

A Case for Audit Automation: Evidence from Auditing Literature and an Internship During the Pandemic

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ABSTRACT

External auditing is the branch of accounting where an independent accounting firm examines an organization's financial records and provides a reasonable level of assurance that the financial statements are in accordance with generally accepted accounting principles. This is crucial to organizations in order to make a company's financial records and, therefore, its economic condition clear and understandable both to its managers and to potential investors. The aim of this research is to examine the auditing profession and its technological advancements, particularly in light of the COVID-19 pandemic, and determine whether the remote nature of audit work since 2020 has been beneficial or detrimental. The research process consisted of review of prior research sources combined with knowledge obtained from firsthand experience in an accounting firm during the pandemic. The conclusion of this research suggests that the new methods were overall advantageous to auditors. Although some audit procedures may still require traditional methods in order to be most dependable, many auditors should consider permanent adoption of the new methods.

Introduction

The COVID-19 pandemic has significantly affected the public audit process, and ushered in the innovative use of accounting technology, which has been implemented to mitigate the negative impacts of the pandemic. There have been many implications of this shift as it has forced businesses to update their technology and methodology in ways that will have lasting repercussions. This paper seeks to examine the methods that were developed in order to determine whether post-pandemic auditing practice should involve continued implementation of these new technologies. This includes a review of prior literature published during and after the pandemic, as well as first-hand experience gained from employment as an audit intern. These two methods lead to the conclusion that changes were beneficial and have sparked needed development and efficiency in the industry.

The first section covers a short history of audit to provide the reader with the context of public auditing prior to the COVID-19 pandemic. Next follows a discussion of the development and use of accounting technology in the auditing field, even before the pandemic. The final section examines how approaches have changed to accomplish audit objectives in the present day and makes an argument for automation based on firsthand internship experience.

History and Purpose of Auditing

From the Nineteenth Century till Now

Before examining the nature and purpose of modern auditing, it is important to discuss the history and development of the profession over the years. Audits were introduced by English laws as far back as the 1840s, as protection against abuse of power by management in various forms of business. However, there was no professional or organized system for following uniform standards or meeting qualifications (AICPA, 1969). Over the next century, the income tax was established, federal securities laws were passed, and user demand for audits increased. Although this demand was

primarily focused on detecting fraudulent misappropriation of assets, it began to evolve toward verification of the reliability of financial statements.

The modern practice of public auditing came about in the 1930s, along with the establishment of generally accepted accounting principles (GAAP) and the standard audit report (Levy, 2020). The Securities Act of 1933 and the Securities Exchange Act of 1934 were both vital for standardization and established the Securities and Exchange Commission (SEC). Any companies registered with the SEC were now required to undergo an audit. The American Institute of Certified Public Accountants (AICPA) began issuing pamphlets and continually providing more guidance, but it was not until several scandals at the turn of the century that the Public Company Accounting Oversight Board (PCAOB) was established by the Sarbanes-Oxley Act of 2002 (SOX). “It also required the largest SEC issuers to engage its auditors to audit and report on the effectiveness of their internal control over financial reporting, thus providing the large audit firms with a significant new revenue source to partially offset the pain of additional intense regulation.” (Levy, 2020, par. 21) Since then, the COVID-19 pandemic has likely had the most significant impact on the auditing profession.

Audit Purpose and Value

The main purpose of an audit is to provide an independent opinion on whether a company’s financial statements were prepared in accordance with GAAP. Auditors provide four types of opinions: an unqualified opinion, an opinion that the financial statements are fairly presented and in conformation with GAAP; a qualified opinion, which indicates they are a fair representation aside from minor, material qualifications made; an adverse opinion, stating that the financial statements are not a fair representation of the firm in accordance with GAAP; or a disclaimer of opinion, in which no opinion is expressed due to scope limitations (PCAOB, 2017). Management desires the unqualified auditing report, but due to any departures from GAAP or scope limitations, may receive one that has been modified or withheld. Although management is the party responsible for fair presentation of the financial statements in accordance with GAAP, the auditors are responsible for exercising their professional judgment in providing an opinion about the statements. They do this by planning the audit, gaining an understanding of the client, identifying risks of material misstatement, designing and implementing procedures in response to the identified risks, completing the audit, and issuing an opinion (Whittington, 2020).

According to Hay and Cordery (2018), there are several explanations for the value of auditing, which are “well-established in auditing research literature.” These are as follows: an agency role, which has to do with reducing agency costs; an information role, which increases credibility and business value; an insurance role, which essentially sets auditors up as a scapegoat for liabilities; a management control role, which assists with organizational control; a governance role, which enhances corporate governance and internal control; and a confirmation role, which emphasizes the importance of previous financial performance. (Hay & Cordery, 2018)

Emerging Technologies

Risks and Opportunities

Technological developments have produced an abundance of new risks and concerns for an auditor. For example, information technology has sparked an abundance of new cybersecurity concerns, and the average estimated cost due to a data breach in 2020 was \$3.8 million (Hobbs & Ingram, 2021) The sophistication of attacks such as ransomware have increased alongside firm’s abilities. Furthermore, the impressive rise of social media, artificial intelligence and data analytics have all had an increased and evolving impact on internal controls.

