

# Intelligent Automation: a key catalyst for India's economic growth

Analyzing the economic impact of  
automation

February 2020





## Foreword:

As pioneers in the Intelligent Automation (IA) space, Automation Anywhere has worked closely with global clients to charter a new wave of digital transformation by deploying IA initiatives at scale. From driving process efficiencies in back-office functions, IA has come a long way to be a staple of CxO conversations with significant impact on customer experience and business growth. With continued expectations of largescale transformations enabled by IA, we wanted to take a step back and understand the impact that is being brought about at a macroeconomic level. This report aims to provide a view of the contribution that Intelligent Automation can make to the Indian economy in the new decade, as the country aspires to become a \$5 trillion global economy.

Ernst & Young (EY) India has brought together the best of industry thinking and EY's vast experience advising clients on digital transformation to write this report. An in-depth research of IA adoption across 29 sectors was conducted and 200+ sector specific use cases in the core business functions were analysed. The projections of India's Gross Domestic Product provided by International Monetary Fund (as of December 2019) are taken as the base for the quantitative analysis. A comprehensive quantitative modeller, vetted by industry experts, has been created to estimate the impact of wide scale adoption of IA technologies on these projections. While high maturity of IA adoption is seen in a few key sectors, there exists a plethora of untapped potential across many sectors. This potential can be leveraged to further India's digital growth, enabling India to become a major global force in the new decade.

Automation Anywhere, Ernst & Young India and the Internet and Mobile Association of India (IAMAI) have a shared vision of leveraging digital technologies to catapult India to become an economic superpower in the new decade. IAMAI's 14th India Digital summit, India's biggest gathering of digital leaders, offers us the perfect platform to launch this report.



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# Executive summary

It is estimated that realizing ~16% incremental automation potential across industries can catapult the Indian economy into the US\$5 trillion club by 2024-25



India's consistent economic growth is fueled by factors such as financial reforms, favorable demographics, a large graduate pool and healthy relations that India shares with other countries, which makes India a US\$2.7 trillion<sup>1</sup> economy in 2018-19. Riding on the growth, the Indian Government has set an ambitious target of making India a US\$5 trillion economy by 2024-25. However, as per International Monetary Fund's (IMF's) estimates, India's Gross Domestic Product (GDP) is expected to reach US\$4.6 trillion at the current projected growth rates (with macro-economic variables being stable/favorable). This report aims to establish the role automation will play in providing a significant impetus to help India realize its vision of being a US\$5 trillion economy by 2024-25.

GDP is calculated as the total output generated in a country basis factors such as labor and capital stock. Productivity is defined as how efficiently the input factors are operating or are being utilized. The higher the productivity, the greater is the economic output and hence the resultant GDP growth. Large scale adoption of automation technologies such as Robotic Process Automation, Artificial Intelligence, Natural Language Processing, and Machine Learning can drive significant productivity improvements resulting in a pronounced effect on a country's economic growth.

The productivity improvement for a sector, that can be achieved from automation technologies, varies on the basis of current automation maturity and the future automation potential of the sector. To get an estimate of the potential impact of automation technologies on India's economic growth by 2024-25 and calculate the productivity improvement across each sector, a realization percentage of the automation potential across each sector was estimated. A key hypothesis considered is that human labor replaced by automation would re-join the workforce and be, at a minimum, as productive as they were earlier. It was estimated<sup>1</sup> that **realizing ~16% incremental automation potential across industries has the potential to catapult the Indian economy into the US\$5 trillion club by 2024-25.**

Intelligent Automation (IA) is a key component of technology-led automation and this report also focuses on the opportunities IA provides across the sectors in India. The following industries are the front runners in IA, with high current adoption maturity and high potential in the future, i.e., they are expected to attract high investments on automation technologies in next two to three years.

## Sectors with high IA maturity

Banking & financial services	Telecommunications	Oil & gas
Manufacturing	Professional services	Pharmaceuticals
Insurance	Retail & CPG	Logistics and transportation

To capitalize on this opportunity and further progress in their IA journeys, there is a need for organizations (across sectors) to undertake a fundamental shift in the skillsets, roles and governance structures of the current automation teams. The teams need to have a deep understanding about the sectors over the knowledge pertaining to horizontal functions. Expertise in cognitive technologies are expected to gain importance due to the increased focus on end-to-end automation of business functions including judgment-based processes. An effective way to facilitate this shift would be through a business-led and IT-enabled governance model. While business would drive the solution discovery and implementation, IT would own the solution governance, security and compliance. Continuous and in-depth collaboration between business and IT may enable successful implementation of IA at scale across organizations.

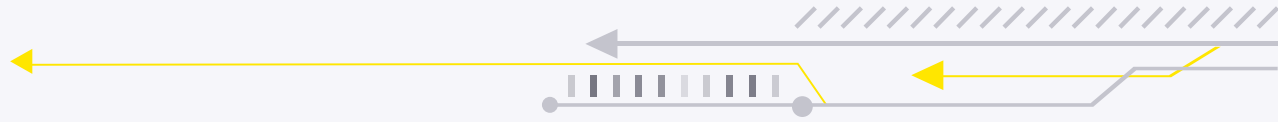
Note: 1. Assumptions for the estimate and data sources are mentioned in exhibit 1.4 and 1.5; Source - India's past GDP figures from World Bank data



A close-up photograph of a person's hand holding a dark pen, pointing towards a computer monitor. The monitor displays lines of code in a dark-themed editor. In the background, another monitor is visible, also showing code. The scene is lit with warm, natural light, suggesting an office or home workspace.

# 2

Impact potential of  
automation on the  
Indian economy



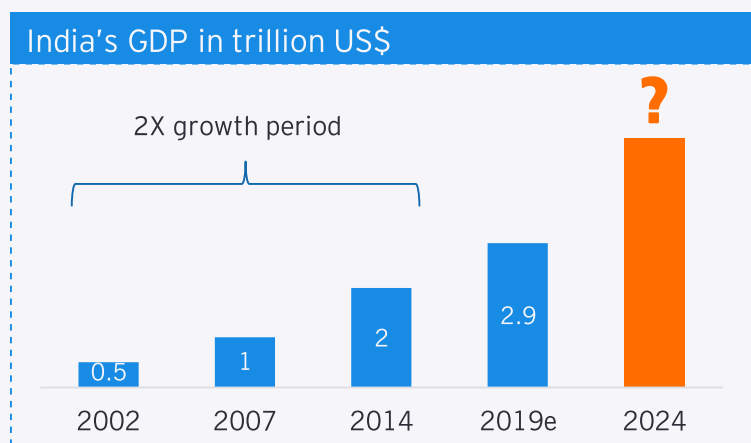
# Introduction

India has been one of the fastest growing large economies in the world. Since it joined the trillion-dollar club in 2007, the country took just seven years to double its economy to two trillion-dollars, earning a spot in the top ten economies of the world<sup>1</sup>. Fast forward to 2019, India is a few billion dollars short of the three trillion-dollar milestone. As per IMF estimates, India's GDP is expected to reach US\$4.6 trillion by 2024-25. However, Indian Government has set an ambitious target to make the country a US\$5 trillion economy by 2024-25. This report aims to establish that automation, if adopted across sectors, can provide a significant thrust to India's ambitions of achieving this target.

The healthy growth that India has experienced so far is due to the financial reforms in the 1990s (that opened up the markets for investments), increase in working-class population, rise in middle class incomes and healthy relationships India has maintained with other countries, which in turn have boosted trade. India has also gained the title of "office of the world" and has improved the ease of doing business that has also contributed to the overall economic growth of India in the last 20-30 years.

To drive sustained long-term growth, it is critical to factor in productivity improvement through technology that helps compound the economic output due to the availability of finite assets, resources and human capital. The relationship between GDP and productivity has been defined in Exhibit 1.2.

**Exhibit 1.1**



**Exhibit 1.2**

## Co-relation between GDP and productivity

$$GDP = TFP \times f(L, K, H)$$

*Input factors<sup>2</sup>*

**L** = quantity of labor input

**K** = size of the capital stock or investments

**H** = quantity of human capital

**TFP** = total factor productivity

**TFP: total factor productivity**

TFP is defined as the efficiency at which the input factors L, K and H operate to produce economic output

*Technological progress is a strong influencer that has the potential to give TFP a significant boost. Investments in technology may directly result in an increase in the GDP as it makes the input factors more productive than earlier.*

Thereby, GDP growth % can be calculated as follows:

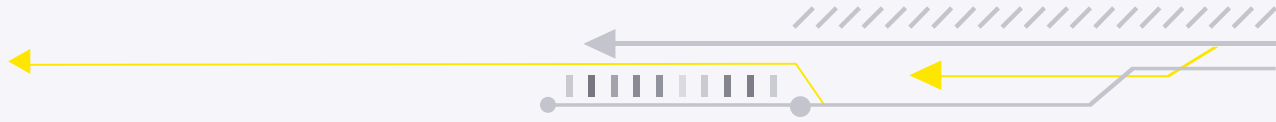
$$Economic\ growth\ (\%) = f(\text{growth rate of input parameters, rate of increase in TFP})$$

$$\% \text{ of } \Delta GDP = \% \text{ of } \Delta TFP + \% \text{ of } \Delta L + \% \text{ of } \Delta K$$

$$\Delta GDP = \text{Increase in GDP}; \Delta TFP = \text{Change in the TFP}; \Delta L = \text{Increase in labor input};$$

$$\Delta K = \text{Increase in capital stock}$$

Sources: 1. World Bank GDP data; 2. Cobb-Douglas production function



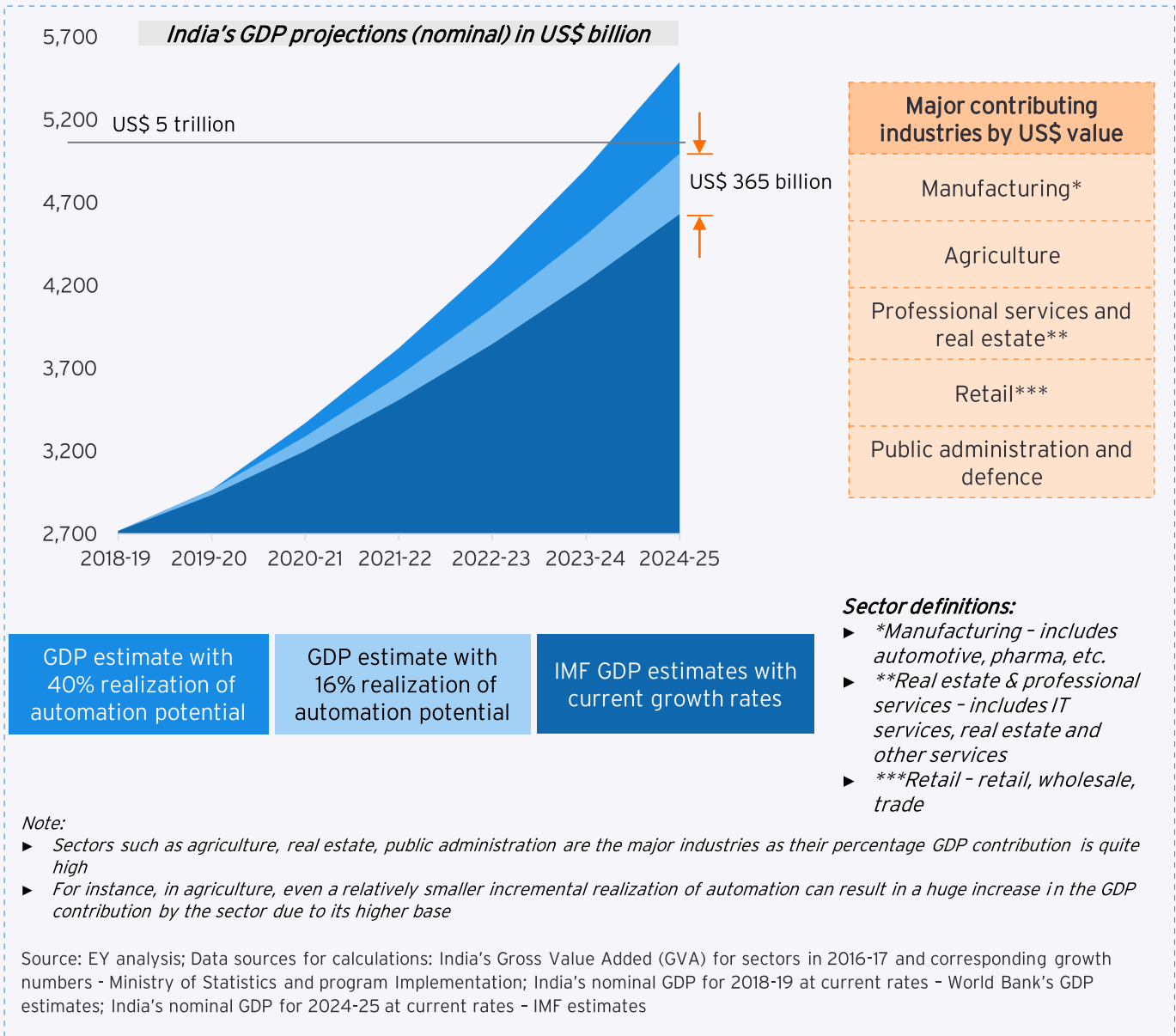
Technology, especially the one that enables automation, can drive intrinsic growth in every sector at the grass-root level. It has the potential to touch every activity of the workforce - making it simpler, easier and faster - thereby increasing the productivity and hence, the economic output. For instance, higher growth rate achieved by Japan in the past was not only due to rapid growth rate of capital stock but also because of relatively higher growth rate in total factor productivity (TFP), driven by technological progress.

Therefore, in this report, the increase in GDP ( $\Delta GDP$ ) was estimated using the change in productivity ( $\Delta TFP$ ) due to the adoption of automation technologies keeping the other factors constant.

