

Technology and Data Analysis in the Accounting Profession

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Past and Future of the Accounting Profession

While nearly all professions have changed drastically since their beginning, accounting is one that may have changed the most. In fact, there is evidence of accounting language found from as early as 8000-5000 BC. (1) In the 1400's, single entry bookkeeping became the standard while the framework for modern accounting was published in 1494. (1) The American Association of Public Accountants was then established in 1887 and the title of Certified Public Accountant (CPA) quickly followed in 1896. (1) Perhaps the most drastic change was the use of computers starting shortly after 1952. (1) Since this development, the profession has changed even more rapidly, from simply entering debits and credits into computers to deeply analyzing millions of transactions in advanced accounting and data analytics software.

In early 2020, the *Journal of Accountancy* published an article about how data analytics, blockchain, and AI would change the accounting profession over the next decade (2). This article summarized how technology changed the 2010's and why we could expect it to drastically affect the 2020's also. The publication also included several quotes from high-level professionals regarding the future of accounting.

“I see more nontraditional businesses starting in the next 10 years. CPAs will need to become more skilled at handling the unique accounting and tax treatments such businesses require. New entrepreneurs have great ideas, but they often lack the business acumen to establish successful operational, financial, and regulatory processes. CPAs will have an opportunity to add value beyond debits and credits to support new businesses in many facets of their operations.” -**Nikki Winston, CPA**, owner, The Winston CPA Group in Alpharetta, Ga. (2)

“Companies will want to, or be asked to, provide more environmental, social, and governance (ESG) information, particularly about how climate change affects them and how they are addressing the issues.” -**Bob Uhl, CPA**, partner and national director of accounting standards at Deloitte & Touche LLP (2)

“I recommend an ongoing, robust enterprise risk assessment process that is dynamic and that all key team members are engaged in ... and a strategic planning process that includes how to optimize existing technologies but also that has a forward-looking emphasis on what is in process and what is yet to come so they can be prepared to move at the appropriate time proactively, not reactively.” -**Brenda Morris, CPA, CGMA**, partner at CSuite Financial Partners (2)

These quotes focus on three main changes to the future roles of CPA's: unique skills related to nontraditional businesses, ESG disclosures, and proactively learning new technology. While these are all important, I believe that technology skills will play a role in providing value to new businesses and certifying ESG disclosures, so these skills likely take priority for students, schools, and companies.

For example, in March of 2022 Deloitte published an ESG Executive Summary, which stated “accurate ESG reporting requires effective use of technology, yet a strong majority (92% of survey respondents) believe that their organization needs to invest more in technology to address demand for consistent and reliable measurement, reporting, and disclosures.” (12) As ESG disclosures become more and more common, related technology will continue to evolve and grow.

Changes to the CPA Exam

When the NASBA and AICPA reached out to stakeholders of the accounting profession regarding changes to the CPA exam, they received over 3,000 responses with suggestions. (4) A consistent response was that the current CPA exam does not test students’ ability to use accounting technology. These suggestions, along with additional research, prompted a new model for the CPA exam, which will launch in 2024.

While the new CPA still has a similar common core of accounting, audit, and tax, it adds an increased focus in technology. (Figure 1) Test takers will also select a specialization area (tax compliance and planning, business analysis and reporting, or information systems and controls) to demonstrate knowledge in their chosen area. (This specialization replaces the BEC portion of the exam.) All specializations will have a full CPA license and will be able to practice in any area of accounting, but they are bound by the AICPA Code of Professional Conduct to provide “due professional care” when providing services. (13) This ensures that CPA’s only practice in areas that they are qualified to provide services in.

The transition period for the new CPA exam will begin January 1, 2024, but this will only affect those who have passed portions of the exam. (3) Those who have not yet passed a section (or whose credit has expired) will have to take the corresponding new exam for AUD, FAR, and

REG, and select a concentration instead of the BEC portion. However, any sections passed before January 1, 2024, will maintain credit through the 18-month expiration period (Figure 2).

