GEARING TOWARDS INTELLIGENT AUTOMATION

POWER YOUR POST-TRADE OPERATIONS WITH COGNITIVE RPA AND AI
Post-trade operations are an integral part of every trade lifecycle. Once a buyer and seller complete the trade, it is necessary to verify the transactions and ensure they do not contain anomalies, errors or duplication. Post-trade operations manage this critical part through a series of documentation and administrative tasks. These tasks are carried out in various stages—confirmation, settlement and payments, asset servicing, reconciliation and reporting of orders.

In the last few years, there has been a conscious effort to automate post-trade operations to create an efficient work environment and reduce back-office operational costs. Traditionally, trading companies used multiple legacy systems that interacted with each other to process a trade. The difference in processing patterns and communications by these legacy systems caused severe problems and delays to the settlement process. To address these issues, post-trade participants engaged back-office operation teams to carry out the tasks manually. The high volume of trades, complexity levels and the time spent by operation teams to identify and fix issues has given rise to the need for automation.

With the advent of Robotic Process Automation (RPA), manually intensive tasks are being executed faster and with greater accuracy. Accenture estimates that RPA will improve process speed and efficiency by as much as 80 percent in the post-trade back-office operations in trading companies.
COGNITIVE TECHNOLOGIES: pushing the boundaries of automation

The automation journey does not end with RPA—in fact, the journey becomes more exciting with disruptive technologies such as Cognitive RPA and Artificial Intelligence (AI), which take automation to the next level. While traditional RPA automates processes that are repetitive and manually intensive, cognitive technologies leverage natural language processing, data mining and pattern recognition to behave like a human brain to solve complex problems. RPA gives quick benefits but cognitive technologies provide long-term value. And both these technologies are helping companies solve problems that require human judgement to understand complex data patterns and business scenarios.

As per Gartner’s research, the interest in AI-based tools in capital markets has increased considerably. At Gartner, the number of client inquiries regarding AI and related technologies in banking is growing. From July 2016 to July 2017, 32 percent of clients inquiring about the term “AI” were from banking and investment services. In addition, according to the annual 2017 Gartner CIO Survey, 38 percent of respondents were planning to or had already invested and deployed machine learning (ML) tools in their organisations. Interestingly, 36 percent of respondents also reported that ML tools were on their radar, but no action had been planned (see Figure 1).1

Figure 1. Status of Machine-Learning Adoption Projects in Investment Services

In medium- or long-term planning
36%
In short-term planning/actively experimenting
19%
Have already invested and deployed
2%
No interest
26%
On the radar but no action plan
17%

What these numbers indicate is that cognitive RPA and AI technologies are definitely becoming part of every company’s business strategy to drive operational efficiencies.

1 Gartner, Market Trends: How to Target Capital Markets with Artificial-Intelligence-Powered Solutions, Moutusi Sau, 28 July 2017

RPA IS THE NEW NORMAL IN POST TRADE

Compared to AI, many post-trade players have opted for RPA as an easier and quicker option. This is because of the easy automation possibilities in processes such as trade matching and reconciling bank account transactions. RPA has been successful in the following areas of the post-trade value chain:

Client reporting
RPA is used to extract various reports and compare information, thereby increasing visibility and auditability of information.

Settlement
Based on Accenture’s experience, it is estimated that RPA optimises “to-be-settled” trade volumes and operational risks, minimises fail rates and reduces average issue handling time by 75 percent.

Reconciliation
RPA helps in reconciling mismatches between two tools and in our experience, it reduces the average handling time by 90 percent and saves approximately 60 percent of full-time equivalent (FTE) expenses.

Asset servicing
RPA helps in decreasing the turnaround time and improving the quality by automating the entire asset servicing process.
WHILE RPA BENEFITS ARE PLENTY, LIMITATIONS ARE NOT FAR BEHIND

Accenture has been combining AI with deep industry and analytics expertise to help our clients embrace intelligent technologies confidently and responsibly. Based on this experience, we have identified certain key benefits and challenges for applying RPA in the post-trade space:

**BENEFITS**

- **Rich dividends in quality and auditability**
  RPA eliminates human error, improves compliance, auditability and visibility, reinforces an audit trail and offers better control over end-to-end processes.

- **Enhanced productivity**
  RPA increases productivity significantly with the potential to operate 24x7, requiring less FTEs to complete repetitive tasks. In addition, we have observed from our experience that there is a 40 percent reduction in average business handling time along with 40 percent reduction in training requirements, making the new hires fast and efficient.

