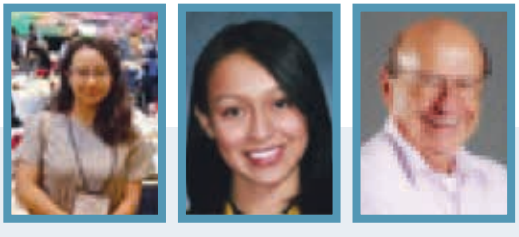
Examining Automation in Audit

The accounting and audit professions have gradually been drawn into the usage of automation and benefited from automation tools. Corporate accounting processes have progressively been integrated into large ERPs (Enterprise Resource Planning systems) and accounting software. However, auditors have tended to use technology with disparate sources of software performing verification, archiving, and extrapolating functions. These functions often are very repetitive and labour intensive with variations from engagement to engagement. A basic core of automatable functions has emerged which rely on a reengineering (Hammer 1990) of a largely customisable set of audit procedures that firms execute client to client and partner to partner. Multiple audit related functions can be performed by robotic process automation (Moffitt et al., 2018) processes that are emerging in the profession and have been progressively widely deployed in the corporate world. Read on…



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What is Robotic Process Automation (RPA)?

Robotic Process Automation (RPA) is a software that runs other application software from the user interface level (i.e., in the same way that a person works with that software) and it can be used to automate predefined business processes. RPA is ideal for processes in which there are many interactions with different application software. A reliable survey shows that accounting and finance is the most common area (54%) of RPA deployment, followed by operational processes (25%), human resources (8%), IT (6%), tax (5%), and internal audit (2%).

Rethink Audit Processes Assisted by RPA

Today's audit process can be somewhat customisable with the practice manuals, templated audit plans, and ever-evolving supportive software *(Rozario, Moffitt, and Vasarhelyi, 2018)*. Though audit automation started almost half a century ago, today's audit automation is mainly about isolated audit task automation, for example, digitising working papers and their management using CASEWARE, using audit software to perform specific audit testing, and using statistics software to run regressions (*C. Zhang, 2018*). However, to enhance efficiency and effectiveness, audit automation needs to go beyond isolated task automation to achieve process automation. The audit procedures, in essence, are processes which consist of a sequence of activities to transform inputs (i.e., information to be audited) into outputs (i.e., audit opinions) to serve a meaningful purpose (i.e., provide useful information to financial statement users) (C. Zhang, 2018). The advent of RPA provides new opportunities for auditors to rethink, redesign, and reorganise the audit processes.

RPA can be a cost-efficient way to automate tasks that do not require judgement but that are important to the completion of the process.

Methodology/Framework of RPA in Audit

A framework for guidance is necessary to facilitate the implementation of RPA. A framework can be proposed for redesigning the audit using RPA *("Redesigning the Audit Process: Towards Robotic Audit Process Automation", Rutgers Dissertation 2019)* and it can be recommended to (1) develop process objectives for automation with RPA, (2) identify and subsequently understand the process, (3) standardise audit data, (4) have RPA automatically execute audit tests, and (5) evaluate the RPA implementation.

Understanding the process from beginning to end in order to break it down into small modules that can be programmed as RPA software bots is emphasized as an important driver for successful RPA implementation. In addition, to exploit the benefits of RPA to the maximum, the concept of audit data standardisation, i.e. the maintenance of audit information into a consistent format, is highlighted as the enabler of RPA across multiple audit engagements. Then, RPA, as an overlay software, can be utilised to integrate otherwise disintegrated audit activities. Finally, to measure the ROI on RPA, a method of formal evaluation is needed. Measures for audit efficiency (e.g. number of hours spent performing the process) and effectiveness (e.g. number of errors detected) under the traditional approach versus the new, RPA-based approach, can help assess the success of RPA implementation.

RPA Projects: Lessons Learned

Auditors could apply RPA to all phases of the audit that require the performance of rules-based tasks that are repetitive, and time consuming.

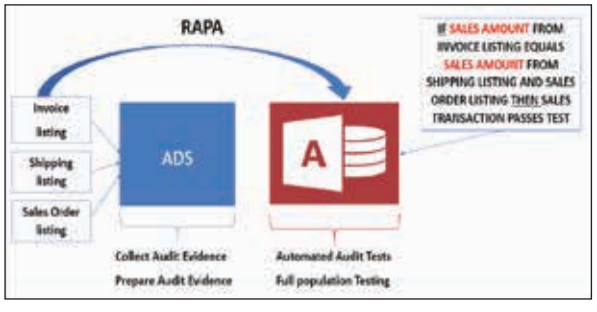
RPA Projects in the External Audit Case 1– Risk Assessment: In the first example, the usefulness of RPA in audit planning is explored. A firm provided a list of possible tasks that could be automated with RPA. The RPA prototype was built based on the redesigned and further standardised audit procedures, which generally include filling in a planning worksheet using information generated from a series of simple analytical processes and auditor's professional judgement.

The first module was data standardisation (Audit Data Standard – ADS, step 3 per the proposed framework), in which a Python program was used to convert the original client data into a standardised and machine-readable format. The second module consists of a series of rule-based analytical procedures interacted with auditor's professional judgement. At the end of the second module, a summary spreadsheet in which what needs to be filled in the planning worksheet was generated. In the third module, the RPA software is programmed to take the results from the summary spreadsheet and fill them in the planning worksheet. All the

modules, including data standardisation, analytical procedures, auditor's professional judgement, and completing the planning worksheet, are connected by the RPA software.

