

Accelerating Automation in Banking with Intelligent Document Processing (IDP)

Expanding the scope of automation through IDP



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Executive summary

Banks have been in a constant struggle to increase operational efficiencies, reduce costs, and improve customer satisfaction, while ensuring compliance to stringent regulatory requirements. The uncertain economic environment as an outcome of the COVID-19 crisis has also impacted the banking industry, further accelerating the need to reduce costs and improve operational efficiencies. We believe that intelligent automation can help banks achieve these objectives fast enough to mitigate the impact of the crisis.

Banks have embraced Robotic Process Automation (RPA) solutions in their need for automation over the past few years. However, traditional RPA solutions alone are unable to deliver holistic automation for banks. Several processes in the banking industry involve substantial manual effort to extract meaningful information from semi-structured and unstructured documents, which cannot be automated through traditional automation solutions. Here is where Intelligent Document Processing (IDP) comes into the picture, as IDP solutions can process such documents with reasonable accuracy. These solutions leverage Artificial Intelligence (AI) to automate document classification and data extraction from semi-structured and unstructured documents. As IDP solutions gain maturity, together with RPA, they can help expand the scope of automation in various banking processes, such as customer onboarding and KYC, mortgage lending application processing, and check processing.

In this paper we examine:

- The intelligent automation ecosystem
- IDP solutions and their capabilities
- The scope for expanding automation outcomes within banking using IDP, highlighting a few use cases
- A case study highlighting the IDP journey at IndusInd Bank
- Key factors to consider when embarking on an IDP journey

The paper is intended for:

- Executives in charge of optimizing business processes
- Chief Operating Officers and other heads charged with improving operations
- Digital transformation and automation leaders

The need for automation in banking

The banking industry has made significant strides in digital transformation over the years. Banks have evolved from branch-driven entities to digital centers leveraging channels such as the web and mobile, thereby making meaningful advances in customer experience. However, despite these improvements, in the face of ever-growing customer expectations, banks need to continuously optimize operations, meet compliance mandates, and reduce processing times to ensure customer satisfaction.

The uncertain global economic environment, in the wake of the COVID-19 crisis, also puts immense pressure on banks to reduce costs and increase operational efficiencies. Bank earnings are being impacted by deferred payments, low rates of return, and a general slowdown in market demand. A recent report¹ published by S&P Global Ratings highlights that the global banking and financial sector will continue to reel under the impact of the crisis, and many banking systems might not recover completely until 2023. Thus, costs have become a key concern for banks.

The emerging intelligent automation capabilities can be a strong lever for banks in their efforts to achieve operational efficiencies and reduce costs. Intelligent automation solutions can also help banks improve customer experience, by establishing faster automated processes that help quickly resolve customer needs. These solutions also enable business continuity and build resilience to handle situations such as the COVID-19 crisis through lower dependency on manual labor.

What is intelligent automation?

Enterprise automation has traditionally begun with Robotic Process Automation (RPA) solutions. Rule-based RPA solutions have been used to automate repetitive, transactional processes. However, as enterprises make progress in their automation journeys, there is a need to automate more judgement-based processes to fulfill the promise of true automation.

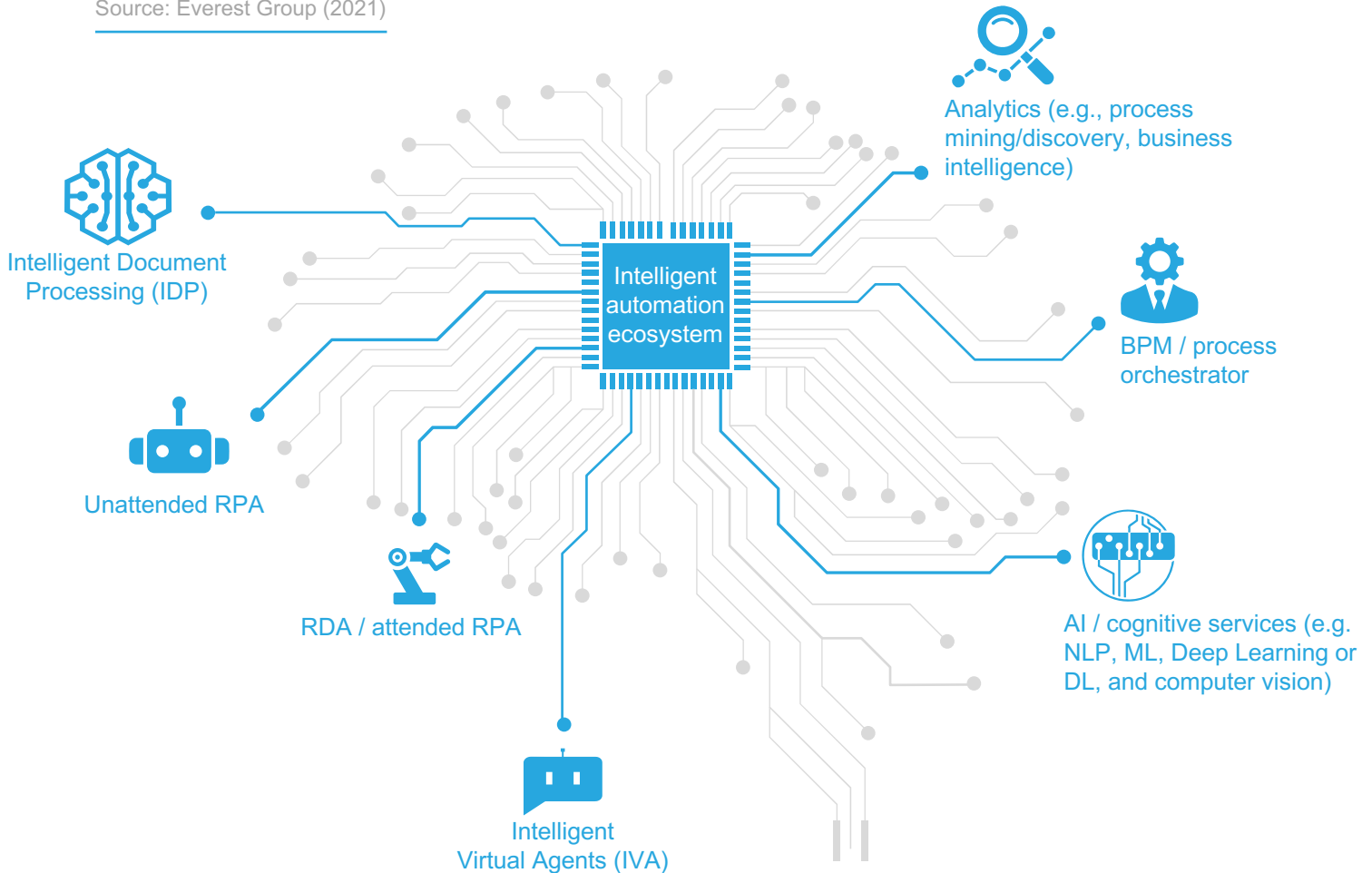
Intelligent automation solutions use artificial intelligence to address the more judgment-based tasks, which rule-based RPA solutions cannot address. These intelligent automation solutions leverage capabilities such as Machine Learning (ML), computer vision, Natural Language Processing (NLP), and advanced analytics, in addition to rule-based automation capabilities, to achieve broader automation outcomes for enterprises. The intelligent automation ecosystem includes a range of solutions and capabilities as shown in Exhibit 1 on the next page.

