Transformation & Impact Across the Accounting Profession

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Sources Include: NASBA and AICPA

The Impact of Technology on our Profession—WOW!

- FIRST – Be Excited!
- New Opportunities
- Learn New Things
- Hang ON
- ENJOY the RIDE!
The Impact of Technology on our Profession—WOW!

- The number of accounting majors is declining in some universities as students are moving toward data centric (data analytics, forensics, CIS) and supply chain majors.
- Mississippi is slow in this trend.
- Why? The basic economic law of supply and demand.

Trends in Accounting & Business Majors in Other Markets

<table>
<thead>
<tr>
<th>Year</th>
<th>University of Maryland</th>
<th>Virginia Tech</th>
<th>NC State</th>
<th>Penn State</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>778</td>
<td>639</td>
<td>452</td>
<td>362</td>
</tr>
<tr>
<td>2015</td>
<td>705</td>
<td>562</td>
<td>410</td>
<td>402</td>
</tr>
<tr>
<td>2016</td>
<td>651</td>
<td>509</td>
<td>428</td>
<td>389</td>
</tr>
<tr>
<td>2017</td>
<td>557</td>
<td>487</td>
<td>452</td>
<td>358</td>
</tr>
</tbody>
</table>

Source: Various University's Data
Trends in Accounting & Business Majors in MS

Source: Mississippi IHL

Source: AICPA
Why the Decline?

- Possible Cause #1 – Accounting degrees yield lower starting salaries compared with other fields related to information sciences & technology, cybersecurity, and technology digitization (RPA, AI and BC).

![Starting Salary by Major Chart]
Why the Decline?

- **Possible Cause #2 – Technology developments** continue to change skill requirements of accountants, causing students to shift to fields that will advance their acumen (*artificial intelligence/machine learning, blockchain, cybersecurity, data analytics*) in conjunction with accounting knowledge.

  Source: Gordon (2018) "The Impact of Technology on Contemporary Accounting: An ABCD Perspective" [Link](http://dx.doi.org/10.14738/tmlai.32.5196)

- If this trend continues, data science consulting firms will be performing services traditionally thought of as accounting related services.

  Source: Kirklaus (2018) "Siri Creator: Accountants Need to Bring AI In-House"
The Impact of Technology on our Profession—WOW! The ABCD Perspective

- **Artificial Intelligence/Machine Learning** – Concerned with intelligent behavior by computers. Machines learning and subsequently performing tasks which previously required human intelligence.

- **Blockchain** – A digital decentralized ledger consisting of “blocks” of transactions between parties.

- **Cybersecurity** – Concerned with the projection of information accessed and transmitted over the Internet and other computer networks (protection of CIA – confidentiality, integrity, and availability of information).

- **Data Analytics** – Involves analyzing and interpreting patterns and trends based on large sets of data.

Technology – WOW!

- [https://video.search.yahoo.com/yhs/search?fr=yhs-pty-pty_converter&hsimp=yhs-pty_converter&hspart=pty&p=kpmg+clara+video&id=1&vid=b5f8e5a7a5c1587e42ed865b7e962db5&action=click]

Technology - WOW!

- **Machine Learning** – algorithms used to predict future events based on based experience and data patterns (regression and clustering analysis)

- **Natural Language Processing (NLP)** – used for content categorization, contextual extraction, sentiment analysis, document summarization, and more.

- **Natural Language Generation (NLG)** – Used to convert nonlinguistic information in to human understandable natural language for machine-human communications, data interpretation, and more.

- **Computer Vision** – enables computers to obtain information from images, videos, or other multi-dimensional data used in facial recognition, self-driving cars, disease diagnosis, automated stores, and more.

Source: AICPA - 2018
Technology - WOW!

- **Computer Vision** – enables computers to obtain information from images, videos, or other multi-dimensional data used in facial recognition, self-driving cars, disease diagnosis, automated stores, and more.

- **Virtual Agent** – can respond to human questions and perform adequate nonverbal behavior. Used in Alexa, Ok Google, chatbots, Siri, customer service, etc.

