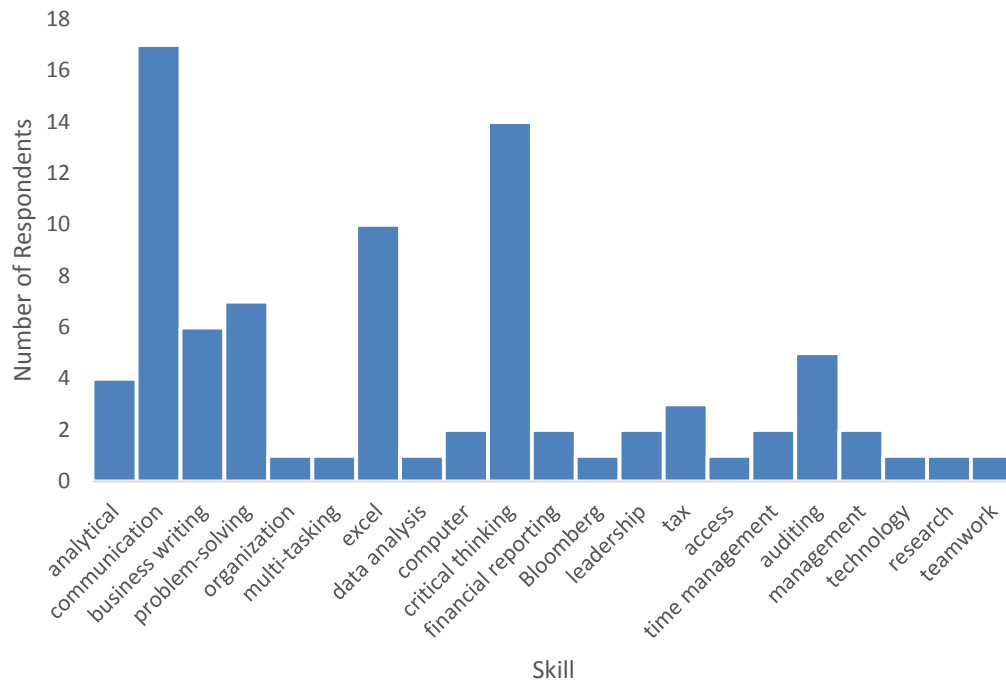


Figure 12 Skills Used In Public Accounting

Traditionally, few courses in the undergraduate business curriculum focus specifically on non-technical skills, with administrators preferring to include those learning objectives in other, more technical, classes. When asked to suggest classes for

inclusion in the accounting curriculum, many respondents brought up the idea of a case-based class that focuses on solving audit problems in client-service scenarios. Some suggested classes are already included in most undergraduate accounting curriculums, such as excel, business writing, finance, and personal tax; however, many respondents suggested that departments make additional courses in these areas mandatory.

