

Robotic Process Automation (RPA) in Auditing: A Commentary

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1 | INTRODUCTION

What is RPA

We are living in an age of transformation. Audit firms are exploring new technologies to improve effectiveness and efficiency, thus improving audit quality. Among many technologies, Robotic Process Automation (RPA) is one of the most often mentioned technology because of its adaptability to audit procedures. The official definition of RPA is “A preconfigured software instance that uses business rules and predefined activity choreography to complete the autonomous execution of a combination of processes, activities, transactions, and tasks in one or more unrelated software systems to deliver a result or service with human exception management” (IEEE Corporate Advisory Group, 2017). An easier way to understand RPA is that to consider RPA as a software technology that designs, builds and deploys a software program, usually referred as a “robot” or “bot,” to interact with the computer application by mimicking human actions to complete specific task defined by the robot designer. RPA can automate human activities such as keyboard inputs, mouse movements, clicks, and computer screen reading. Combing these actions, a bot can perform many tasks a human can do on a computer.

Still, RPA is not the magic wand that can do all the tasks for humans. There are some characteristics to help a practitioner decide whether a job is feasible for RPA to accomplish. A repetitive task is a good candidate for RPA to automate. RPA can speed up the execution of those processes to increase efficiency. RPA works best for the rule-based, standardized task. If there are clear rules or standards to perform specific procedures, the RPA designer can configure a bot to execute the task strictly following the rules to increase effectiveness. Besides, RPA works better on structured data. RPA cannot self-learn to respond to various inputs. It can only follow the way a designer configured it strictly. Structured data can help reduce errors and debug efforts.

There are two types of robots in RPA, attended and unattended bots. An attended bot requires human initiation and

intervention. Attended bots usually are used on tasks that require human approval. Unattended bots, as the name suggested, do not require human intervention. The unattended bot can be programmed to start and stop anytime per business requirements.

RPA Implementation Standards

You can regard RPA as an agent who can execute your instruction repetitively without errors. However, the agent can and only can do precisely what you told it to do. It cannot self-learn new rules or adapt to changes in the work environment. For instance, a bot is designed to scrape data from a website. If there are any changes in the content of the website, such as text locations or spreadsheet format, the bot is likely to fail. Not all tasks are suitable to be automated by RPA. It is vital to implement RPA appropriately, which requires the RPA designer to follow specific steps or frameworks to identify the correct processes and implement RPA. Both academia and industry have proposed such frameworks. (Huang & Vasarhelyi, 2019; Ernst & Young Foundation, 2023).

The first step is to examine the task you want to automate. Rule-based, highly repetitive processes with structured data are good candidates to be automated via RPA. Then the designer should understand the process to break it down into step-by-step activities. The best way to do so is by drawing a detailed flowchart to list all the steps of one task being automated. A flowchart can help the user configure the bot and maintain the bot in the future if necessary. An RPA developer must be conscientious at this step. The RPA program is not as clever as people thought.

On the contrary, an RPA program is too simpleminded to require instruction as detailed as possible. Once the RPA developers identify the right task and understand the process correctly, they can step into the bot configuration using various RPA tools. There are many RPA software vendors, such as UiPath, BluePrism, and Power Automate, among which the developers can choose based on their needs. The comparison of RPA software vendors is not the purpose of this commentary. After the bot configuration, the RPA developers need to test and debug the bot. This step usually consumes significant time in the whole RPA development process. The developer needs to perform many “micro-adjustments” to the RPA bot. Sometimes, adding or removing a few seconds of wait time before or after an activity may make a difference. Debugging will be easier if the developer understands the task better and have more RPA development experience. Once the bot is tested and debugged, it is ready to implement to perform actual tasks. However, it still requires subsequent maintenance and adjustment if any changes happen to the automated task.

Current and Future State of RPA

Traditional automation tools, such as Macro and VBA, aim to solve simple tasks and usually automate one task at a time. RPA can manage more complex tasks at scale. In Deloitte's global RPA survey in 2020, 53% of respondents have already started RPA implementation, and Deloitte estimates near-universal adoption within the next five years (Deloitte, 2020). In terms of audit, since many audit procedures are born in nature with structured data and rule-based processes, RPA can be implemented by auditors in many functions, such as reconciliation, analytical procedures, and internal control testing.