## Impact of automation on GDP

### Calculating the potential impact of adoption of automation across the sectors on India's GDP

Exhibit 1.6







## Key takeaways from the economic impact estimation:

- ▶ Realizing 16% of the automation potential across industries can significantly boost India's efforts of being a part of the US\$5 trillion club. This increase is the sum of the projected additional economic output that the sectors are likely to generate through automation-enabled productivity improvement.
- ▶ As per EY's analysis, a conservative 5% realization would grow India's GDP to US\$4.74 trillion, while the more ambitious scenario of 40% realization would grow it to US\$5.6 trillion by 2024-25.
- ▶ The monetary impact due to realization of automation potential is driven by the contribution the sector makes towards the overall GDP in addition to current automation adoption and future potential. In sectors such as agriculture, construction, real estate and public administration, the dollar value contribution is quite high, therefore a marginal increase in automation could result in a relatively higher increase in the GDP, as compared to other sectors like financial services.

## Intelligent Automation

This report defines Intelligent Automation to include Robotic Process Automation, Machine Learning (ML), Natural Language Processing (NLP), Natural Language Generation (NLG) and Artificial Intelligence. **Banking and financial services, insurance, retail, telecom and professional services sectors are likely to be the front runners to adopt Intelligent Automation (IA).** These sectors are currently adopting the IA at a higher pace and hold potential in the future to further open the doors for investments in the next two to three years. The adoption maturity of Intelligent Automation is discussed in greater detail in section 2 of the report.

### Exhibit 1.7

## Topics detailed in further sections

### *In the following sections, the focus is on IA technologies.*

The report covers the below-mentioned areas to provide a more sector-specific insight on the opportunities that Intelligent Automation hold:

- ▶ Where are various industries on the IA maturity curve?
- ▶ Where do companies need to invest in automation hotspots?
- ▶ A qualitative view of the current state and future potential areas where IA can play a significant role.

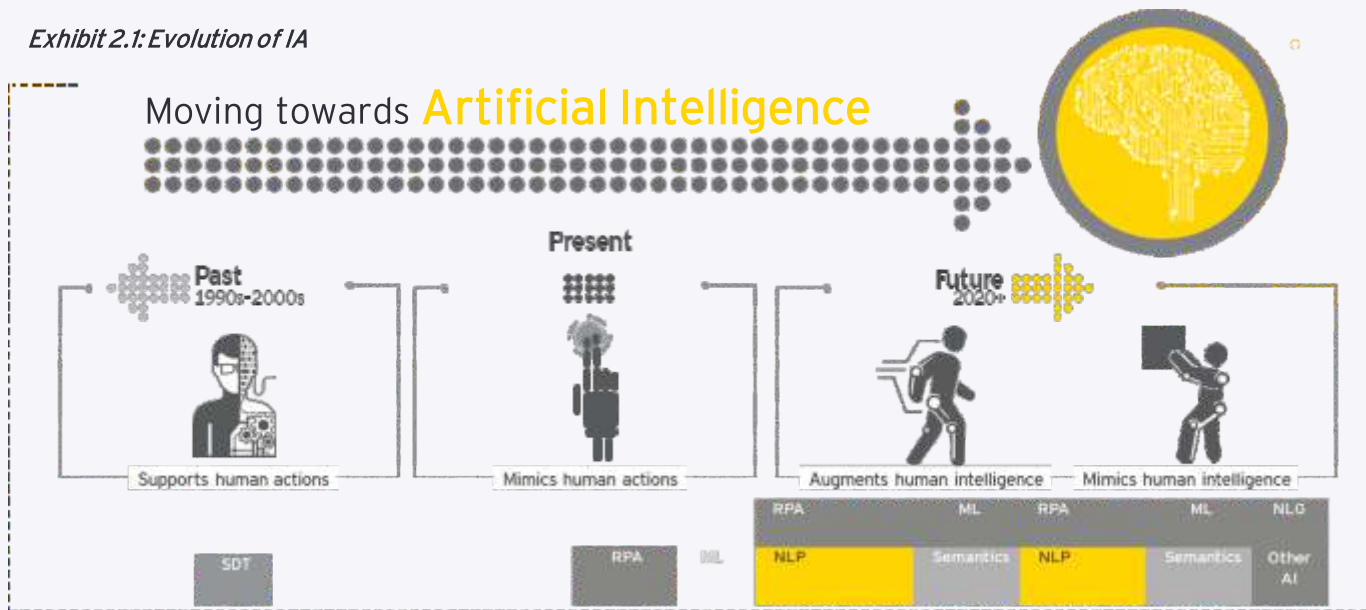


# Adoption of Intelligent Automation across the sectors

## Intelligent Automation adoption maturity across sectors

We are in an era where technological advances have elevated the productivity of the workforce. In the past few years, there has been a paradigm shift wherein workflow-based automation has converged with cognitive automation, which has given rise to IA. IA has enabled automation of not just repetitive tasks but also tasks involving judgment/decision-making. Organizations across sectors are hence increasing their spend on IA. Organizations in 2018 have globally spent ~US\$10 billion<sup>1</sup> on IA technologies, with the spend growing at a CAGR of 22 .

Exhibit 2.1: Evolution of IA



SDT : Structured data interaction | RPA: Robotic Process Automation | NLP: Natural Language Processing | ML: Machine Learning | NLG: Natural Language Generation  
Please note that here Intelligent Automation does not include machine driven automation

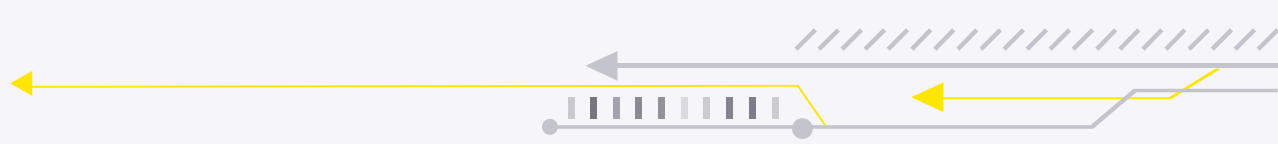
This report evaluates the current IA adoption and IA's adoption potential across sectors. Current IA adoption represents the relative extent of adoption of IA technologies across sectors and the *IA adoption potential* represents the relative potential that the sectors hold to adopt IA technologies in the future (Exhibit 2.2). Through a data-backed framework, in this report, we have identified nine mature sectors, which already have large-scale IA deployments, and six potential sectors, which have high potential to benefit from IA adoption in the next two to three years.

In order to quantify the current IA adoption, EY considered a weighted average rating of correlated factors. In this process, firstly, we have analyzed the current IA use case implementations across functions. Further, we compared the presence of a dedicated senior leadership with techno functional expertise in organizations across sectors. Finally, the extent of online promotions by professional services and platform companies (as a measure of supply) and the sector's digitization index<sup>2</sup>, were also factored in to come up with holistic ratings for current IA adoption.

In order to quantify the potential adoption of IA in different sectors, the factors directly correlating to ease at which IA could be implemented and degree of impact that they are likely to create are taken into account. The automation potential<sup>3</sup> of jobs across sectors, which is the relative prevalence of repeatable manual processes, is combined with the average annual IT spends of organizations across sectors. Further, the online lookup rate (online interest) for IA services is considered. Finally, the adoption potential also factors in the presence of proven IA hotspots, primed to be the center of focus for the next few years, across business functions.

Note: 1. Sources for Sources Research 2017, the numbers quoted here do not directly match as there is a difference in the definition of IA in this report and the definition of IA in HFS analysis; 2. Sector digitization index taken from McKinsey Global institute's report - "Digital America: a tale of the haves and have-mores"; 3. Automation potential's definition taken from a study by McKinsey Global Institute - "A future that works: Automation, employment, and productivity"

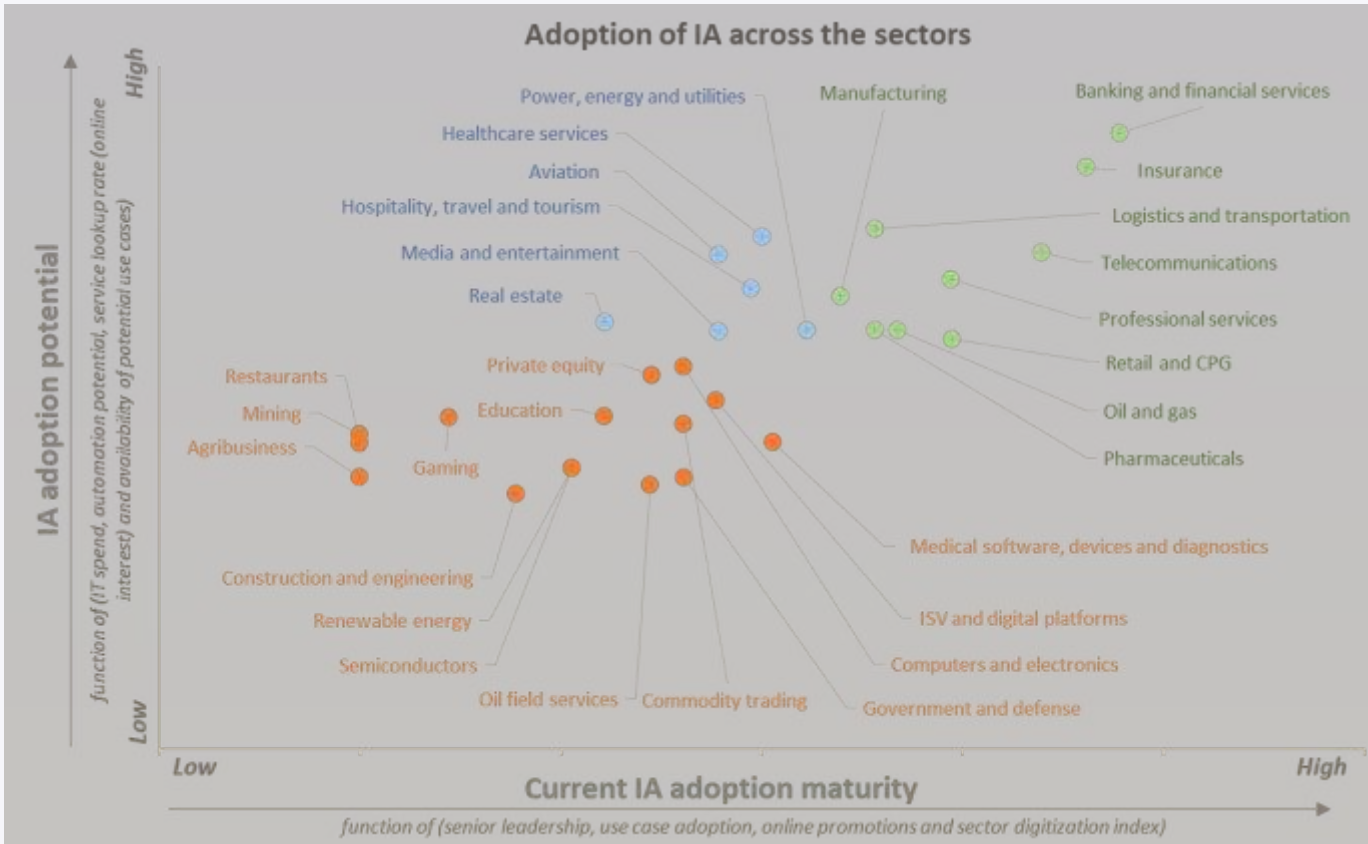




Due to the similarities in characteristics of horizontal processes across sectors (finance, HR, IT, etc.), the adoption potential of IA would be almost identical. To derive a conclusive view on variance between the sectors, it was imperative to look at the vertical specific use cases in the core business functions. Due to inherent differences in the characteristics of business functions across sectors, the potential for adoption of IA also varies. The implementation of IA in these sectors can unlock the benefits that have a direct impact on the organization's productivity by reducing the time to market and improving the customer experience. Therefore, this report has specific coverage on vertical specific use cases for the discussion of potential adoption of IA across sectors. Moreover, the maturity ratings derived in this report also factors in the views of IA service providers, platform vendors and industry subject matter experts to present a holistic picture.

**Exhibit 2.2 - Adoption of IA across the sectors**

**Legend: *mature*, *potential* and *aspirational* sectors**



**Source: EY analysis**

Banking, financial services and insurance sectors are the first movers and the most *mature sectors* to adopt IA. Telecom, retail and consumer packaged goods (CPG), oil and gas, and logistics and transportation sectors focus strongly on automating the core business functions, driven by the mandates to cut costs and improve customer experience. In the identified *potential sectors*, while IA has become a common practice in the horizontal functions, organizations are still in a nascent stage of implementing IA at scale across their core functions. Across these *potential sectors*, a plethora of probable IA hotspots exist which have been detailed out in the subsequent sections. Automation across these core IA processes has the potential to have a direct impact on the organization's productivity. For instance, in manufacturing firms, cognitive bots automate order placement and provide updates based on the real-time inventory and production levels, to enable these companies to dynamically plan ways to reduce the risk of unfulfilled customer demands. In the hospitality sector, bots have drastically reduced the process time taken to generate refunds and cancellations, thereby increasing customer satisfaction scores. In the subsequent sections, the report details out the IA hotspots in the identified mature and potential sectors.

The identified *aspirational sectors* are at a relatively nascent stage of adopting IA. However, there still exists a large potential for organizations to unlock the value of IA technologies. For instance, in the government sector, automated processing of public benefits application and payments significantly reduces the turnaround time, enabling accurate and timely disbursement of public benefits and minimizing the time of government workers to focus on more value-added tasks. IA's adoption across these sectors is expected to rise significantly in the long term.

Note: 1. Manufacturing sector includes automotive manufacturing as well as networking and communication equipment manufacturing

A person wearing a yellow jacket is using a smartwatch to pay at a terminal. The terminal is on a wooden table. A smartphone is also on the table. The background is dark.

