

An Examination of Factors Affecting the Passing Rates of the CPA Examination

Rogelio J. Cardona *
Karen C. Castro-González *
Carmen B. Ríos-Figueroa**

March 19, 2015

Abstract

According to data compiled by the NASBA Candidate Performance Reports, Puerto Rico has consistently reflected the lowest passing rates among the 50 states and territories of the United States (U.S.) on the CPA exam. The objective of this study is to examine the factors that might be causing the lower passing rates of Puerto Ricans on the CPA exam. Our study aims to fill a gap in the literature. We are conducting a survey among candidates taking CPA review courses and recently licensed CPAs to obtain their perceptions of the factors that affect their performance on the CPA exam.

Keywords: CPA exam, passing rates, success factors

* Associate Professor of Accounting, School of Business Administration, University of Puerto Rico-Río Piedras.

** Assistant Professor of Accounting, School of Business Administration, University of Puerto Rico-Río Piedras.

Acknowledgments: This study was financially supported by a summer research grant from the School of Business Administration of the University of Puerto Rico-Río Piedras.

Introduction

Prior research examines the success rates among first-time candidates and repeat candidates of the Uniform CPA Examination (CPA exam) prior to 2004 and the factors that might affect the exam's passing rate (Titard and Russell, 1989). A more recent study suggests that the convenient scheduling of the new computerized version of the CPA exam throughout the year seems to have reduced the urgency among candidates to sit for the exam (Charron and Lowe, 2009). In addition, Metinko and Gray (2010), examine the association between changes in the 150-hour education requirements with the number of CPA exam candidates during an eleven-year period.

The objective of this paper is to examine the factors that might be affecting the passing rate among candidates on the CPA exam in Puerto Rico. To the best of our knowledge, the literature has not studied the performance of non-native English-speaking candidates on the CPA exam. Our study aims to fill that gap in the literature.

Motivation and justification

According to data compiled by the NASBA Candidate Performance Reports, Puerto Rico has consistently reflected the lowest passing rates among the 50 states and territories of the United States (U.S.) on the CPA exam. Although the literature explores the different factors affecting the passing rates among the candidates taking the exam, to our knowledge there has been no study examining the factors that may be affecting the performance of the Puerto Rican candidates.

Related Literature

The literature related to the accounting profession and the CPA exam identifies several areas of study. Some studies analyze the factors or reasons for success on the CPA exam, while others consider the effects of the 150-hour requirement on the exam passing rates. There is another body of studies that examines minorities in the accounting profession or concentrate in analyzing how incentives affect candidates' performance. The following section offers a review of the literature that examines these specific aspects.

Factors or reasons for success on the CPA Exam

Titard and Russell (1989) examine relatively recent success rates for both first-time candidates and repeat candidates on a national basis (prior to the computerized version of the exam), and consider some factors that might explain the reasons for success. The data examined was provided by NASBA for the four examinations conducted during 1985 and 1986. The study examines passing rates by subject matter for first-time and repeat candidates. The factors considered are grade-point average (GPA), advanced degree, public accounting experience and supplementary study such as a CPA review course. The authors find that a candidate's GPA and having advanced degrees seems to improve the passing rates on all four parts of the CPA exam. The years of experience in public accounting improve the pass rate on the parts formerly known as Auditing and Practice but do not improve the pass rate on the remaining two parts known as Law and Theory. In addition, the results obtained suggest that supplementary study such as CPA review course had a positive effect on the exam's pass rate.

In contrast, Ashbaugh and Thompson (1993) study the factors associated with passing the four parts of the CPA exam on the first attempt but using other variables. They collect data from 234 candidates for the years 1989 and 1990 from a medium-size Midwestern university. The authors use discriminant analysis to compare two groups: those passing the exam at the first attempt and those who have not. They use four independent variables: high school class size, high school class rank, combined ACT score and grade in a CPA review course taught at the university. The results show that the factors that significantly contributed to the success or failure on the exam were high school class size, high school class rank and grade in the CPA review course. The larger the high school attended by the candidate and the higher he or she ranked in the class, the higher the probability of passing and achieving outstanding performance. Regarding the CPA review course, those students who earned an A or a B in the course and have the above characteristics have a higher probability of passing the exam. The authors suggest that input variables have a strong influence on a candidate's performance in the CPA exam.

Other authors, like Campbell, Lindsay and Foote (2000), focus on whether having a specific governmental/not-for-profit-accounting course improves the passing rates on the CPA exam. The study was based on data provided by NASBA reflecting the passing rates on the CPA exam from May 1991 through May 1993 and May 1994 to May 1996 for 108 schools from 40 states. College catalogues for

1992-1993 were also examined to identify whether a schools' program included a required governmental/not-for-profit course or course component in an advanced accounting course. The study compares the passing rates of candidates from different universities and whether having a specific course on Governmental /not-for-profit- accounting course improved the passing rates on the CPA exam. The results obtained suggest that a statistically significant relationship may exist between the requirement of a governmental/not-for-profit accounting course in the curriculum and the passing rates on the CPA exam. The existence of such coursework seems to improve a candidate's performance on the exam and increase a school's predicted pass rate above the average pass rate of the whole sample.

In a more recent study, Brahmasrene and Whitten (2001) combine factors that other authors have used to survey CPA candidates. They surveyed candidates in the state of Indiana to examine the factors that may affect the probability of passing the CPA exam. Using a logit model they test the probability of passing the exam in relation to variables such as undergraduate grade point average (GPA), credit hours, high school GPA, high school class size, age, high school rank, educational level, type of preparation for the CPA exam, nature of work experience, gender, and race. Both models indicate that the factors that significantly influence the probability of passing the exam are undergraduate GPA, age, private accounting experience and gender. Males seem to be more successful than women in passing the exam. The authors suggest that a possible explanation is the format of the exam but further research is recommended in this regard. Older candidates perform better, specifically those participating in live CPA reviews. Participating in a review course, regardless of the type, seems to be better than having no review course at all, although live reviews seem to be better than other types. Having private sector experience seems to help in achieving a successful outcome in the exam.