As the exhibit shows, a key emerging component of the intelligent automation ecosystem is Intelligent Document Processing (IDP), which can help automate the extraction of meaningful data from semi-structured and unstructured documents through the use of AI, ML, and NLP capabilities. Exhibit 2 illustrates the capabilities of enterprise-grade Intelligent Document Processing solutions.

¹ Source: How COVID-19 Is Affecting Bank Ratings: October 2020 Update, S&P Global Ratings, October 2020

EXHIBIT 1**Intelligent automation ecosystem**

Source: Everest Group (2021)

**Intelligent Document Processing (IDP)**

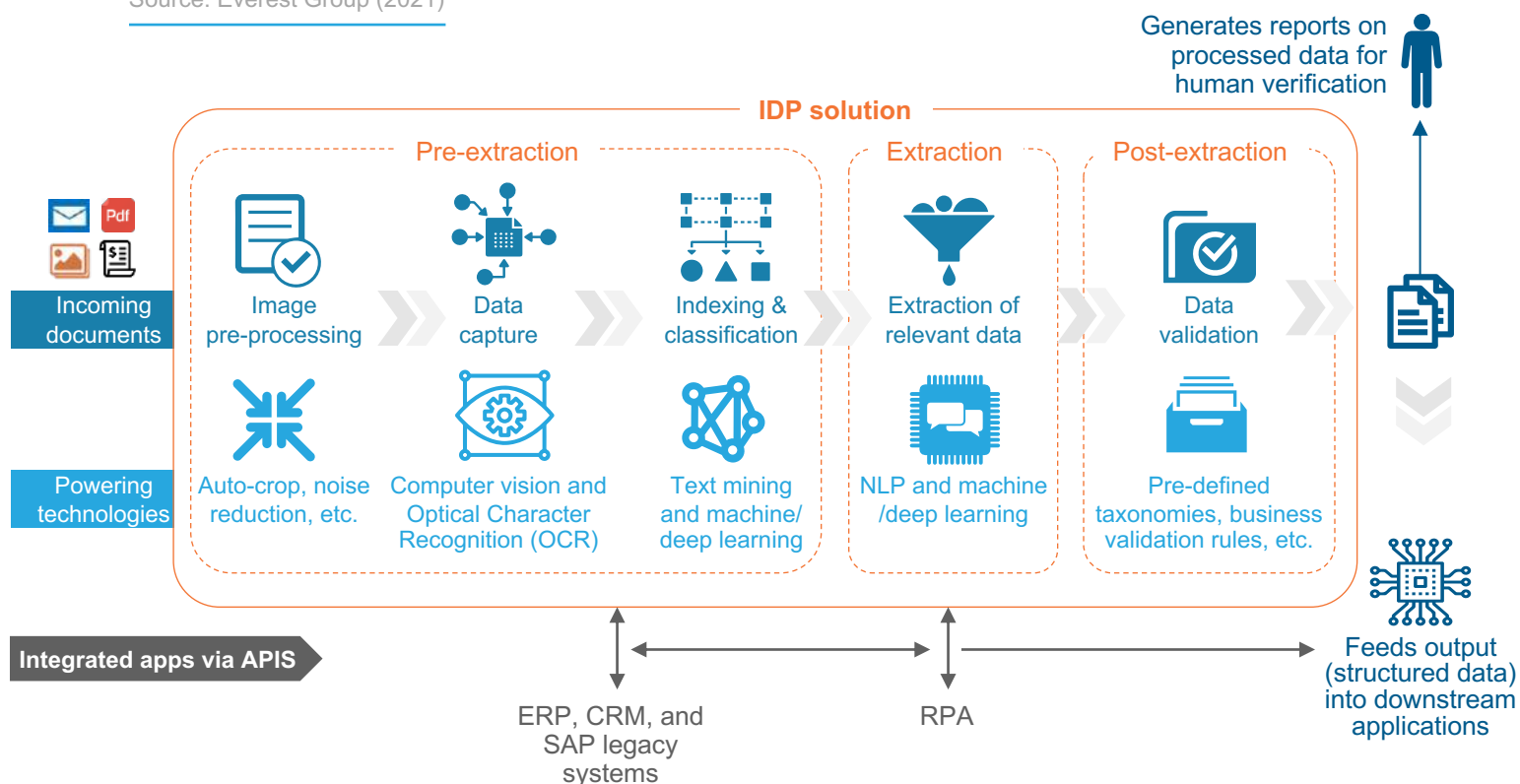
An enterprise-grade IDP solution performs the following actions:

