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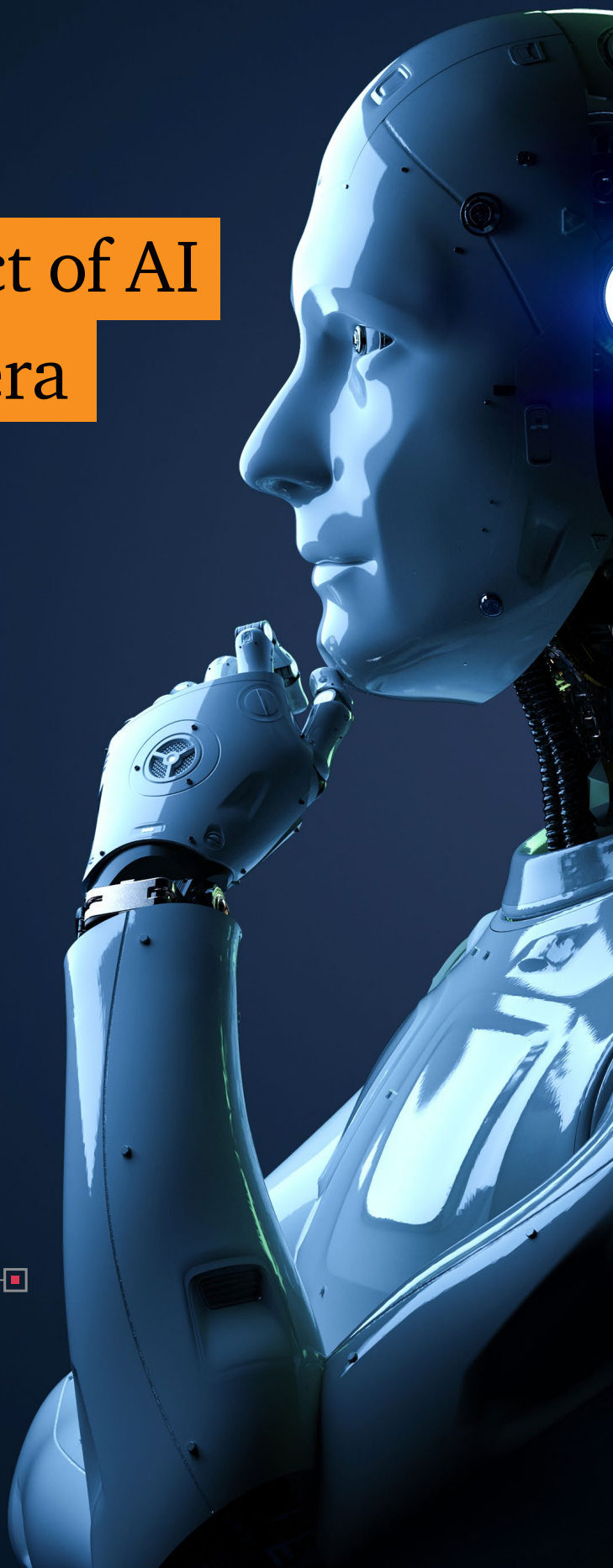
Towards a smarter tomorrow: Impact of AI in the post-COVID era



Foreword

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The COVID-19 pandemic has had a far-reaching impact on the world, with artificial intelligence (AI) having played a key role in helping us cope with the various challenges of the pandemic. AI has been used to develop new diagnostic tools, track the spread of the virus, and develop treatments and vaccines. It has also been used to support remote work and education and provide mental health support.

Due to the pandemic, AI adoption grew exponentially across a wide range of industries. For instance, AI is being used to automate tasks in manufacturing, improve customer service, and develop new products and services. As the world emerges from the pandemic, AI is poised to play an even greater role in our lives.

This report explores the impact of AI in the post-COVID-19 world and the emergence of new products and services based on AI. It presents an overview of the use of AI during and after the pandemic and highlights the key trends driving the adoption of this technology across industries globally.

Some of these key trends are as below:

- Generative AI (GenAI): The developments in this space have enabled content search and summarisation, along with content generation. For example, GenAI can be potentially used to hyper-personalise online advertisements, enhance productivity by automating creation of standard documents, and search and summarise external research.
- Remote work and collaboration: The pandemic forced many businesses to adopt remote work and collaboration solutions which often rely on AI-enabled technologies. For example, AI-powered chatbots are being used to answer customer questions, and AI-enabled video conferencing tools are being used to facilitate meetings and enable collaboration.
- Contactless solutions: The pandemic also increased the demand for contactless solutions, such as AI-enabled self-service kiosks and chatbots. These solutions can help businesses to reduce the risk of infection at physical outlets/offices, and thus improve customer experience.
- Data-driven decision making: AI is used to collect and analyse large quantities of data, which can then be used to make better decisions about product development, marketing, customer service, etc.
- Increasing availability of AI-enabled tools and services: The cost of AI-powered tools and services has been declining, making them more accessible to businesses of all sizes. This has also led to an increase in the number of AI start-ups, which are developing new and innovative solutions.

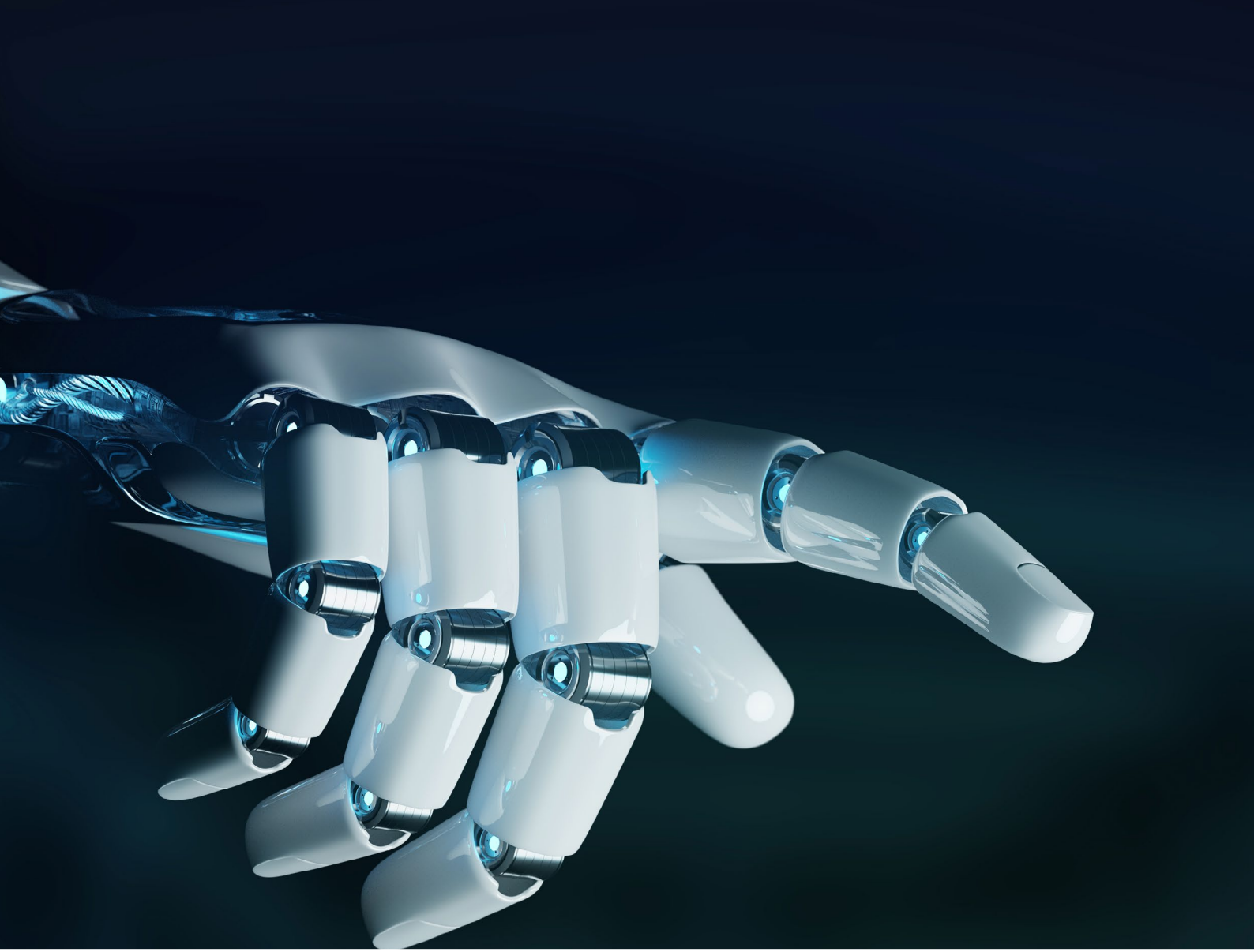
We conducted several surveys to determine the use of AI in various industries and have discussed a few examples in the report.