- **Cognitive Computing** – augments human capabilities by providing relevant information or recommendations to help humans make better decisions (Evans, D., 2017). It brings together ML, NLP, NLG, CV and VA used in disease diagnosis, investment recommendations, Google Maps, etc.

Source: AICPA - 2018

Technology - WOW!

- **Intelligent Process Automation (IPA)**…or cognitive process automation, is a constellation of technologies expanding RPA with AI, cognitive technologies, & other technologies to make the process automation scalable, flexible, & intelligent.

Source: AICPA - 2018
Skills in Demand

As technological innovation and changing client demands are rapidly transforming the skills accountants need to thrive, standard accounting and audit tools along with skillsets need to be in line with the digital transformation. Source: AICPA (2018) RPA Fundamentals for Accounting & Finance Professionals

- Strong written and verbal communication skills
- Interpersonal skills (working with teams, getting along with others)
- Strong critical thinking and technical aptitude
- Time management and organizational skills

Source: Morehead, Deal (2018) Building the Workforce & Workplace in GFM

- Technical Skills
  - Excel
  - Data Visualization
  - Analytic Modeling
  - ETL – Extract, transform, and Load tools
  - Accounting concepts

Source: Jamila Webb (2018) Grant Thornton Audit Partner and University Recruiter

WOW! What Does This Mean for Universities?

- Retooling the Academy
- Training – Increase offerings in IT, Data Analytics, RPA, etc.
- AACSB – Data Analytics in EVERY accounting course
NASBA & AICPA Accounting Evolution Project
“Reimagining the CPA learning & licensure approach”

• Education Requirements
  • No additional hours
  • More course technological & analytics assessment content added (AACSB has already implemented this change)
• CPA Exam
  • Longer exam?
  • Depth and breadth on testing certain topics
• Experience requirements to sign accountant’s report (beyond initial licensure presented to Uniform Accountancy Act Committee for review)

NASBA & AICPA Accounting Evolution Project
“Reimagining the CPA learning & licensure approach”

• Members:
  • Cathy Allen, CPA – Managing member of Audit Conduct LLC and member of NASBA’s BoD
  • Tom Broderick, CPA, CGMA – Managing principal at BPW&C
  • Mark Dawkins, CPA, CGMA – Dean, Coggin CoB, U of North Florida
  • Clay Huffman, CPA – Senior Manager, Frazier & Deeter LLC
  • Nancy Wolven-Juron, CPA – Partner, Deloitte LLP
  • Audrey Katcher, CPA/CITP, CGMA – Partner, RubinBrown LLP
  • Rick Niswander, CPA, CGMA – Professor, East Carolina U
  • Todd Shapiro – President and CEO, Illinois CPA Society
  • Susan Somers – Executive Director, Kansas Board of Accountancy
  • Michael Womble, CPA/ABV,CFF – Managing Partner, Williams Overman Pierce LLP
Technologies that are changing how we practice

- Artificial intelligence
- Automation
- Big data
- Blockchain
- Cloud technology
- Data analytics
- Machine learning

New marketplace demands … and opportunities

- Internal control reporting
- Continuous reporting
- Social media
- Deep fakes
- Sustainability
- Digital/crypto assets
- Blockchain implications on SOC 1 and SOC 2
- SOC for Cybersecurity
- Privacy/GDPR
- Data integrity
- Certifications/HITrust
Non-accounting graduate degree hires

Non-accounting hires as a percentage of all new graduate hires are up 11%.

- 2014: 22%
- 2016: 20%
- 2018: 31%

Source: 2017 AICPA Trends Report
A combined NASBA-AICPA initiative aimed at evolving CPA licensure to reflect the skills and knowledge CPAs increasingly need in a technology-driven marketplace.