The current state of RPA is only to mimic human actions to automate tasks. It cannot handle changing circumstances with unstructured data. Nevertheless, RPA has the potential to combine with statistical modeling, machine learning, and AI to achieve semi-cognitive, even cognitive intelligence.

2 | APPLICATION IN AUDITING

RPA in Auditing Research

Scholars have explored ways to apply RPA in auditing. Moffitt, Rozario, and Vasarhelyi (2018) first introduce the concepts of RPA to the accounting domain and discuss the potential usage of RPA in auditing. Huang and Vasarhelyi (2019) propose a 4-stage framework for applying RPA in auditing and implement a pilot project to demonstrate the feasibility. The pilot project is conducted on two audit procedures, bank account confirmation, and inventory cut-off test. These audit procedures are well-defined, repetitive, and mature (Huang & Vasarhelyi, 2019). Cohen, Rozario, and Zhang (2019) explore using RPA in substantive audit procedures via a case study to automate essential employee benefit plan audit services processes. RPA was used in the case study to automate data movement and perform predefined audit tests. Eulerich, Pawlowski, Waddoups, and Wood (2022) develop a three-step framework to help auditors decide which activities are feasible to automate and validate this framework using two case studies. The results suggest that not all automation ideas auditors generate are achievable, and auditors need guidance and instruction to implement RPA in audit procedures (Eulerich et al., 2022). Auditors can refer to the framework developed by Eulerich et al. (2022) to evaluate whether one task is the right one to apply RPA.

Scholars' attempts to apply RPA to audit procedures demonstrate that RPA can improve audit effectiveness and efficiency by reducing auditors' workload on highly repetitive, rule-based tasks and helping auditors focus on tasks that require human judgments and decisions. Still, the successful implementation highly depends on the tasks being automated. It is case by case bot configuration process that several case studies or pilot projects cannot illustrate. Practitioners should understand the concept of RPA development and follow the conceptual framework to understand the automation task, configure the bot, implement the bot, and evaluate and maintain the bot.

RPA in Audit Practice

The academia has started exploring the implementation of RPA on audit engagements and proposing conceptual frameworks and guidance for practitioners regarding RPA implementation. Nevertheless, how commonly RPA has been used in audit engagement remains a question. Public accounting firms using RPA in audit engagements remain silent about it (Rechtman, 2021). Given the case-by-case characteristics of the RPA configuration process, this commentary aims to discuss how RPA has been used in audit practice instead of describing details on the whole robot designing process. Also, accounting firms mention automation and RPA on their website and press release. Still, they do not disclose how they used RPA in an audit engagement in detail, considering the confidentiality requirement of the audit engagement.

It is hard to quantify how many audit tasks can be or have been automated within one engagement. But we can infer that it can be sure that RPA has already become a mature technology that auditors use to reduce audit burden and improve efficiency. According to a survey by Grant Thornton of 1,100 finance and accounting professionals in 2020, automation is among the top three technology professionals who want to add for audits (Grant Thornton, 2020). PwC estimates that 45% of work activities can be automated (PwC, 2017). Starting from a small scale and using macros, auditors from Deloitte have begun to use automation techniques to "select samples, calculate materiality and populate templates" (Deloitte, 2016). EY Academic Resource Center (EYARC) summarized circumstances where RPA can be used in audit engagements. Generally speaking, appropriate tasks for RPA include "loading client data into analytics tools, creating audit-ready work papers, and performing sampling and confirmations" (EYARC, 2023).

Instead of the conventional sampling method to test transactions on a small portion of the population, RPA empowers auditors with the ability to perform audit testing on population transactions. Using RPA, an engagement team at KPMG examined a complete set of about 250 million transactions and identified 60 outliers for further investigation (KPMG, 2021). BDO integrates automation technology into its Sales Match Analytics tool to examine 100% of sales transactions of a client to save both time and money for the client (BDO, 2022).