Whitten and Brahmassrene (2002) focus on examining success factors using other candidates' characteristics. They find that whether the candidate had a bachelor's degree or higher does not appear to significantly influence the exam result. The authors argue that females perform as well as males in term of passing on the first sitting, but do not do as well in subsequent sittings. Those possessing 150 or more credit hours performed better than expected in terms of attaining conditional status. Working experience seemed to be an advantage for those passing after attaining a conditional status. The authors surveyed 1,072 May 1998 Indiana CPA candidates to examine factors that may affect the outcome in the CPA exam. Their final sample consisted of 238 completed surveys. They find that those candidates

having 150-credit hours at the time of sitting for the exam performed better than those who have not completed the 150-hour education, but did not perform as well in terms of passing after attaining a conditional status. Having work experience seemed to be a good attribute when sitting for the CPA exam under conditional status, whereas those having private work experience seem to perform better than those in other areas. For first time candidates without experience results were better than those with experience. Time constraints for those working seemed to be a determinant factor in this regard. There were no significant differences related to gender.

More recent studies examine different factors affecting the success rates but after the exam started to be offered in a computerized format. Howell and Heshizer (2006) assess the effectiveness of the training in accounting received by students in universities accredited by AACSB through an on-line survey sent to a sample of CPAs employed at accounting firms. Respondents were asked on what attempt was the exam passed, year passed, highest degree held when passed, the type of review course used (classroom review or self-study), their SAT (or ACT) score, age when the CPA exam was passed, and the overall college GPA. Information provided by AACSB was used to determine if the school was accredited when the respondent attended said school. The assumption made by the authors in this study is that persons that passed the CPA exam in fewer attempts were better trained than those that required more attempts. Therefore, the underlying objective is to determine what factors contributed to the passing of the CPA exam. The factors considered in the study are inherent intelligence (as measured by SAT or ACT score), the highest degree held when passed, the type of CPA review course used (classroom review or self-study), age when the CPA exam was passed, and overall college GPA.

The evidence obtained documents a significant difference for the average SAT score with the AACSB school graduates averaging higher scores (about 50 points higher). AACSB school graduates were more likely to have graduate degrees at the time the CPA exam was passed. In addition, AACSB graduates passed the exam on fewer attempts than non-AACSB graduates. Therefore, higher GPA, SAT score at any college and attending an AACSB school are characteristics that seem to be associated with passing the exam in fewer attempts. From these factors, GPA seems to have the largest impact on the passing rate, followed by attending an AACSB school. Preparing for the exam with self-study seems to increase the number of times required to pass the exam.

López and Spetch (2009) use a survey to determine the extent that student pass rates on the CPA exam have been used by accounting programs as a measure of learning outcomes assessment. The authors surveyed university chairs and deans of accounting program listed in the Prentice Hall Accounting /faculty Directory, during the fall 2006 semester, with 58 participants responding. The respondent schools have increased in-class use of computers for student research and writing assignments, the use of individual assignments that require research, the use of authoritative assignments, cases and simulations, spreadsheets and in class assignments. AACSB accredited programs exhibited a greater degree of change in adoption new teaching methodologies. Only 50% of universities were found to use the pass rates on the CPA exam as a measure of learning outcomes assessment.

Other studies like Coccozza (2005) concur with the notion that there are factors that might influence the outcome in the CPA exam. The author makes some suggestions as to the steps that employers should take in helping their staff achieve success in the CPA exam. First, he suggests that the candidate should sit for the exam as soon as possible after graduating or completing the requirements. Then, as a strategy to use time in favor of the candidate, he suggests that the candidate should start registration paperwork well before the planned test time. He also suggests that timing is important in that the candidate should avoid taking the exam during busy season. Finally, the author suggests that a strategy as to the order in which the candidate plans to sit for each part should be established. This strategy may focus on the educational career strengths.

McDonough (2010) argues that the CPA exam is a matter of proper planning, focus and determination. He concludes that the exam is definitely possible. McDonough (2010) suggests exams pitfalls to avoid and tips to pass the exam on your first attempt: Apply early- at the appropriate time, make a plan- A study plan, quality and quantity- Take the time to understand the process needed to solve each particular problem, give it your best –Get plenty of rest before the exam and get to the testing center early, don't change an answer, take your time with the simulation and, after the exam, continue studying for your next part.

Using data from Candidate Performance on the CPA Examination, published by NASBA between 1998 and 2009, Lindquist and Smith (2013) find that there were some universities that never ranked in the top 10 for the pp exam between 1998 and 2003 but have done so two or more times for the CBT exam

between 2004 and 2009. They also find that some candidates took the exam in a different state from the one they received their accounting education. The average pass rate on the CPA exam is improving among all candidates.

Lindquist and Smith (2013) examined the student quality and program quality to measure what schools are doing differently. The student quality was represented by student quality-stringent admission standards, retention rate. The Program Quality was represented by AACSB, percentage of classes that contain less than 20 students, percentage of classes that contain more than 50 students and percentage of full time faculty. For the authors, the true secret to success on CPA exam is hard work by good students. The purpose of this study was to determine whether, in a period of time beginning before and ending after accreditation has been gained, newly accredited business schools demonstrate greater improvements to average success rates than those for a comparably sized group of randomly selected but unaccredited business schools over the same time span, and without reference to the initial levels of success rates.