- Healthcare: AI is being used to develop new diagnostic tools, design new treatments and improve the efficiency of healthcare delivery. For example, AI-powered chatbots can be used to answer patient questions and provide support.
- Retail: AI can help personalise shopping experiences, optimise inventory management and prevent fraud. For instance, AI-enabled video analysis technology can be used to understand the best placement of products in a hyper-mart.
- Manufacturing: AI is being used to automate tasks, improve quality control and reduce costs. For example, AI-powered robots can be used to perform dangerous or repetitive tasks.
- Logistics: AI is being used to optimise delivery routes, track shipments and prevent delays. For example, AI-powered algorithms can be used to predict demand and allocate resources accordingly.
- Operations and supply chain: AI-embedded solutions are enabling organisations to improve visibility, risk management and decision making across supply chains, making them more resilient and sentient. Digital twins enabled by AI-driven simulations are helping organisations to accelerate product development and innovation. Moreover, AI-enabled simulation of operations and supply chains helps in addressing choke points and vulnerabilities, thus helping to prevent possible disruptions in advance.

In addition, we have briefly discussed the emergence of responsible AI and its integration into various models to help business functions across industries. Furthermore, we have explored the implications of AI for the future of businesses and society.

As the world continues to recover from the pandemic, AI is likely to play an even greater role in business. Therefore, businesses that embrace AI will be well-positioned to succeed in the post-COVID world.

We hope that your find this report to be insightful.



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01

Introduction

Following the COVID-19 pandemic and subsequent geopolitical and economic disruptions, markets across the world have seen rapid transformation of businesses due to the adoption of advanced analytics and data-driven decision making. Of these, regulated markets such as banking and healthcare have seen major disruptions. For instance, the banking industry has witnessed a significant shift towards providing services in remote locations through AI[1]-driven solutions which determine credit risks using social scores. Another use case, which has been a rising trend in healthcare, is the emergence of voice user interfaces (VUIs).[2] Voice-based AI is expected to bring in the next big transformation in healthcare and enhance the upstream value of the industry.

Be it resilience, growth or productivity, AI has carved a niche for itself in the Indian and global economy. Based on a survey conducted by PwC in 2022–23, the adoption of AI in India at the pilot level has increased from 40% in 2020 to 56% in 2022–23.[3] Furthermore, 66% of the respondents agree that AI/machine learning (ML) makes businesses more trustworthy. Amongst business functions, sales and marketing saw a significant jump in AI/ML-driven automation. A recent global survey by PwC highlighted that the top three functions on which AI has had a significant impact are operations and maintenance (62%), customer experience (61%), and strategy (60%).[4] Additionally, it is anticipated that with time, organisations will become more confident in their ability to gain the expected return on investment (RoI) from current AI initiatives.

Furthermore, the size of enterprise data created, stored and consumed is increasing every day. Therefore, to obtain a significant RoI and build a sustainable business model in today's digital era, it has become crucial to leverage this data with analytics in a meaningful way. Companies that are advancing with AI modelled on this data are reaping the benefits of business transformation enabled by effective decision making.

1 For the purpose of this report, artificial intelligence is defined as a collection of technologies which are capable of sensing, thinking and acting like rational human beings. In recent years, every individual, organisation and government has seen numerous instances of AI enter various facets of their lives – the most common applications being chatbots, facial recognition, image classification, aggregators, recommendation engines and targeted marketing. AI has the potential to solve complex problems effectively at scale.

2 https://www.pwc.in/assets/pdfs/industries/healthcare/a-new-healthcare-era.pdf

3 https://www.pwc.in/assets/pdfs/data-and-analytics/ai-an-opportunity-amidst-a-crisis.pdf

4 https://www.pwc.com/us/en/tech-effect/ai-analytics/ai-business-survey.html

02

Objective and methodology

To gain a sense of the AI adoption landscape in India, PwC conducted comprehensive surveys with approximately 220 CXOs and decision makers across the Indian market in 2022–23. This was a follow-up to the survey conducted in 2020. Around the same time, PwC conducted the 2022 AI Business Survey, where data from 1,000 global business and technology executives involved in their organisation's AI strategies was obtained. We then compared the data on the Indian and global markets and conducted a temporal analysis of during and post-COVID responses.

The primary objective of this study was to understand the awareness, adoption and impact of AI in the post-COVID-19 landscape – i.e. today – and to capture the near- and long-term benefits of AI adoption. Moreover, the study aimed to understand the importance of ethics in AI, including the development, deployment and ongoing management of AI solutions, and the extent to which COVID-19 had an impact on the implementation of AI/ML to meet business goals.

The survey covered respondents from:

- industries such as financial services, healthcare and pharma, industrial manufacturing and automotive, retail and consumer, telecom, media and technology, and travel and hospitality
- business functions such as customer service, finance and tax, human resources, IT and cybersecurity, manufacturing and operations, research and development, risk, legal and compliance, sales and marketing, supply chain and logistics.

5 Ibid.

03

Industry-wise adoption and growth of AI

Table 1. Increase/decrease in AI adoption across industries in India (2022–23)

Industry	Adoption rate (2020–21)	Adoption rate (2022–23)	% Swing
Retail and consumer ▼	76%	70%	-6
Financial services ⇑	85%	86%	+1
Industrial products and manufacturing ⬆	72%	92%	+20
Travel and hospitality ⬆	92%	99%	+7
Technology, media and telecommunications (TMT) ⬆	80%	92%	+12
Healthcare and pharmaceuticals ⬆	75%	82%	+7

