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The opinions expressed in this article are those of the author and do not necessarily reflect the views of any organizations with which the author is affiliated.

In this article, the author discusses the importance of processes in indirect tax compliance and considers how taxpayers can use technology — specifically, robotic process automation and process mining — to improve the operation of their indirect tax functions.

The indirect tax function in any company has three core tasks: tax compliance, tax planning, and audit defense. Most businesspeople would, under normal circumstances, consider tax compliance to be the most time-consuming and labor-intensive of the three. It includes multiple routine activities, each of which can have a significant and long-lasting impact on the company's tax position.

Many companies consider launching automation projects as a way to improve the execution of indirect tax compliance processes. Automation can offer many advantages such as improving accuracy by removing the potential for human error, promoting efficiency by reducing the time spent on repetitive manual tasks associated with tax return preparation, and enhancing transparency by creating an audit trail that tracks all user activity and data changes in the return preparation process. With indirect tax functions facing growing demands in the form of increasingly complex compliance obligations and ever-present budgetary restrictions that prevent companies from adding new staff to handle these additional responsibilities, investing in automated solutions becomes a necessity.

This article will show companies how they can approach indirect tax process automation to ensure they can realize the anticipated efficiency gains. The article begins by providing some background information on tax processes. Next, it discusses two specific tools — robotic process automation (RPA) and process mining — that companies can use to make indirect tax processes more efficient, transparent, and accurate.

I. Background

Processes are a key component of the well-established people-process-technology model, which suggests that successful project implementation requires focusing on all three elements and optimizing the relationships among them.

Interestingly, while companies from a range of industries recognize and use the model, its roots are not very clear. The first reference I could identify is in a paper that Harold Leavitt delivered at a conference in 1962.[1] One of the earliest appearances of the people-process-technology concept in the IT industry came in the 1980s with the Information Technology Infrastructure

[1] Leavitt, "Applied Organization Change in Industry: Structural, Technological and Humanistic Approaches," in *New Perspectives in Organization Research* (1964) (a collection of papers from two conferences held in June 1962).

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Library framework. Bruce Schneier helped popularize the model in the 1990s.[2]

According to the model, technology is only as good as the processes that it supports, and processes are only as good as the people who execute them. When planning new projects, adherents suggest starting with people — namely, identifying key stakeholders and confirming senior management buy-in. Once people commit to the project, it is time to focus on processes. Technology should always be the final consideration — it only becomes the focus once the people clearly understand the problem that the project seeks to solve and have determined the requirements for the solution.

Processes are important because they describe how things are done, and how things are done determines the success of the outcomes. In many companies, unfortunately, the level of knowledge and understanding of tax processes is far too low. Companies may have guidelines that outline standard operating procedures, but frequently the procedures are poorly documented or simply out of date. As a result, it may not be clear what the actual operating processes are, and employees tend to follow their own (self-labeled) "best practices." The consequences of this approach can be disastrous. As W. Edwards Deming once said, "If you can't describe what you are doing as a process, you don't know what you're doing."

Consider the following three examples involving a hypothetical multinational enterprise with over 100 entities and VAT registrations in more than 50 countries. The company uses multiple enterprise resource planning (ERP) systems and has internal guidelines describing some steps of the VAT compliance procedures, such as stating that every VAT return should go through a three-step process of preparation, review, and approval. Because indirect tax compliance has not been centralized, management's ability to oversee the execution of the global indirect tax processes is limited.

Example 1

Before any work on the preparation of VAT returns can start, data from various sources and ERP systems must be pulled together and standardized. The process of data aggregation and assembly is neither well-defined nor documented. Each clerk has his own opinion about the optimal way to get VAT-relevant data in the correct format. The company would like to automate data aggregation and standardization. To do so, it needs to determine which of the various approaches should be considered best practices.

Example 2

Many VAT returns must be resubmitted because of errors. It is not clear what causes incorrect reporting. Potential culprits include the possibility that some prescribed controls are skipped.

Example 3

After the VAT return has been submitted, an accounting clerk adds new invoices to the ERP system. He fails to notify the tax department of this change because there are no written guidelines requiring him to do so. Now the accounting data does not match the data on the VAT return and these discrepancies may lead to penalties if they are detected during a tax audit.

Each of these examples demonstrates process flaws. In Example 1, the company does not know what process is being used for data aggregation. Example 2 suggests that the actual process may not match the prescribed process, resulting in the submission of incorrect VAT returns. Further, Example 3 demonstrates that the process model is incomplete because it fails to prescribe some actions that are critical for VAT compliance. Before it can develop a plan to address the observed flaws and inefficiencies, the MNE needs to gain more insight into its compliance processes.

II. Robotic Process Automation

Although blockchain and artificial intelligence are dominating conversations, RPA is the technology that will have the most significant impact on tax compliance in the short term. RPA is a software solution that mimics human actions and connects multiple fragmented systems

[2] *See* Schneier, "People, Process, and Technology," Schneier on Security (blog) (Jan. 30, 2013).

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through automation. It does not change the company's IT landscape; rather, it integrates easily into existing IT systems because it can work across legacy systems, custom applications, and any other technology platforms. RPA is like an employee who can work effectively 24/7 while maintaining a high level of accuracy in repetitive tasks. Beyond increasing the speed and volume of repetitive tasks compared with manual performance, RPA achieves consistency in procedure and removes the risk of human error.