Morgan (2011) examines the following data bases: Institute of Education Sciences, US Department of Education, National Center for Education Statistics 2008-2009 provides the list of all US four year colleges and universities and NASBA, Candidates performance on the Uniform CPA Exam, 2008 edition. The accredited universities were identified by contacting the AACSB directly. A comparison group of unaccredited schools was developed. For the author there is a systematic association between larger positive changes to CPA exam success rates over time and AACSB business accreditation. Accounting programs at AACSB accredited institutions, over time, improve their quality.

The studies previously discussed, offer a review on the possible factors influencing the outcome in the CPA exam. In the next section, we discuss the results of studies that examine the effect of the 150-hour requirement on the exam passing rates.

Effect of the 150 hour requirement on the exam passing rates

Allen and Woodland (2006) evaluate the effect of the 150-hour requirement on the passing rates of the CPA exam. The research questions for the study were the following: (a) After controlling for changes in the number of accounting graduates, is implementation of the 150-hour requirement associated with an increase or a decrease in the number of candidates?, (b) Is implementation of the 150-hour requirement associated with an increase in pass rates?, (c) Is the 150-hour requirement associated with more or fewer candidates passing relative to the number of accounting graduates?

The research data provided by NASBA reflected the passing rates on the CPA exam from 1991 to 2002 for 50 states and three territories (DC, Guam and Puerto Rico). The US Virgin Islands were excluded because of the low number of candidates passing the exam. The study compares the passing rates of candidates for each state for three, two and one year before and after the implementation of the 150-hour requirement to take the CPA exam. The factors considered in the study are the number of accounting degrees (both bachelor's and master's degrees) awarded in each state per year, the number of candidates passing the exam in each state and the passing rate for each state. The authors find that the 150-hour requirement is associated with a large decrease (36%) in the number of candidates taking the exam and a significant reduction in the number candidates passing the exam (931.55), but very little (small) effect on the pass rates of first-time candidates on the CPA exam. The results also seem to suggest that a large number of unprepared candidates took the exam before the implementation of the 150-hour requirement to avoid the marginal cost related to the additional education requirement.

Other authors like Carpenter and Hock (2008) examine the effects of the requirement of 150 credit hours to sit for the CPA exam in Florida, Texas and New York. The data base for the study was provided by NASBA reflecting the passing rates on the CPA exam between 1990 and 2003 and for the years 2004 and 2005 in Florida, Texas and New York. The study compares the number of candidates passing the CPA exam and the passing rates of candidates before and after the adoption of the requirement of 150 credit hours to sit for the CPA exam. Although there was a reduction in the number of candidates sitting for the CPA exam after the 150-hour requirement went into effect, there was a dramatic increase in the number of candidates passing some or the entire exam in 2005. According to the authors, the increase in

the passing rates seems to be related to the fact that with the new exam format, candidates can dedicate their study efforts to passing the parts of the exam sequentially.

Authors like Metinko and Gray (2010) examined the association of the 120/150 hour education requirement with the number of CPA exam candidates during 1998 and 2008. They used two variables: Y- the number of people taking the CPA exam in a jurisdiction in year I and Variable x- equal to 1 if the state has the 150 hour education requirement to sit for the exam in effect and 0 if it does not. The data used was from the NASBA Candidate Performance Reports 1999-2009. The Pearson Product Moment Correlation Coefficient was calculated for the entire population to determine if there is a linear relationship between the variables. The study result for 1998 was $R = .05$, which indicates that almost no correlation between the number of CPA exam candidates and the 150 hour education requirement for year 1998. The result for 2008 was $R = -.17$, indicating a negative correlation. The results suggest that the decrease in CPA exam candidates in 2008 compared to 1998 should be attributed to many factors other than just the 150 hour education requirement.

In another study, Allen and Woodland (2012) discuss whether the 150-hour education requirement has an effect on candidates to the CPA exam by comparing the studies of Gramling and Rosman (2009) and Allen and Woodland (2006). Allen and Woodland (2006) examine the effects of the 150-hour requirement on the number of candidates taking and passing the exam. They conclude that this requirement reduced the number of candidates sitting for the exam but has little effect on pass rates. Years later, Gramling and Rosman (2009), while examining the same, conclude that the 150-hour requirement did not significantly reduce the number of candidates taking and passing the exam. By examining the latter paper, they interpret their results in a different way. Allen and Woodland (2012) argue that Gramling and Rosman (2009) find evidence that suggests that the *implementation methods* in regards to the 150-requirement may be the influencing factor in the number of candidates sitting for and passing the exam but do not directly provide evidence of the effects on the number of candidates sitting and passing the exam. These *methods* affect the requirements for licensure, sitting or both. Some states require 150-hours of education for licensure and others 120 to sit for the exam. The states can be classified as 150/150 states, 120/150 states and 120 /120 states (those that have not adopted the 150-hour rule). Allen and Woodland (2012) have concerns in relation to Gramling and Rosman research design and methods. The authors argue that Gramlin and Rosman results support Allen and Woodland (2006)

findings in that the 150-hour requirement does affect the number of candidates sitting and passing the exam regardless of the implementation method.

More recently, Briggs and He (2012) analyze the sectional pass rates of the CPA exam in individual jurisdictions for calendar years 2004 to 2007, the four-year period subsequent to the adoption of the computer-based test to determine if the jurisdictional requirements related to the minimum number of credit hours necessary prior to taking the CPA exam, have a significant effect on the passing rate for the exam's different sections. The study uses data provided by NASBA from 2004 to 2007 and from 2005 to 2008 and examines the CPA exam passing rates before and after the change to the computer-based exam in 2004 and compares the performance between jurisdictions that require 150 hours with jurisdictions that do not require 150 hours. The authors find that jurisdictions requiring 150 credit hours have higher pass rates than jurisdictions without the requirement, the differences are statistically significant for the Auditing and Regulation sections (at 0.01 and 0.05 levels, respectively). Similar results were obtained for first-time candidates, wherein jurisdictions with the 150 hour requirement have higher pass rates than jurisdictions without said requirement. Significant differences were also observed for the passing rates in the Auditing and Regulation sections. The results suggest that the additional educational requirement has improved the pass rates for certain sections of the CPA exam, but not for others.