Source: Surveys conducted by PwC India in 2020–21 and 2022–23

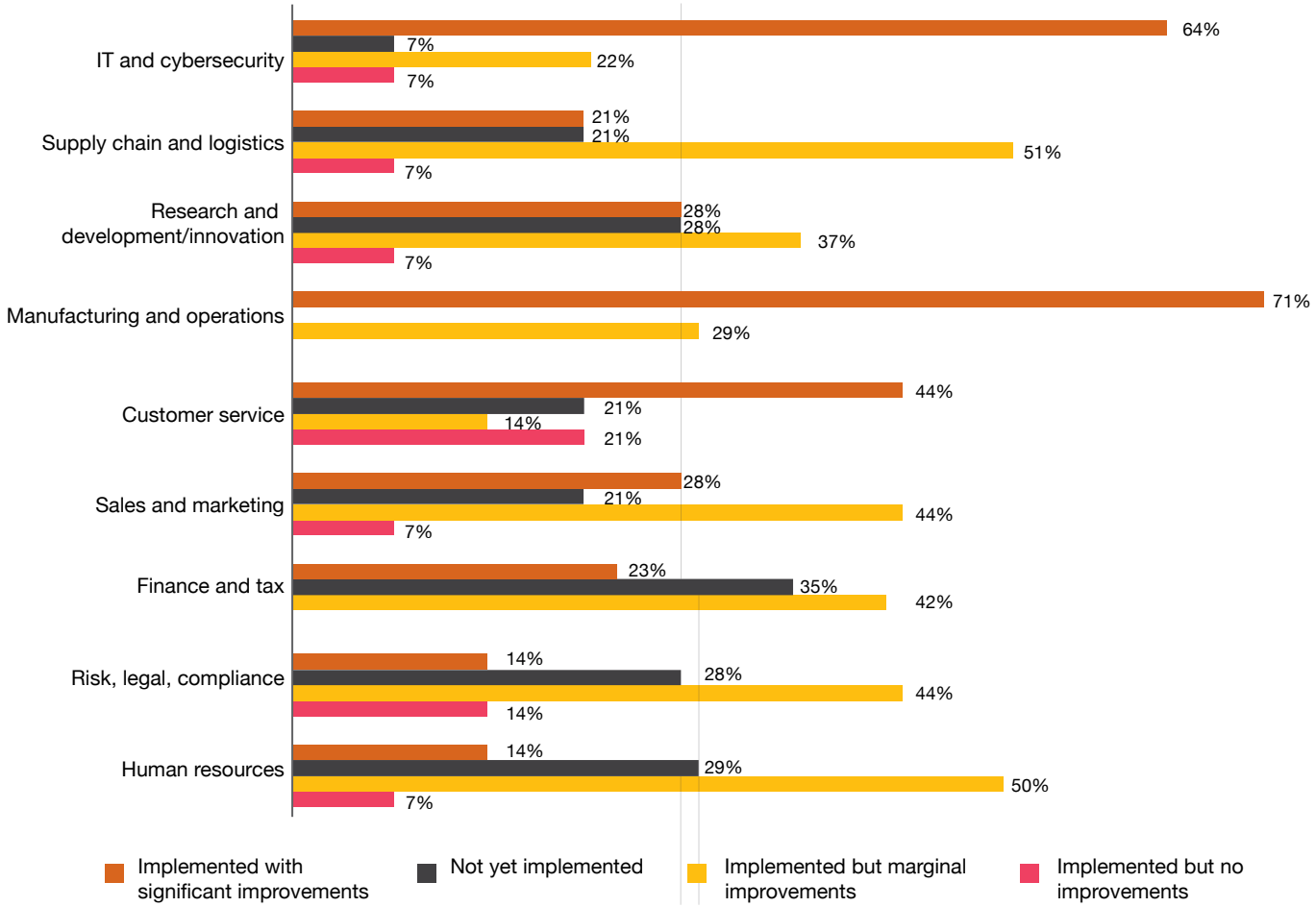
While there has been a significant increase in AI adoption with scalable impact in terms of returns, trends indicate that the travel and hospitality industry has reached a degree of saturation. While the TMT as well as healthcare and pharma sectors have seen steady progress, they are facing certain challenges around measuring the RoI, especially in the pre- and post-COVID-19 times. Compared to the other sectors, the retail and consumer market has seen a decline in AI adoption due to a gap in the identification of potential use cases amidst changing market forces and consumer behaviour. The rate of AI adoption in financial services, on the other hand, has remained nearly constant.

04

Industrial products and manufacturing

Over the past two years, from mid-2020 to 2022, this sector has seen the maximum increase of 20% in the adoption/implementation of AI/ML solutions. Following implementations in the 12–18-month period following the pandemic, organisations from this segment have reaped maximum benefits from AI in three business functions – namely, manufacturing and operations, supply chain and logistics, and IT and cybersecurity.

Figure 1. Benefits realised across business functions due to AI/ML implementation



Source: Surveys conducted by PwC India in 2022–23

While companies have increased AI implementation, they have diversified their investments into solutions beyond key business processes. Core use cases for AI in manufacturing are becoming clearer as companies learn to better quantify the value of its application. Manufacturers are implementing AI primarily to:

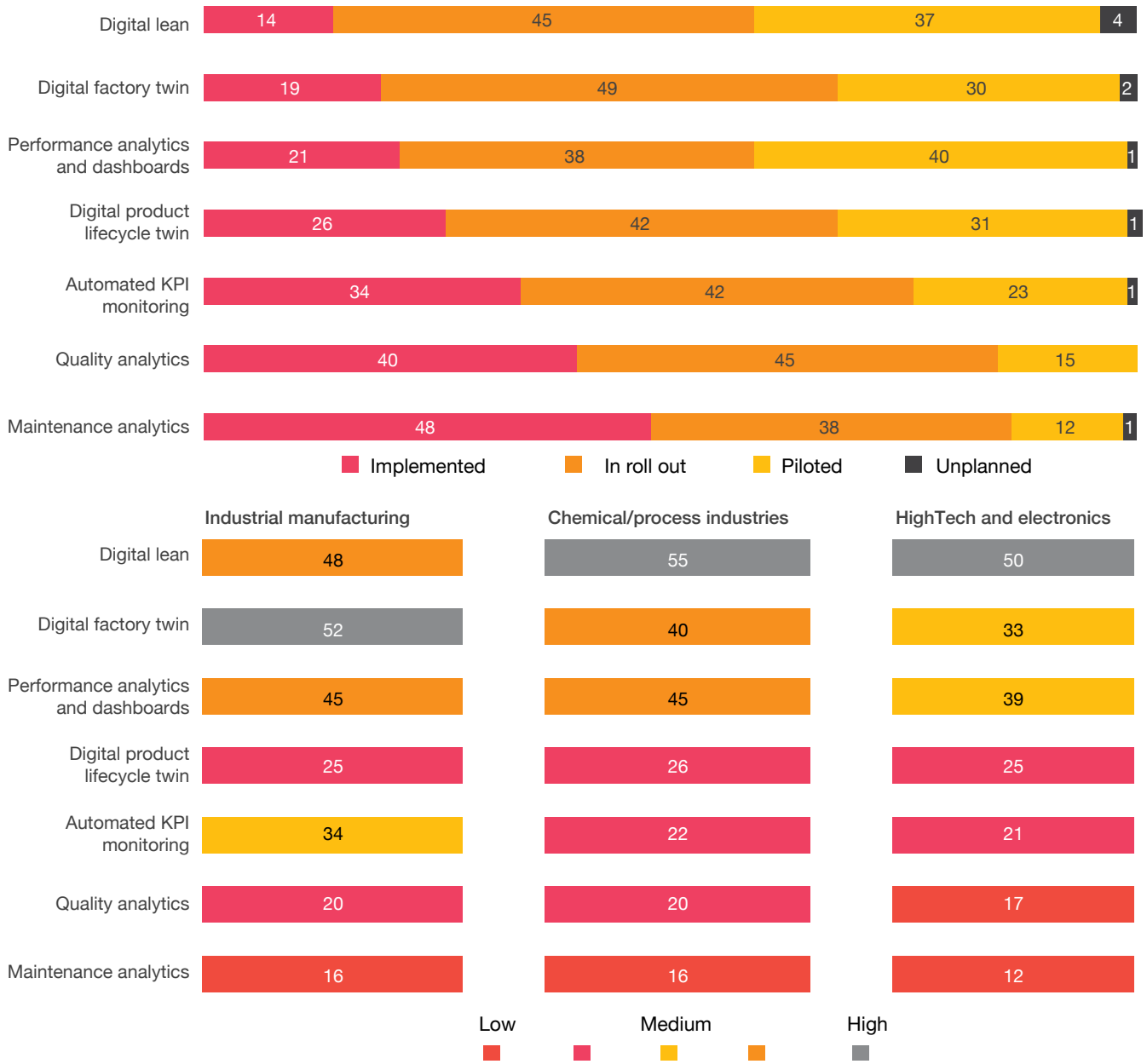
a. automate manual as well as cognitive tasks

b. assist in making decisions or take actions

c. augment decision making through continuous ML.

According to PwC's Digital Factory Transformation Survey 2022,[6] there is a 67% increase in the number of companies which stress upon resilience and flexibility as key drivers for investments. In order to achieve resilience and flexibility, companies have started to implement AI in quality analytics, maintenance solutions and automated key performance indicator (KPI) monitoring, along with digital twins and digital lean manufacturing. Figure 2 illustrates how companies have started to invest into this bucket.

Figure 2. AI implementation by companies to ensure resilience and flexibility – split by use cases and stage of implementation



Source: PwC's Digital Factory Transformation Survey 2022
All values in the graph above are in percentages.

6 https://www.pwc.de/en/strategy-organisation-processes-systems/operations/digital-factory-transformation-survey-2022.html

Based on the survey results, AI-enabled use cases have a market size of over USD 1.1 trillion each year, with almost 64% of the organisations currently at an early stage of their transformation journey. To assist clients, PwC has worked extensively to yield demonstrable benefits in this segment.