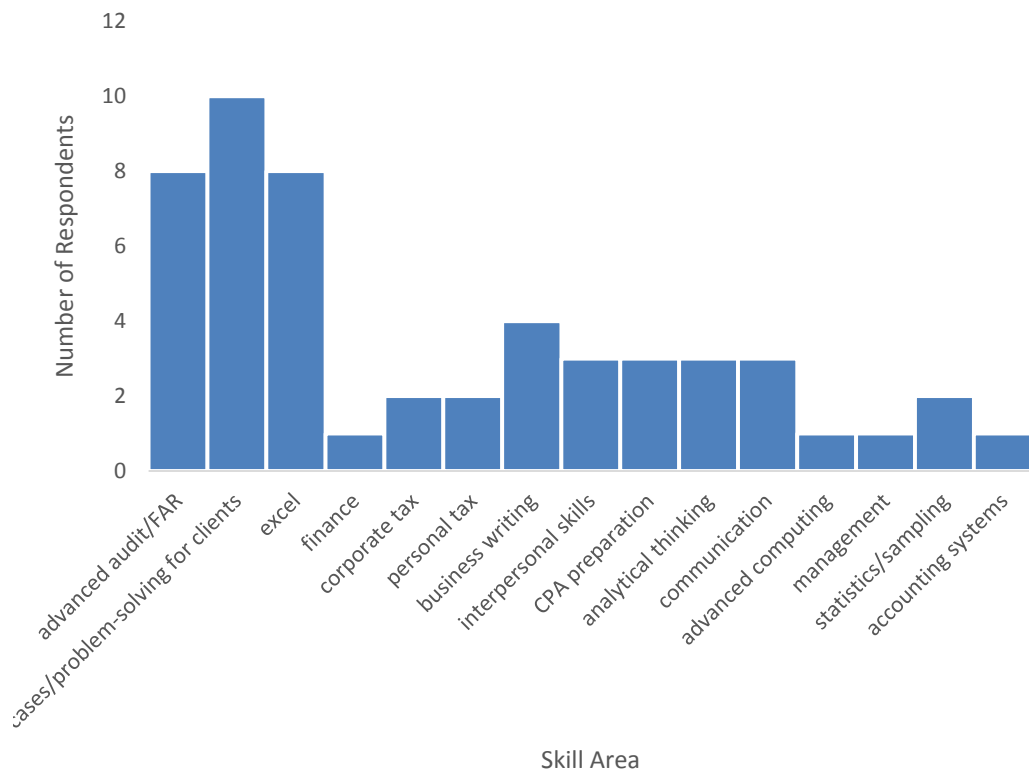


Figure 13 Suggested Additions To The Undergraduate Accounting Curriculum

Chapter 6

CONCLUSION

The results of this survey suggest that, while there are many ways to obtain the 150 credit hours needed for CPA licensure, real-world experience is especially beneficial. Respondents stressed the importance of on-the-job learning, especially in the open-ended sections of the survey. Students would be wise to use some of the additional 30 credit hours on an internship that would allow them to experience a work environment before graduation.

Universities would be well-served to examine the possibility of adding a case-based class. Much like nursing students, who take simulation-based classes before working with real patients in a clinical setting, accounting students would benefit from exposure to topics in a work environment. Major curriculum changes in universities come about slowly, so adding a case-based class is realistically a long-term goal. In the meantime, universities should consider adding small experiential portions to existing classes and fostering relationships with employers to help students secure internships. Universities should also encourage students to participate in case competitions and other similar opportunities to gain more practical experience.

Some of the classes suggested by respondents as additions to the curriculum or areas of emphasis are already part of most courses of study. However, many are offered without a practical application component. For example, a standard

communication class tends to focus more on speeches and public speaking than interpersonal communication, which is more common in the workplace. Perhaps business schools could offer their own variations of standard classes in order to better prepare students for the situations they will face after graduation. The University of Delaware recently had success in this way after adding a Business Analytics class, which places extra emphasis on data analysis and its effect on business decision making, as a substitute for standard statistics.

While preliminary research suggested that new accountants should possess computer skills beyond basics like Microsoft Excel, the results of this survey show that Excel is still an important part of public accounting, especially for new hires. The large number of respondents who encouraged students to take basic Microsoft Excel courses suggests that new hires arrive on the job with a lower level of software competency than anticipated. One survey participant even volunteered that “It’s criminal how many people aren’t proficient in Excel.” There is clearly a large gap between the ideal accountant of accounting researchers, who is fluent in statistical modeling systems and computer programming languages, and the realistic accounting new hire, who needs basic Excel courses to keep up with the demands of the job. Most business schools offer computer classes ranging from basic Excel to advanced computer systems. Accounting majors should consider participating in these courses if they are not already required to do so by the curriculum. Along the same vein, universities should examine the possibility of including these courses in the business core, as suggested by Kearns.

Once students have progressed past basic Excel classes, the possibilities for integrating business and technology are limitless. The standard accounting curriculum has remained largely unchanged over the past decades, and is now producing less-qualified accountants as market needs shift towards areas such as data and analytics (Kearns, 2014). Building an academic foundation in audit-related technology is extremely important when considering the trend towards continuous auditing, which involves analyzing a constant stream of data. This technique would allow auditors to distribute the work usually confined to a “busy season” of around six weeks more evenly throughout the year. It would also increase stockholder value, since audited financial statements could be available more regularly, instead of just at the end of each fiscal year. Continuous auditing would also help detect and address issues such as fraud as they occur, which would help protect the market. Currently, continuous auditing is being explored as a logical “next step” for the profession (Tucker, 2016). Tucker argues that continuous auditing, which would require auditors to have a strong technical base, would ensure greater accuracy and efficiency, as well as facilitate continuous improvement (Tucker, 2016). She also asserts that “The benefits of continuous accounting are so powerful, sensible and strategic that the organizations that first implement these processes will gain a competitive advantage” (Tucker, 2016). Because continuous auditing is still a novel concept, the first firms to harness the power of the process could reap the rewards. Likewise, auditors with the technological skills to be a part of that innovation will have a great advantage in the field. However, there is an industry concern that the typical accounting graduate is not

prepared to offer continuous auditing services due to the lack of comparable courses or learning objectives in the curriculum (Byrnes et al., 2016).