The studies discussed above, offer a review on the effect of the 150-hour requirement on the exam passing rates. In the next section, we discuss the results of studies that examine how minorities perform in the CPA exam and the possible factors that influence their passing rates.

Minorities

Using data from exam scores and questionnaires (1997-1999) of African American candidates, Booker (2003) found that a majority of African-American candidates were female and had obtained only a bachelor's degree. An average 30% of the candidates had earned 150 or more credit hours of college education. At least half of the candidates reported that the decision to major in accounting was made in high school or earlier. The study reveals that first time candidates performed best on (1) Law and Professional Responsibility (LPR), (2) Auditing and Attestation (AUD), (3) Accounting and Reporting

(ARE), (4) Financial Accounting and Reporting (FAR). The author concludes that a substantial number of African-American candidates are taking and passing the CPA exam.

Lloyd-Bierstaker, Howe and Seol (2005) also examine the effects of the 150-hour education requirement on the decision of students to pursue a career in accounting. They focus their study on women and minorities. To examine this occurrence, the authors develop a questionnaire to investigate the perceptions of students regarding the benefits and costs of the 150-hour rule, specifically as it affects women and minorities. They collect data from approximately 600 business students at one private business college and one public university in a state of the Northeast of the US where the 150-hour rule has been passed but was not yet in effect. The evidence suggests that this new requirement does not deter minorities from becoming CPAs. Although they find evidence that suggests that female students are less likely than male to plan to pursue the CPA, female students seem to be more interested in the CMA exam. The authors argue that these results may be considered as evidence that the 150-hour rule has deterred female students in pursuing the CPA. In regards to the concern that minorities may be less able to afford the cost of additional education required by this new rule, they find that minorities are more optimistic than nonminority students in that they will receive additional compensation from employers to complete the education requirements for the CPA.

Other studies like Charron and Lowe (2009) examine the issues related to the occurrence of new graduates taking the CPA exam. They argue that the demand for CPAs had an increasing demand and that the number of students majoring in accounting was also increasing while the number of accountants taking the exam was not following the same trends. To examine these trends, they study the progress of candidates and their attitude towards taking the CPA exam as well as the possible factors that contribute to this occurrence. They find that although the interest in taking the CPA exam was very high, the completion of any possible plan was challenging. On the one hand, 20 percent of those graduates who were interested in taking the exam had not completed the 150 hour credits. On the other hand, 40 percent of those “exam ready” had not taken any part, even when half of them have been ready to take the exam for more than a year. The authors suggest that new graduates are more likely to have success on the exam if they take it soon after graduating and that employers should give them more guidance on the importance of obtaining the license sooner in their careers. They find evidence that suggests that assistance and incentives to new graduates may offer motivation towards taking the exam.

In a more recent study, Gabre, Flesher and Ross (2014) analyze the reasons for the small number of minority CPAs. Specifically, they mention that, although trends may indicate that there is an increase in the number of minority hires in the profession, the numbers are not representative of the percentage of the population that they pertain to. In particular, Hispanics are underrepresented despite the efforts of organizations like the Association of Latino Professionals in Finance and Accounting (ALPFA). The authors argue that this situation may be caused by a lack of role models and/or the 150-hour requirement. To examine the reasons for the scarcity of Hispanic CPAs, the authors surveyed by e-mail Hispanic professionals in the ALPFA membership database. Of those who answered the survey, 196 were Hispanic accountants. The questions included in the survey included items that measured factors such as availability of role models, CPA certification, the type of school attended, the different routes used by respondents to complete the 150-hour requirement, CPA review taken, their CPA certificate and exam perceptions. Results show that female Hispanic accountants are less likely to become CPA. The results also show that cost affordability is directly associated with the probability of becoming a CPA. They suggest that accounting departments, graduate programs and professional organizations could help in this matter by creating review courses or offering scholarships to this group. They also find that role models play a central role for Hispanics when taking and passing the CPA exam. There is a positive relation between having a CPA family member and the probability of becoming a CPA. In relation to the 150-hour requirement, they find that the evidence does not support the notion that this requirement has a negative impact on minority accountants sitting for the CPA exam.

The studies discussed above, examine how minorities perform in the CPA exam and the possible factors that influence their passing rates. In the next section, we discuss the results of studies that examine how incentives may affect the CPA candidates' performance and their passing rates.

Incentives

Weidman (2009) examines how firms motivate their staff to pass the exam. They found that one of the motivational tools used by firms is a booklet that discusses the necessary elements to pass the exam. Firms indicate that they monitor their staff's progress periodically. Many firms agree to pay 100% of the cost of review courses and offer a bonus up to \$5,000 when the candidates pass the exam. They also

offer paid time-off to be used as a review period for the exam. The author concludes that the motivation to pass the CPA exam is a combination of personal and professional goals.

O'Callaghan, Elson, Walker, Rao and Rechtman (2010) analyze the different methods or policies, including the use of incentives by CPA firms in the New York City area to assist their staff in taking and passing the CPA exam. The study was made with a focus group of partners and human resource managers of CPA firms in the New York City area. The study examines the different incentives used by CPA firms to motivate their staff to take the CPA exam and for passing the exam. The authors find that Management personnel at CPA firms should help staff by designing a success plan that should include how many hours they need to pass the exam. Management should also advise their staff to ask for family support and understanding in complying with their study plan. The authors also recommend that candidates take a live review course with classes near the staff members' homes. Once a candidate passes the exam, compensation should be revised to recognize the achievement.