For example, a global manufacturer was looking to increase the yield of its plants and wanted to achieve this goal using the same machinery and operators. Therefore, the onus was on tracking and improving manufacturing processes. Our solution approach focused on three key levers to improve the existing processes. This included the following:

(1) machine and workforce utilisation through which the losses were reduced via performance tracking (using enhanced insights from digital performance dashboard), upskilling and cross-skilling of operators, mapping poor performance at an operator-machine-SKU level and ideal allotment of operator to machine

(2) monitoring and tracking parameters for production time and quality were tracked to identify its grade

(3) best-recipe identification wherein based on historical data, a relationship was developed between a product's recipe parameters and its quality.

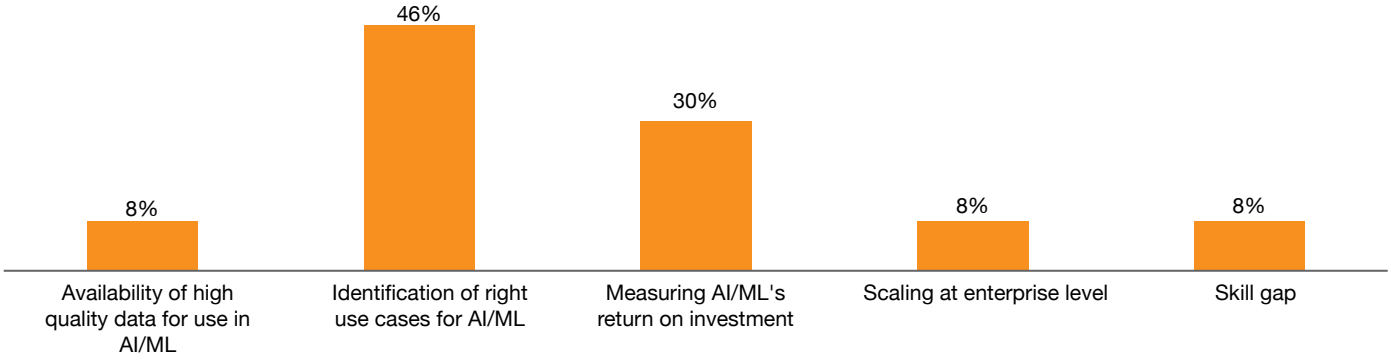
In another case, PwC worked with a global aviation major to assess its operations and delivered a predictive maintenance solution for its maintenance operations, resulting in significant improvements. PwC worked with the client and conducted primary maintenance activities at a central hub with limited ground time, as well as a number of spoke stations with extended ground time. The airline had made significant investments to drive operational reliability. Thus, it wanted to benchmark its overall performance with the best-in-class peers and improve balance between service levels with cost to serve – without impacting operational reliability. As part of the project outcomes, PwC assessed current sourcing and procurement practices to highlight capabilities to be enhanced and enabled sustained sourcing savings, developed a spend cube to analyse spending and determined key sourcing opportunities, and identified opportunities and developed planning processes to reduce inventory levels without impacting service levels.

05

Retail and consumer

In comparison with the other sectors which have seen a marginal or significant increase in the adoption rate of AI, the retail and consumer industry witnessed a marginal decrease of 6% in 2022–23 as compared to 2020. This was triggered by the gap in identification of the right use cases and measuring the RoI.

Figure 3. Challenges faced by organisations in the retail and consumer segment while adopting AI/ML



Source: Surveys conducted by PwC India in 2022–23

Use cases in this sector are primarily in sales and marketing, customer service, and supply chain and logistics with 68%, 52% and 56% of participants, respectively, reporting only marginal or no improvements. This demonstrates the significance of the identification and implementation of the right use cases in the context of the business. Incorrect execution would yield negative results. Moreover, challenges in the retail segment continue to grow as consumer expectations keep shifting due to inflation, supply chain issues post COVID-19, environmental, social and governance (ESG) awareness, and a possible economic slowdown which disrupts both demand and supply. Furthermore, as supply chain disruptions and cost pressures affect consumer behaviour, seamless shopping experience needs to remain consistent.

As omnichannel experiences become more important than ever, trust is indispensable. Thus, organisations need to better invest in data analytics to capture consumer behaviour patterns and make decisions regarding the same. Moreover, 30% of organisations now believe that environmental factors influence purchasing behaviour, with 40% of them stressing on social and governance factors as well.[7]

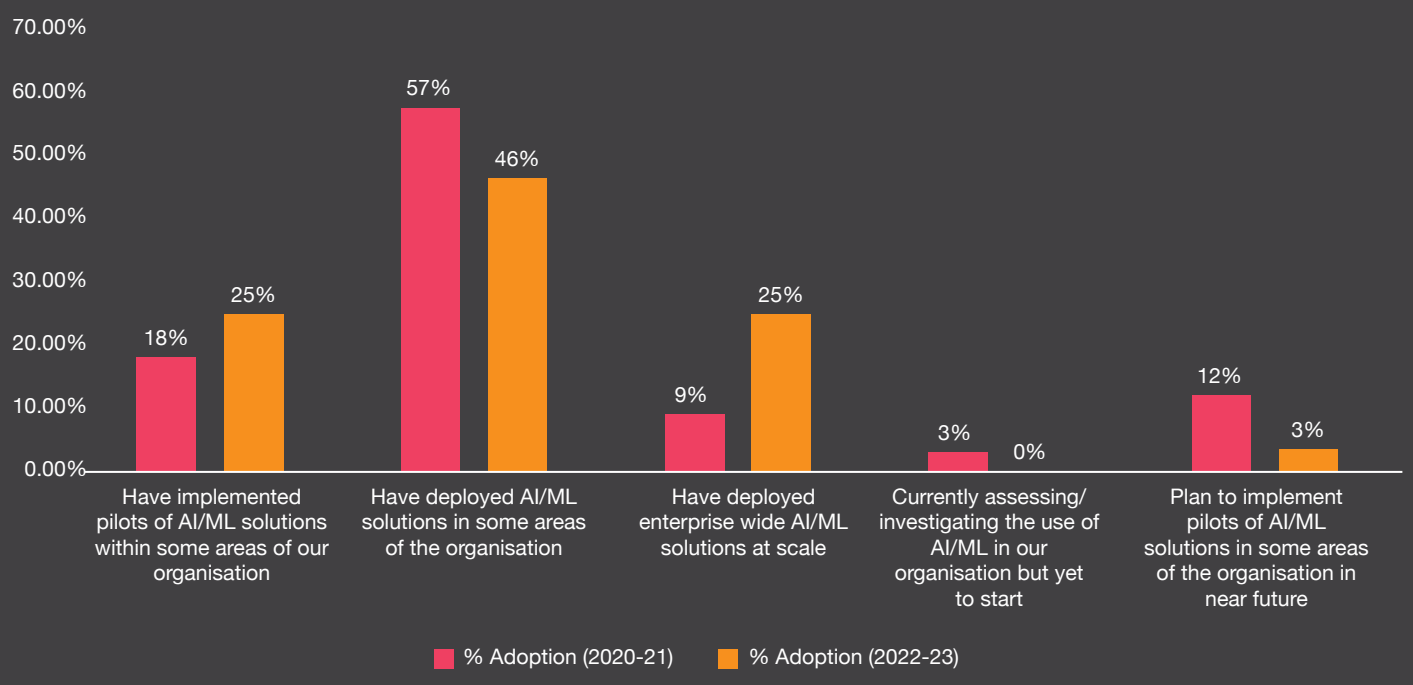
7 https://www.pwc.com/gx/en/industries/consumer-markets/consumer-insights-survey.html

06

TMT

Post the COVID-19 pandemic, the TMT sector has seen an increased demand for AI/ML solutions. As per the survey results (Figure 4), there is a nearly 15% increase in the number of respondents that have deployed enterprise wide AI/ML solutions at scale. To keep up with market forces and build a long-term competitive advantage, organisations are piloting AI/ML solutions to investigate and measure their impact. There was an almost 7% increase in such implementation at the pilot level from 2020 to 2022.