- **Significant cost savings**
  RPA yields around 40 percent reduction in operational costs. In case of seasonal demands, virtual resources can be deployed at a fraction of the costs of an FTE.

- **Minimum implementation time**
  It requires approximately six weeks for a cost-effective RPA implementation. In addition, the Agile methodology makes implementation faster, while object and process elements can be reused across different clients.

- **Happy employees, satisfied customers**
  Eradicating monotonous tasks boosts satisfaction among the staff as well as the customers, freeing up time and effort invested in data administration and enabling them to focus on high-value work, customer acquisitions and customer service outcomes.

**CHALLENGES**

- **Lack of clarity in deciding what to automate**
  Quite often, the operations team is not adequately skilled to identify the right processes or use cases that require automation. There could also be initial resistance in identifying the right use case. In such a scenario, applying traditional RPA to an inefficient process will not suffice as RPA does not address end-to-end automation. Instead, the team must focus on identifying the root cause of their process or technology inefficiencies and then apply cognitive solutions to maximise the benefits.

- **Easier said than done**
  Installing thousands of bots can be quite time consuming and complex. There are many permutations and combinations that can be chosen to automate a standard process. Sometimes, combining RPA with cognitive technologies reduces diverse permutations, implementation time and maximises benefits.

- **Changing or unstructured data**
  Any changes in upstream and downstream data can affect the functioning of bots. This is because RPA is not a cognitive solution and cannot learn from experience. In addition, RPA is not of much help when data is unstructured. When processes evolve over a period of time, bots can get redundant. Cognitive RPA and AI are the best options when data is constantly changing or is unstructured.

- **Long-term maintenance**
  Maintenance and cybersecurity issues of bots come with additional costs. The platforms used by bots to interact might often change and they may not always be configured with the required flexibility. While considering an automated solution, companies must take these factors into consideration.

- **Automation is not directly proportional to cost savings**
  Automating a number of tasks does not always translate into an equal reduction in costs. Generally, people multitask. Therefore, looking at a single area for cost reduction might not depict the actual outcome. This is where cognitive RPA and AI offer end-to-end automation capabilities, automating multiple activities simultaneously.
RPA IS GOOD, BUT COGNITIVE RPA AND AI ARE EVEN BETTER!

RPA works well where there is extensive manual, rule-based and repetitive work that requires no human judgement. However, real life business scenarios are not so predictable. RPA falls short in situations that require human judgement to understand complex data patterns and business scenarios. It is best suited in a post-trade operational set-up where the emphasis is to reduce manual efforts, meet regulatory deadline or achieve short-term return on investments.

Traditional RPA is not yet advanced enough to automate complex processes and decision-making but that is where AI techniques come to the rescue. Though RPA has great potential, its combination with AI makes it a highly disruptive technology. AI enables computer systems to mimic the working of the human brain with the ability to sense, comprehend, act and learn. It analyses complex unstructured data by studying the past trends that will help the system to automate processes performed by humans. Based on Accenture’s vast experience in the cognitive technology space, here are some potential post-trade processes that can leverage AI and cognitive RPA:

**Referential data**
Static data maintenance and product classification.

**Trade confirmation and settlement**
Automation of the trade validation and confirmation process by predicting trends and patterns and analysing business rules.

**Collateral management**
Margin call processing and dispute resolution.

**Reconciliation**
Complex reconciliations that require human judgement can be managed by AI by predicting patterns and sending recommendations to the operations team.

Let us look at some post-trade scenarios to understand how AI can automate complex business situations to bring superior efficiency and reduce time spent in back-office operations.

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**TRADE VALIDATION**

1. A third party sends the operation team emails to update Standard Settlement Instructions (SSI) records.
2. Emails contain information in the form of plain text, a PDF, an excel sheet or unstructured text.
3. Each day, subject matter experts huddle together and go through each email with post-trade settlement request.
4. A traditional RPA solution will not be able to automate this process as it is unstructured.
5. A deep learning model like Recurrent Neural Network and Long Short-Term Memory (RNN-LSTM) built on Python is used to identify the email patterns (for example, whether the information is a trade reference number or a gloss reference number).

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**REFERENCE DATA**

1. Banks face a common data-quality issue of incorrect classification of instrument data that can pose a serious risk when trades are processed.
2. AI techniques such as NLP help in reading the product data stored in files.
3. Once the files are read, ML techniques such as support vector machines, logistic regression models and random forests help in reclassifying the instrument categories correctly.