Based on past studies and considering the specific characteristics of candidates that take the exam in Puerto Rico, we develop our research methodology. The next section presents our research design.

Research design

Sample and Research Methodology

The objective of this study is to examine the factors that might be causing the lower passing rates of Puerto Ricans on the CPA exam. We are conducting a survey among candidates taking CPA review courses and recently licensed CPAs to obtain their perceptions of the factors that affect their performance on the CPA exam. We ask them to provide information such as their overall GPA at graduation, major GPA, whether they have an advanced degree, years of public accounting experience, and supplementary studies, such as a CPA exam review course.

Some of the studies mentioned above (Gabre, et. al., 2014; Titard and Russell, 1989; Charron and Lowe, 2009) provide some guidelines as to the appropriate questions that should be included in this type of survey. We designed a questionnaire based on some of the questions used by these authors and some

questions relevant to the sample and purpose of this study. Then we submitted the instrument for the approval of the Institutional Review Board for the Protection of Humans in Research of the University of Puerto Rico-Río Piedras. The surveys were handed to the candidates personally. After collecting the surveys, they were tabulated and analyzed. The final results will be summarized for the purpose of our analysis.

Results

Sample description

A total of 59 questionnaires were tabulated in this investigation. The age of the participants in our sample when they took the CPA exam for the first time was distributed as follows: 85 percent were between 21 and 25 years old; 7 percent were between 26 and 29 years old; 3 percent were between 30 and 33 years old; and 5 percent were older than 34 years old. Approximately 53 percent of those surveyed have already obtained the CPA designation. Out of those that are already CPAs, 84 percent were between 21 and 25 years old when they passed the exam, 13 percent were between 26 and 29 years old, and 3 percent were older than 34 years old. In terms of gender, 39 percent are men and 61 percent are women. About 10 percent of the sample is married or living with a significant other, 86 percent is single and 3 percent is divorced. Only 10 percent of the participants responded that their marital status changed while they were studying for the exam. Ten percent of our sample had children living with them in the same household while they were studying for the exam.

The educational background of all of the participants in our sample is an undergraduate degree in accounting obtained in Puerto Rico. The institution where the candidates obtained their degree was distributed as follows, 90 percent graduated from the state university system (University of Puerto Rico) and 10 percent from private colleges or universities. Approximately 73 percent of our sample has an undergraduate GPA between 3.50 and 4.00, 20 percent has a GPA between 3.00 and 3.49 and 5 percent has a GPA between 2.99 and 2.50, and 2 percent has a GPA between 2.49 and 2.00. With respect to the major's GPA, 66 percent has a GPA between 3.50 and 4.00; 20 percent has a GPA between 3.00 and 3.49 and 10 percent has a GPA between 2.50 and 3.00 and 4 percent did not answer.

Most of the accounting professors of the participants in the sample were identified as having the CPA designation; 36 percent were identified as only CPAs, 7 percent were identified as only PhDs and 56 percent of the instructors were identified as PhDs who also had the CPA certification.

Survey Results

The participants were asked how they completed the 150 credit-hour requirement to sit for the exam. About 49 percent spent a fifth year taking additional college-level courses prior to obtaining a bachelor's degree and possibly completing a second major; 37 percent took additional college-level courses after obtaining their bachelor's degree (not intended to complete another major or a master's degree). To complete the 150 hour requirement, 13% of the sample completed graduate studies (8 percent obtained a Master's degree in Accounting, while 5 percent obtained an MBA).

Our sample consists of CPAs (53%) and non-CPAs (47%) that have taken at least one part of the CPA exam. Out of those that are CPAs, 42% passed the exam in less than one year, 54% passed the exam within one to two years after becoming eligible to sit for the exam, and only 4% of those who are CPAs passed the exam within three to four years. Of those surveyed, 81% waited between one to six months for their first attempt at the exam, 10% waited between six months and one year, 7% waited more than two years and 2% did not respond to this question.

All of the participants in our sample took a CPA review course, 51 percent took a live course, 19 percent took an internet course and 30 percent took a combination of a live and an internet course. In terms of the time dedicated to study for the exam, 12 percent studied between one to ten weekly hours, 25 percent studied between 11 to 20 weekly hours, 19 percent studied between 21 to 30 weekly hours, 20 percent studied between 31 to 40 weekly hours, 22 percent studied more than 40 weekly hours, and two percent (one respondent) did not answer this question.

Twenty four percent of the participants were working part-time when they took the CPA exam for the first time, 34 percent were working full-time and 42 percent was unemployed. In terms of years of work experience, 58 percent had less than one year when they took the exam for the first time, 25 percent had between one to three years, 7 percent had between 3 to 5 years, 3 percent had between 5 to 8 years, 2

percent had more than 12 years of work experience and 5 percent provided a “Not applicable” reply. With respect to the job title of the participants when they took the exam for the first time, forty four percent were employed as staff accountants, 31 percent were unemployed, 22 percent were working in different positions with various job titles and only 3 percent held senior management jobs. Regarding the type of employers of the participants when they took the exam for the first time, 19% worked for international accounting firms, 14 % worked for a national, regional or local accounting firm, 10% were working for a corporation, 8 percent were working for a governmental entity, 2 percent was working in private not-for-profit entities, 19 percent were working in other various types of employers and the remaining 28 percent were either unemployed or did not respond to the question.

For those participants who passed the four parts of the CPA exam, approximately 42% described themselves as working part time when they passed the exam, 54% were working full time, and 4% was unemployed. Of those who passed the exam, 4% had a job title in Senior Management, 65% were Staff Accountants, and 4% were employed in other various positions. With respect to the employment area of the participants who passed the exam, 54% worked in Auditing or Assurance services, 4% provided Accounting services, 4% worked in Internal Auditing, 4% provided tax services, and 7% worked in Information Technology services.