**CPA Evolution progress**

<table>
<thead>
<tr>
<th>Circulated/ discussed conceptual licensure model</th>
<th>Drafted guiding principles</th>
<th>Leveraging feedback to inform an evolving licensure model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Group formed; provided perspective</td>
<td>Exposed draft guiding principles; received feedback</td>
<td>Build out model, gather feedback and finalize</td>
</tr>
</tbody>
</table>
Guiding Principles

- We must adapt quickly
- Technological expertise is essential
- Licensure requires rethinking
- We must expand our view of the CPA candidate
  - All must demonstrate core competencies
  - Change should be rapid yet deliberate

2,000+ stakeholders gave feedback
AICPA and NASBA stakeholder outreach

- AICPA Council
- State CPA societies
- Boards of Accountancy
- General membership
- Firms of all sizes
- Academia
- Volunteer committees
- Federal regulators
- Students
- Technology experts
- CPAs in business and industry
- Young professionals

Support for:

- Need to change
- Bigger technology emphasis

A model that will:

- Position CPA for the future
- Bring needed skills to the profession
- Protect the public interest
What AICPA and NASBA heard

Focus on...

• A core that includes accounting, auditing, tax and technology
• Education that aligns with the core
• Experience requirements that support audit quality
• Supporting existing CPAs
  • Reskilling
  • Promoting emerging services
…while developing appropriate messaging to modify licensure in current environment

This should be about more than just technology.

To future-proof the profession, we must think differently.
Body of knowledge for newly licensed CPAs is growing…

Compared to 1980, today there are:

- 3X as many pages in the Internal Revenue Code
- 4X as many accounting standards
- 5X as many auditing standards

CPA firms told us:

- Procedures historically performed by newly licensed CPAs are being:
  - Automated
  - Off-shored
  - Performed by paraprofessionals

Result: Newly licensed CPAs need to know more earlier in their career
Body of knowledge for newly licensed CPAs is growing...

**Demands of practice require deeper skillsets**

- Critical thinking
- Professional judgment/skepticism
- Problem solving
- Understanding of business
  - Systems, controls, risk
- Data management and analysis
- SOC engagements

...but Exam stays the same size.
What is the exam like today?

Then
- Paper exam offered twice annually
- Take all un-passed sections at each sitting
- Multiple choice, problems and essays
- Exams were taken on piers, in gymnasiums

Now
- Computerized exam offered 280 days annually
- Take one section at a time
- Multiple choice, task-based simulations, constructed response questions
- Exams taken in Prometric testing centers

The AICPA recently issued a document (in December 2019) titled Maintaining the Relevancy of the Uniform CPA Exam®: An Exposure Draft and Invitation to Comment. I have attached the document to this e-mail. You can also find the document directly from the AICPA, in a pdf format, at: https://www.aicpa.org/content/dam/aicpa/becomeacpa/cpaexam/downloadabledocuments/2019-practice-analysis-report.pdf

There are important issues related to state and local government accounting addressed in this report. The issue of greatest concern is a proposal in the Invitation to Comment section of the document to eliminate state and local government accounting from the CPA Exam.

I encourage you to read the executive summary on pages 5 and 6 of the document (pdf pages 6 and 7) and the Request of Comment pages (document pages 7 and 8). Please pay special attention to section B. b. on page 8 of the document, which introduces the proposal to eliminate state and local government (SLG) accounting from the CPA Exam. The specific Invitation to Comment information related to eliminating SLG accounting is located on page 36 of the document (pdf page 37).

There are also proposals in the Exposure Draft to reduce the depth of governmental accounting tested on the CPA Exam beginning in the summer of 2021. The SLG accounting topics are listed in the Blueprint as FAR Section IV. The Exposure Draft proposes changes to SLG accounting coverage. The changes are listed as changes 37-39 on pages 25 and 26 of the document.

There are many other changes proposed for FAR, REG, AUD, and BEC in the Exposure Draft. You may want to review the full document for other topics of interest to you. There is also a second proposal in the Invitation to Comment to eliminate the Written Communication portion of BEC.