4

Intelligent  
Automation hotspots  
across mature  
sectors

## IA in banking and financial services sector



### Drivers for Indian BFS sector

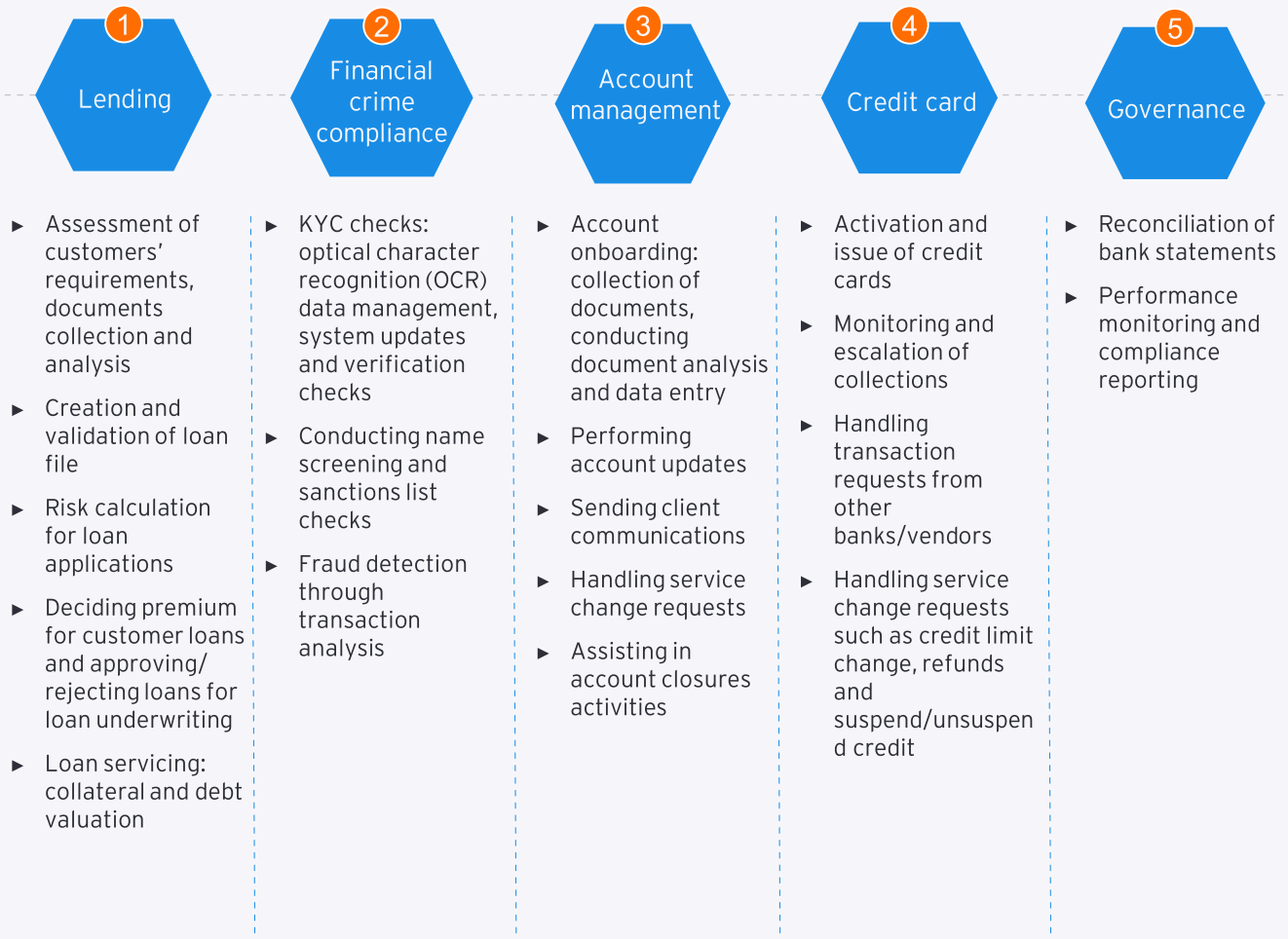
- ▶ Increasing working population and growing disposable income
- ▶ Growing volume of digital payments; rise of the tech savvy consumers
- ▶ Supporting policy reforms and tech platforms (IndiaStack) introduced by the government

The number of bank account holders in India has grown from 53% in 2014 to 80% in 2017<sup>1</sup>. Digital payments in India have also witnessed a nine-fold increase over the last five years<sup>2</sup>. The BFS sector is expected to grow at an accelerated rate due to the policy support, growing volume of digital and mobile transactions and increasing working population. In order to improve the workforce productivity for serving this burgeoning demand, the BFS sector has been one of the leading adopters of IA solutions. IA is helping BFS institutions embrace the shift to digital channels and improve productivity across data-driven, manual and repetitive business processes, such as accounts management, KYC and compliance checks, loan processing and trading operations.

**Exhibit 3.1**

## IA focus areas in banking and financial services sector (1/2)

Following are the key focus areas where IA can be applied within this sector

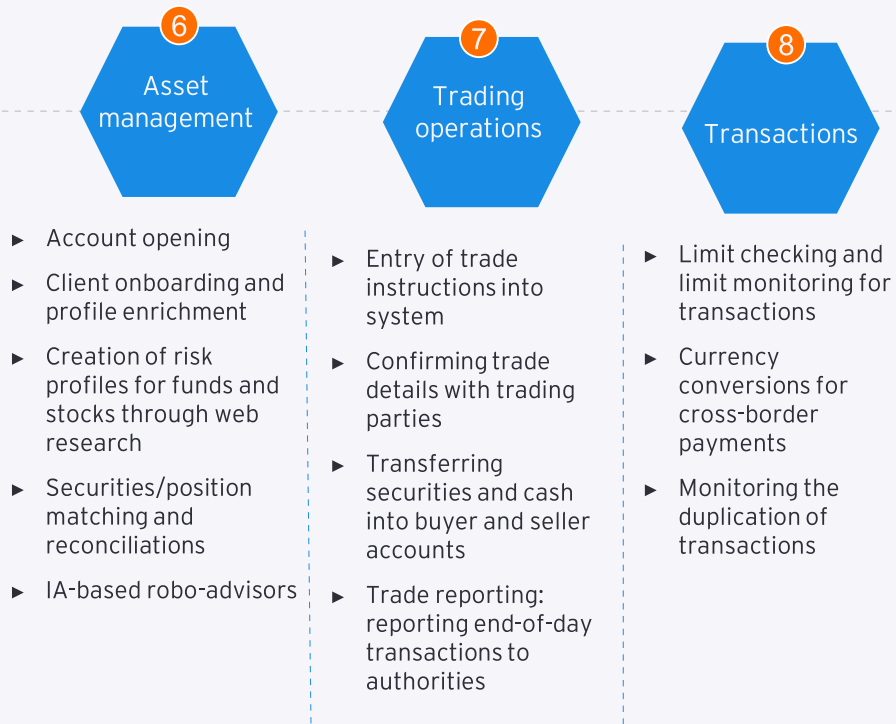


Source: 1. World Bank's Global Financial Index 2017; 2. RBI, March 2019



## IA focus areas in banking and financial services sector (2/2)

Following are the key focus areas where IA can be applied within this sector





## Financial crime compliance

As per a survey conducted by Thomson Reuters<sup>1</sup>, it was found that some institutions are spending as much as US\$500 million on their KYC and customer due diligence processes. Organizations have the potential to significantly reduce processing time while maintaining 100% accuracy rates utilizing IA for these processes. Cognitive bots can analyze the incoming Optical Character Recognition (OCR) data to automate verification, compliance checks, notifications and data updates across multiple disparate systems. Besides this, cognitive bots help monitor transactions in real-time and raise alerts for possible fraud cases, enabling accelerated response times.

## Credit card functions

Banks can take weeks to validate customer information and obtain approvals required for credit card application processing, resulting in high costs and low customer satisfaction. However, with the help of IA, banks process these applications within hours. Bots talk to multiple internal systems simultaneously to validate documents, perform background checks and credit checks, and leverage rule-based decision-making to approve or reject an application. A large portion of credit card accounts management processes such as creating new accounts, migrating these accounts to new systems and addressing service change requests, can be automated using IA. Further, bots also assist in credit collection by analyzing the collected data, determining the severity of the case and escalating cases to officials in case of non-compliance concerns.

## Wealth and asset management

IA is used across the wealth and asset management industry to handle transactional activities such as account creation, customer onboarding and addressing customer service requests. Bots create risk profiles for funds/stocks by analyzing price trends, rising and falling volumes and strong and weak options. Many BFS institutions are also planning to introduce AI bots driven robo-advisory services by the end of 2020.

## Way forward

As the sector grows, there is a need for the BFS institutions to deal with high non-performing assets (NPA) and increasing fraud rates while managing their costs and maintaining compliance. IA is expected to become a key strategic lever for the BFS institutions to address these challenges. Moreover, IA may also enable them to become more customer centric in order to distinguish themselves in the market.

### Case Study 1

A leading bank achieves significant reduction in mortgage cycle times through IA

#### Overview

A bank was devoting a significant amount of manual effort on various rule-based, repetitive and error-prone mortgage processes, such as ordering of documents, data entry and data verification. Due to manual processes, the duration of cycle and error rates were increasing, bringing dissatisfaction among employees.

#### Solution

Automation Anywhere leveraged its IA platform to deploy bots to gather appraisal fees, order loan appraisals, complete the Generally Accepted Appraisal Rules (GAAR) worksheet updates, perform appraisal follow-up notifications and order second appraisals. Eventually, the entire mortgage appraisal process was automated end-to-end.



Note: 1. Source - Thomson Reuters 2016 Know Your Customer survey

# Intelligent Automation hotspots in insurance



Exhibit 3.2

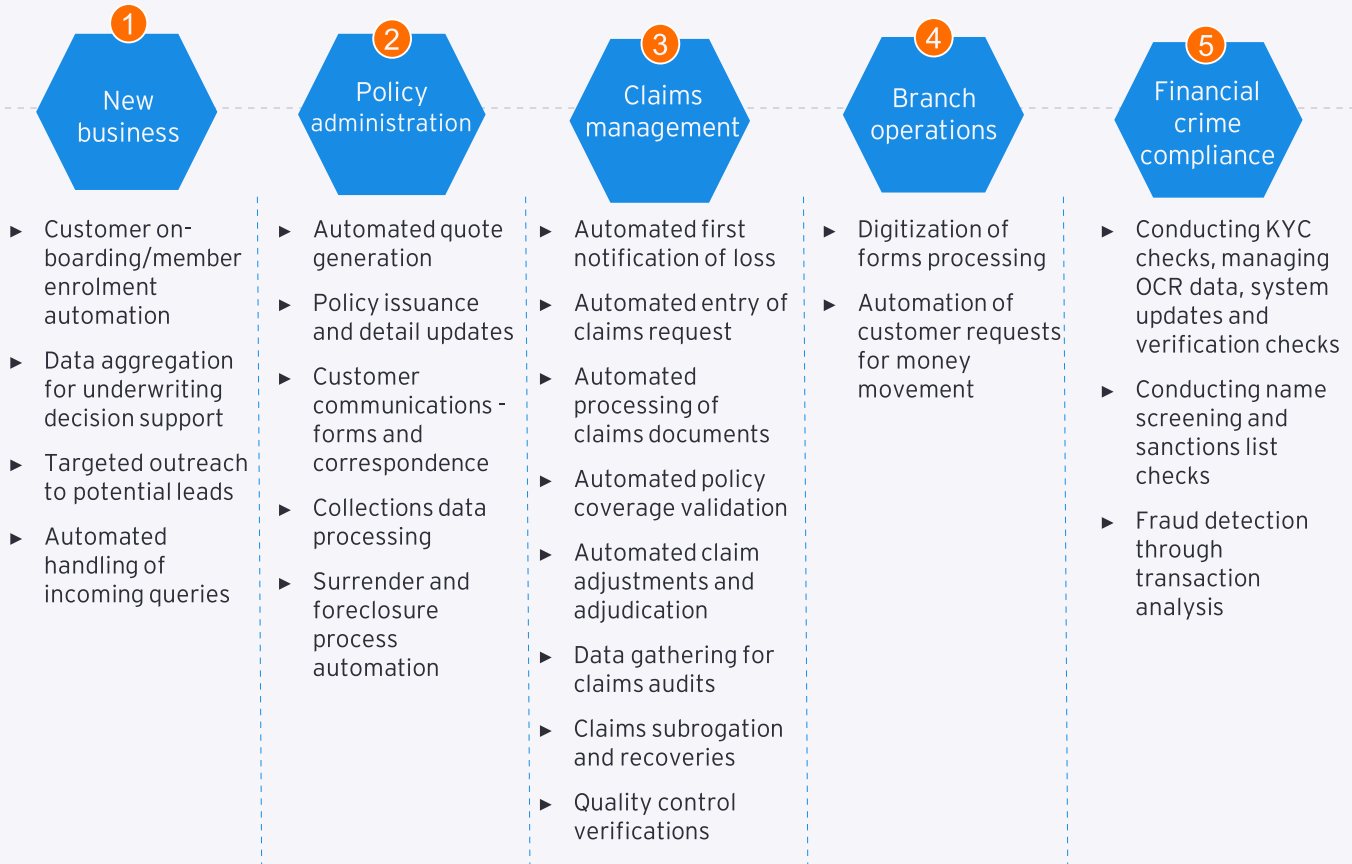
## Drivers for Indian insurance sector

- ▶ Government push through policy support measures and schemes such as Ayushman Bharat
- ▶ Changing demographics such as aging population and growing middle class
- ▶ Digital enablement and emerging business models such as microinsurance on-demand

India is a huge underserved market for insurance. The Government of India, through its schemes like Ayushman Bharat, aims at increasing the coverage to more than 100 million families<sup>1</sup>. The insurance sector is expected to grow due to the policy support by the government, rapidly-growing middle class, ageing population, digital enablement and increasing awareness. This expected growth will lead to an increase in policy requests and claims. IA can enable insurers to address the increasing demand by improving workforce productivity. The data-driven, high volume and manual characteristics of insurance business such as claims-processing and policy administration make them highly suitable for IA. Further, IA can also address the existing challenges around underwriting errors and lack of awareness due to limited workforce reach.