In terms of years of work experience of the participants who passed the CPA exam, 38% had less than one year of experience, 50% had one to three years of experience, 8% had between three to five years of experience and 4% answered with a “Not applicable” response, which suggests that they did not have any work experience.

With respect to the incentives received from their employer to take and pass the CPA exam, the study’s questionnaire contemplated the possibility of more than one answer, which resulted in percentages exceeding 100%. Approximately 39% of the sample participants received a reimbursement of the cost of an exam review course, 17% received time off (paid or without pay), 34% received a bonus upon passing the exam, 37% indicated that there were no incentives, and 3% indicated that they were unemployed.

The last survey question asked the participants to provide their perceptions of the challenges associated with taking and passing the CPA exam. Twenty seven percent of the participants strongly agree that they did not have enough time to study, whereas 39 percent agrees with the statement, 22% disagree with the statement, while 5 percent strongly disagree. The rest of the sample (6%) did not express an opinion. With respect to their perceptions about the level of technical difficulty of the exam, 20% of the participants strongly agree that this factor affects the possibilities of passing the exam, 64% agree, 12% disagree, 2% strongly disagree, and 2 percent did not answer.

Regarding the perception that economic constraints represented a challenge in completing the 150-hour requirement, only 2 percent of the participants strongly agree with this statement. Another 25% of the participants agree with this statement, 41% disagree, 22% strongly disagree with this statement, and the rest of the sample (10%) did not provide an opinion. With respect to their perception that the exam is too expensive, 32 percent of the participants strongly agree with this assertion. Another 39 percent of the participants agree with this statement, 20 percent disagree, 5 percent strongly disagree with this statement, and the rest of the sample (3%) did not provide an opinion. The evidence seems to suggest that the cost of the exam is a challenge for the majority of the participants in our study.

Concerning the language used in the exam as a factor affecting the passing rates, only 3 percent of the participants strongly agree. Another 32% of the participants agree with this statement, 42% disagree, 15% strongly agree and 7% did not provide an opinion. The rest of those surveyed answered that this statement did not apply to them or did not answer the question. The evidence seems to suggest that the language of the exam is not perceived as a challenge for the majority of the participants in the survey. This contradicts our prior research expectations.

With respect to the perception related to the difficulty in drafting responses to questions requiring written responses, only 10 percent of the participants strongly agree. Another 44 percent of the participants agree with this statement, 29 percent disagree, 12 percent strongly disagree with this statement, and the rest of the sample (5%) did not provide an opinion. This result suggests that the participants perceived that drafting written responses might represent a factor that affects the passing of the exam.

In relation to the statement that suggests that 18 months is a short time to take and pass the exam, 31 percent of the participants strongly agree and 29 percent agree. Only 24 percent of those who answered disagree with the statement and 14 percent strongly disagree. The rest of the sample did not offer a response. As to the assertion that suggests that having too many family responsibilities represents a challenge in taking and passing the exam, 8 percent of the participants strongly agree and 47 percent agree with it. A total of 20 percent of the participants disagree with this notion and 5 percent strongly disagree.

Conclusion

We examine the perceptions of the factors that affect the performance on the CPA exam, specifically the computerized version of the exam, which started being offered in 2004. Our sample consists of participants who are either CPAs or have taken at least one part of the exam in Puerto Rico. In terms of age, 85% of the sample participants are between 21-25 years of age, and 53% of the participants are already CPAs. Out of the participants who are already CPAs, 53% are in the 21 to 25 year interval, which is similar to the average age of the total sample.

In terms of gender of the participants, 39% are male and 61% are female. An overwhelming majority (86%) of the participants identified themselves as single. All of the participants obtained their undergraduate degree in Puerto Rico, and 90% of them within the University of Puerto Rico (UPR) system. With respect to GPA, 73% of the participants were in the 3.50 to 4.00 range, and 20% were in the 3.49 to 3.00 range (93% of the participants had a GPA of 3.00 or higher). In the major GPA, 66% of the participants were in the 3.50 to 4.00 range, and 20% were in the 3.49 to 3.00 range.

Most of the accounting professors of the participants in the sample were identified as having the CPA designation; 36 percent were identified as only CPAs, 56 percent of the instructors were identified as PhDs and CPAs, and 7 percent of the professors were identified as only PhDs with no CPA certification. This suggests a possible unawareness by the students of the educational and professional background of their Accounting professors.

According to the participants in the study, the most significant challenges associated with taking and passing the CPA exam were the following:

1. Enough time to study for the exam
2. Level of technical difficulty of the exam
3. Cost of the exam
4. Difficulty in drafting written responses to questions on the exam
5. The 18-month window to take and pass the exam
6. Having too many family responsibilities while studying for the exam

The above findings seem to agree with our prior research expectations. However, the language factor was not perceived to represent a challenge in taking and passing the exam among the participants, which is inconsistent with our prior expectation for this study. At this stage in our research, our study sample is mainly composed of staff accountants working for large accounting firms, who usually tend to have higher GPAs and are fully bilingual. As a result, this might represent a limitation in our study. Future research should include a more diverse sample of participants and examine the differences in perceptions between CPAs and non-CPAs.