Figure 4: Adoption/implementation of AI/ML in the TMT sector (2020–21 vs 2022–23)



Source: Surveys conducted by PwC India in 2022-23

In terms of the overall impact across all three sectors, telecom has been a major driver with respect to enterprise-wide level implementation. On the other hand, in the case of information technology-enabled services (ITeS), most organisations have deployed AI/ML within some areas of the organisation or through pilot programmes. The rising competition in the telecom sector means that no organisation would want to be left behind by not leveraging AI/ML. However, at the same time, many organisations in the technology segment have not achieved major improvements in terms of returns. According to our 2022–23 survey, approximately 60% of the organisations within the technology segment which have implemented AI say that they have realised only 'marginal improvements'. However, with the advent of generative AI, this number may go up in the future.

8 Surveys conducted by PwC India in 2022–23

Table 2: AI adoption in each segment for TMT

Segment	Adoption rate (2022–23)	Adoption rate (2020–21)	% Swing
Communications (telco, telco infrastructure etc.)	25%	6%	+19%
Entertainment and media (E&M)	11%	7%	+4%
Technology	63%	86%	-23%

Source: Surveys conducted by PwC India in 2022–23

Within E&M,

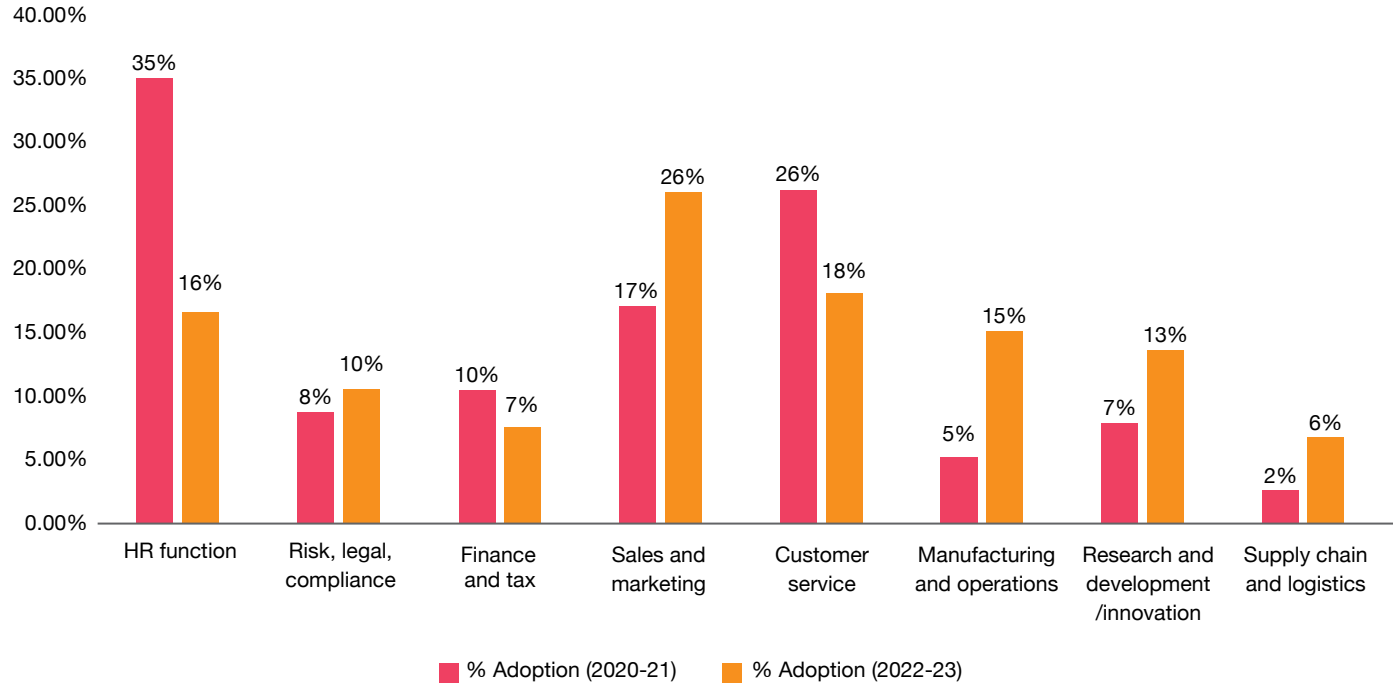
- three out of four organisations have mentioned that AI/ML adoption makes their businesses more trustworthy and competitive, and augments their decision-making capabilities
- two out of three organisations agree that AI/ML is a core necessity for the digital solutions crucial to achieving their business objectives.

However, unlike other sectors, there is still scope for the growth of AI within the E&M sector since most organisations have implemented AI in certain areas of their organisation and are yet to scale it across enterprise-wide functions.

In this scenario, generative AI can play a key role in accelerating the industry's move towards digitisation. Generative AI can help automate tasks and workflows for labour-intensive routines (such as editing). Other use cases include automated generation of many types of content, virtual production with cloud support, and intelligent chatbots acting as frontline customer service representatives for consumer-facing businesses.

In ITeS, business functions such as human resources and customer service have seen a decline in AI/ML adoption, whereas sales and marketing, R&D and operations have witnessed an upswing (Figure 5).

Figure 5. AI use cases and rate of adoption within the ITeS sector (2020–21 vs 2022–23)



Source: Surveys conducted by PwC India in 2022–23

Table 3. Top use cases within business functions which have seen an increase in adoption

Business function	Use cases	% Adoption (2020-21)	% Adoption (2022-23)	% Swing
Sales and marketing	Hyper-personalisation for customer experience through customer insights and predicting behaviour	31%	32%	1%
	Make my Salesforce more efficient and effective	10%	40%	30%
	Dynamic pricing based on customer, context, and geography	10%	13%	3%
	Improving context-aware targeted marketing	15%	18%	3%
Manufacturing and operations	Improving asset performance using predictive maintenance	5%	13%	8%
	Digital twin and simulation	0%	9%	9%
	AI-enabled quality checks	10%	22%	12%
Research and development / innovation	Using AI to determine feasibility of new products and prototypes	15%	27%	12%
Supply chain and logistics	Improving demand forecast accuracy for better inventory level maintenance	5%	18%	13%
	Making procurement and distribution more efficient and effective	5%	9%	4%

Source: Surveys conducted by PwC India in 2022–23

Table 4. Percentage shift in AI/ML adoption across different business functions and use cases in the telecom industry

Business function	Use cases	% Adoption (2020-21)	% Adoption (2022-23)	% Swing
HR function	Improving recruitment and onboarding of new employees	28%	12%	-16%
	Predicting likeliness of employees to churn and improving job satisfaction for retention	14%	25%	11%
Sales and marketing	Hyper personalisation for customer experience through customer insights and predicting behaviour	21%	25%	4%
	Make my Salesforce more efficient and effective	28%	25%	-3%
	Dynamic pricing based on customer, context, and geography	7%	25%	18%
	Improving context-aware targeted marketing	28%	37%	9%
Customer service	Personality profiling of call center agents or customers	7%	0%	-7%
	AI-augmented customer service using chatbots	42%	25%	-17%
	Personalising user experience	35%	37%	2%
Manufacturing and operations	Improving asset performance using predictive maintenance	14%	12%	-2%
	AI-enabled quality checks	28%	37%	9%
Research and development / innovation	Using AI to determine feasibility of new products and prototypes	35%	25%	-10%
IT and cybersecurity	Fraud detection and anti-money laundering	14%	62%	48%

Source: Surveys conducted by PwC India in 2022-23

Table 4 indicates that within sales and marketing, dynamic pricing is a use case which is in demand in the telecom sector. On the other hand, application of AI/ML within the HR function in this sector has been mixed.

The decline in adoption for certain use cases is influenced by factors related to algorithmic fairness, explainability and accuracy. Lastly, AI adoption in R&D has shown promising results with the introduction of generative AI/large language models which empowers researchers with their work. However, there are issues with challenges in accuracy and reliability in new product development.