## IA focus areas in insurance sector

Following are the key focus areas where IA can be applied within this sector



## Claims management

Insurance companies can process low complexity insurance claims within a few seconds<sup>2</sup> by using Intelligent Automation. Bots have the ability to accurately scan, recognize and aggregate the key pieces of information that characterize each case to assist and speed-up decision-making. This stands true even for those claims that require human intervention. Bots are now automating tasks traditionally performed by claims operators in areas such as contract validation, conducting claims history checks, claims adjustments, claims subrogation and recoveries.

Source: 1. Ayushman Bharat website; 2. Lemonade website





## Policy administration

It is estimated that more than 50%<sup>1</sup> of the policy administration and servicing processes can be automated through bots. This includes activities such as performing policy update actions arising from incoming queries and service requests - such as change of name, mobile number, address, billing details and nominee details. Cognitive chatbots also enable self service through an end-to-end automation of aforementioned queries and service requests. Further, bots automate large parts of templated processes such as generation of policy quotes based on input parameters, personalized client communication about policy summaries, transactions and offers, and closing a policy on surrender or foreclosure.

## New business

IA can deliver productivity gains<sup>2</sup> up to 30% by significantly reducing the error rates in customer onboarding/member enrolment, an error-prone manual process, by seamlessly validating the rules during data entry from electronic application systems. Further, the underwriting process also requires data aggregation from multiple sources and application of business rules for risk assessment. Bots can quickly gather data and analyze it to assist underwriters in decision-making, significantly reducing the turnaround time and chances of errors. Cognitive bots can also assist in increasing awareness through automated outreach to potential leads and automated addressal of incoming queries from prospects.

## The road ahead

The growth in the insurance sector comes along with increasing challenges in ensuring SLA adherence, self-service enablement and data security while maintaining bottom line and ensuring compliance. Adoption of IA across business functions provides insurers an opportunity to boost their overall operational effectiveness and improve customer experience, despite low investments, and quick return on investment (RoI) realization, while simultaneously adhering to the stringent compliance requirements.

### Case Study 2

## A leading health insurance company enjoys quick RoI by using AI for member enrollment and claims management

### Overview

A health insurance company wanted to use IA to transform its manual intensive back-office processes used for enrolling members, auditing claims and creating health packages. The following challenges existed in the process:

- ▶ In the member enrollment process, 90% of the data had to be manually keyed into 12 different product lines and toggled between 20 different screens in multiple applications, which led to a lot of errors.
- ▶ Testing and auditing commercial claims was also highly tedious, repetitive and time-consuming.
- ▶ Building a health package under a given insurance plan was time consuming taking up to 22 hours.

### Solution

Automating the most time-consuming, manual intensive and error-prone processes with Automation Anywhere has delivered significant value to this company by deploying bots to:

- ▶ Leverage the built-in rules engine and enable seamless business validation and data entry from the electronic enrolment applications into the system.
- ▶ Automate audits of testing claims and building health packages. These bots collected all the required information from various spreadsheets, automated screen capture, matched business rules, validated line items and entered details in the client's applications.

Benefits  
achieved

99.97%  
improvement  
in quality

40+%  
reduction in  
average  
handling time

40+%  
cost savings

Source: 1. Analysis by EY LLP; 2. Automation Anywhere case study

## Intelligent Automation hotspots in telecom sector



### Drivers for Indian telecom operators

- ▶ Increasing penetration of internet and rising data usage
- ▶ Recent technological developments such as 5G, voice over long term evolution (VoLTE) and Internet of Things
- ▶ Strong policy support from the government

With 604 million internet subscribers, India is the world's second largest market in total internet users<sup>1</sup>. It is estimated that over the next five years, with the rise in mobile phone penetration and decrease in data costs, 500 million<sup>2</sup> new internet users will be added in India. This is likely to create a huge opportunity for telecom providers to drive data usage and expand their value-added service offerings. IA is enabling telecom operators to improve their productivity with low investment and realize quick RoI, while simultaneously also improving customer centricity and service-level agreement (SLA) adherence.

Exhibit 3.3

## IA focus areas in telecom sector

Following are the key focus areas where IA can be applied within this sector



### Customer servicing

Customer servicing is one of the major hotspots in the telecom sector where IA is being deployed to significantly improve customer satisfaction. Having deployed rule-based automation to streamline their customer support processes, such as ticket management and first-call resolution, operators are turning to cognitive technologies to tackle more core processes such as customer application forms (CAFs) processing. NLP and cognitive bots help in interpreting scanned data by verifying their application and filling data on Customer Relationship Management systems by significantly reducing the activation timeline and improving customer experience. Further, smart chatbots are automating end-to-end processes for executing customer service requests, ensuring that the service levels provided adhere to evolving customer expectations.

Note: 1. Data as of December 2018, source IBEF; 2. Source IBEF





## Network management

Research suggests that the use of IA in network management can result in significant performance and efficiency advantages, such as inter-frequency handover times that are twice as fast. Network management processes which are governed by set rules and algorithms – such as barring and unbarring of network services that are not payment related, node load sharing, opening extra time slots on a site and changing frequency – are being automated to improve network performance. IA is also enabling more accurate network planning and design by analyzing network data to generate insights on the best solution to meet the objectives of coverage, capacity and service quality.

## Marketing and sales

Bots are being deployed to automate manual and repetitive processes in sales channel management such as monitoring sales channels performance and effectiveness, calculating agent commissions based on contractual rules and performance and communication of change in the commission structure to all internal departments. IA can also enable targeted cross-selling and up-selling. Smart customer service chatbots, in addition to enabling self service, are being used to provide personalized experiences to customers by recommending products and offers based on their usage patterns, preferences and transaction history.

## What lies ahead

Around 71% of telecom operators believe that process automation is essential for the organization's long term operational excellence<sup>2</sup>. Going forward, disruptive technologies of today – 5G, Internet of Things and predictive analytics – will become the mainstream focus areas. IA will enable operators to free their employee's time so that they can focus on service delivery improvement and unlocking the value delivered by the aforementioned technological advancements.

### Case Study 3

## Automation of customer data updates for credit and collections enabled saving of US\$235,000 per year for a telecom company

### Challenge

The client wanted to consolidate its credit and collections functions across a plethora of platforms and systems. It was looking to bring efficiencies in the processes of handling returned mail and updating customer payment profiles, while reducing costs within the credit operations group. Seven FTE work hours per week were dedicated to performing routine, repetitive tasks.

### Solution

Automation Anywhere implemented a solution which seamlessly integrated with the client's customer relationship management product and the underlying platforms to keep the customer database up-to-date. The solution automated the process for returned mail handling from customers and updating payment profiles.



Source: 1. Research by Ericson company; 2. EY LLP report - Digital transformation for 2020 and beyond





## Intelligent Automation hotspots in retail and consumer packaged goods (CPG) sector

### Drivers for Indian retail and CPG sector

- ▶ Rising incomes, favourable demographics and increasing urbanization
- ▶ Growing ecommerce volumes from tier-2 and tier-3 cities
- ▶ Evolving customer expectations driving the need for an omnichannel experience

The Indian retail market was largely offline ten years ago. However, since then there has been a significant shift in the consumption patterns and India is one of the fastest growing consumers of online services globally. While the current online services penetration in India is less <sup>1</sup> than 30% with the rising internet and smartphone penetration and push for digital payments, this shift in consumption patterns is expected to accelerate. Moreover, even though the market is highly price sensitive, the customer expectations remain similar to those in mature markets, making it a considerable challenge to capture and retain market share. To deal with this challenge, organizations in the Indian retail and CPG sector are turning to IA to differentiate themselves from the competition by optimizing business processes, reducing turnaround times and enabling an omnichannel customer experience.

Exhibit 3.4

### IA focus areas in retail and CPG

Following are the key focus areas where IA can be applied within this sector



### Store management

Cognitive bots can automate the creation of optimal store layouts and merchandizing plans by analysis of sales and customer preferences data along with alternative data sources such demographics and market trends. Moreover, a study suggests that IA can generate accuracy rates of 98% in retail product categorization, reducing human effort by 80%, improving the customer's shopping experience and reducing costs<sup>2</sup>. Since the introduction of Amazon GO pilot store, retailers have also been focusing heavily on enabling self-check out at their stores through a combination of IoT and Intelligent Automation.

Source: 1. Statista Research Department; IBM; 2. Fintech Times article



## Supply chain management

Bots are already assisting retail and CPG organizations with efficient supplier management including onboarding, document verification, integration, effective communication and performance monitoring. Bots can also automate a major portion of the contract management process including contract generation, verification, analysis and data extraction.

Susceptible to the ever-increasing fickleness in customer demand, overstocking or understocking have always been challenging to manage. IA is being used to bring together data on inventory, supply and customer demand, which is usually distributed across systems, to create a real-time view of the surplus/deficit inventory. Equipped with cognitive capabilities, bots are automating order placement and updates based on the inventory and production levels. This has enabled leaner forecasting, dynamic planning and reduced risk for retail and CPG organizations.

## Sales, marketing and customer servicing

IA is enabling the creation of a detailed, dynamic 360° view of the customer by collating alternate data on customer demographics with their purchase history in order to enable a personalized customer experience. Smart customer service chatbots, in addition to enabling self service and faster complaint resolution, can also utilize the personalized profiles of customers to drive targeted promotions and discounts. This personalized data can be further used to drive in-store real time product personalization through IoT devices such as beacons, smart mirrors and smart kiosks. Further, the e-commerce and digitization wave has led to challenges in handling the burgeoning digital content. Bots are being used to manage the creation and updation of digital content for websites, promotions and SKU listings.

## What lies ahead

As the e-commerce volumes and price sensitivity keeps growing, retail and CPG organizations would need to have a renewed focus on providing a personalized omnichannel customer experience, address seller fraud, provide easy returns and personalized promotions while containing the costs. IA can help retail and CPG organizations address these challenges by enabling improved workforce efficiency, leaner inventory dynamics, efficient supply chains and AI-driven prescriptive analytics.

### Case Study 4

## Automation of content management system to speed time-to-market for 200+ brands

### Challenge

A global CPG company was facing significant time-to-market and quality issues due to the repetitive and time-consuming manual workflow required to provide its hundreds of agency personnel access to digital content in its consumer facing content management system (CMS).

### Solution

Automation Anywhere enabled the deployment of bots to fully automate the access provisioning workflow for the CMS, resulting in a faster cycle time, improved quality and redirection of resources to newer technologies and projects.

Benefits achieved

**70%**  
less time spent on manual tasks

**100%**  
process repeatability

**60%**  
reallocation of team members to higher skill/higher value projects



## Intelligent Automation hotspots in professional services



Exhibit 3.5

### Drivers for the Indian professional services sector

- ▶ Rise of digital business models and digital offerings to drive competitive advantage
- ▶ Need for cost reductions for sustainable growth
- ▶ Changing employee skillsets and expectations

India has been given the title of *Office of the Worlding* to the rapid growth of professional services organizations that are servicing enterprises across the globe from their India offices. In the digital era, organizations are looking for benefits beyond just cost, therefore professional services organizations are focusing on improving the productivity through Intelligent Automation to deliver more with less. Since all the major IT service providers and the Big 4s have large operations in India, they are continuously challenged by their clients to optimize even further and adhere to strict SLAs.

### IA focus areas in professional services sector

Following are the key focus areas where IA can be applied within this sector



### Finance and accounting service providers

Finance and accounting service providers are leading the pack with high adoption rates of IA technologies enabling end-to-end automation across business functions, including those processes which involve making cognitive decisions and adapting these decisions over time. Automation in finance can achieve 35% to 65%<sup>2</sup> cost reduction in onshore operations, while providing agility to businesses to respond to dynamic market demands. Some of the major business process that can be automated include order-to-cash, procure-to-pay and reconciliation.

Note: 1 Business Process Outsourcing; 2. Analysis by EY LLP





## IT services providers

Intelligent Automation is widely adopted by the IT services in both end-user computing and enterprise computing. Using IA, IT services providers deploy bots that are available 24/7 for the support staff, thereby shifting the focus of workers on high-value tasks rather than repetitive tasks and making them more productive. Automated service desks to address quick password resets, create user accounts, installation of new tools, etc. is a major area where IA is being leveraged. This enables service providers to reduce costs of delivery, improve customer experience and pass the benefits to their clients.

## BPO service providers

The BPO sector has uses automation across several processes to achieve efficiencies. However, with the evolving sophistication across processes, service providers are focusing more on IA. The BPO worker's role is gradually evolving where the profile has moved on from doing repetitive tasks to handling only the exception cases, thereby acting as an administrator, while the bots perform the repetitive tasks. Some of the prominent use cases of IA include automated formatting, data entry and validation and analysis of customer interactions logs.

## Legal service providers

Firms providing legal services are using IA for monotonous and repetitive tasks such as analyzing lengthy case files and similar cases as well as automating data collection for audits and contract management. Cognitive bots are expected to reduce the time taken for conducting a research by more than 60% giving employees the time to focus on other valuable work.

## The road ahead

Going forward, firms offering professional service need to focus on re-skilling their workers with the technical knowhow that is required to deliver high value work while the bots are likely to assist these firms with the repetitive manual processes. With IA offering increasing productivity, professional services firms are expected to increase the scope of their service offerings to cover functions and processes that have traditionally been delivered in-house by organizations.

### Case Study 5

## Automation drives innovation: delivering immediate business impact at a firm offering professional service

### Challenge

The client saw opportunities to automate manual and time-intensive data processing activities with IA. Collating critical data manually across multiple modules usually took up to three months, resulting in the loss of significant productive time each reporting cycle.

### Solution

Automation Anywhere enabled quick deployment of bots, reducing manual, painstaking data processing work. The processes automated included data entry, data validation and reporting processes.