Eventually, however, either through a change in accounting standards or simply due to stockholder demand, continuous auditing could become the norm in the profession. If the Public Company Accounting Oversight Board (PCAOB) or AICPA, both issuers of auditing standards, decided to implement a new standard necessitating continuous auditing, most firms and universities would be caught off guard. Realistically, this could happen in the near future, so it is important for undergraduates to be prepared to face this changing work.

As the profession moves toward the future of audit and considers the push for continuous audits and heavier use of data and analytics, it is likely that some technologies previously considered unimportant will become critical. Some of these technologies might not even exist yet. Because of this, it is important to equip students with a basic understanding of, and comfort with, the core concepts of accounting technology. A wider exposure to technology such as databases and statistical modeling tools, and the principles that underlie them, in undergraduate courses will allow students to adapt more easily to tools that are yet to be created.

This survey suggests that students need real-world experience, and research claims that undergraduates need to take more intensive technology classes. In both cases, the accounting curriculum is due for some changes. Ideally, the curriculum could be expanded to include new classes in technology and case-based exercises, enabling undergraduate students to reach 150 credit hours without paying even more

for an advanced degree. Students would also benefit from this model because they would be learning applicable skills that could differentiate them from the competition when they enter the workforce.

The results of the survey suggest that, while graduate degrees, especially in accounting, improve some skills, such as critical thinking, they are not as beneficial when considering other skills, such as statistical modeling. The majority of respondents agreed that it is possible to succeed in the profession without a graduate degree. Students choosing to pursue an advanced degree would likely benefit from the decision, but the investment of time and money into graduate school is not necessary for success in the profession. Students who enroll in graduate school in order to increase their chances of success in the profession should look for programs that emphasize practical application of concepts and interaction with professionals.

The changes envisioned by the Pathways Report may come about more quickly due to the efforts of industry professionals partnering with academics. KPMG recently created its own Master's degree program to fill its need for auditors who understand data and analytics. This suggests that such a program did not already exist, and that the need for auditors with these skills is pressing. By working together, industry and academics can advance the profession rapidly.

Limitations of this Survey

This survey represented a small sample of public accountants, and was conducted in a way that would allow for completion in a timely matter. In the future, similar studies should be conducted with larger sample sizes if possible.

Suggestions for Further Research

The researcher suggests an investigation into innovations in accounting curriculums at universities, as well as new graduate programs that meld accounting and other subjects.

The researcher would like to conduct a study similar to this one, but in the form of an interview instead of a survey. This would allow the interviewer to collect more information and ask clarifying questions, resulting in more reliable data.

The researcher also suggests a deeper analysis of the gap between supervisor reports of employees' readiness for the profession and the reports of the employees themselves.

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Appendix A

IRB EXEMPTION LETTER



RESEARCH OFFICE

210 Hulihan Hall
University of Delaware
Newark, Delaware 19716-1551
Ph: 302/831-2136
Fax: 302/831-2828

DATE: January 18, 2017

TO: Margaret Mary Rilling
FROM: University of Delaware IRB (HUMANS)

STUDY TITLE: [1013523-1] Beyond the Spreadsheets: An Analysis of Modern Accounting Education

SUBMISSION TYPE: New Project

ACTION: DETERMINATION OF EXEMPT STATUS
DECISION DATE: January 18, 2017

REVIEW CATEGORY: Exemption category # (2)

Thank you for your submission of New Project materials for this research study. The University of Delaware IRB has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will put a copy of this correspondence on file in our office. Please remember to notify us if you make any substantial changes to the project.

If you have any questions, please contact Nicole Farnese-McFarlane at (302) 831-1119 or nicolefm@udel.edu. Please include your study title and reference number in all correspondence with this office.

Appendix B

SURVEY

Applied Accounting Education

Q37 SURVEY: ACCOUNTING EDUCATION AND JOB PREPAREDNESS This survey is part of a student research project from the University of Delaware. The purpose is to understand how accounting education prepares students for careers in public accounting. The survey should take about 10 minutes to complete. Your responses will remain completely confidential. No personally identifying information will be collected. This survey has been approved by the University of Delaware's Research Ethics Board. Your participation is completely voluntary and you may stop at any time without any consequences to you. If you have any questions about this study, please contact Margaret Mary Rilling, University of Delaware Class of 2017, at mrilling@udel.edu. Your participation is greatly appreciated! Thank you for your time!