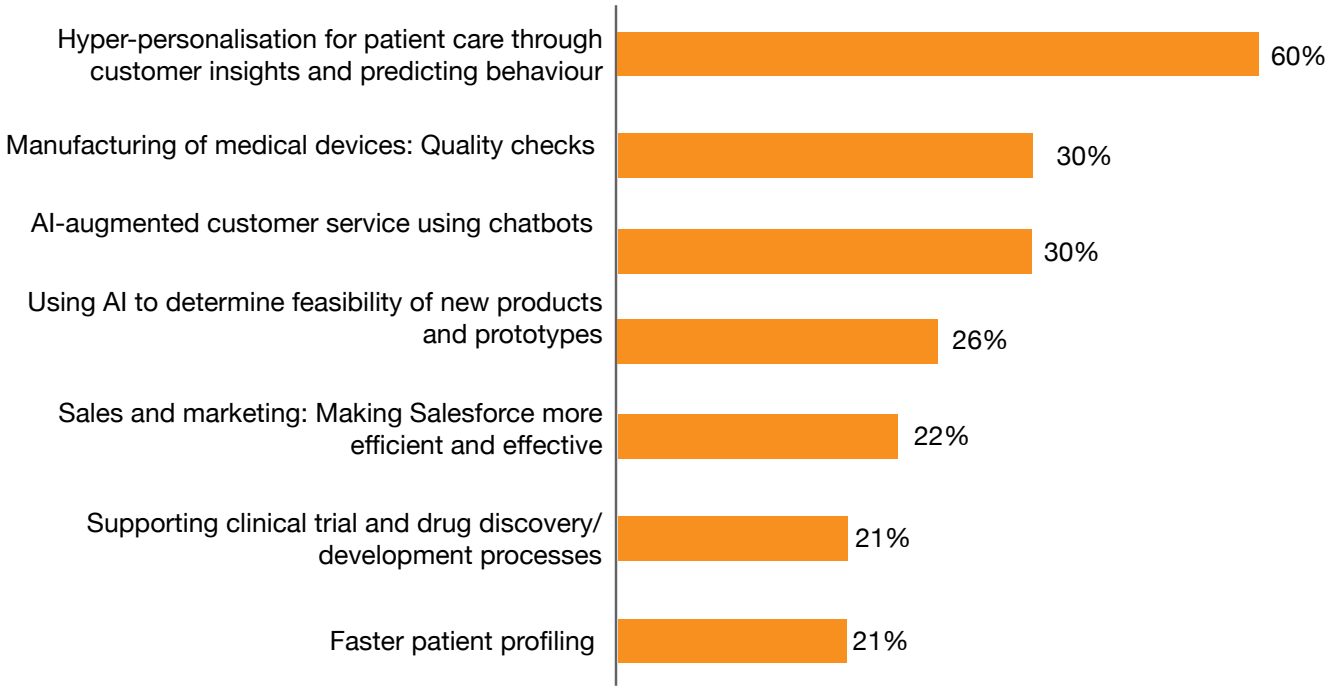
07

Healthcare and pharmaceuticals

Following the COVID-19 pandemic, this sector has seen steady progress in AI adoption with a 7% increase since 2020–21. According to a survey completed in February 2023, 85% of the respondents are interested in AI-enabled, patient-centric solutions (such as sharing customised treatment plans for autonomous disease detection and aiding prevention/cure), while approximately 65% are interested and willing to pay for a service for a disease or a medical concern that can be predicted using AI.[9] However, there are certain challenges around trust. For example, 15% of the total respondents trust the outcome of the AI-generated diagnosis results, while 78% of the population wants to further investigate and discuss it with doctors.

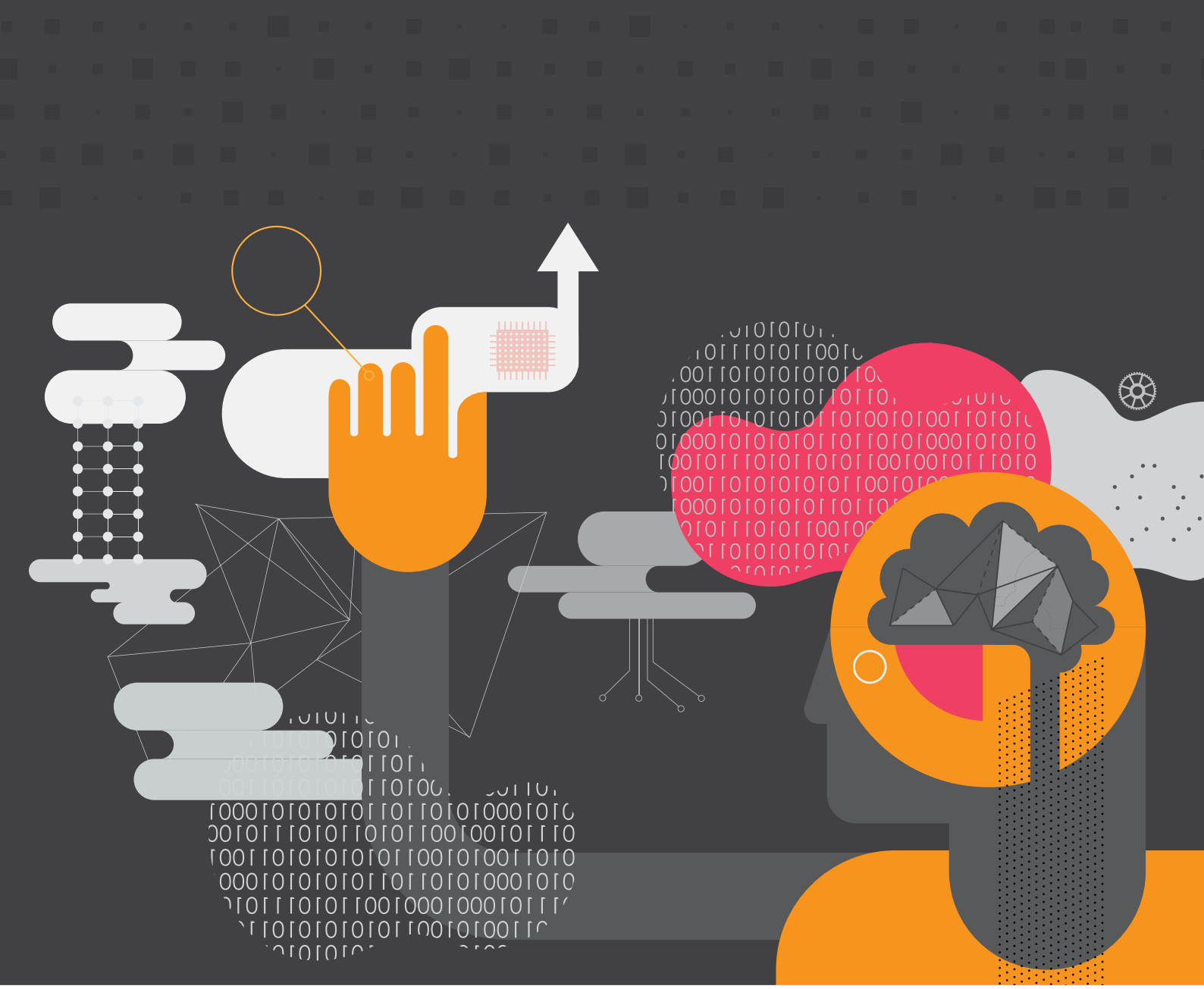
Apart from the above-mentioned use case, over the past two years, hyper-personalised care has realised maximum benefits, closely followed by quality improvements in the manufacturing of medical devices.

Figure 6. Use cases by implementation (%)



Source: Surveys conducted by PwC India in 2022–23

9 https://www.pwc.in/assets/pdfs/healthcare/enabling-healthcare-with-technology.pdf



Although many use cases have been implemented, the rate of growth in adoption is lower as compared with TMT and industrial manufacturing.

Furthermore, in PwC's 2017 Future of Customer Experience Survey,[10] healthcare and pharma ranked as second and third respectively on the list of industries where there was a gap between experience and expectations in AI implementation. To navigate these challenges, PwC has conceptualised a patient experience solution that strategically differentiates healthcare providers, payers and pharmaceutical companies, creating connected health consumers by transforming them from one-off interactions with patients to a personalised presence in their daily lives. Based on over 2,000 distinctive variables, the solution offers unique consumer insights into health by converting these variables into straightforward information on significant features – such as particular health issues, motivations and financial variables matched to certain geographies – using both data and behavioural science.