Benefits  
achieved

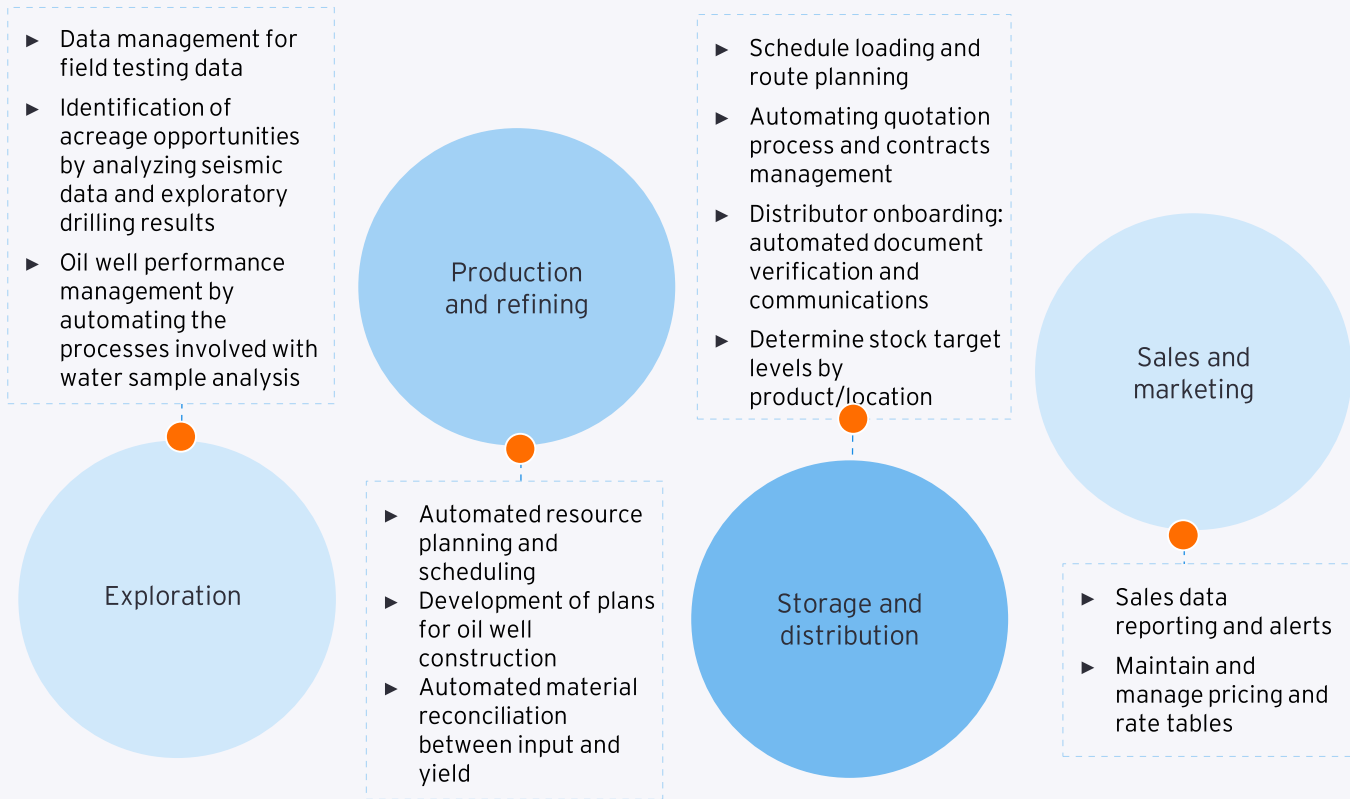
**25+**  
bots  
deployed

**70%**  
reduction  
in turnaround  
time

IA focus areas in oil and gas sector

Exhibit 3.6

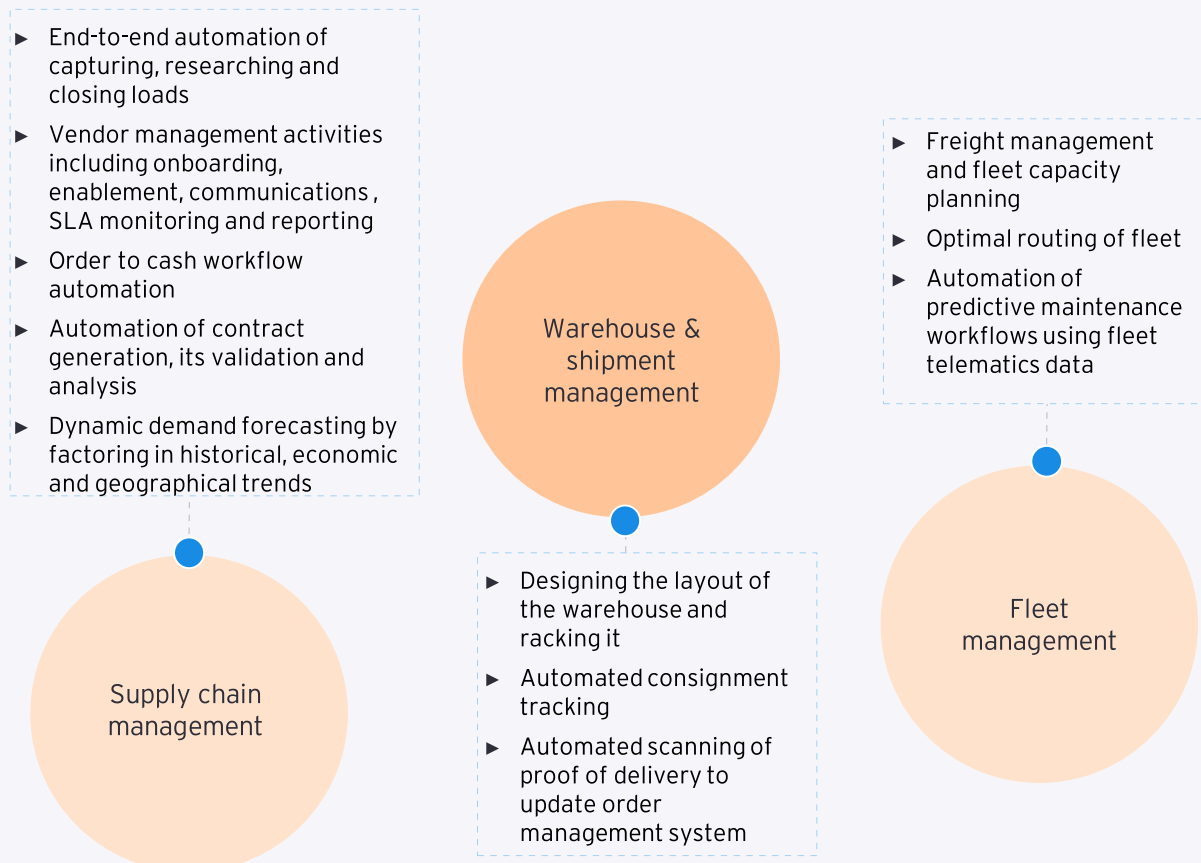
Following are the key focus areas where IA can be applied within this sector



IA focus areas in transport and logistics sector

Exhibit 3.7

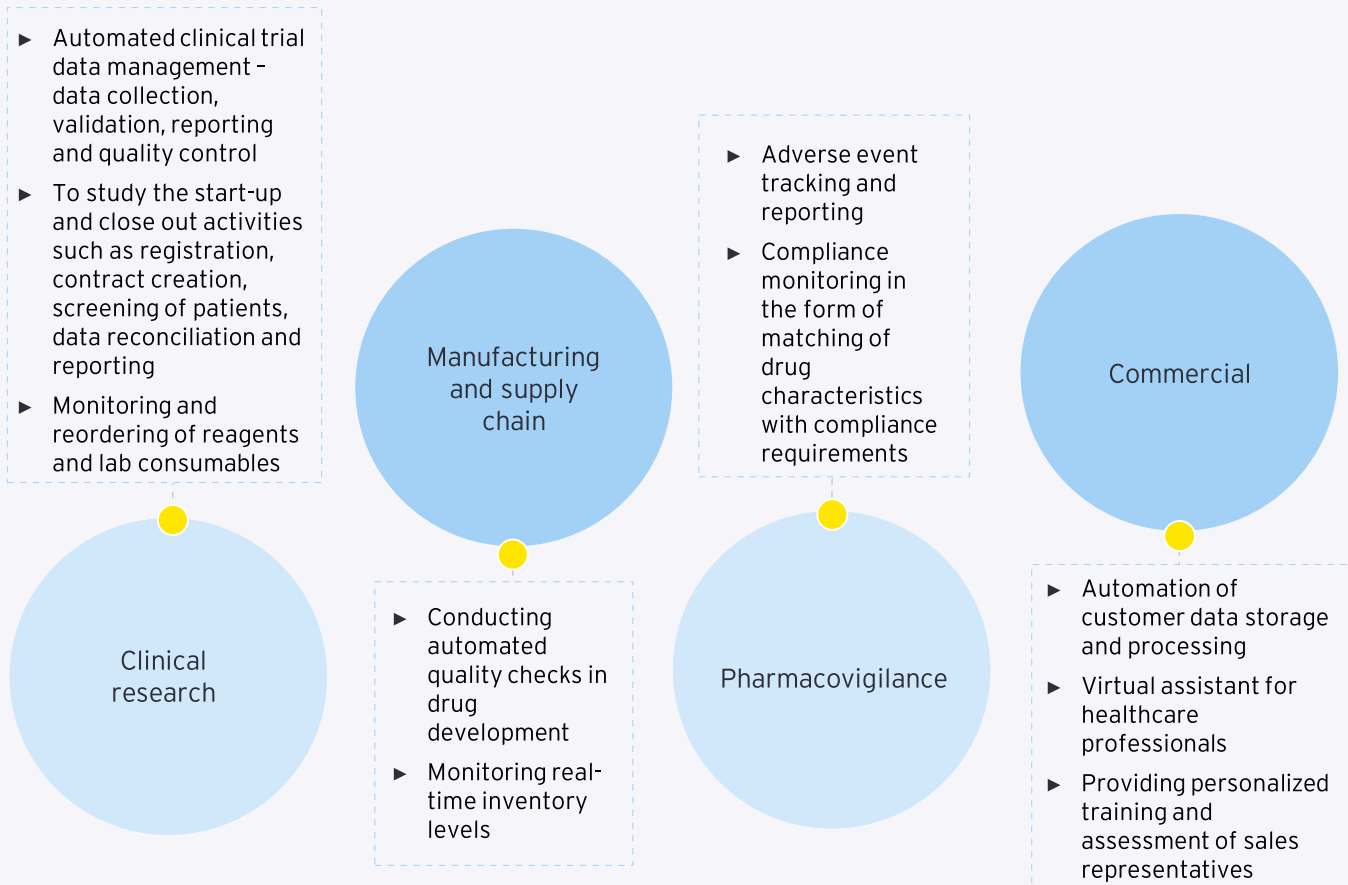
Following are the key focus areas where IA can be applied within this sector



IA focus areas in pharmaceutical sector

Exhibit 3.8

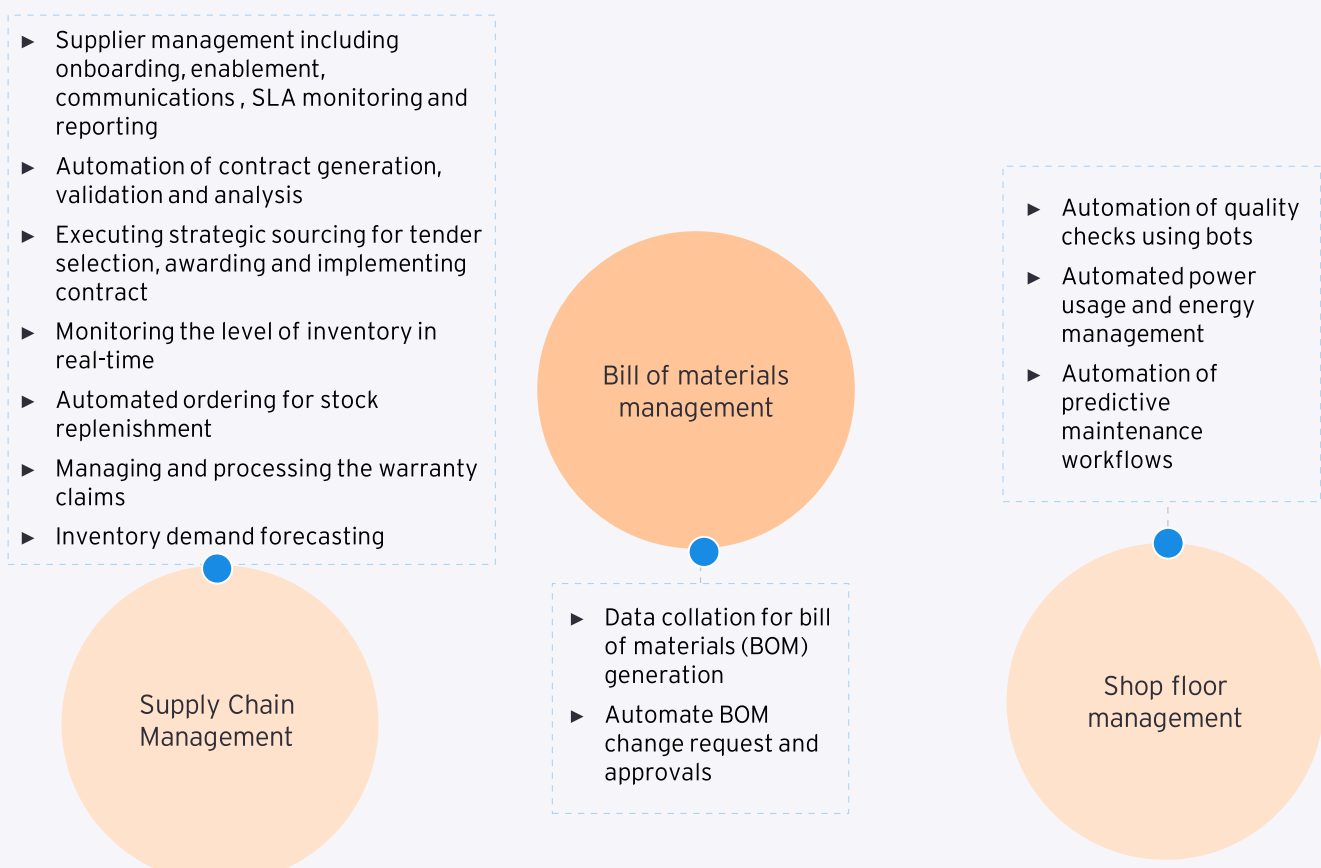
Following are the key focus areas where IA can be applied within this sector



IA focus areas in manufacturing sector

Exhibit 3.9

Following are the key focus areas where IA can be applied within this sector





A man wearing a red and white checkered keffiyeh and a brown jacket is looking at a smartphone. He is holding a yellow card in his other hand. The background is a blurred outdoor setting.

