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EVOLUTION OF THE AUDITING PROFESSION IN THE SMART MACHINE AGE

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A R T I C L E I N F O.

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Abstract

In this article, the importance and necessity of changing the audit profession with artificial intelligence, the various problems that arise as a result of this are highlighted, as well as the necessary conclusions and suggestions are given.

Auditors are frequently referred to as the gatekeepers of corporate governance. However, rapid technological development in the area of Artificial Intelligence (AI) has led to speculation of a catastrophic demise of the auditing profession. Some are concerned that auditors will be entirely replaced by robots. Others propose that AI is following a typical hype cycle for technological innovation, and that speculation of the extreme impact of AI has peaked. According to this line of thought, AI is currently in the phase of disillusionment, in which much of the hyped technology is not yet measuring up in expected ways. What comes after this phase is a more realistic assessment of how AI will be integrated into our business world.

The most likely first step into the SMA begins with a migration to cloud accounting platforms and the implementation of automated entries. Currently, accountants and auditors increasingly rely on Robotic Process Automation (RPA) to automate data processing. For auditors, areas that are most likely to be automated using this technology are routine tasks, such as the analysis of transactions and account fluctuations. For example, PWC's GL.ai software rapidly identifies items on the general ledger that meet certain qualifications, which are "red flagged" by the system. Auditors may then direct their attention to the item for further testing. RPA technology is automating many entry-level auditor tasks, such as the confirmation of bank account balances. Just 10 years ago, the confirmation process was primarily paper-based, requiring letters to be mailed to the bank and received back by the auditor.

Today, a significant portion of the confirmation process is automated, allowing the audit team to focus on analysis of the outcome and exceptions instead of spending time on the evidence gathering process. Similar advances in data analytics technology have led to a more continuous audit process for some companies, such that 100% of certain transactions and account balances are subject to monitoring. The ability to continuously audit accounts results in higher levels of assurance that financial statements are accurate year around, including quarterly reports. For example, the AI technology AppZen allows companies to audit expenses on a real time basis to detect both errors and fraudulent employee expenses. Any red flags produced by the system could be monitored either internally by the company, or by the external auditor. When companies implement this technology, their external auditors will likely be able to significantly reduce year-end testing of related accounts and transactions. As a result,

this technology could eliminate auditors' traditional "busy season," or allow auditors to concentrate their time after year-end on different responsibilities. It is clear that auditors in the SMA must focus on data identification, extraction, and analysis at a much more rapid pace. One of the biggest challenges is that much of the data that auditors rely on is not structured or organized enough to allow for rapid analytics. In order to deal with this demand, technology is moving beyond RPA into more advanced systems. Partnerships between audit firms and tech companies have been formed to develop technology to speed up auditors' unstructured data extraction and analytics processes (i.e. KPMG and IBM Watson, Deloitte and Kira). Smaller firms are seeking out similar technology from startups, such as Mindbridge.ai Auditor. This technology is developed to be utilized for tasks that may need additional data extraction and organization before analysis, such as the examination of lease contracts. Firms are developing these tools in response to a clear demand for audit technology to match the advanced technology that their clients are utilizing for their day-to-day businesses, and to deal with the increasing amount of data that needs to be analyzed by auditors. Looking to the future, the profession is currently in pursuit of the next level of AI. For example, KPMG entered into a partnership with Microsoft to develop a smart audit platform called "KPMG Clara." KPMG plans to work with their partners to develop cognitive capabilities of AI in auditing. KPMG Clara could someday replace higher level audit tasks that involve complex decisions, but these more advanced capabilities are perhaps years away from practical fruition.

With all of these exciting developments, some are concerned that auditors will one day be replaced entirely by smart machines. However, catastrophic predictions of the demise of the auditing profession tend to disregard the wide variety of tasks that auditors currently perform for their clients. A significant component of the audit process is in the planning phase, the assessment of the design and implementation of internal controls, and the follow-up analysis of any "red flags" that are detected during the audit process. These tasks rely heavily on professional judgment, and are unlikely to be replaced by technology anytime in the near future. Arguably, this means that some of the more mundane tasks that auditors do not typically enjoy will be performed by RPA and AI systems, leaving auditors more time to focus on their other procedures. In other words, AI becomes a tool that is utilized to increase worker efficiency. In addition, a client's demand for and use of intelligent systems will create an entirely new area of services. Technology is far from error free, increasing the demand for positions focused on the design and operation of internal controls to effectively monitor automated activity. Coders themselves also exhibit biases, which can lead to pervasive issues in the algorithms created for AI. Auditors could play a significant role in the process of preventing, assessing, detecting, and mitigating these biases for their clients.