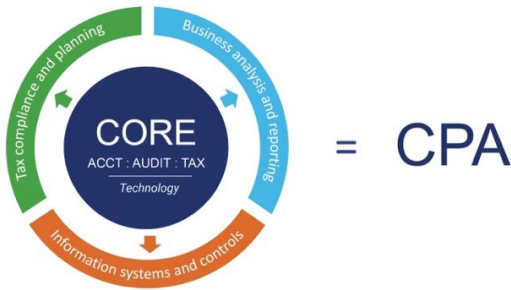


Figure 1

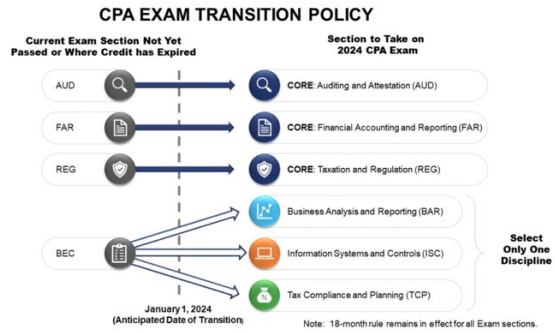


Figure 2

OSU Response to Changing Technology and New CPA Exam

One of the many draws to OSU’s Master of Science in Accounting program is its excellent CPA exam pass rate. The university wide pass rates from 2016-2020 are 65.2%, 64.3%, 85.7%, 62.5%, and 76.92%, respectively, and the rates for graduates of the MS program are even higher. Nationally, from 2015-2019, the pass rate did not exceed 60% on a single portion of the exam, much less the whole exam (Figure 3).

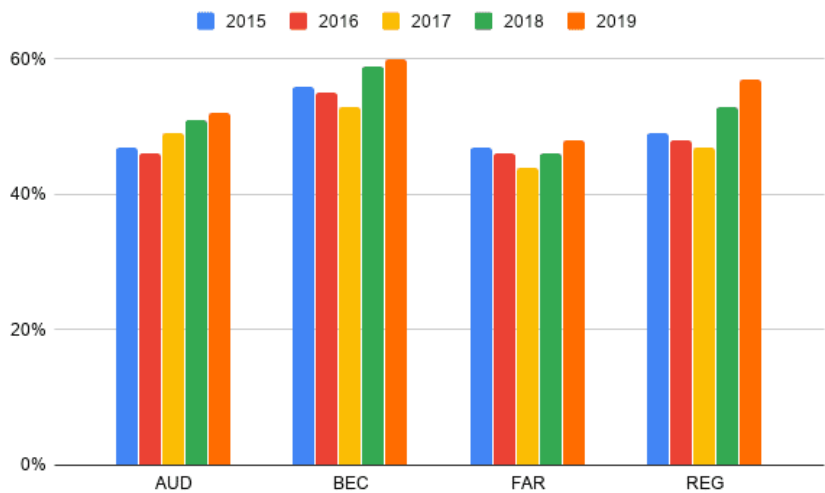


Figure 3

These numbers show that

historically, OSU has done an excellent job of preparing its students for the CPA exam. With that in mind, once the upcoming changes to the CPA exam were announced in 2020, the OSU School of Accounting (SOA) quickly approved changes to the accounting curriculum in order to better align with the technology focus of the CPA exam and continue to give students the best opportunities for success. (7)

The following year, the Spears School of Business replaced business calculus with business analytics in the business core curriculum, meaning that a minimum of nine technology hours are now required for any business degree at OSU. (Many degree programs require extra MSIS courses in addition to these nine hours.) (7)

One reason that the SOA may have been able to implement these changes so quickly is because they likely expected more emphasis on technology requirements after the AACSB Standard A7 required “the development of skills and knowledge related to data creation, data sharing, data analytics, data mining, data reporting, and storage with and across organizations” to be taught in accounting courses. This standard was published in 2013 and allowed a three-year implementation period, but it brought technology to the front of educator’s minds and may have sparked the idea for some of the new courses even before the new CPA exam was announced.

The new courses from these SOA and Spears changes are:

- ACCT 3004 - Foundational Accounting and Data Skills (focuses on Microsoft Excel)
- ACCT 3104 - Intermediate Accounting I and Data Analysis (focuses on Microsoft Power BI and Tableau)
- ACCT 4911 - Advanced Accounting Tools and Technologies (focuses on Alteryx and Advanced Excel)

- ACCT 3001 - Practicum in Professional Accounting I (focuses on emerging issues within accounting)
- ACCT 4901 - Practicum in Professional Accounting II (focuses on more advanced emerging issues within accounting)
- BADM 2233 - Business Analytics Fundamentals (focuses on Tableau and in-depth Microsoft Excel)

The Class of 2024 was the first to take the accounting data courses and the Class of 2025 is the first to take the BADM 2233 course (although older students do have the opportunity to switch to the new degree plan or take the new courses as electives.) This fits almost perfectly with the CPA exam timeline, as most students taking the new exam in 2024 or later would have had the opportunity to take most (or all) of the new technology courses at OSU.