However, these technological developments in our world also provide auditors with new methods of actually performing audits, and of gathering information and analyzing it. These result in enhanced efficiency, improved testing

and staffing changes. These methods include the use of powerful data processing systems and automation of auditing procedures. Deloitte's focus has shifted to using cloud computing to transfer information securely, "agile" daily meetings to plan and deliver value amongst teammates, and leveraging data analytics and digital risk assessments to accurately prioritize activities daily (Raphael, 2021).

The 2019 Internal Audit Market Report released by Barclay Simpson reveals that over 80% of audit teams are using data analytics and artificial intelligence (AI) in some form (Barclay Simpson, 2019). "Analytics work is commonly split into three groups: descriptive, predictive and prescriptive. Or, put simply, 'what happened?', 'what will happen?' and 'how can we make it happen?' respectively." The first type is most common in businesses, while the second two are forms of advanced analytics. (Barclay Simpson, 2019) They have been used to not only improve audit findings, but also cut costs associated with the engagements. Powerful data processing systems allow huge amounts of information to be analyzed in fractions of the time it would be considered manually.

One "key subset" of artificial intelligence is machine learning, "which originated with the idea that machines could be taught to learn in ways similar to how humans learn." (Dickey, 2019) Although there are limitations to the current capabilities of machine learning, it excels at performing repetitive tasks. Because an audit requires a vast amount of data and has a significant number of task-related components, machine learning has the potential to increase both the speed and quality of audits. The machine-based performance of redundant tasks should allow auditors more time for review and analysis, which would give them a greater ability to focus on the areas of greatest risk, as well as a better understanding of the larger picture. (Brennan, 2017)

A Forbes article by KPMG explored "three technologies that will change the face of auditing". These are cognitive technology, predictive analytics, and smart digital hubs. There are new ways of performing digital analysis of vast amounts of data. These include algorithms that can use information to reason and draw conclusions in an almost humanlike way. "Auditors can use cognitive technology to redesign their work so they can conduct analyses of structured and unstructured data in ways not possible just a few years ago. For example, an auditor can examine information from non-traditional sources (such as social media, TV, radio and the internet), process it with a client's financial and other records, and utilize advanced analytics to draw a clearer view of possible risks." (KPMG Insights, 2018)

Firstly, technological developments allow for powerful new tools such as the analysis of unstructured data. This data includes business elements such as contracts or emails, which in prior times would have required sampling and more manpower to be useful. Auditors can now take advantage of these dramatic changes to analytical power. (Hoggett, et. al., 2019)

As for predictive analytics, auditors can use comparative data to draw better conclusions about future outcomes and potential risks relating to a client's business. For example, telecommunication companies can tailor analytics to predict future revenue scenarios based on data regarding business transactions and customer contracts (Deloitte, 2021a). Finally, smart digital hubs are a relatively new platform that have exploded into the mainstream and are now fueling the collaboration within many companies (KPMG Insights, 2018). Working remotely, in real time, is a huge part of the business world now. "Yet to be as effective as possible, these platforms must possess three characteristics. First, a smart platform interface must be agile and able to work in a cloud-based environment. Second, it must ideally be configured to support integration into future innovations not yet available but anticipated within the next few years. And finally, it must avoid piling layers of needless complexity onto an auditor's already challenging workload." (KPMG Insights, 2018)

Data analytics can also be used in fraud detection. They enable auditors to search for specific kinds of transactions, for example, such as entries made on the weekends or those created by unauthorized staff (Boillet, 2018). These tools can also be used when ensuring tax compliance, by analyzing activity and monitoring administrative tasks (Earley, 2015). When auditors are well-trained in emerging data technologies, they will be equipped to use data visualization tools, recognize patterns, and create advanced programming.

The impact of artificial intelligence developments on the audit field has been extremely significant. Automation of auditing procedures enables auditors to focus their own time more efficiently, enabling them to use their human

judgment to analyze a broader and deeper set of data and documents. It is important to emphasize that there is still a great need for this judgment in performing estimations, making decisions and forming opinions. Predictions created by analytics technology must be evaluated by human minds in order to take into account trade-offs and reach rational conclusions. (Macpherson, 2019).

A report by PwC detailed the importance of an audit that is *digitally fit* (Bunker, 2019). “Digital fitness was measured in two ways: 1. Having the right skills and competencies in place to provide strategic advice to stakeholders and offer assurance regarding digital transformation risks; and 2. Changing internal audit’s own processes and services to ensure the function is technologically capable of aligning with the organization’s strategic risks and responding appropriately.”

In summary, emerging technologies have triggered the need for more vigilant cybersecurity measures, but they have also enabled revolutionary progress in audit efficiency and digital fitness.