You do not need to respond to all the topics and questions in the Exposure Draft and Invitation to Comment. You can respond only to the topics and questions of interest to you. The deadline for submitting your comment letter to the AICPA at practiceanalysis@aicpa.org is April 30, 2020.
Models Considered

Stretch to cover more material with less depth

**Impact**
- Requirements for licensure are watered down
- Candidates know less about what matters most
Increase Exam and curriculum hours

Impact
- Increases barriers to entry, impacting pipeline
- Unsustainable approach over long term

Other models considered
- CPA – Audit, CPA – Tax, etc.
- Two tier
- Medical
- Legal
  - Engineering
Engineering Model

= Professional Engineer (PE)

Engineering Model

= PE

With signing authority
AICPA-NASBA leadership current thinking

- AICPA volunteer leadership
- NASBA volunteer leadership
- State Society, State Board leadership
- Senior AICPA and NASBA staff
- Small firm
- Top 100 firm
- Big 4 firm
- Technology expertise
- Tax expertise
- A&A expertise
- Governmental expertise
- Consulting expertise
- Regulatory expertise
- Testing/Exam expertise

Possible model for discussion

\[ \text{CORE} = \text{CPA} \]

- Tax compliance and planning
- Business reporting and analysis
- Information systems and controls

ACCT : AUDIT : TAX : TECH
Possible model for discussion

- Strong core with accounting, auditing, tax and technology
- Deeper knowledge in three primary disciplines
- Reflects reality of practice
- Adaptive and flexible
- One CPA license
- Enhances public protection

For example…*

- Principles and intermediate accounting
- Advanced accounting
- Audit and attest
- Tax fundamentals
- Advanced tax
- Ethics
- Fundamentals of info systems, analytics
- Advanced info systems
- Advanced analytics
- Business law
- Economics
- Finance

* Content would be determined by formal practice analysis
Reimagining education and exam subjects *for the core*

We asked how CPAs would classify subjects for the core – deep, moderate, limited, none

- **Greatest core emphasis (>10% on avg)**
  - Audit and attest
  - Principles and intermediate accounting
  - Fundamentals of info systems and analytics
  - Tax fundamentals
- **Least core emphasis (<5% on avg)**
  - Advanced accounting
  - Advanced info systems
  - Advanced tax

*Content would be determined by formal practice analysis*
Themes on model presented

**Benefits**
- Protects core
- Flexibility to evolve
- More tech
- Deeper knowledge of disciplines

**Challenges**
- Attracting technologists
- University curricula, esp. small schools
- Expecting candidates to pick a discipline
- Regulatory environment

**Questions**
- Where are soft skills covered?
- What will exam and curricula content/structure look like?
- Have we gone far enough?

**Where do we go from here?**
- Build out model and continue to seek feedback
- Continuing dialogue into 2020
  - Regional Council
  - State societies and state boards
  - Spring Council
  - NASBA Regional Meetings
  - AICPA and NASBA Boards of Directors
- **Goal:** Finalize model in summer 2020
- Plan and map out implementation
GFM Career Opportunities – Endless?

- College graduates struggling to find jobs
- Sky’s the Limit (unless you work for NASA)
- Bureau of Labor Statistics: top jobs from 2016-2026 – accounting, auditing, budgeting, financial analysis, management analyst (280,000+)
Career Opportunities Exist

- GAO – Human Capital on 2019 High Risk list (19\textsuperscript{th} straight year) – 31.6\% federal workers currently eligible to retire
- OMB – 26\% federal workers indicated they would retire within the next 5 years \textit{(2017 Federal Employee Viewpoint Survey)}
- NASACT – 58\% of respondents concerned about S&L “retirement wave”

Governmental Accounting Course:

- Terminology
- Bases of Accounting
- Journal Entries
- Presentation of Financial Statements
Governmental Accounting Course:

- Dampened Student Interest
- Lack of Exposure
- Limited Attention & Resources (on the course/faculty)
- We “Recruit” for Tax & Audit
- Too focused on “Big 4”

Governmental Accounting:

- 5-15% of FAR on CPA Exam
- AR, MI, MS, NE & NC (only FIVE states require a government accounting class to sit for CPA exam)
- State, Territory & Federal agencies (minimum – bachelor’s in accountancy or business; few require governmental)
- 85.2% of survey respondents want entry-level accountants to have at least one (if not more) government accounting course.
Exhibit 1: (Over 500) Respondents’ Primary Employer