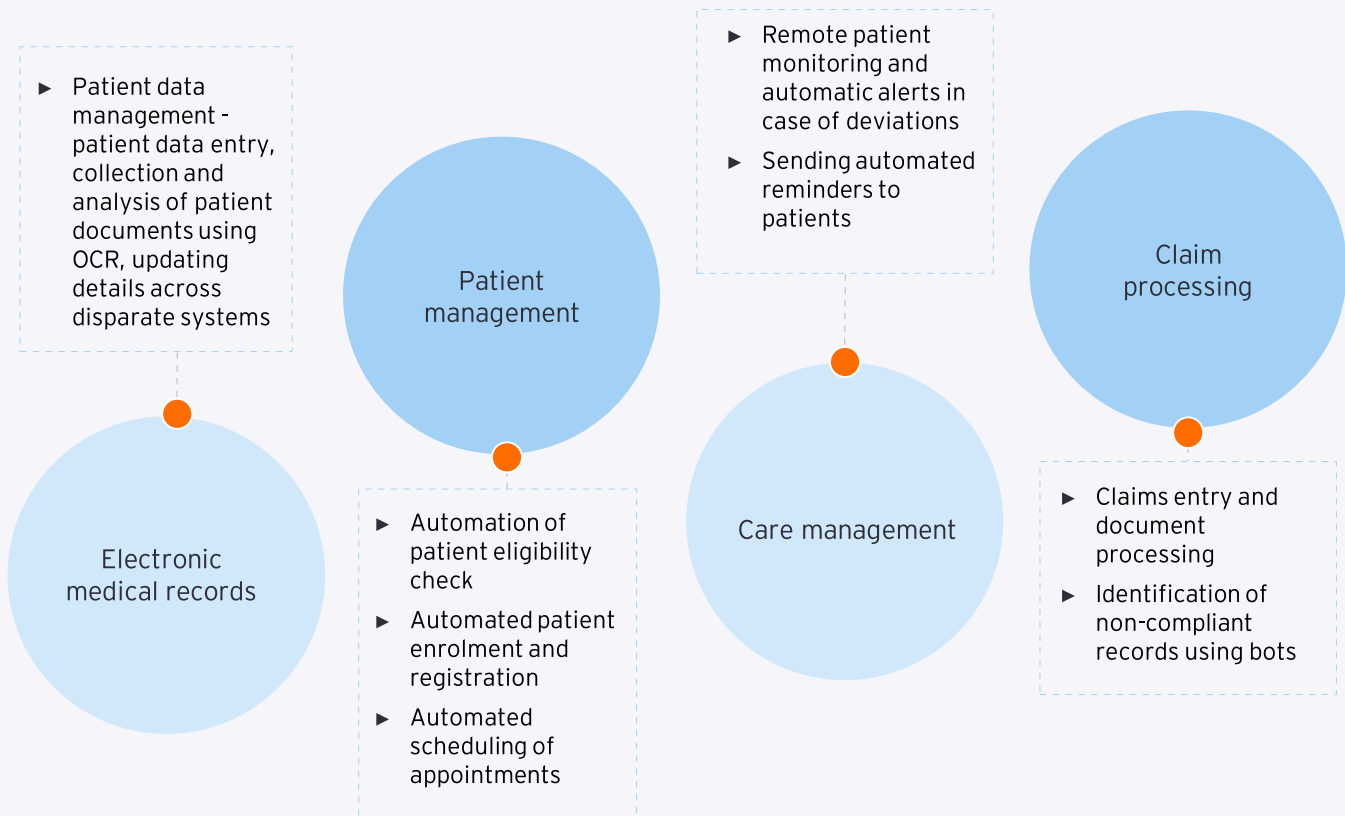
# 5

Intelligent  
Automation hotspots  
across potential  
sectors

IA focus areas in healthcare providers

Exhibit 4.1

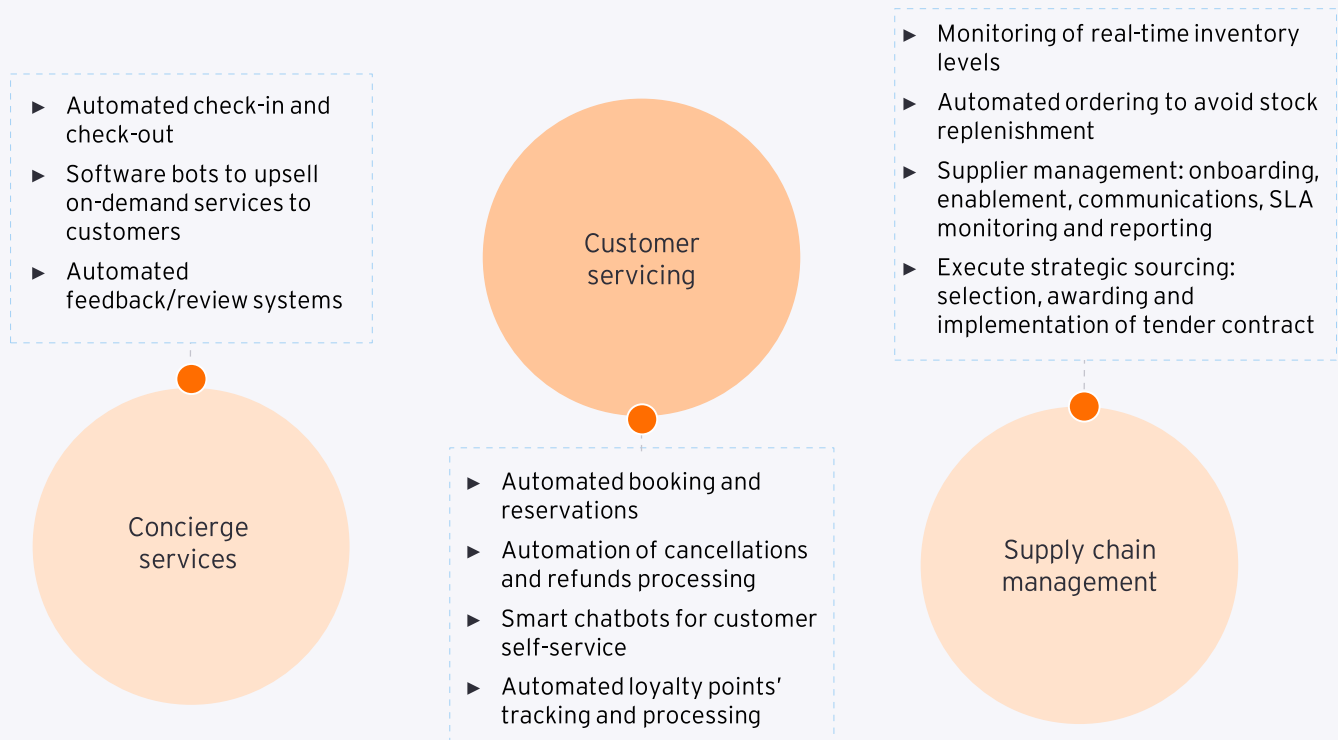
Following are the key focus areas where IA can be applied within this sector



IA focus areas in hospitality, travel and tourism

Exhibit 4.2

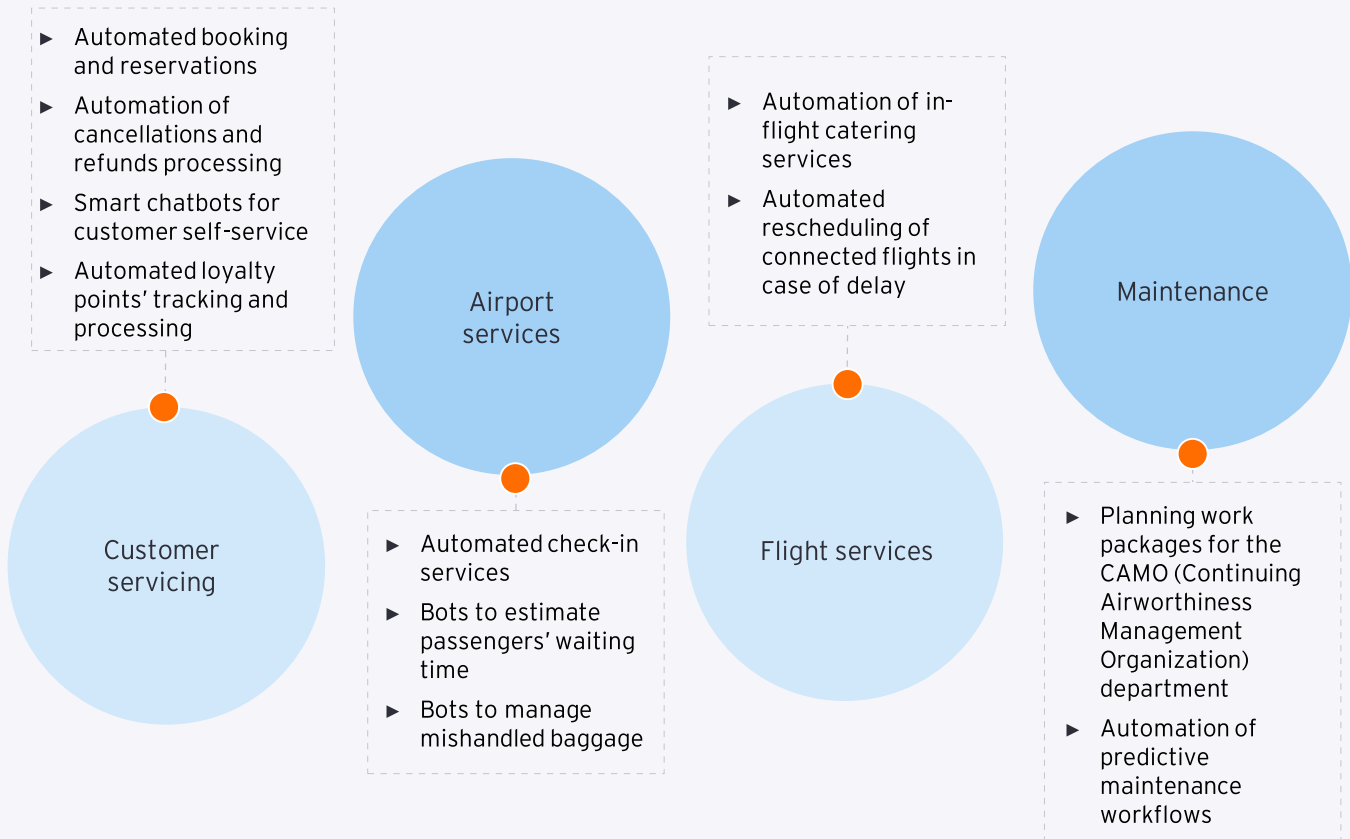
Following are the key focus areas where IA can be applied within this sector



IA focus areas in aviation sector

Exhibit 4.3

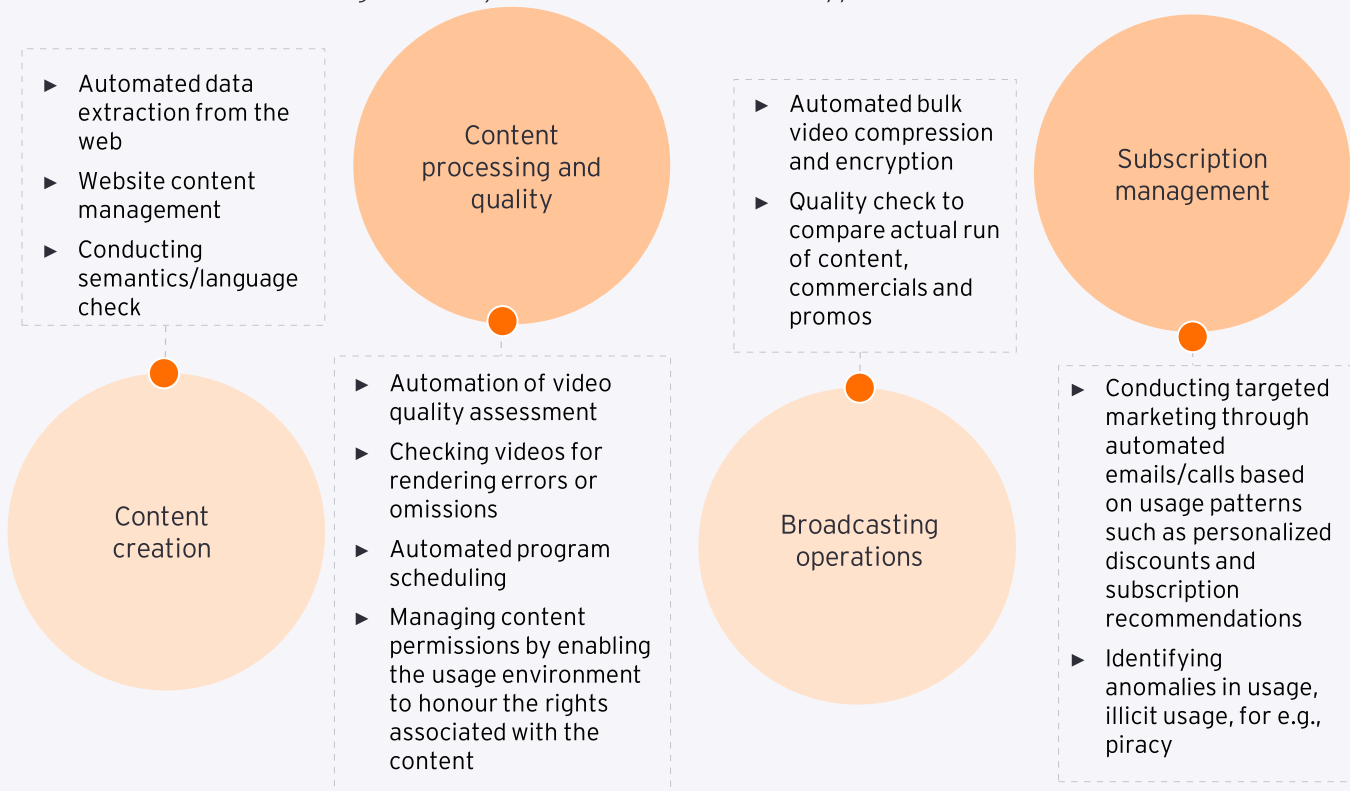
Following are the key focus areas where IA can be applied within this sector