- **Pre-extraction:** Performs image pre-processing to increase the quality of the scanned document, captures data, and indexes & classifies the documents into categories
- **Extraction:** Extracts relevant data leveraging NLP and ML/DL capabilities for further processing
- **Post extraction:** Validates the extracted data with the help of pre-defined taxonomies, data dictionary, and business validation rules

Traditional Optical Character Recognition (OCR) or template-based solutions fell short in addressing document processing use cases with variations in the structure and quality of documents to be processed

EXHIBIT 2**Intelligent Document Processing capabilities**

Source: Everest Group (2021)



Scope of IDP in banking

Banks were among the early adopters of RPA solutions, automating transactional and repetitive manual work using these solutions. However, RPA solutions were not able to automate processes in which a significant part of the manual effort involved reading, understanding, and extracting information from semi-structured and unstructured documents. Traditional Optical Character Recognition (OCR) or template-based solutions also fell short in addressing document processing use cases with variations in the structure and quality of documents to be processed. Given the large volumes of documents that need to be processed in certain banking processes, these traditional automation levers left a lot to be desired.

With the advent of IDP solutions, these gaps are now being plugged to a considerable extent. Processes such as invoice processing, customer onboarding and KYC, and mortgage lending application processing tend to deal with large volumes of documents and variations in document structure and quality, making them ideal candidates for IDP adoption. Most data extraction scenarios in banking follow the maker-checker principle, with the maker responsible for data extraction from documents and the checker verifying the extracted information. IDP solutions can make these processes more efficient by automating the maker task in the maker-checker construct.

Given its advantages, we are now seeing rapid adoption of IDP within the banking industry. In fact, the banking and capital markets industry has emerged as the largest market for IDP solutions, accounting for almost 30% of the IDP solutions market and showing a strong growth of 35-45% over 2018-19. Exhibit 3 showcases the adoption of IDP solutions across different industries.

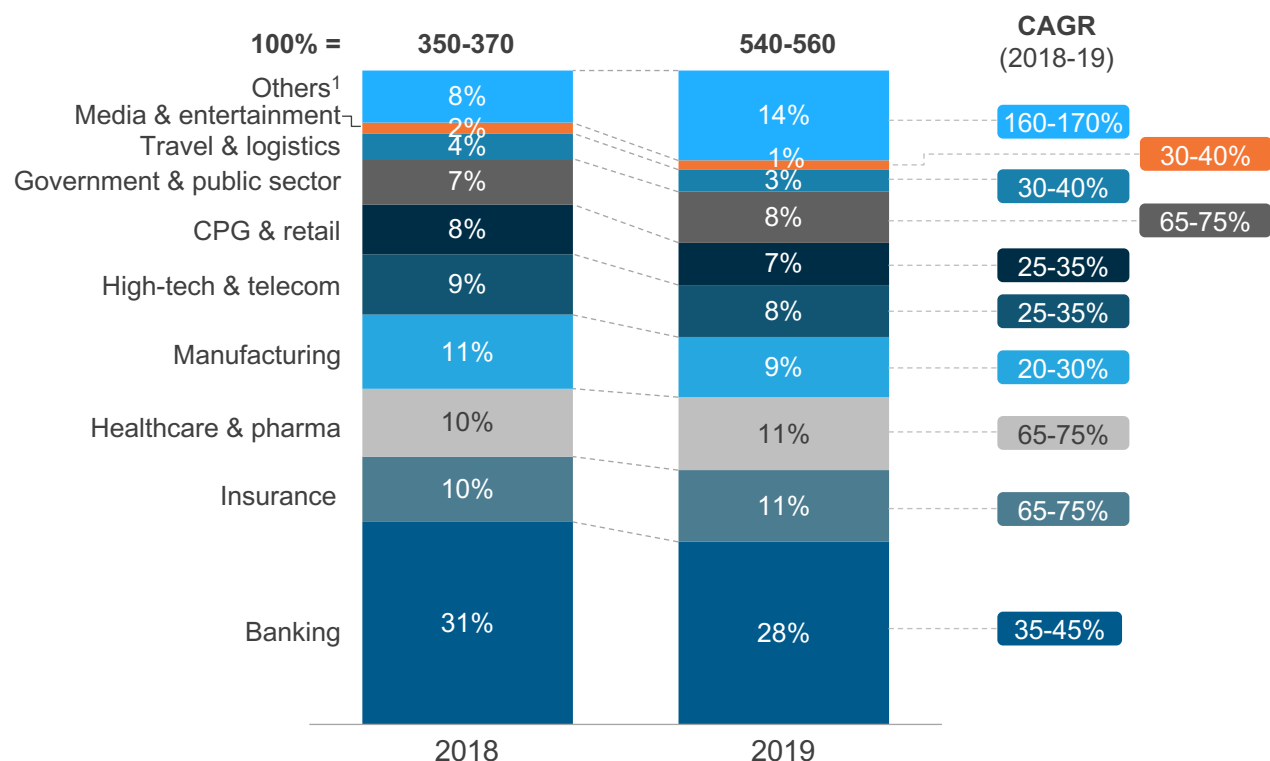
IDP solutions can be coupled with RPA, feeding the extracted information to RPA for further downstream processing, among other things. The subsequent sections look deeper into specific use cases where banks have successfully deployed IDP solutions.