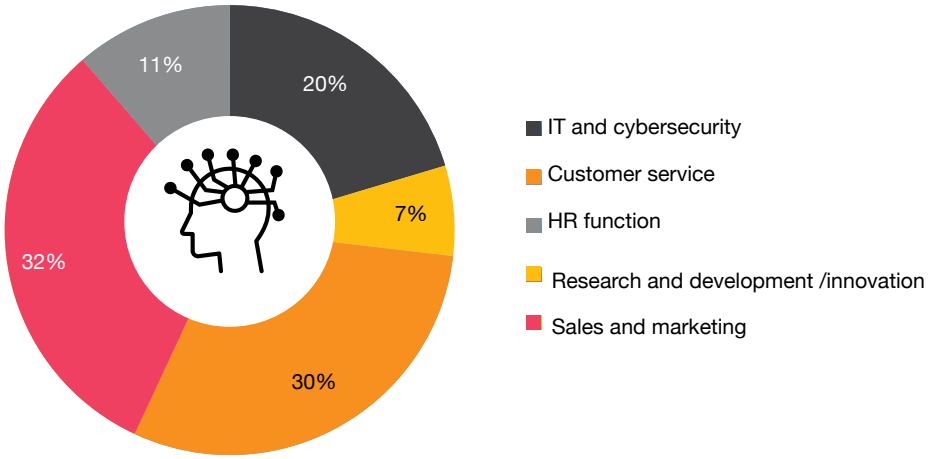
10 https://www.pwc.com/us/en/advisory-services/publications/consumer-intelligence-series/pwc-consumer-intelligence-series-customer-experience.pdf#page=8

08

Travel and hospitality

In 2020, the market saw an increasing trend towards adoption of AI/ML solutions within the travel and hospitality industry. In 2020, almost 90% of organisations from the travel and hospitality industry reported that they had deployed AI/ML solutions in some or more areas of their organisation at a scalable pace.[11] Primarily, this was driven by deployment across sales and marketing, customer service, and IT and cybersecurity.

Figure 7. AI/ML implementation by business function in the travel and hospitality sector (2020; Top five by % of deployment)



Source: Surveys conducted by PwC India in 2022–23

However, compared with 2020, this market is now moving towards saturation. Based on the survey we conducted in 2022–23, the travel and hospitality sector has seen approximately 7% growth, and almost 99% of organisations surveyed today have either implemented AI/ML at scale in at least in some areas.[12]

One major factor that influences investments in a new product portfolio is the RoI. While adoption has seen significant growth in this industry, it is also important to understand whether implementation is yielding considerable benefits. Our survey conducted in 2022–23 shows that following implementations in 2020 (Figure 9), during the last 12–18 months, organisations have seen a proportionate boost in business performance due to specific investments in a business function. For instance, 32% of surveyed organisations had implemented AI/ML solutions within sales and marketing in 2020. Out of those, 67% have reported a significant improvement in results, with only 33% reporting a marginal improvement and none reporting no improvement.[13]

11 https://www.pwc.in/assets/pdfs/data-and-analytics/ai-an-opportunity-amidst-a-crisis.pdf
12 Surveys conducted by PwC India in 2022–23
13 Ibid.

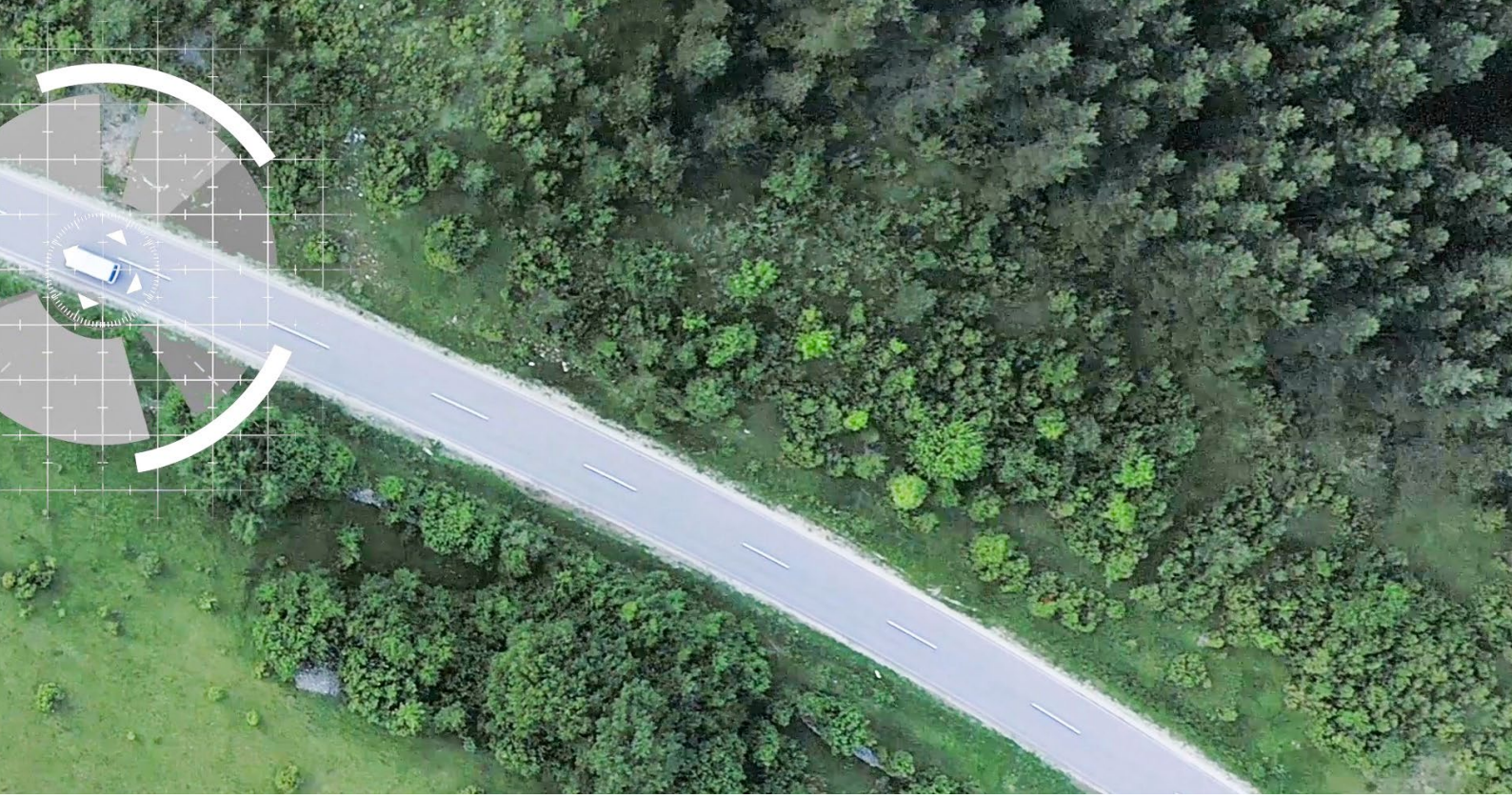
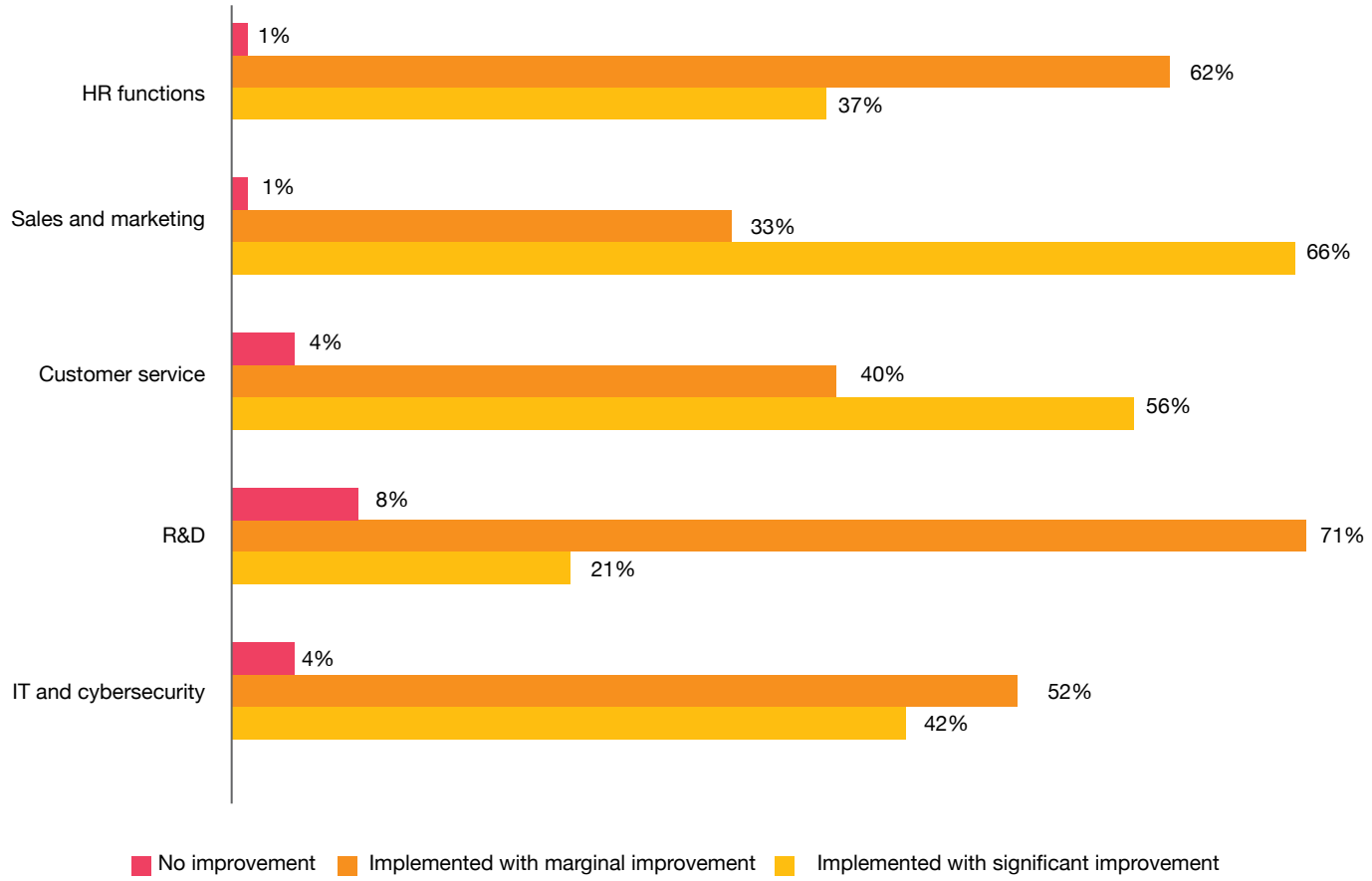