OSU Students' Thoughts on Curriculum Changes

- “I’m so glad that BADM 2233 Business Analytics was added! It was great to spend half of the class learning excel with in-depth projects and the second half using Tableau! I loved, loved, loved the Tableau final!” -a freshman Spears Scholar Leader who recently changed her major to accounting
- “I wish I could have taken the accounting labs” -a Spears Outstanding Senior who majored in both accounting and finance

When asked the question “Do you feel that OSU has prepared you with the technology skills you need to succeed in your career? If so, how?” students responded with:

- “Yes, by providing the data analytics classes”
- “Yes, through the labs and other courses”
- “The data labs came right after my time, but I think that’s a huge step in the right direction!”
- “I think at the end of my time at OSU I will feel prepared technology and knowledge wise”

I was also able to survey a small sample of accounting students regarding their comfort in Microsoft Excel and Tableau on a scale of 1-10. The Microsoft Excel results were fantastic, with no student selecting lower than a 5, 64% of students selecting an 8 or higher, and an average response of 7.64 (Figure 4). Microsoft Excel is a critical skill in the business world, so it is extremely exciting that OSU students seem to be comfortable using it. The Tableau results were much less consistent, with students selecting each option from 1-10 and an average response of 5.07 (Figure 5). However, I knew that surveying students all the way from freshman to senior could lead to a large range, as the younger students have had the opportunity to spend hours in Tableau while the juniors and seniors have had fewer opportunities to practice with it. Even with this small sample size, I think that OSU can see the payoffs of the data analysis/technology courses through the lack of comfort in students who did not take the courses compared to the comfort of those who did take them.

How comfortable are you using Excel?

14 responses

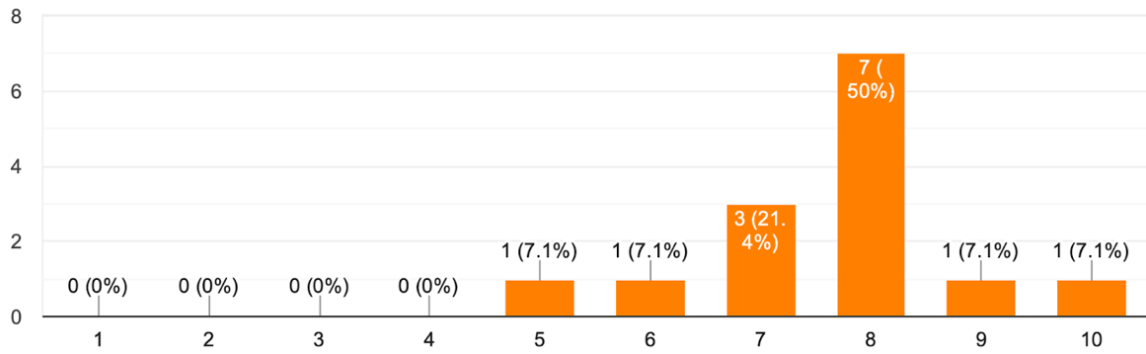


Figure 4

How comfortable are you using Tableau?

14 responses

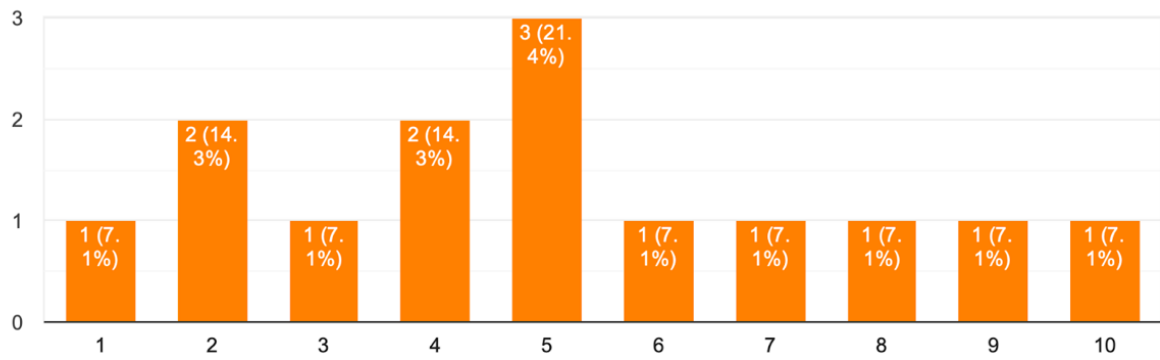


Figure 5

Employer Preferences and Technology Programs

With the rise of automation and AI, it makes sense that employers are starting to expect entry level employees to possess greater understanding and knowledge. Experience with applications such as Tableau and Microsoft Power BI can help candidates to stand out on a resume or in an interview, as I know firsthand due to discussing these programs with a Big 4 Partner in an interview last spring. In addition to these applications, many firms are creating their own audit innovation platforms and intern technology programs. Each Big 4 firm has at least one of these programs, and smaller CPA firms tend to follow their lead. Many companies in industry accounting also have different programs that can help to unite the organization across divisions, offices, and even countries.

EY Digital Ambassadors Program

“This program immerses participants in new technologies, teaching them to tell a story with data and become more fluent in leading-edge analytics capabilities. Participants visit one of our wavespace™ locations and work alongside teams to develop a digital approach for a current business challenge. This program is open to all accepted Audit interns and includes a formal application process.” (8)

PwC Aura Audit Technology Platform

“Aura is a thorough audit technology platform that, combined with our industry leading methodology, enables an end-to-end, tech-powered audit. The result: A seamless, data-driven experience, enhanced quality and an audit that’s right-sized for our clients.