EXHIBIT 3

IDP software market size by buyer industry

Source: Everest Group's Intelligent Document Processing State of the Market Report 2020

License revenue in percentage; US\$ million



Customer onboarding and KYC

Customer onboarding is a crucial process for banks, given the importance of complying with regulatory needs such as KYC, while ensuring that the process is as fast and smooth as possible for customers. In an age of instant gratification, customers expect onboarding and account creation to be completed very quickly. However manual operations can result in long wait times due to the number of activities that need to be completed before an account can be set up for a customer. Banks need to ensure adherence to KYC norms, screen applicants for Politically Exposed Persons (PEPs) and sanctions, and also apply different levels of due-diligence checks, before creating a customer account.

¹ Others includes audit, global consultancies, energy, real estate, shared services, and utilities

Note: Based on the capability assessment of 18 IDP technology vendors

Source: Everest Group (2020)

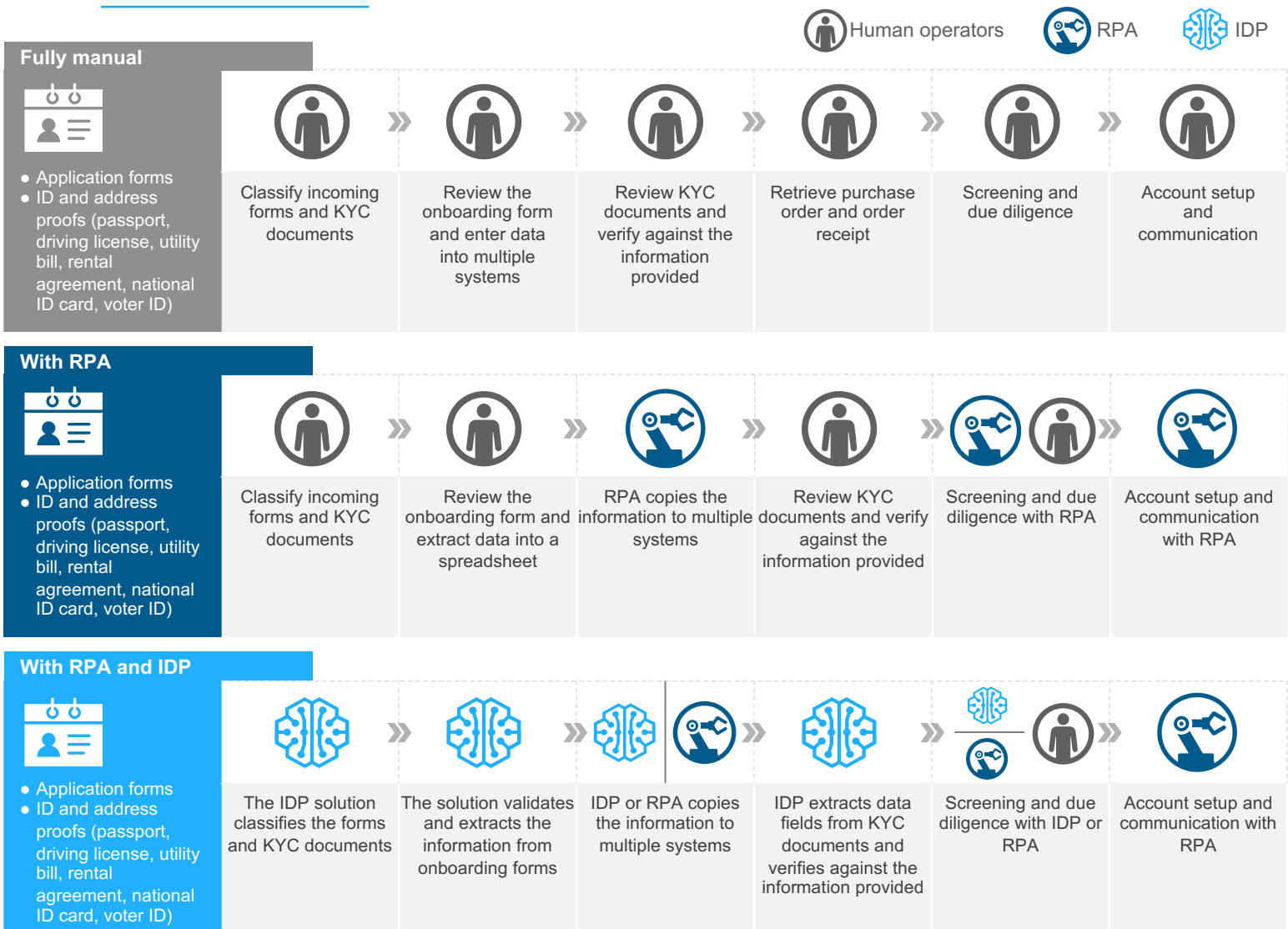
RPA helps automate some of these activities such as duplicating information across systems, automating screening checks against different systems, automating account setup, and sending confirmation emails to customers. However, the process also involves understanding and extracting information from documents at different stages, which requires significant manual effort. Identity- and address-proof documents come in a variety of formats and structures, with wide variance in quality. With IDP, application forms and identity- and address-proof documents can be classified and extracted with reasonable levels of accuracy, significantly reducing manual effort. Mature IDP solutions are also able to process handwritten application forms. IDP applications also provide the ability to apply validation checks such as comparing fields across documents and checking if the identity-proof is past the validity date. Human operators will still need to be involved to validate the extracted information, but the effort required can be significantly reduced with much faster processing times through IDP.