- Private Practice Accounting Firm: 7%
- Federal Government: 24%
- State Government: 41%
- Local Government: 20%
- Other: 8%

Exhibit 2: Most Relevant Enhanced Skills Expected for New Hires

<table>
<thead>
<tr>
<th>Skill</th>
<th>Most Important</th>
<th>Second In Importance</th>
<th>Third in Importance</th>
<th>Fourth in Importance</th>
<th>Fifth in Importance</th>
<th>Least Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of Internal Controls</td>
<td>33.1%</td>
<td>48.8%</td>
<td>16.3%</td>
<td>6.4%</td>
<td>2.0%</td>
<td></td>
</tr>
<tr>
<td>Knowledge of Budgetary Accounting</td>
<td>25.6%</td>
<td>17.2%</td>
<td>15.7%</td>
<td>12.2%</td>
<td>7.3%</td>
<td></td>
</tr>
<tr>
<td>Collect &amp; Analyze Audit Evidence</td>
<td>21.6%</td>
<td>18.5%</td>
<td>18.5%</td>
<td>19.8%</td>
<td>17.3%</td>
<td></td>
</tr>
<tr>
<td>Knowledge of GASB Standards</td>
<td>19.6%</td>
<td>15.7%</td>
<td>21.2%</td>
<td>16.9%</td>
<td>12.3%</td>
<td></td>
</tr>
<tr>
<td>Consider Fraudulent Activity</td>
<td>4.1%</td>
<td>8.7%</td>
<td>19.3%</td>
<td>23.3%</td>
<td>16.2%</td>
<td></td>
</tr>
<tr>
<td>Perform Asset Tracking</td>
<td>2.9%</td>
<td>4.9%</td>
<td>14.3%</td>
<td>26.7%</td>
<td>44.9%</td>
<td></td>
</tr>
</tbody>
</table>
### Exhibit 3: Most Relevant Technical Skills Expected for New Hires

<table>
<thead>
<tr>
<th>Area</th>
<th>Most Important</th>
<th>Second in Importance</th>
<th>Third in Importance</th>
<th>Fourth in Importance</th>
<th>Fifth in Importance</th>
<th>Least Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Statement Preparation</td>
<td>36.6%</td>
<td>21.4%</td>
<td>14.9%</td>
<td>11.0%</td>
<td>8.8%</td>
<td>7.0%</td>
</tr>
<tr>
<td>Budgeting</td>
<td>22.5%</td>
<td>17.0%</td>
<td>12.5%</td>
<td>18.4%</td>
<td>11.9%</td>
<td></td>
</tr>
<tr>
<td>Auditing Financial Statements</td>
<td>25.6%</td>
<td>20.0%</td>
<td>18.5%</td>
<td>14.4%</td>
<td>13.6%</td>
<td></td>
</tr>
<tr>
<td>Performance Measurement</td>
<td>31.2%</td>
<td>17.0%</td>
<td>11.9%</td>
<td>11.0%</td>
<td>7.0%</td>
<td>38.6%</td>
</tr>
<tr>
<td>General Assets &amp; Capital Projects</td>
<td>8.7%</td>
<td>14.6%</td>
<td>18.1%</td>
<td>25.8%</td>
<td>21.6%</td>
<td>11.5%</td>
</tr>
<tr>
<td>General Liabilities &amp; Debt Services</td>
<td>6.4%</td>
<td>13.4%</td>
<td>22.6%</td>
<td>20.0%</td>
<td>22.2%</td>
<td>16.0%</td>
</tr>
</tbody>
</table>

### Survey – Relevant Core Skills for New Hires:

- Critical Thinking
- Financial Analysis
- Effective Oral & Written Communications
Survey – How Prepared are New Hires?