IA focus areas in media and entertainment

Exhibit 4.4

Following are the key focus areas where IA can be applied within this sector

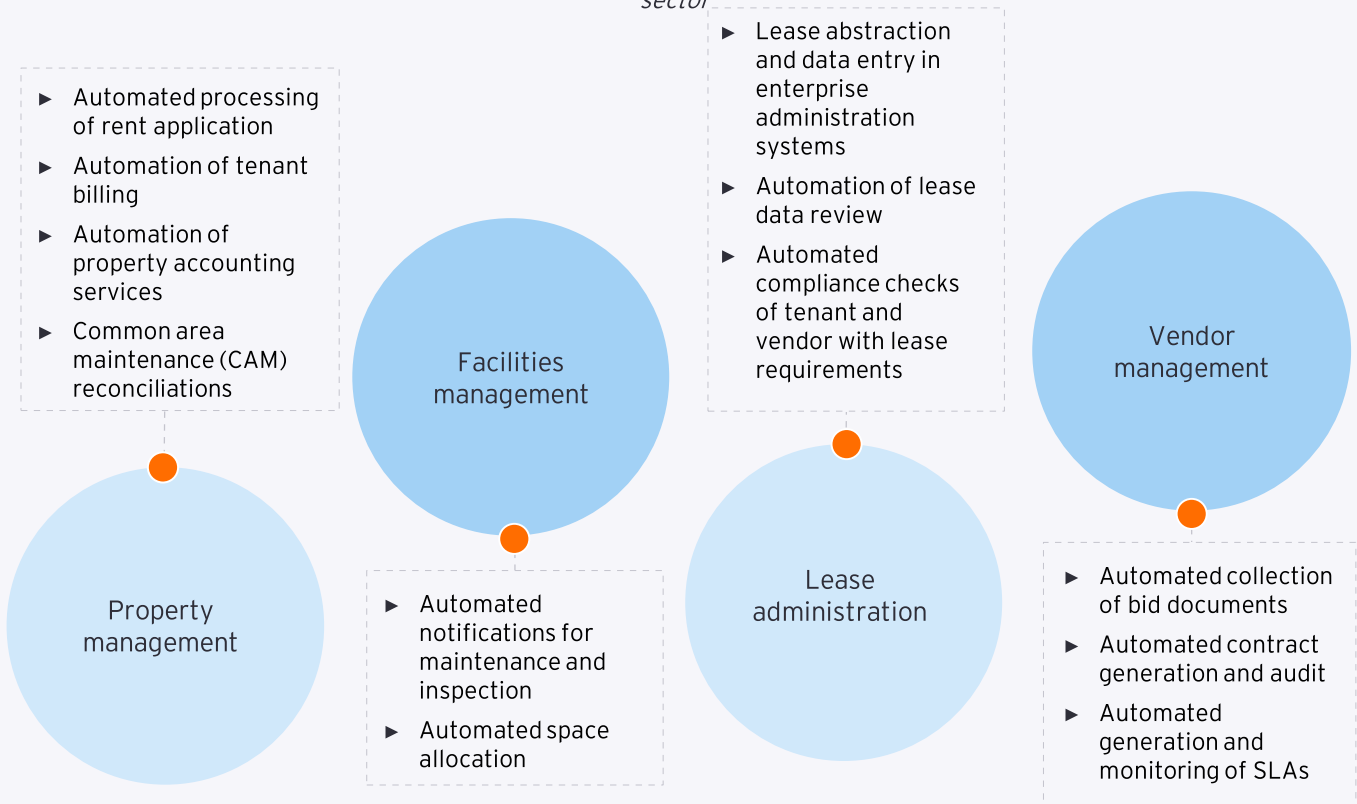




IA focus areas in real estate

Exhibit 4.5

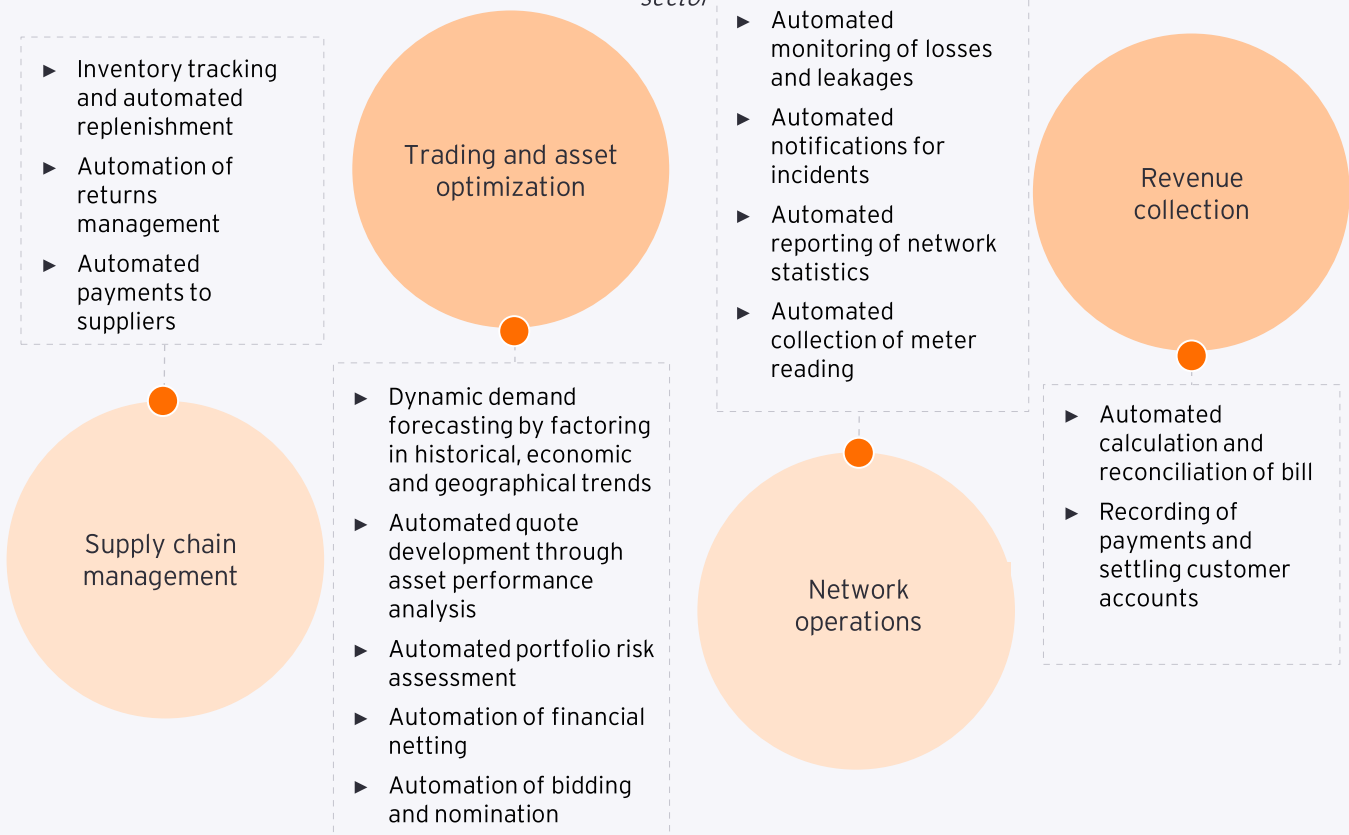
Following are the key focus areas where IA can be applied within this sector



IA focus areas in energy and utilities sector

Exhibit 4.6

Following are the key focus areas where IA can be applied within this sector



A person is seen in profile, looking at a tablet device in a server room. The room is filled with server racks, some of which have green indicator lights. A large, white, stylized number '6' is overlaid on the left side of the image. The overall lighting is dim, with blue and green hues from the equipment.

6

Embarking on the  
Intelligent  
Automation journey

## How can organizations prepare for scaling Intelligent Automation?



In order to unlock the productivity benefits across business functions, organizations should look beyond traditional automation and embrace cognitive automation. Going forward, in order to enable successful deployment of cognitive technologies at scale, there needs to be a fundamental shift in the skillsets, roles and governance models of automation teams.

Traditional RPA teams need to increase their domain knowledge and gain expertise in cognitive technologies. With the changing focus from horizontal functions to vertical functions, RPA consultants need to have a high level of domain expertise to accurately evaluate the business processes during return on investment (ROI) assessment and design tailored solutions which address the process intricacies. They also need to ensure that the success metrics align with the goals of the business unit (BU) and that IA delivers maximum value to the BU. Moreover, since the IA platform providers are focusing on making the platforms more business user friendly through graphical user interfaces,

Exhibit 5.1

### Changing roles and skillsets of automation teams (1/2)



#####

Age: 28 | Education: MBA | IIM Ahmedabad  
Experience: 4 years

#### Current role: RPA Consultant

- ▶ Responsible for client interactions, requirements gathering and process workflow mapping required for bot development
- ▶ Functional knowledge of RPA platforms
- ▶ Limited domain knowledge
- ▶ Limited knowledge of IT systems

#### Evolved role: Techno-functional Consultant

- ▶ Leverages domain expertise to define end-to-end process automation workflows and business success metrics
- ▶ Utilizes graphical user interface (GUI)-based IA platforms for cognitive bot development
- ▶ Functional knowledge of AI/ML/ IoT/AR engines, data lakes and IA platforms and of corresponding interfaces



## Changing roles and skillsets of automation teams (2/2)



#####

Age: 26 | Education: CS Engineer | IIT Delhi

Experience: 4 years

### Current role: RPA developer

- ▶ Converts functional requirements to technical requirements
- ▶ Designs, implements, tests and maintains RPA bots
- ▶ Expertise in programming languages such as C#, .NET and JavaScript

### Evolved role: IA Developer

- ▶ Designs predictive/ prescriptive models to automate end to end business processes
- ▶ Designs interfaces between AI /ML /IoT /AR engines, data lakes and IA platforms
- ▶ Expertise in AI/ ML/ Big Data programming frameworks and languages such as Apache Spark, Hadoop, R, Python



#####

Age: 32 | Education MS Information Systems

Experience: 8 years

### Current role: RPA Architect

- ▶ Defines the architecture of the RPA solution
- ▶ Expertise on IT system architecture design (enterprise resource planning(ERP)/ Testing/ Data)
- ▶ In-depth knowledge of RPA platforms

### Evolved role: IA Architect

- ▶ Defines the architecture for end-to-end process automation across business functions
- ▶ Functional knowledge of AI/ML/ IoT/ AR engines, data pipelines and IA platforms



#####

Age: 36 | Education: MTech CS | IIT Delhi

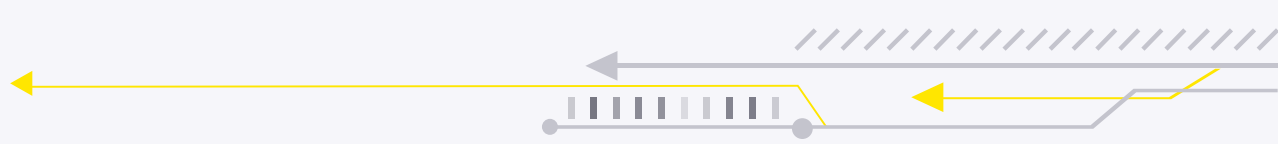
Experience: 12 years

### Current role: RPA Delivery Head

- ▶ Responsible for meeting delivery SLAs and success metrics for RPA implementations
- ▶ Limited domain and process knowledge
- ▶ Functional knowledge of RPA platforms
- ▶ Networking and evangelization for sourcing RPA projects
- ▶ Expertise in people and project management

### Evolved role: Business unit - IA Head

- ▶ Responsible for delivering value to the business unit (top/ bottom line) through Intelligent Automation of business processes
- ▶ In-depth domain and process expertise
- ▶ Functional knowledge of AI/ML/ IoT/ AR engines, data pipelines and IA platforms
- ▶ Added expertise in change management



Therefore, RPA consultants are expected to become techno-functional consultants and undertake both process mapping and GUI-based bot development. In such a scenario, the roles of RPA developers also change to IA developers with their work portfolio shifting from coding and testing bots to development of cognitive functions. They need to focus on designing predictive and prescriptive models, interfaces with artificial intelligence, IoT and augmented reality platforms to automate end-to-end business processes. Similarly, RPA architects need to become IA architects who define the architecture required to standardize and simplify the interconnectivity of the complex web of digital platforms and IT systems. The roles of RPA bot administrators, who currently manage bots deployed across processes, is also evolving into IA orchestrators wherein they are involved in managing end-to-end automated processes rather than individual bots. Going forward, RPA support engineers also need to have functional knowledge of cognitive technologies and platforms.

One of the most important shift needs to be in the positioning of IA initiatives in the BUs and the perspective of leadership toward these initiatives. In order to realize its full benefits, IA needs to be embraced as a core component of a BU's digital transformation strategy. BU leadership needs to not only evangelize IA but also mandate adoption across identified hotspots. Automation leaders need to shift the success metrics from manhours automated to business value delivered through reduction in turnaround times or direct top line and bottom line impacts. The leadership also needs to have a basic understanding of the functionality, the interplay with other digital platforms and the potential benefits of IA technologies.

This fundamental shift of bringing the IA team closer to business has to be enabled by a change in governance models of IA teams.