Exhibit 4 illustrates the customer onboarding and KYC process flows in banks.

EXHIBIT 4

Customer onboarding and KYC process flows

Source: Source: Everest Group



Check processing

Checks as a payment channel have been on the decline, but they continue to play an important role for banks in certain markets. Check processing is a largely manual process, with human operators reviewing and validating the information in the check and matching it with the customer information in their records. This also involves a manual visual review of the signature on the check with the customer signature on record to ensure that it matches. This manual operation is a cost burden on banks and runs the risk of human error in the process.

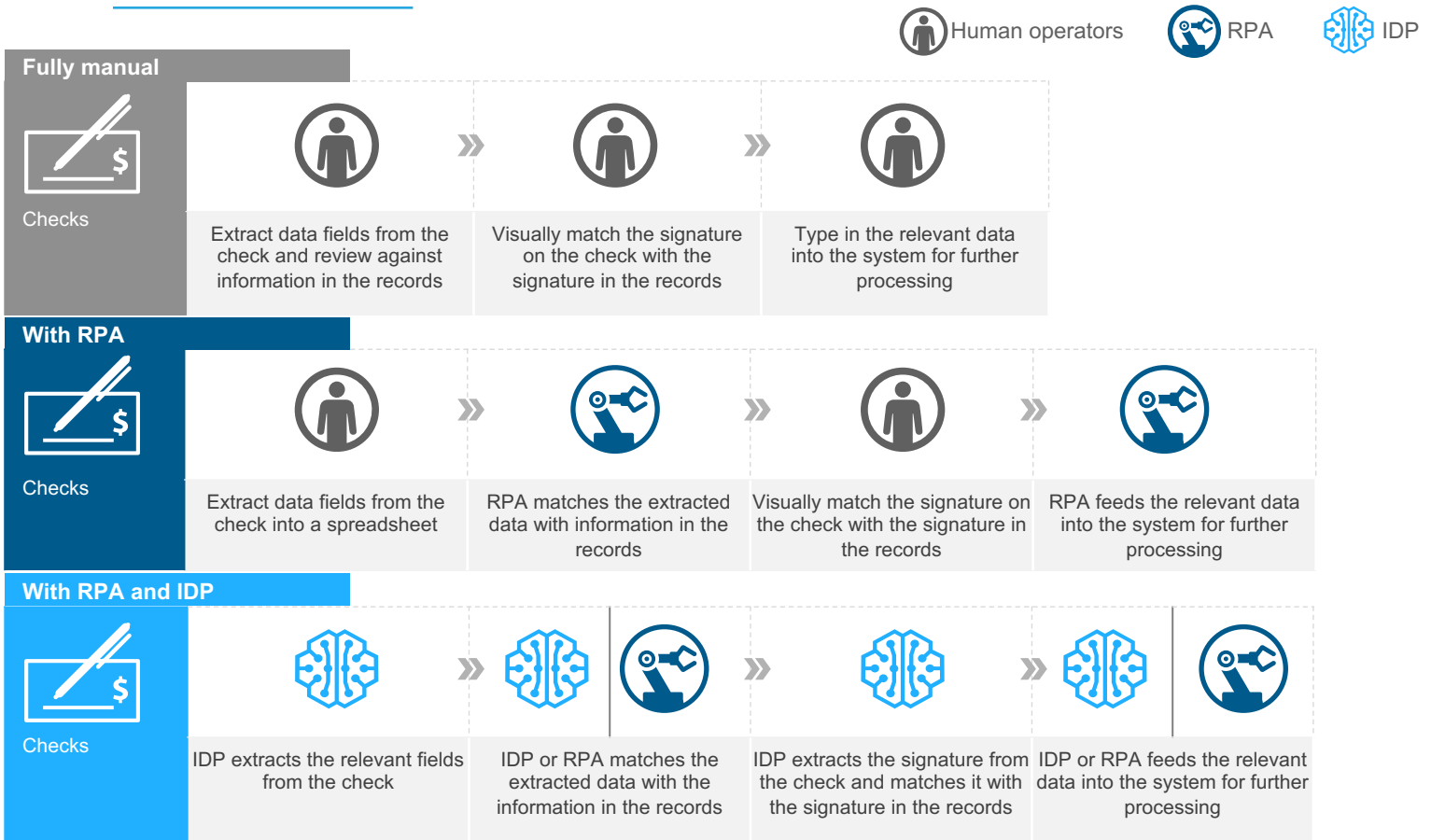
Introducing RPA into the process can help automate parts of the process, such as validation of the extracted data with on-record information and feeding the data into downstream systems. IDP can extract data fields such as the account number, amount, date, and signature from checks and apply business validation rules on these extracted fields. Certain IDP solutions can also match the extracted signature with the customer signature on record to ensure a valid match. The outcome is a more streamlined process and a more complete automation, with human involvement limited to the validation and correction of extracted data.