Assuming that jobs will still exist, what impact do these changes have on the skills required for auditors? PWC predicts that "AI will impact employers before it impacts employment." Employers are faced with the challenge of determining how to hire to meet the changing demands of the different functions handled by auditors. Is the best solution to train current employees for new skills, or to hire new employees with complementary skills? This question is likely to be a significant challenge for those in charge of hiring and assigning duties for most companies in the immediate future. Although it appears that auditors will not be entirely replaced by AI in the near future, those who do not adapt and learn to interact with AI will likely be replaced by auditors who do have these skills. This means that companies may desire auditors who can speak both the language of accounting and the language of technology. Their jobs will step away from the routine and into a complex environment that requires a level of agility and responsiveness to change that has not previously been demanded of all auditors. This does not necessarily require auditors to be experts in computer science and coding. Rather, individuals will need to be able to converse and interact intelligently with coders to provide expertise in accounting. Since existing employees are typically resistant to new technology, this rapid integration of intelligent machines into accounting and auditing processes could create a significant skills gap. Those that have advanced knowledge of complex technology could take advantage of those who do not. This

skills gap could leave the auditing profession highly susceptible to failures, exposing clients to undetected errors and fraud. This risk creates the need for immediate assessments of skills and education for both current and future auditors. Overall, there is great opportunity for auditors to emerge as leaders in AI. However, it is important for universities and employers to address skills gaps by placing more of an emphasis on AIS in college courses. State boards of accountancy may also consider modifications to requirements to apply for and maintain CPA certification. A lack of adaptation to these changing needs in the profession could lead to decreased placement of accounting students, job loss, or poor performance on the job. Pervasive failure to rise to the challenges of integrating accounting, auditing, and information systems knowledge could jeopardize the future of the profession, as humans begin to compete with smart machines for efficiency and effectiveness. As technology rapidly develops, there may also be a race to the finish for companies to create and utilize more advanced AI, opening the potential for significant overlooked risks. It is important for the profession to identify and plan to combat these risks now. Specifically, this article highlights issues related to ethics and professional judgment, legal liability exposure, cybersecurity vulnerabilities, and the evolution of regulatory and professional standards. These issues create an opportunity for important future research and discourse.

Currently, the accounting and auditing professions utilize RPA as a substitute for routine tasks, but still rely heavily on humans for decisions requiring professional judgment. Auditors are required to be licensed and registered with both state and federal boards, and follow standards set by organizations such as the PCAOB, the standard-setting body for public company auditors in the U.S. These standards require auditors to develop and rely upon their own specialized decision-making skills to form opinions about the financial statements. Therefore, until technology is advanced enough that it can be trusted to make principles-based decisions, expert humans will be irreplaceable. However, AI is predicted to develop over the next 20 years to the point where it will be fully integrated into the business world. Once this occurs, smart machines could become more involved in complex judgments that require ethical reflection and professional skepticism. This would require advanced machine learning technology, primarily based on pattern identification. The primary weakness in this use of AI for auditing is that machines initially learn from flawed systems: humans. As there are known built-in biases and limitations in human decision-making, there is no reason to believe that systems created by humans, and learning patterns based on human decisions, would not have biases and limitations of their own. Auditors should be aware of these biases as they perform analyses of their client's systems, and in their own use of computer assisted audit technology. These biases could be exposed by examining an AI system's "black box," which could record important decisions. Auditors in the future should regularly examine these decisions to determine if they are adequate, and continuously assess the impact of algorithmic biases. Auditors' professional judgment in the SMA may also be jeopardized by the risk of overreliance on technology. Any technology, no matter how advanced, is subject to manipulation or override by those in positions to do so. Clients could still complete business transactions off-books to prevent red flags that could be generated by automated systems. Therefore, auditors must recognize the limitations of the use of AI and automated accounting systems by their clients. In contrast, there is also a risk that auditors will not rely enough on emerging technology, to the detriment of audit quality. Will auditors be able to recognize situations in which humans are in fact inferior to machines? If so, will they remain overconfident in their own professional judgment, and less likely to rely on smart machines? These questions will be important as the SMA brings forth technology that will lead to better decisions.

With any technological advancement comes increased cybersecurity risks. For auditors, this includes the firm's own cybersecurity and privacy measures, and the evaluation of their client's systems. Public company clients are required to report any significant issues that may expose the company to legal liability or economic decline, including cybersecurity challenges. Auditors are responsible for providing assurance that these disclosures are adequate. For example, transitioning to cloudbased technology and automation may expose audit firms and their clients to hacking of AI algorithms to manipulate a company's financials, for the purpose of asset misappropriation or fraudulent financial reporting. These

risks could come from both inside and outside the company. Technological advances may bring on more sophisticated schemes to steal and cover up financial crimes, and auditors must be prepared to evaluate their clients' ability to prevent and detect these issues. A recent multimillion-dollar judgment against PWC for failing to detect fraud at Colonial Bank has led to increased calls to examine auditor liability exposure. Arguably, auditors are being held more responsible for detecting fraud than ever before. How will technological innovations impact audit firms' legal liability exposure? Some argue that technological innovation may increase the likelihood of detecting fraud in some aspects, resulting in more accurate audit outcomes. However, auditors are also required to assess the strength of their clients' internal controls over financial reporting. Some of these controls may be RPA or AI systems designed to prevent or detect fraud. In the event that an auditor fails to disclose that a client has a high risk of fraud, and fraud occurs in the future, shareholders could have a strong case against auditors for providing false and misleading statements. Given that there will likely be flaws in emerging technology, will auditors truly be able to understand the underlying technology enough to understand when output is faulty or incorrect? Who is liable if the machine is wrong, and the auditor relied on the output? These are all very important questions to address as the profession moves forward into the SMA. How will the SMA impact auditors' role in society? Current trends indicate that auditors' responsibilities will expand beyond their role as gatekeepers of financial reporting, as they become the gatekeepers for how AI is integrated into the business world. However, this will require the profession to establish authority over the domain, expanding expertise into new areas. Now is the time for the profession to embrace these changes, before the traditional role of auditors becomes obsolete in the SMA.

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