### Exhibit 5.2

## Governance models seen across automation teams

### IT led model

- ▶ Ownership lies with the IT organization
- ▶ Automation team might not have all the required domain knowledge
- ▶ May lead to diminished RoI and unmet expectations while automating vertical processes

### Business led model

- ▶ Ownership lies with the business units
- ▶ Implementation team may not have a proper structure for IT governance
- ▶ May lead to issues with scalability, cybersecurity and compliance

### Business-led and IT enabled model

- ▶ Joint ownership with business driving implementation and IT driving governance
- ▶ Needs close collaboration and a clearly defined responsibility assignment matrix

In a lot of organizations, an IT led governance model is seen wherein the ownership of IA implementation lies with the IT teams who work in collaboration with the business teams. However, as organizations shift their focus toward automating vertical processes, the need for domain expertise to create an informed business case addressing process intricacies and to deliver business value makes it imperative to shift the ownership of IA implementation to the BU. In the business-led governance model, individual IA teams reside within each BU ensuring higher vertical focus and accountability. These IA teams generally report to the BU's digital transformation office or the program management office. However, this model may still have challenges as it may result in issues with security, scalability or compliance if IT best practices and governance guidelines are not adhered to.

In order to address these issues, organizations are adopting a business-led and IT enabled model wherein both business and IT share joint ownership. While business would drive the solution discovery and implementation, IT would own the solution governance, security and compliance. It is to be noted that this model requires a clear definition of the responsibility assignment matrix in order to avoid friction, delays and bureaucratic hurdles. Further, continuous and in-depth collaboration between business and IT is required.

With the right policy framework and operating model, organizations can reap the benefits of IA through successful implementation at scale. This has the potential to unlock productivity across sectors thereby enabling India to accelerate its economic growth.



7

Appendix

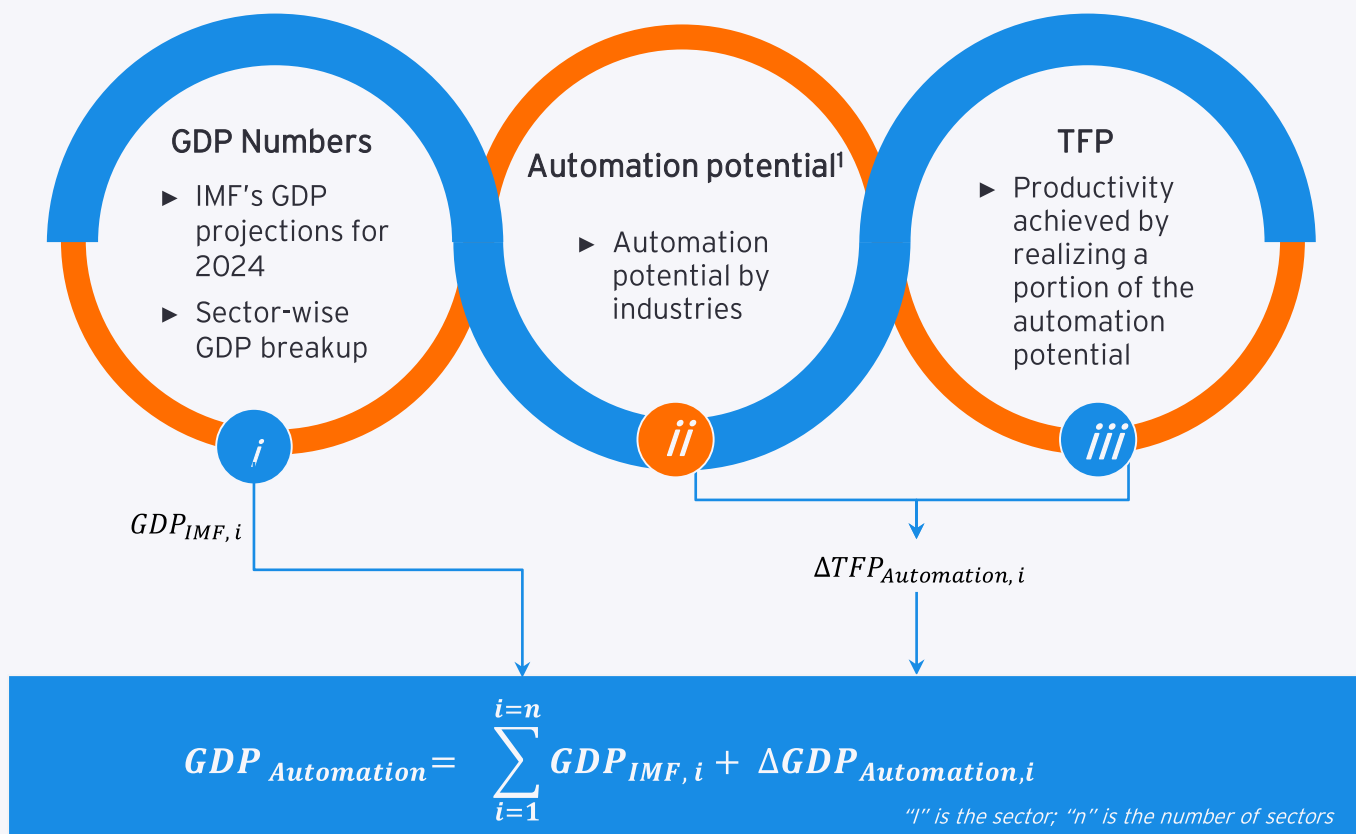


# Appendix

## Methodology to estimate the impact of GDP

Exhibit 1.3

### Input factors



Each of the estimation methodology components are detailed out in this section.

#### i. GDP numbers: Growth forecast of India's GDP considering an as-is state

According to IMF, India's GDP is expected to reach US\$4.6 trillion by 2024-25. The figure projected by the IMF already factors in the current automation adoption across sectors. Since the sector-wise break-up of this number was not available from the IMF data, the sector-wise GDP numbers for 2019-24 have been estimated using the average GDP growth rates of the individual sectors during the period 2014-19.

#### ii. Understanding automation potential

As per the study conducted by McKinsey Global Institute (MGI), about 5% of the current occupations have 100% automation potential and around 60% of the current occupations have at least 30% automation potential which can be realized by adopting currently demonstrated automation technologies. The MGI study evaluated the activities of every occupation spread across sectors to identify the percentage of tasks/activities that can potentially be automated with the current technology.

This report uses MGI's estimates on the automation potential across sectors to understand and forecast the automation potential percentage that can be realized by each sector in the years leading to 2024.

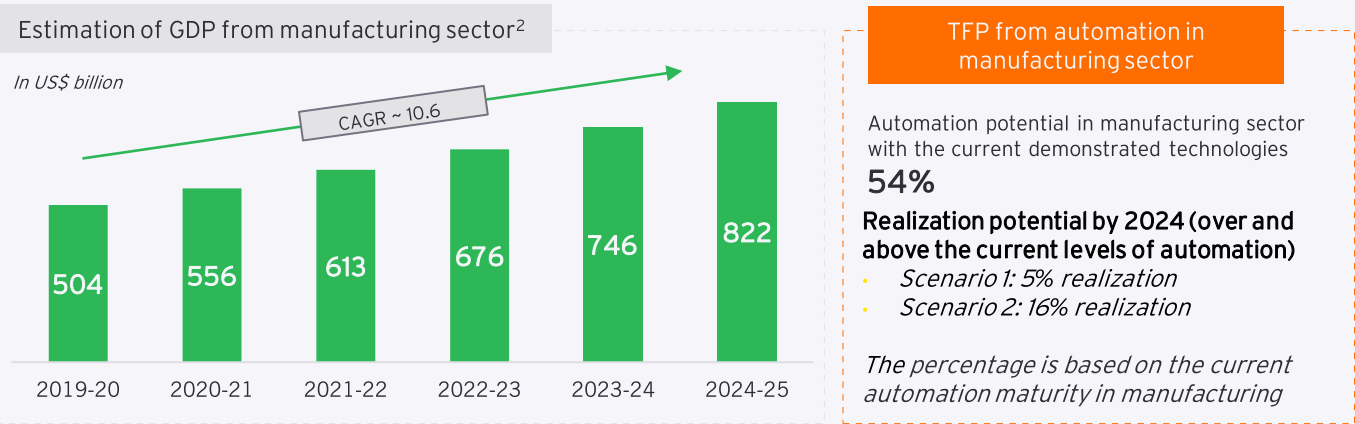
#### iii. Total factor productivity (TFP)

TFP is the productivity improvement achieved for each sector by automating specific tasks in the day-to-day operations. Automation in a sector is adopted gradually starting with the simple tasks/activities in the initial years. Once organizations realize the value of automation, they then start implementing it extensively in complex tasks, compounding the improvement of productivity in the entire sector. TFP is calculated as the percentage of the total automation potential that can be realized at the time of estimation (in this case, by 2024). To get an estimate of the impact automation has on India's economic growth by 2024-25, a realization percentage of the automation potential across each sector was estimated that enabled calculation of productivity improvement.

Note: 1. Automation potential definition taken from a study by McKinsey Global Institute - "A future that works: Automation, employment, and productivity" which defines automation potential as the percentage of total work activities that can be automated by adapting currently demonstrated technology

Exhibit 1.4

Sample calculation: estimation of GDP from manufacturing sector<sup>2</sup>

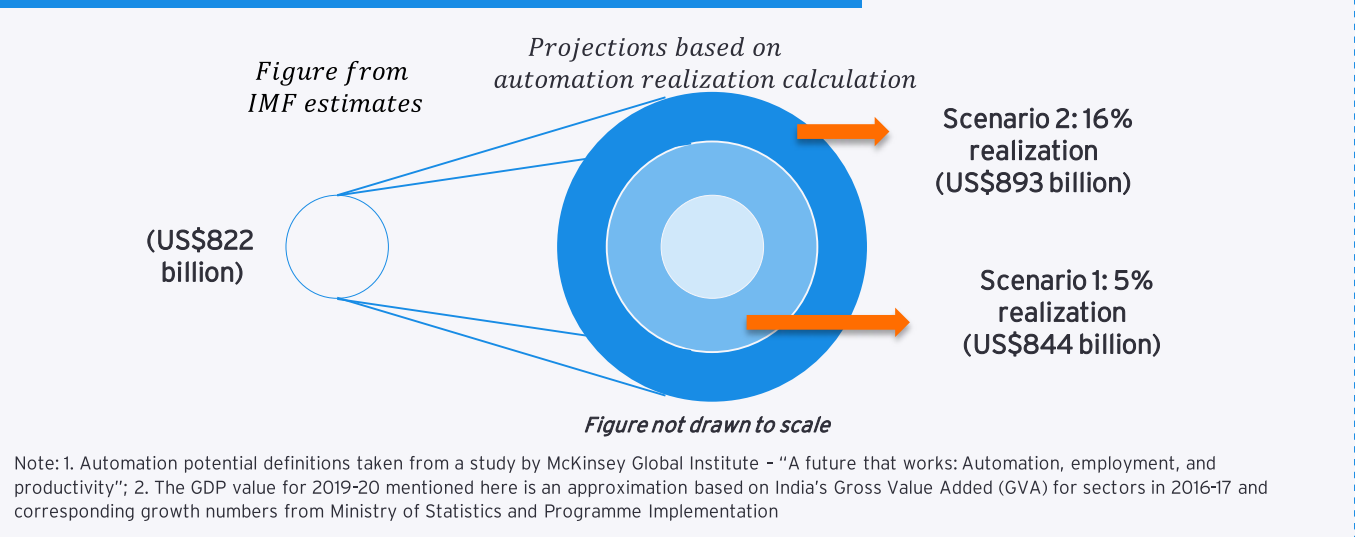


Source: EY analysis

Source: MGI report on "A future that works: Automation, employment, and productivity"

Exhibit 1.5

Projected GDP from automation in manufacturing sector (2024+2025)<sup>2</sup>



Assumptions made for the estimation of GDP impact

- ▶ Automation includes technologies such as Robotic Process Automation, Machine Learning (ML), Natural Language Processing (NLP), Artificial Intelligence and Machine-driven Automation, among others.
- ▶ The estimation takes a key assumption that the human labor replaced by automation would re-join the workforce and be as productive as they were earlier.
- ▶ The IMF estimates of GDP for the period 2019-2024 intrinsically contain the current state or as-is realization of automation potential in various sectors.

The model estimates the potential impact that automation has on India's GDP given that the following external factors remain constant:

- ▶ Inflation growth rate
- ▶ Changes in INR-US\$ exchange rates
- ▶ Political stability and cross-border tensions
- ▶ Economic stability (no threats of recession/any other abnormal economic activity)
- ▶ Socio-cultural factors such as population growth, age distribution, etc.
- ▶ Policy/legislations on automation

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## Research Commissioned by

### Automation Anywhere

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Automation Anywhere is a global leader in Robotic Process Automation (RPA), empowering customers to automate end-to-end business processes with software bots - digital workers that perform repetitive and manual tasks, resulting in dramatic productivity gains, improved customer experience and more engaged employees. The company offers the world's only web-based and cloud native intelligent automation platform combining RPA, artificial intelligence, machine learning and analytics right out of the box, to help organizations rapidly start and scale their process automation journey. With offices in more than 40 countries and a global network of 1,200 partners, Automation Anywhere has deployed over 1.7 million bots to support some of the world's largest enterprises across all industries.

For additional information, visit [www.automationanywhere.com](http://www.automationanywhere.com).

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IAMAI

### About IAMAI

The Internet & Mobile Association of India is a young and vibrant association representing the entire gamut of digital business in India. It was established in 2004 by the leading online publishers but, in the last 14 years, has come to effectively address the challenges facing the digital and online industry including mobile content and services, online publishing, mobile advertising, online advertising, ecommerce and mobile and digital payments among others.

Fourteen years after its establishment, the association is still the only professional body representing the online industry. The association is registered under the Societies Act and is a recognised charity in Maharashtra. With a membership of nearly 300 Indian and overseas companies, and with offices in Mumbai, Delhi and Bengaluru the association is well placed to work towards charting a growth part for the digital industry in India.