- 58% - Somewhat
- 33% - Adequately
- 5% - Strongly

Exhibit 4: Skills Accounting Graduates Need

<table>
<thead>
<tr>
<th>Skill</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree or Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written Communication Skills Training</td>
<td>40.1%</td>
<td>42.0%</td>
<td>15.0%</td>
<td>1.4%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Government Accounting Coursework</td>
<td>39.7%</td>
<td>43.3%</td>
<td>9.3%</td>
<td>2.9%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Oral Communication Skills Training</td>
<td>31.1%</td>
<td>43.3%</td>
<td>22.8%</td>
<td>2.1%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Research Skills Training</td>
<td>27.1%</td>
<td>47.2%</td>
<td>22.6%</td>
<td>1.4%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Technical Knowledge in Accounting</td>
<td>20.6%</td>
<td>43.3%</td>
<td>29.8%</td>
<td>4.4%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Technical Knowledge in Auditing</td>
<td>15.5%</td>
<td>43.3%</td>
<td>38.9%</td>
<td>5.5%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Business Knowledge Coursework</td>
<td>14.0%</td>
<td>42.5%</td>
<td>33.9%</td>
<td>8.3%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Non-Profit Accounting Coursework</td>
<td>10.2%</td>
<td>40.6%</td>
<td>40.6%</td>
<td>7.8%</td>
<td>3.8%</td>
</tr>
</tbody>
</table>
Open Comments:

- Critical thinking, curiosity, inquisitive, dedicated, loyal, ability to communicate
- The ability to put theory into practice
- Flexibility, awareness of workplace dynamics
- Ability to multitask
- Understanding good customer service
- Willingness and ability to continue to learn

Open comments:

- Project management skills
- Willingness to work hard and learn from mistakes
- Have a positive attitude and ability work as part of a team
- Enthusiastic, energetic, and willing to learn and try new things
Open comments:

- Advanced computer skills a must (data analytics, advanced Excel, pivot tables)
- A “willing to work” and “willing to learn” attitude
- Soft skills – getting along with peers and managers; showing up ready for work on time; willingness to take on new projects
- Ability to “translate” how functions affect/drive budget and financial statements
- Strong ethical beliefs…not a skill, but a mindset

Open comments:

- Ability to deal with a wide variety of personnel at different skill levels/experience and to be able to relate to senior management
- Work ethic…ability to work independently
- Ability to act professionally in the work place; understanding of business rules and chain of command
Open comments:

- Ask questions; be inquisitive and curious; understand why you are doing what you are doing and the goal/objective; listening skills; seek feedback if it is not being given; learn not to be intimidated by management/power

Millennials (random facts):

- 75% of the workforce within 10 years
- Entering government – 7.1%
- Leaving government – 8.5%
- GREAT mix of skills, creativity & experiences
- “Digital Natives”
- Creative & collaborative thinkers
- Entrepreneurial spirit
Millennials (random facts):

- THEY WANT TO BE LEADERS & are willing to work for it!
- They want:
  - Leadership training – 61%
  - Assignments which stretch them – 57%
  - Formal career mentoring – 50%
  - 90% prefer face-to-face training (leadership skills, critical & strategic thinking, negotiation skills, presentation skills, & networking

Recruitment – Not the Way Grandma Did It!

- Day in the Life
- Boot Camps
- Leadership development programs
- Job fair resources
- Inspire the next generation
- Professional Associations (MSCPA, AGA, NABA, etc.)

- Reexamine the way job openings are advertised.
  - Different entities advertise openings differently due to amount of support and resources.
    - Newspaper posting and website or
    - Notifying related professional association
    - Utilize job search engine
America’s Population Migration (West & SE)

Population Growth: 2011-16
- 6% and Higher
- 4 to 6%
- 2 to 4%
- 2% and Lower

Source: US Census Bureau, December 2017

Best Practices…

- #1 - Hire the best qualified employees
- Succession planning
- Encourage training – whether on-line or in person
  - (remember 90% prefer in-person)
- Encourage participation
  - MSCP, AGA and other organizations
  - agency events
  - local events
- Build a family environment and allow flexible schedules (when you can)
  - Allow flex schedules for community involvement (Coaches/referees/school participation with children/(grandchildren :0) etc)
The Impact of Technology on our Profession—WOW!

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Contact Information:

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