Exhibit 5 showcases check processing flows with a fully manual process, with RPA, and with RPA and IDP.

EXHIBIT 5

Check processing flows

Source: Source: Everest Group



Mortgage loan origination

Mortgage lending in banks involves complex processes spanning several teams and systems. It starts with the mortgage loan origination process, which includes the review and validation of supporting documents, such as income sources, tax returns, and bank statements. This is followed by the review of credit scores across different rating agencies, the property appraisal process, underwriting process, and closing of the application. The process involves significant human effort across the different stages and long waiting times for customers, typically spanning several weeks and even months.

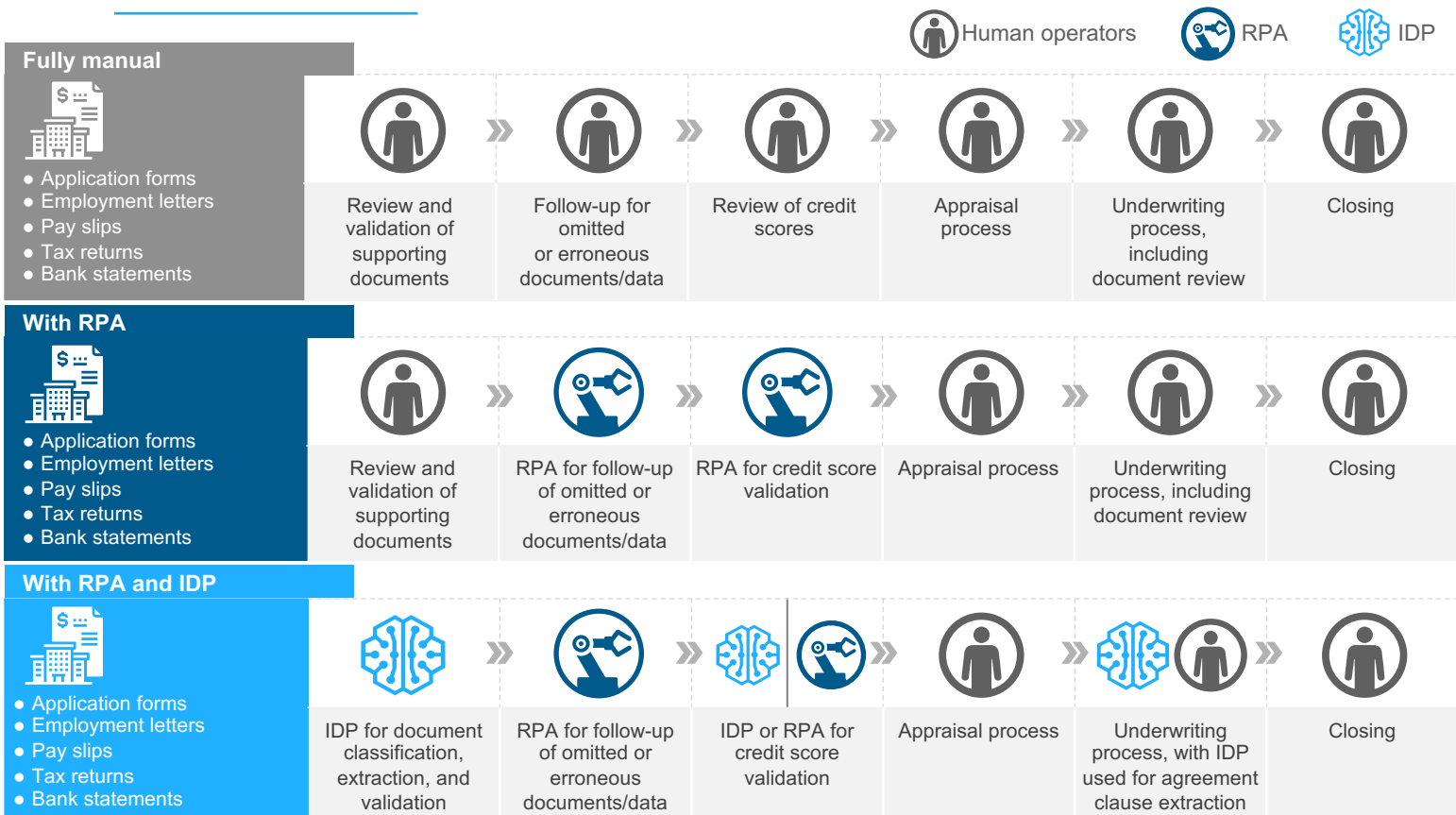
Traditional RPA-based automation can help automate certain stages of the process, such as follow-ups with the applicant for omitted or erroneous documents, automation of the credit score review, and support in transition between different teams/stages in the process. However, significant human effort is still involved at the start of the process, in sifting through the application forms and all the supporting documents provided, to verifying that all the required documents are available and have consistent and valid information. This is difficult to automate through traditional automation solutions due to wide variations in document types and formats, such as employment letters, bank statements, and pay slips. IDP can help automate the classification of these documents, the extraction of relevant data, and the application of different business validation rules on the extracted data.