COVID-Related Changes

The Current State of Auditing

There are significant new challenges in the audit world because of COVID. A publication from the Institute of Internal Auditors about remote auditing explores some implications (Litzenberg, 2020). The components of audits are similar in many ways, but the “focus, burden, and executions” of each audit phase will differ. Due to the primarily remote nature of many audits, as far as audit planning and scope limitations, these will require a plan for how and when information will be shared, how technology is used, and any advance authorization required for photo or video capture. (Litzenberg, 2020)

Accurate financial reporting is dependent on strong internal controls that ensure accountability, integrity, and attention to detail, and internal controls have drastically changed in necessary approaches. A report by Deloitte (2021b) details the new concerns for auditors due to the pandemic including staffing changes, irregular control frequency, and new control designs. Changes could include new governance structures, such as delegating which employees have rights to online programs, or which supervisors are responsible for approving that access. Similarly, KPMG, a firm that pushed for digital innovation even before the pandemic, added artificial intelligence to its toolbelt (Kalia, 2020). New processes helped transform auditing to achieve higher quality audits, more efficient audits, and improved insights regarding the companies being audited.

Document review may require significantly more time for documents to be prepared and uploaded to online sharing platforms, since auditors cannot go in person. Auditors must work on remote ways to review provided data and take into account considerations of sampling and communicating strategy to clients. An alternative measure that is often necessary is video and photo capture of specified areas, as well as remote interviews - video calls have become a regular staple in the lives of many workers in the past year. However, site reconnaissance limitations include lack of good internet coverage in remote areas, and the fact that video feeds provide tunnel vision (obstructing peripheral vision) and sometimes may have poor audio quality.

DeCorte and Wright (2021) discuss how the pandemic forced them to reassess their execution of procedures such as physical observation, which they now used live video conferencing or time-stamped photos to accomplish verification of asset existence. They found that some of these revised approaches were “just as effective – and more efficient – than our traditional approaches.” They noted that there would still be high-risk processes that would require physical presence of auditors.

DeCorte and Wright (2021) also wrote about the new opportunities available as audit companies are now able to expand their recruitment efforts outside of the local area, with remote work so easily implemented. “This offers an increased flexibility to attract individuals with varying perspectives and experience, as well as those in strategic

locations.” By hiring someone in a location near a major client, for example, an auditing firm can cut travel costs for those procedures that still require an in-person auditor visit.

Overall, audit components and procedures have evolved rapidly in the past two years, as the pandemic has expedited investment in advanced software and future-focused training (Kalia, 2020). The naturally occurring risks have been paired with considerable new advantages.

A Case for Automation: Internship Experience

While working as an audit intern in the spring of 2021, I was able to experience firsthand some ways technology is used to advance auditing operations. In my semester of work, there was only a single client whose office I visited with my team. The rest of the audits were performed one hundred percent remotely, with the procedures done by communicating with the client through emails or over Microsoft Teams video calls.

Some of the audit procedures included selecting a sample of items for testing, drawing from requested documentation such as reconciliations, cash confirmations, bank statements, and account summaries. Further selections, such as deposits, checks, receipts, invoices, etc. could also all be sent digitally. While a decent number of clients had used technology to digitally record their files before, due to the necessity of working remotely in 2020, the need for it skyrocketed.

We would request virtual copies of documents, and could use software to annotate, bookmark, and navigate the documents more easily than could have been done with physical paperwork. This allowed for straightforward sharing of documents and communicating with team members about the work being done. This also applied to the way internal files are shared, as all paperwork was entirely completed via our company-issued laptops on a file-sharing program through the company’s virtual private network.

Our teams saved time because there was such little need for traveling to and from the client’s office. Additionally, time was saved on the somewhat distracting formalities and pleasantries that are naturally a part of an office visit, such as an office tour, meeting various department members, etc. We were able to conduct observations of the internal controls being carried about by utilizing screen sharing capabilities.

Video calls were also exceedingly useful for assistance in training and mentorship. These allowed for supervision and review of intern work. It was easy and flexible to jump on a call with my superior to share my screen and ask questions. Similarly, team in-charges could conduct daily or weekly meetings that everyone could transition out of straight back into what they had been previously working on— it was as simple as switching windows.

Throughout the internship, vital procedures and regular conversations revolved around and were enabled by cutting-edge technology and impressive capabilities. This kind of automation has become an integral part of the industry.

Conclusion

Audit firms have significantly benefited from the technological developments occurring recently, particularly new methods that developed as a consequence of necessary COVID-19 strategies. Examples include the use of artificial intelligence and data analytics, the ease of video calls, and the versatility enabled by working remotely. These contributed to overall enhanced audit quality. Public auditing before the pandemic was beginning the move toward futuristic artificial intelligence and analytics, but was fueled significantly by necessity. Outside research and personal experience indicate that these changes have been greatly beneficial and will continue to spur innovation and efficiency.

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