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**RECONCILIATION**

1. The operations team spends a lot of time in research and reconciliation of breaks.
2. An AI solution such as a decision tree algorithm, identifies patterns in historical matching scenarios.
3. The AI tool suggests the operations team with matching scenarios.
4. In cases where the operations user provides additional rationale, the machine also learns continuously from the acceptance/rejection criteria to build a contextual knowledge base.
WHAT MAKES ACCENTURE STAND APART?

With more than 7,250 robotic automations implemented for nearly 350 clients across the globe, Accenture is a proven partner in the automation space. Our global reach has enabled us to build a robust automation practice, drawing on robotics from across the world.

Accenture’s Robotics team has deep experience in implementing traditional robotics for simple automation requirements as well as cognitive robotics for complex automation scenarios. Accenture also has multiple global alliances and reseller agreements with major technology partners. Accenture also has its own RPA solution, Cognitive Robotic Suite (CRS), that observes and documents current processes, automatically executes repetitive and manual processes, scales to a team of knowledge worker robots in the cloud and requires minimum technical coding or scripting.

Bots in action
Accenture implemented 55 different types of bots in multiple areas for one of the post-trade projects. In another project for an investment bank, Accenture automated the settlement matching and the late-cash flow tasks through RPA.

Powering investment processes through cognitive automation
Accenture helped an investment bank automate their settlements and reference data maintenance by using the CRS. The suite’s process agent monitoring tool records, replays and documents activities and processes carried out in the machine. The document reader within the tool uses optical character recognition (OCR) to read and understand complex documents and automate complex processes.

Accenture’s AI capability is focused on building exciting assets and solutions for solving some of the major real-time industry problems. These assets are based on AI technologies such as virtual agents, ML, computer vision, speech to text and text analysis tools. These tools enrich user experience, minimise human intervention and reduce time and effort on various activities and processes across the industries.

Powering automation through AI
Accenture developed an AI-based solution for the post-trade operations setup that analyses the counterparties’ data on the trades and predict their probability of failure based on the value date (the expected date on which the trade is settled). For another investment bank, we formulated an AI solution using ML techniques to identify data trends and patterns and automate the existing trade confirmation and validation process.

Smart automation with AI and machine learning
Recently, Accenture implemented AI and statistical techniques for a leading investment bank to improve its data classification quality of exotic equity derivatives (highly complex derivatives as compared to the standard instruments). Accenture offered a two-part solution to resolve the client’s business challenge. The first solution used the Bayesian predictor that helped in identifying mismatches and incorrect product classifications. The second solution used natural language processing and machine learning to classify distinct products (e.g. variable maturity note, callable options and various exotic derivatives) by reading data from PDF files.
The post-trade area is a highly regulated industry with multiple operations and manual processes. Many post-trade players use incongruent systems for trade validation, confirmation, settlement, reporting and accounting operations. Accenture believes that moving towards intelligent automation will allow post-trade players like central securities depositories (CSDs), investment banks, custodians and others to cut costs and achieve tremendous operational efficiency.

TO ENABLE YOUR ORGANISATION MOVE TOWARDS COGNITIVE RPA AND AI, ACCENTURE CAN HELP BY:

- Assessing your current post-trade processes and RPA capabilities and create an effective roadmap based on cognitive RPA and AI-based solutions.
- Selecting a vendor or third-party product according to your business needs.
- Leveraging experts that help in identifying the right use cases with the help of Accenture’s automation identification tool, wide range of industry use case libraries, reference architectures, technology blueprints and repositories.
- Developing a proof of concept on specific use case(s):
  - Executing an entire RPA/cognitive RPA/AI project by leveraging tools such as Automation Anywhere, BluePrism, UiPath, TensorFlow, IBM Watson, Microsoft Azure, etc.
  - Offering training on cognitive tools as-a-Service.
- Organising regular innovation challenges within the organisation to leverage new ideas and solutions in the cognitive space.
- Delivering at a pace that allows post-trade players to realise long-term benefits.

IN A SNAPSHOT: ACCENTURE’S AI CAPABILITIES

| ACCENTURE AI |
| US$600 million investment |
| More than 185 patents and applications |

| TOTAL NUMBER OF PRACTITIONERS |
| More than 250 practitioners |

| PARTNERSHIPS WITH UNIVERSITIES AND RESEARCH BODIES |
| Stanford |
| MIT |
| DFKI |
| Turing Institute |

| GLOBAL LABS |
| UK Liquid Studio |
| Dublin AI COE |
| Tech Labs Palo Alto |
| Tech Labs Sophia |
| IDC Innovation Centre |
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Accenture is a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations. Combining unmatched experience and specialised skills across more than 40 industries and all business functions – underpinned by the world’s largest delivery network – Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With approximately 442,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives. Visit us at www.accenture.com.

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