Exhibit 6 illustrates the mortgage loan origination process with a fully manual process, with RPA, and with RPA and IDP.

EXHIBIT 6

Mortgage loan origination process flows

Source: Source: Everest Group



Financial spreading

Banks’ credit analysis of businesses involves a detailed review of the businesses’ financial information. Since businesses can provide financial data in a variety of formats, the first stage in the process is for the bank to perform financial spreading – which converts the financial information into a standard format for credit analysis. This process involves reviewing and extracting information from several unstructured documents such as annual reports, balance sheets, cashflow statements, and income statements.

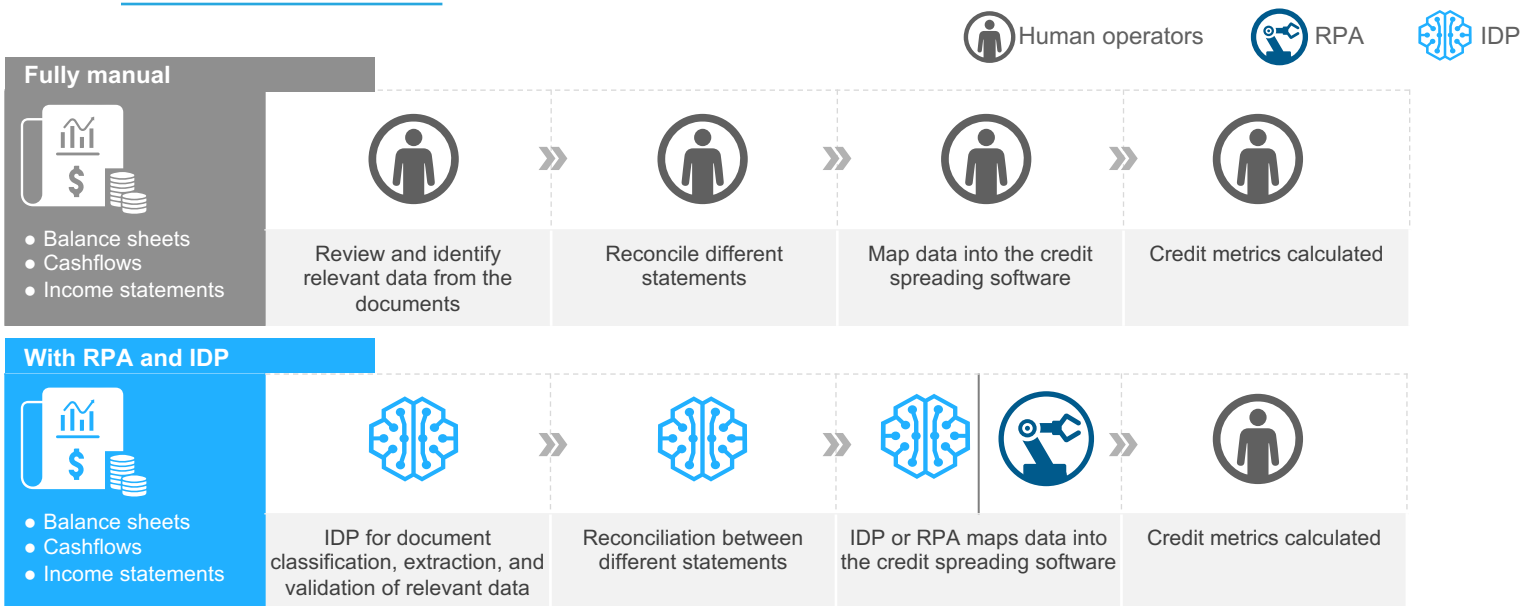
Much manual effort is spent in reviewing different documents, identifying relevant data points, and mapping them to the bank’s standard taxonomy for financial spreading. With IDP, banks can classify and extract data from unstructured input documents and apply validation rules for data reconciliation across different statements.

We illustrate the financial spreading with the manual process, and with RPA and IDP in Exhibit 7.

EXHIBIT 7

Financial spreading process flows

Source: Source: Everest Group



In addition to the above use cases, banks are also leveraging IDP solutions in areas such as trade finance, anti-money laundering, wealth management, LIBOR transitions, branch fund transfers, and loan forbearance. As the IDP market matures, IDP solutions are being adopted across more and more use cases in banks.

Case study: IDP at IndusInd Bank

Business challenge

IndusInd Bank, a large private sector bank based in India, wanted to introduce automation to achieve simplicity, speed, and broader process level efficacy. As part of this initiative, the bank identified its export bills regularization process to start its broader automation journey.