RPA Projects in the External Audit Case 2– Test of Details: There is untapped opportunity to apply RPA for substantive testing as there are a plethora of audit steps that consist of the matching of data fields from one source to the other. In case 2, RPA was applied to execute test of details. RPA was utilised to conduct tests of details for the revenue account by first collecting audit evidence from several files, compiling this evidence into a standardised format, importing it to the data analytic software, and then executing audit tests that are pre-programmed to match the sales amount from the invoice detail to the shipping, and sales order detail. The revenue case is one example, however, this example can be generalised to the audits of other financial statement accounts or areas, such as cash, pension plan assets, and internal control testing.

Figure 1: Robotic Audit Process Automation (Adapted from Rozario, 2019)



Despite the several benefits that RPA can bring to the audit, there are items that need to be considered to increase the success of RPA implementation. First, data should be in a machine-readable format for RPA to be able to process it. Many business reports, such as payroll reports, are in PDF file type formats, therefore, if the data is not in a machine-readable format, the possibility of converting it into this format should be considered. Second, RPA bot deployment and maintenance should be taken into account. For example, should RPA be decentralised and deployed at each business segment, or should it be centralised at an RPA Centre of Excellence? In large public accounting firms the first option may be feasible while for the smaller firms the latter may make more sense. RPA bots, like any other software, would require updates. How would the maintenance and updates be handled? Ultimately, the success of RPA implementation would be in the hands of management and their employees. Hence, if public accounting firm partners embrace RPA as a way to improve the auditing process, is it likely that such attitude would be adopted by their employees.

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Move from RPA to IPA

The characteristic of RPA is that it is used to automate standardised, rule-based, and structured processes. Massive benefits can be harvested from RPA alone in such processes. However, many business processes and audit processes are not standardised, not rule-based, or not structured, therefore, falling outside the scope of RPA. To achieve process automation that is more scalable and flexible, we need Intelligent Process Automation (IPA). IPA is an ecosystem of technologies that work together to make the process automation flexible, scalable, and intelligent *(C. Zhang, 2018)*. The IPA ecosystem, based on the state-of-art of automation technologies, contains RPA, Artificial Intelligence, Cognitive Computing, and other technologies such as drones, Internet-of-Things, and data analytics *(Zhang, 2018)*. Unlike RPA that can only automate pre-defined processes, IPA can learn and predict process patterns, and to interact with humans when needed *(Zhang, 2018)*. More detailed comparisons between RPA and IPA are extracted from *Zhang (2018)* and listed as follows :

Figure 2: Comparison between RPA and IPA (excerpted from Zhang, 2018)

	RPA	IPA
Deal with definable, standardised, structured, rule-based tasks	Yes	Yes
Deal with fuzzy and unstructured tasks	No	Yes
Complex data analysis	No	Yes
Exception processing	No	Yes
Predictive analysis	No	Yes
Adapt to changes	No	Yes
Learn through time	No	Yes

Impacts of RPA/IPA on the Audit Quality

RPA can increase audit efficiency as it can conduct work the same way as human auditors without getting tired. For example, for the cases described above, RPA performed audit activities in 3 minutes or less. Hence, RPA can perform audit activities in a fraction of the time that an auditor can. Accordingly, RPA can scale as it can conduct audit work on a large number of audit clients in the same amount of time that it would take for one auditor to conduct the work on one audit client. In addition, RPA can do this for many hours.

While process improvement using RPA can certainly increase the efficiency of the audit process, it may also increase its effectiveness. RPA can reduce the number of errors that occur as a result of transferring data. Importantly, by automatically processing data and executing audit tests on the full population of accounting records, RPA can more efficiently detect accounting anomalies and offer auditors the opportunity to more precisely measure the risk of material misstatement in a timely manner and for many audit clients. Subsequently, audit effectiveness can be improved by having auditors spend their efforts on higher risk areas such as the evaluation of audit test results.

Impacts of RPA/IPA on Auditor Skills

With the advent of RPA/IPA, the rule-based and repetitive tasks in accounting that require the application and simple analytical skills are expected to be automated shortly. To be prepared for the future of the accounting and audit profession, professional accountants need to be open-minded and start to focus on building another set of "accounting plus skills."

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These "accounting plus skills" include advanced analytical skills (e.g. data visualization, programming logic, and analytic modeling), personal skills (e.g. resilience, communication, and agility), open and critical mind-sets, and the understanding and application of disruptive technologies (e.g. RPA, AI, and Blockchain)

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Conclusion

This article discussed the second major wave of automation happening in the accounting and audit world that entails overlay software integrating labour-rich repetitive applications. For that purpose, it reviewed two RPA project learnings and drew conclusions. Current audit processes need to be reengineered to a certain degree to homogenise the ways different engagements are conducted into data identification, audit data standardisation for that cycle/process, a common set of homogeneous pre-prepared audit activities, and eventually a semi-automated conclusion (opinion) module. Currently, the repetitive and structured processes could be automated while eventually IPA will try to automate some of the more complex decision processes. ■

(Courtesy IFAC Knowledge Gateway)