It all starts with data. That leads to smarter risk assessment and augmented testing. That delivers a truly revolutionized audit, customized just for your business. It works when the right people and leading technology come together through a top-down and bottom-up approach to innovation.” (9)

KPMG Clara Audit Platform

“From an audit perspective, our KPMG Clara smart and intuitive audit platform, powered by Microsoft Azure, is one of the leading technological innovations in the industry. As a fully integrated, scalable, cloud-based platform, it enables the enhanced audit methodology through a data-enabled workflow. The platform integrates new and emerging technologies, with advanced capabilities that leverage data science, audit automation, and data visualization. KPMG Clara for clients gives a 24/7 window into the status of an audit, all in one place. The net result is greater interaction that consists of more targeted and meaningful conversations about specific findings, risks and insights. The KPMG audit benefits from our alliances with leading technology companies such as Microsoft, working to ensure our technology and capabilities are second to none. It’s all part of the transformation of audit to harness the power of leading technology to provide higher quality results.” (10)

Deloitte Amnia Experience

“Deloitte uses superior advanced analytics, big data manipulation, and AI to facilitate efficient and painless data access and analysis of huge data sets. This has enabled our Deloitte audit team to pinpoint the key audit risk areas and target their testing accordingly. Not only has this resulted in less work for my team, but more importantly has helped provide insights on business trends and relationships that otherwise would not have surfaced.” -CFO, FTSE 100 company (11)

Many of the OSU MS program students enter public accounting (especially Big 4) after graduation, so they will have opportunities to use several of these new, innovative programs. I will be participating in the EY Digital Ambassadors Program this summer and am looking forward to using the technology that I have learned at OSU to continue to refine my data analysis skills. When employers see that students have experience with advanced technology, it gives them confidence that those students possess the skills necessary to learn the new technologies that their company has implemented. Students also feel more comfortable learning new programs when they have practiced with new technology, even if the program/technology is not identical to one that they had used previously.

Recommendations for Stakeholders in Accounting Field

As the role of an accountant changes, there are steps that each stakeholder in the field can take in order to stay ahead of the changing technology. Most importantly, all stakeholders need to embrace that technology is fluctuating rapidly and attempt to develop a mindset of excitement towards the changes. If we aren't willing to learn new skills, it will seem impossible to ever truly find success. In fact, being "tech savvy" is one of the 38 Korn Ferry core competencies taught at OSU. (14) Ferry describes this "anticipating and adopting innovations in business-building digital and technology applications". To learn this skill, we must be willing to learn and adopt the new innovations, even when it may not be easy or convenient. I believe that the most important thing about this competency is the exposure to technology and the motivation to continue learning. As mentioned above, many companies have their own programs, so they are looking for employers who can use more basic software and are willing to learn their unique, internal programs. Next, I

would recommend that all accounting students take as many technology courses as they can. For upperclassmen at OSU, this may mean taking the data labs that aren't technically required for their degree. For underclassmen at OSU, this likely consists of looking into different MSIS courses beyond the degree requirements. I believe that these courses can teach students the process of learning technology (the "tech savvy" soft skill), which prepares them to learn their employer's software down the line. Along with this, I would recommend that all professors in the accounting department find ways to implement technology into their courses. I was able to complete data analytics assignments in both Cost Accounting and Intermediate II Accounting and they provided both reviews of old Excel skills and new Tableau or advanced Excel skills greatly beneficial to my education. Finally, to those in practice (the majority of the stakeholders), I would strongly recommend continuous improvement of technological skills. Now that students have more opportunities to use technology in school, it is more important than ever for professionals to use continuing education on their technology skills. Whether this is completing training modules in Tableau, watching YouTube videos on Excel shortcuts, or taking a more formal course on a program, any further experience can set professionals apart. With a self-development mindset, all stakeholders in the accounting profession have opportunities to stay ahead of the technology and possess the important soft skill of being tech savvy.

Summary of Research

Between the recent advances in technology and opportunities for more advanced/interesting entry level jobs, it is an extremely exciting time to enter the accounting profession. Professionals, educational institutions, and students are attempting to stay ahead of the

changes in technology rather than fall behind. This includes preparing for the new version of the CPA exam, which will launch in January 2024 and include an increased emphasis on technology. Additionally, schools like OSU are updating their curriculum to include more courses with a focus on data analytics and advanced software. This aligns with goals of employers, who desire candidates who can provide value with regards to technology. While the role of an accountant has shifted drastically as of late, OSU has made the changes necessary to help their students succeed in both their short-term and long-term career goals within the accounting field.

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