More specifically, a company could use RPA to handle several tasks within the indirect tax function such as importing data from multiple ERP systems and other supporting documents, consolidating and validating data, and populating VAT returns and VAT refund applications. RPA may also prove useful in shared services centers because repetitive processes are often a core part of the work.

While RPA can lead to increased speed, reduced costs, and improved accuracy, RPA automates only the "as-is" process. It does not examine the existing process, and with no examination of the current process steps, RPA does not redesign anything. It does not ask whether anyone needs to perform this activity at all. It operates at the task level as opposed to the end-to-end process level. Companies that focus only on RPA — that is, companies that make RPA the main way they apply technology to the indirect tax function or any other function — may miss significant opportunities to improve process outcomes, quality, and cost structure. Therefore, when it comes to processes, tax technology projects should not focus on process automation but on process transformation. The goal should be to redesign or improve the process, rather than simply automate its current state.

III. Process Mining

The goal of process mining is to use event data (that is, observed behavior recorded in audit logs) to provide a better sense of the actual processes — and then improve them. Process mining focuses on a confrontation between event data and process models, either predefined or discovered automatically. It can be used to check compliance, identify bottlenecks, record policy violations, streamline processes, and recommend actions. Any process for which events can be recorded is a candidate for process mining.[3] There are three types of process mining activities: discovery, conformance, and enhancement.

If there are no pre-defined processes as was the case in Example 1 of our previous hypothetical MNE, process mining will automatically discover a process by observing events recorded by the system. An established discovery technique can take an event log and produce a model without any additional information. Using discovery process mining, different events can be correlated and may result in surprising insights. The findings could include such things as, "Returns prepared by X tend to be sent back by the reviewer more frequently" or "Returns for company X require most manual adjustments to the imported data." Discovery process mining does not seek to create a single model of the process, but provides different views on the same reality at different probability levels: Users can choose to examine the most frequent behavior (70 percent model) or inspect all cases observed (100 percent model).

If there are well-established processes in place, then process mining will be used for conformance and enhancement purposes — that is, to analyze deviations and improve the quality of the models. To check conformance, the system compares an existing process model with an event log of the same process to see whether reality — as recorded in the log — conforms to the prescribed guidelines. One can view conformance from two perspectives: Either reality deviates from the model (that is, the guidelines are not being followed), or the model does not reflect real behavior (that is, the model is wrong and needs to be amended). Conformance checking techniques focus on identifying discrepancies, such as the problems described in Example 2. Suppose that the hypothetical company's internal guidelines dictate that every VAT return should be reviewed by someone other than the person who prepared it. However, the analysis of audit log data shows that the review stage is frequently skipped because return preparation is finalized just before the statutory due date and there is no time left for

[3] For background on process mining, see Wil M.P. van der Aalst, *Process Mining: Data Science in Action* (2016).

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other checks. This may explain why the company needs to resubmit a large number of returns because of errors.

The idea behind the third type of process mining — enhancement — is to improve an existing process using information recorded in the event log. While conformance checking measures the alignment between model and reality, enhancement focuses on changing the defined model. In Example 3, information from the audit log may be used to amend the internal guidelines to require accounting clerks to notify the tax department if new invoices are recorded after the return submission date.

Process mining can take place both online and offline. Typically, companies analyze processes after the fact (offline) to see how they can be improved or better understood. However, process mining techniques can also be used in real time (online), for example, to detect noncompliance when the deviation actually occurs. Process mining can use different methods to obtain event data, including:

- web services, which capture events as they occur instead of retrieving them from a file later;
- adapters, which use a dedicated piece of software to load events from a particular application;
- databases, which load events from systems such as MySQL or SAP S4/HANA; or
- files, which store events in a comma-separated values file (known as a CSV file) or Excel file and import them into a process mining tool.

The mining software can run locally (on the computer used for analysis or the company's server) or remotely (in the cloud).

Process mining is very similar to data mining. Both aim to analyze large data sets to find unsuspected relationships and summarize data in novel ways. Both are data-driven. However, the commonly used data mining techniques are not process-centric and do not consider end-to-end processes. Another difference is that data mining is not limited to process-related data.

Process mining can be part of business intelligence, a broad term including anything that transforms raw data into meaningful, actionable information that can be used to support business decisions. However, the mainstream business intelligence tools are data-centric: They are not tailored toward the analysis and improvement of processes. Examples of functions that business intelligence products can provide include ETL (that is, extract, transform, and load), generation of predefined reports, creation of interactive dashboards, and ad-hoc querying.

IV. Conclusions

This article highlighted the importance of processes in indirect tax compliance. It focused on two tools — RPA and process mining — that taxpayers can use to make indirect tax processes more efficient, transparent, and accurate. RPA uses software — or, if you prefer, robots — to perform human-like functions by executing preprogrammed tasks on structured data. Robots can automate repetitive tasks, allowing human employees to concentrate on higher-value activities. Taxpayers can use process mining — a tool that emphasizes the relationship between a process model and the reality captured in an event log — to gain insight into the actual processes, verify that they are compliant, and improve the processes. Before launching process automation initiatives, companies should take a critical look at the existing processes, which are often overly complex, contain unnecessary steps, and have not been examined for many years.

Automating inefficient processes can generate only modest labor savings — it cannot lead to significant improvements in costs, quality, or performance. Therefore, automation initiatives should focus on process transformation rather than simply automation. As Bill Gates once said: "The first rule of any technology used in a business is that automation applied to an efficient operation will magnify the efficiency. The second is that automation applied to an inefficient operation will magnify the inefficiency." ■

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