As part of this regulatory process, exporters that have received advance payments from their buyers need to regularize these transactions with the bank after shipping the goods to the buyer, as mandated by the regulatory authority. Exporters submit several documents to the bank, including invoice and transport documents, to match the corresponding advance payment they have received from the buyer. The bank then reviews the documents, performs several internal and regulatory checks, handles different exception scenarios, and feeds the data into downstream systems for further processing with the regulatory authority.

While the workflow was standardized for the bank, it required substantial manual effort, especially in the manual review and processing of different types of documents. Thus, the bank wanted to reduce the average handling time per transaction to be able to handle large volumes without increasing its operating costs.

Approach/solution

- IndusInd Bank decided to partner with AntWorks to address its requirements. It implemented an IDP solution along with RPA to automate the process of data extraction from the document sets, applying a range of business validation rules and checks, and uploading the data to downstream systems
- The system would have to extract information from a variety of document types, including invoices, bill of lading, packing lists, regulatory documents, and transport documents, which vary depending on the mode of transport used. The range of document types and variants that needed to be processed by the system, as well as the extent of business rules and validations required to be performed on the data, made it a complex project

Some of the key learnings for IndusInd Bank in the IDP project were as follows:

- **Training data set** – Creating a representative labelled document set for training the system during the implementation phase is important to help achieve the desired extraction accuracy levels from the IDP system. The training data set has to be a representative sample of the documents that can be expected to be encountered in production
- **Detailed requirements definition** – It is important to work closely with the vendor to define the product requirements in detail, especially for complex processes. Documenting each step in the process in detail, taking all possible variations into consideration, and evaluating the impact on upstream and downstream processes are key to ensuring a successful automation rollout
- **Change management and user training** – When introducing automation to organizational teams, it is important to have a change management and user training strategy to educate the team/s on the tool and the new ways of working to ensure smooth adoption

Business outcomes

The IDP solution was able to extract data from different document types with reasonable accuracy, with a human-in-the-loop construct for validations and exception handling, resulting in the following benefits:

- Achieved broader process automation, while ensuring compliance with all business rules
- Achieved 33% reduction in average handling time
- Reduced the SLA from three days to two, and on-track to further decrease it to one day
- Improved process scalability, handling larger transaction volumes more smoothly while being operational 24x7

The bank now plans to expand IDP-led automation to more processes to achieve similar efficiencies across the board.

Achieving broader automation through IDP: how to get started

IDP helps banks expand the level of automation that can be accomplished across several process areas. However, it is important to note that IDP can come with its own set of challenges and pitfalls. It is important for banks embarking on their IDP journeys to follow a measured approach to avoid early setbacks. Below are some of the key points for banks to consider before implementing IDP to ensure a smooth journey and realize maximum benefits:

- **Assess the automation potential** – The first step is to gain an accurate understanding of the automation potential with IDP. IDP solutions are best suited to address document classification and extraction scenarios involving semi-structured and unstructured documents, where there are variations in the structure and quality of the documents. Banks need to identify document-intensive processes within the organization that could benefit from IDP adoption. Priority should be given to use cases that require the processing of large volumes of documents with predictable variations in quality and structure
- **Estimate the benefits** – Assessing the time-to-value and Return on Investment (RoI) for IDP can be a difficult exercise. IDP solutions do not promise full straight-through processing of documents; instead, they employ a human-in-the-loop construct for output validation and correction of exception cases. The time-to-value can also vary significantly depending on the availability and quality of the training data and the level of success with the setup training. Potential benefits should be estimated keeping in mind the human-in-the-loop construct and the potential variability in the time-to-value
- **Evaluate the training data** – A core part of the setup process for IDP solutions involves training the system with a sample of labeled documents so that it learns to identify and extract the relevant fields accurately. Enterprises will need to review internal document management practices and verify the availability of a historical document set for training. Organizations should also estimate and plan for the effort required in creating a robust training sample. Creating the training set will involve annotation of document sets to teach the system to understand the relevant fields for extraction. A robust training sample will also need to be representative in terms of the variety of structure and quality of documents expected to be extracted. Enterprises can also limit the variability in training outcomes to a certain extent by adopting IDP solutions that offer pre-trained models for relevant use cases
- **Educate stakeholders and set the right expectations** – In many cases, enterprise stakeholders are unable to understand how IDP is different from OCR and template-based solutions. The relevant stakeholders need to be educated about the capabilities of IDP solutions and the scenarios in which they can deliver distinct benefits. Stakeholders should also be educated on IDP's AI and ML capabilities and the opportunities and challenges that accompany them. Setting the right expectations is critical, especially to have a realistic view of the extent of automation that can be achieved and the time to realize the solution's full potential. Stakeholders should also be informed upfront about the accompanying change management and training needs to address any changes in employee roles as an outcome of IDP adoption

Conclusion

There is significant scope to expand the current level of automation in banking and move from RPA to AI-based intelligent automation solutions. The current global economic crisis has also necessitated banks to leverage intelligent automation, in a bid to control costs and streamline operations.

IDP solutions offer a particularly attractive proposition due to their relevance across multiple process areas in banking, where large volumes of documents need to be processed effectively. In recent years, IDP solutions have grown in maturity in the banking industry, with increasing levels of document processing accuracy and a wider range of use cases being addressed by these solutions. Several IDP solutions also offer pre-trained capabilities for specific use cases that allow easier adoption and quicker time-to-value for enterprises. We thus expect IDP adoption to accelerate further in the banking industry, helping banks achieve broader automation and more efficient operations across different process areas.



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