RPA can help auditors reduce audit burden and free the audit talent to focus on tasks that require more judgment. Big four and regional accounting firms have already implemented RPA in audit tasks or integrated automation into audit tools to improve audit efficiency and reduce errors.

3 | DISCUSSION

Benefits of RPA in Auditing

RPA is suitable for audit tasks in nature. Many audit tasks are labor intensive, highly repetitive, rule-based, and work with structured data. There are several benefits of applying RPA to audit procedures. First, implementing RPA in auditing improves audit efficiency and reduces audit burden by saving auditors time and talent, which enables them to focus on high-level tasks that require more professional judgment (Huang & Vasarhelyi, 2019). Focusing on interesting and challenging jobs can also retain the workforce, thus reducing employee turnover (EYARC, 2023). Second, applying RPA to audit procedures can improve audit effectiveness and audit quality by reducing human errors in performing audit procedures. Once the RPA bot is configured successfully, it will run as programmed without error.

Third, RPA can improve audibility, security, and governance of the audit engagement (EYARC, 2023). Audit data is confidential. RPA can automate data collection and movement processes, reducing the number of humans accessing sensitive data. Finally, RPA can maintain business knowledge and improve its performance. Even though RPA is not artificial intelligence (AI) that can self-learn from records and boost the program by itself, it still can obtain improvements from errors and exceptions. Starting from small-scale and straightforward tasks, RPA developers can add more complex activities and find ways to handle exceptions to refine the RPA bot performance.

Challenges and Concerns of Implementing RPA

There are many benefits of implementing RPA. Still, no technology is perfect and free from downside. Challenges and concerns also exist when applying RPA to audit. The first challenge is the monetary cost and time cost. Enterprise versions of RPA software could be expensive. Whether accounting firms are willing to spend extra money on one engagement remains a question, especially considering the current audit procedure works fine, and audit standards are unclear about using technologies to obtain audit evidence. The time cost is also immense to develop a workable RPA program that can help the auditors given that the time budget is tight for an engagement. Configuring an RPA program to automate one task takes more time than conventionally performing the task. Auditors need to do a cost-benefit analysis to decide whether automate one task using RPA.

The second challenge is technical ability. Auditors must obtain the operational know-how and technical ability to develop a workable RPA program (EYARC, 2023). The third challenge is the organizational mindset. It may be hard to convince partners to accept RPA in an engagement. Prior literature has found that auditor exhibit "algorithm aversion," which means auditors are reluctant to adopt emerging technology. Also, employees may express concerns that the

robot may replace their job role and thus refuse to implement RPA on audit tasks.

People also concern that utilizing RPA may cause a knowledge gap within the organization. This concern is more common for small firms than for large firms. For example, if one auditor develops an RPA program to automate a specific task and the RPA program works perfectly, that requires no human intervention for years. The RPA program works so well that it replaces humans in this particular task. If the auditor who designed the RPA program left the firm, no one knows how this task should be performed. This situation is less likely to happen in the foreseeable future. Still, it may cause people to hesitate to adopt RPA in practice.

4 | CONCLUSION

RPA is a fascinating technology with benefits and costs when applied to audit tasks. RPA can lower audit burdens, improve audit efficiency, and improve audit quality. RPA can also help auditors focus on more interesting and challenging tasks to enhance their sense of accomplishment. Some audit tasks are appropriate candidates to be automated with RPA, given the task nature of highly repetitive, labor-intensive, rule-based, and structured data. Scholars and practitioners have made attempts to implement RPA on audit tasks. Auditors still need to make professional judgments and cost-benefit analyses about whether to adopt RPA in their practice. Auditors shall first identify appropriate tasks that can be automated. The auditors need to obtain a thorough understanding of the task. After configuring and testing the bot, auditors need to make subsequent maintenance of the bot to ensure it can keep working. Auditors can refer to frameworks and guidance proposed by prior literature when they decide to adopt RPA. With careful consideration and evaluation, auditors shall consume the benefits while overcoming the challenges and minimizing the costs of implementing RPA in audit tasks.

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