☐ I have read and understand the above (1)

Q20 Years in public accounting

Q2 Undergraduate Major

Q4 Job Title

Q5 How many people does your firm employ?

☐ > 10,000 (1)

☐ 5,000 - 9,999 (2)

☐ 1,000 - 4,999 (3)

☐ < 1,000 (4)

Q6 Which service line do you work in?

☐ Audit (1)

☐ Tax (2)

☐ Advisory/Consulting (3)

Q7 A typical bachelor's degree requires 120 credit hours to graduate. How did you obtain the additional 30 credit hours currently required for CPA licensure?

- ☐ I earned my CPA license before the 150 credit hour requirement was instated (1)
- ☐ As an undergraduate in courses related to accounting (economics, finance, information systems, etc.) (2)
- ☐ As an undergraduate in courses not related to accounting (theatre, arts, other electives) (3)
- ☐ In graduate school (4)
- ☐ I have not yet completed the 150 hours (5)

Q8 If you earned a graduate degree, what subject area is the degree in?

Q12 Please indicate whether you agree or disagree with the following statements

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
My undergraduate degree prepared me for a career in public accounting (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My undergraduate degree gave me the auditing skills necessary to succeed in public accounting (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My undergraduate degree gave me the understanding of business law necessary to succeed in public accounting (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My undergraduate degree gave me the understanding of financial reporting necessary to succeed in public accounting (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My undergraduate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

degree gave me the critical thinking skills necessary to succeed in public accounting (5)					
My undergraduate degree gave me the communication skills necessary to succeed in public accounting (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My undergraduate degree gave me the leadership skills necessary to succeed in public accounting (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My undergraduate degree gave me the ethical decision-making skills necessary to succeed in public accounting (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My undergraduate degree gave me the information technology skills necessary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<p>to succeed in public accounting (9)</p> <p>My undergraduate degree gave me the statistical modeling skills necessary to succeed in public accounting (10)</p>	○	○	○	○	○
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Q30 Please indicate whether you agree or disagree with the following as they relate to your advanced degree

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
My graduate degree improved my auditing skills (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My graduate degree improved my understanding of business law (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My graduate degree improved my understanding of financial reporting (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My graduate degree improved my critical thinking skills (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My graduate degree improved my communication skills (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My graduate degree improved my leadership skills (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My graduate degree improved my ethical decision-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

making skills (7)					
My graduate degree improved my information technology skills (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My graduate degree improved my statistical modeling skills (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q32 The information I learned and skills I gained in graduate school are instrumental to my success in public accounting

- ☐ Agree (1)
☐ Disagree (2)

Q33 My graduate degree better prepared me for success in public accounting than my undergraduate degree alone

- ☐ Agree (1)
☐ Disagree (2)

Q21 I oversee new staff as an in-charge, manager, or partner

- ☐ Yes (1)
☐ No (2)

Q35 If you oversee or supervise new staff as an in-charge, manager, or partner, please assess the competency of the new staff upon their entering the profession

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Staff enter my firm from college prepared for a career in public accounting (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My firm's new staff are equipped with the auditing skills necessary to succeed in public accounting (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My firm's new staff are equipped with the understanding of business law necessary to succeed in public accounting (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My firm's new staff are equipped with the financial reporting skills necessary to succeed in public accounting (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My firm's new staff are equipped with the critical thinking skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

necessary to succeed in public accounting (5)					
My firm's new staff are equipped with the communication skills necessary to succeed in public accounting (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My firm's new staff are equipped with the leadership skills necessary to succeed in public accounting (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My firm's new staff are equipped with the ethical skills necessary to succeed in public accounting (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My firm's new staff are equipped with the information technology skills necessary to succeed in public accounting (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My firm's new staff are equipped with	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

the statistical modeling skills necessary to succeed in public accounting (10)					
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Q14 Please indicate whether you agree or disagree with the following statements

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
It is possible to succeed in the public accounting profession without an advanced degree (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is possible to succeed in the accounting profession after taking only the required courses for accounting majors (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The undergraduate accounting curriculum prepared me to pass the CPA exam (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I regularly use the information I learned while studying for the CPA exam (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q15 In what ways did your undergraduate education prepare you well for a career in public accounting?

Q16 What skills or courses should be included in the undergraduate accounting curriculum that are not currently included?

Q17 What skills do you use the most in your day-to-day role as an accounting professional?

Q22 What advice would you give college students on how to best use the extra 30 credit hours?

Q19 Please leave any additional comments you may have on accounting education or field preparedness in the box below