References

- Allen, A. and Woodland, A.W. (2006). The 150-Hour requirement and the Number of CPA Exam Candidates, Pass Rates, and the Number Passing. *Issues in Accounting Education*, 21(3), 173-193.
- Allen, A.C. and Woodland, A.C. (2012). Response to: The Ongoing Debate about the Impact of the 150-Hour Education Requirement on the Supply of Certified Public Accountants. *Issues in Accounting Education*, 27 (4), pages 1045-1057.
- Ashbaugh, D.L. and Thompson, A.F. (1993). Factors Distinguishing Exceptional Performance on the Uniform CPA Exam. *Journal of Education for Business*, 68 (6), 334.
- Bierstaker, J.L., Howe, M.A. and Seol, I. (2005). The Effects of the 150- Credit-Hour Requirement for the Certified Public Accountant (CPA) Exam on the Career Intentions of Women and Minorities. *Journal of Education for Business*, November/December 2005, 99-104.
- Booker, Q. (2003). African American Candidates for the CPA exam: Participation and Performance. *The CPA Journal*, August, 55-57.
- Brahmasrene, T. and Whitten, D. (2001). Assessing Success on the Uniform CPA Exam: A Logit Approach. *Journal of Education for Business*, September/October, 45-50.
- Brahmasrene, T. and Whitten, D. (2002). Passing the Uniform CPA Exam: What Factors Matter? *The CPA Journal*, November, 60-62.
- Brundage, H. (2007). With Flying Colors-Guidelines to help your candidates pass the CPA Exam, *California CPA*, December, 31.
- Briggs, G.P. and He, L. (2012). The 150 Credit-hour Requirement and CPA Examination Pass Rates-A Four Year Study, *Accounting Education: An International Journal*, February, 21 (1), 97-108.
- Campbell, A., Lindsay, D. H., Foote, P. S. (2000). Does a Government/not-for-Profit Program Requirement Improve CPA Exam Pass Rates?, *The Government Accountants Journal*, 49 (2), 38-44.
- Carpenter, C.G. and Hock, C.A. (2008). The 150-Hour Requirement's Effect on the CPA Exam, *The CPA Journal*, June, 62-64.
- Charron, K. and Lowe, D.J. (2009). Becoming a CPA: Evidence from Recent Graduate. *The Accounting Educators' Journal*, XIX, 143-160.
- Cocoza, C.R. (2005). With CPA Exam, Perfect Makes the Practice. *Pennsylvania CPA Journal*, 76(2), 1-2.
- Gabre, H.G., Flesher, D. and Ross, F. (2014) Determinant Factors for the Dearth of Hispanic CPAs. Retrieved from: <http://aaahq.org/AM2014/abstract.cfm?submissionID=2749>.

- Howell, C. and Heshizer, B., AACSB Accreditation and Success on the Uniform CPA Exam. *Journal of Applied Business and Economics*, 6(3), 9-17.
- Lindquist, T. and Smith, G. (2013). Top Schools' Success on the Computerized CPA Exam. *The CPA Journal*, May, 66-71.
- López, K. and Specht, L. (2009). The Computer-based CPA Exam-Effects on curricular Change and Measures of Outcomes Assessment. *The CPA Journal*, September, 64.-70.
- Madsen, P.E. (2013). The Integration of Women and Minorities into the Auditing Profession since the Civil Rights Period. *The Accounting Review*, 88 (6), 2145-2177.
- McDonough, R. (2010). The Secrets to Passing CPA exam on your first try. *New Jersey CPA*. July/August, 40.
- Metinko, T.R. and Gray, D. (2010). Decrease in the Number of People Taking the CPA Exam Not Due to the 150-Hour Requirement. *American Journal of Business Education*, 3 (11), 45-51.
- Morgan, J. (2011). The Impact of AACSB Business School Accreditation on Quality of Accounting Education as Measured by CPA Exam Success Rates. *Business Education Digest Foundation*, XVIII, 1-10.
- O'Callaghan, S., Elson, R.J., Walker, J.P., Rao, A and Rechtman, Y. (2010). Help Staff Pass the CPA Exam. *The CPA Journal*, February, 62-64.
- Schick, A.G. (1998). Should Undergraduate Education in Accounting be Evaluated, in Part, based on Graduates' Performance on the CPA Examination? *Issues in Accounting Education*, 13 (2), 417-420.
- Titard, P.L. and Russell, K.A. (1989). Factors Affecting CPA Examination Success. *Accounting Horizons*, 3(3), 53-59.
- Weidman, A. (2009). Failing the Exam No More! Support for CPA Candidates Breaks Down Barriers to Success. *Pennsylvania CPA Journal*, 80(2), 1-3.
- Whitten, D. and Brahmssrene, T. (2002). Passing the Uniform CPA Exam: What factors Matter. *The CPA Journal*, November, 1-2.
- Zachry, B.R. and Bettinger, C.R. (1992). Testing communication skills on the CPA exam, *Journal of Education for Business*, 67(3), 168.

Appendix
Questionnaire

The following questions are related to your experience with the CPA exam:

1. Your age when you took the exam for the first time: _____
2. Your age when you passed the last part of the CPA exam: _____
3. Gender: _____Female _____Male
4. Marital status when you took the exam for the first time:
_____ Married or living with a significant other _____ Single _____ Divorced
5. Did your marital status change during the time it took you to pass the CPA exam?
____ Yes _____ No
6. Did you have children living at home while you were studying for the CPA exam?
_____Yes _____No (go to question 8)
7. How many children? _____
8. Was your bachelor's degree in Accounting?
_____ Yes _____ No, please specify your major _____.
9. Where did you obtain your bachelor's degree?
 - a. Puerto Rico
 - b. United States (go to question 11)
 - c. Other, specify: _____
10. If your answer to (9) above was (a), i.e. Puerto Rico, identify the name of the institution:
 - a. University of Puerto Rico, specify the campus _____
 - b. Interamerican University, specify the campus _____
 - c. University of Sacred Heart
 - d. Ana G. Méndez System, specify the institution _____
 - e. University of Phoenix
 - f. Polytechnic University
 - g. Other, please, specify _____
11. If your answer to (9) above was (b), i.e. United States, identify the name of the institution:

12. Undergraduate GPA:

- a. Below 2.00
- b. 2.00-2.50
- c. 2.50-3.00
- d. 3.00-3.50
- e. 3.50-4.00

13. What was your major's GPA?

- a. Below 2.00
- b. 2.00-2.50
- c. 2.50-3.00
- d. 3.00-3.50
- e. 3.50-4.00

14. Most of my undergraduate accounting professors were:
- a. CPAs
 - b. PhDs
 - c. Both
 - d. Not Applicable
15. How did you complete the 150 hour requirement to take the CPA exam?
- a. Master's degree in Accounting (MS, MSA, or MACC)
 - b. Master's degree in Business Administration (MBA or Master's degree in another business related area)
 - c. Master's degree in a non-business related area
 - d. Spending a fifth year taking additional college-level courses prior to obtaining a bachelor's degree (and possibly completing a second major)
 - e. Taking additional college-level courses after obtaining my bachelor's degree (not intended to complete another major or a master's degree)
16. Where did you complete graduate studies? If you did **not** complete graduate studies, go to question 20.
- a. Puerto Rico
 - b. United States
 - c. Other, specify: _____
17. If your answer to (16) above was (a), i.e. Puerto Rico, identify the name of the institution:
- a. University of Puerto Rico, specify the campus _____
 - b. Interamerican University, specify the campus _____
 - c. University of Sacred Heart
 - d. Ana G. Méndez System, specify the institution _____
 - e. University of Phoenix
 - f. Polytechnic University
 - g. Other, please, specify _____
18. If your answer to (16) above was (b), i.e. United States, identify the name of the institution:
- _____

19. Graduate GPA:
- a. Below 2.00
 - b. 2.00-2.50
 - c. 2.50-3.00
 - d. 3.00-3.50
 - e. 3.50-4.00
20. Currently, I am:
- a. A CPA
 - b. In the process of becoming a CPA
 - c. No longer interested in pursuing the CPA exam
21. How much time did it take you to pass the four parts of the CPA exam?
- a. Less than a year
 - b. 1-2 years
 - c. 3-4 years
 - d. 5-6 years
 - e. More than 6 years
22. How long did you wait for your first attempt to sit for the CPA exam after completing the CPA exam candidate requirements?
- a. 0-6 months
 - b. Between 6 months-1 year
 - c. More than 1 year but less than 2 years
 - d. More than 2 years
 - e. Have not taken the exam yet
23. Did you take a CPA review course?
- a. Yes
 - b. No
24. If your answer to (23) above was yes, identify the type of CPA review course:
- a. Live course
 - b. Internet course
 - c. Both a and b
 - d. Other, describe: _____.
25. How many weekly hours did you spend studying for the CPA exam?
- a. 1 – 10 hrs.
 - b. 11 – 20 hrs.
 - c. 21- 30 hrs.
 - d. 31- 40 hrs.
 - e. More than 40 hrs.
26. Were you working when you took the CPA exam for the **first time**?
- a. Part-time
 - b. Full-time
 - c. No

27. How many years of work experience did you have when you took the CPA exam for the **first time**?

- ___ a. < 1 year
- ___ b. 1-3 years
- ___ c. 3-5years
- ___ d. 5-8 years
- ___ e. 8-12 years
- ___ f. > 12years
- ___ g. Not applicable

28. What was your job title in your employer when you took the CPA exam for the **first time**?

- a. Unemployed
- b. Senior Management (Partner, VP, CEO, Director, etc.)
- c. Manager (Sr. Manager, Controller, Chief Accountant, etc.)
- d. Staff
- e. Other (Please specify) _____

29. Were you working when you **passed** the CPA exam?

- a. Part-time
- b. Full-time
- c. No

30. What was your job title in your **employer** when you **passed** the CPA exam?

- a. Unemployed
- b. Senior Management (Partner, VP, CEO, Director, etc.)
- c. Manager (Sr. Manager, Controller, Chief Accountant, etc.)
- d. Staff
- e. Other (Please specify) _____

31. Which of the following best describes your **employer** when you took the CPA exam for the **first time**?

- a. International Accounting Firm
- b. National, Regional or Local Accounting Firm
- c. Corporation
- d. Government including Federal
- e. Not-for-Profit organization
- f. Self-employed
- g. Unemployed
- h. Other (Please specify) _____

32. Which of the following best describes your **employment area** when you **passed** the CPA exam?

- a. Unemployed
- b. Audit/Assurance
- c. Accounting Services
- d. Consulting
- e. Industry (Corporate Accounting or Finance)
- f. Internal Audit
- g. Tax
- h. Information Technology
- i. Other (Please specify) _____

33. How many years of work experience did you have when you **passed** the CPA exam?

- a. < 1 year
- b. 1-3 years
- c. 3-5years
- d. 5-8 years
- e. 8-12 years
- f. > 12years
- g. Not applicable

34. Incentives received from your employer to take and pass the CPA exam were the following: (you may select more than one answer):

- a. Reimbursement of review cost
- b. Time off (paid or without pay)
- c. Bonus upon passing the exam
- d. There were no incentives
- e. Other (Please specify)_____

35. Please identify your perception of the challenges associated with taking and passing the CPA exam:

	Strongly Agree	Agree	Disagree	Strongly disagree	N/A
Not enough time to study.					
Level of technical difficulty of the exam.					
Economic constraints in completing the 150-hour requirement.					
Difficulty in understanding the language used in the exam.					
The exam is too expensive.					
Difficulty in drafting responses to questions requiring written responses.					
18 months is a short time to take and pass the exam.					
Too many family responsibilities.					

Please identify any other factor(s) that you believe are challenges related to taking and passing the CPA exam and are **not included** in the previous question.