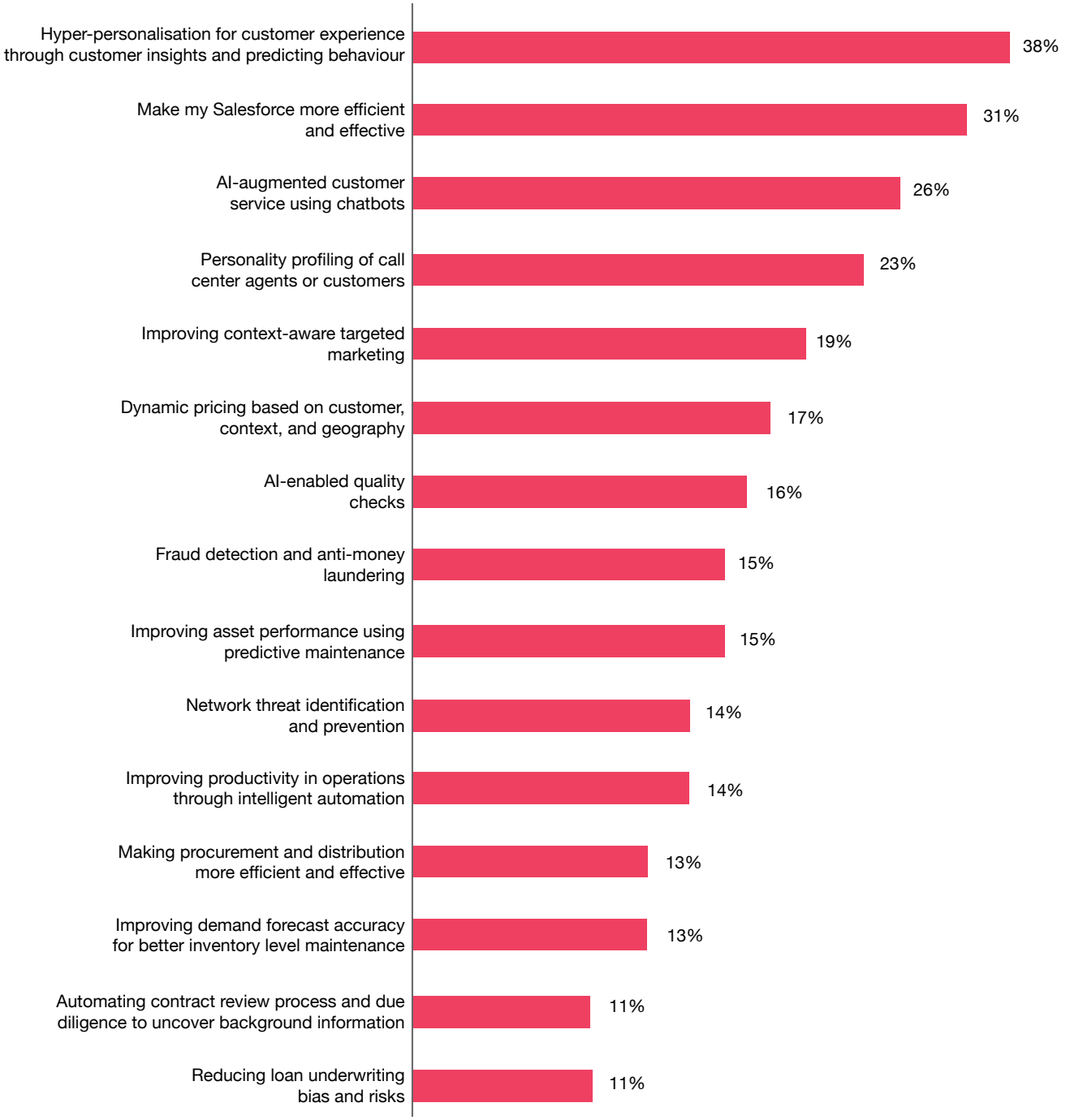
Figure 8. Organisations reporting a positive RoI with improvement in business results in one or more business functions



Source: Surveys conducted by PwC India in 2022–23

The top five use cases which have yielded significant improvements and maximum impact for most organisations between 2020–21 and 2022–23 include **personalised/ hyper-personalised user experience, applications in platforms that enable customer relationship management (CRM), AI-augmented chatbots, personality profiling in customer service, and dynamic pricing based on customer, context and geography.**

Figure 9. Use cases with maximum adoption and a high ranking in terms of priority



Source: Surveys conducted by PwC India in 2022–23

Until 2021–22, organisations invested considerably in the front-end or market-facing domains – such as sales, marketing and customer service – in order to attract and retain a good customer base and generate revenue. However, survey data pertaining to 2022–23 suggests a shift in the focus on AI implementation from market-facing domains to back-end operations, with use cases emerging primarily in supply chain and logistics, manufacturing and operations, and finance and tax.

Table 5. Percentage change in investment in AI/ML across business functions within the travel and hospitality sector

Function	%Adoption (2022–23)	% Adoption (2020–21)	% Swing
Supply chain and logistics	16%	0%	+16%
Sales and marketing	80%	85%	-5%
Finance and tax	28%	14%	+14%
Customer service	96%	89%	+7%
Risk, legal and compliance	20%	7%	+13%
IT and cybersecurity	20%	57%	-37%
Operations	12%	3%	+9%
R&D	8%	25%	-17%
HR	32%	39%	-7%

Source: Surveys conducted by PwC India in 2022–23

Based on the business functions which have seen the maximum shift in investments, the top use cases for AI/ML in the sector are as follows:

a) improving demand forecast accuracy (supply chain and logistics – especially in hotel chains)

b) automation of claims process and refunds (finance and tax)

c) automation of contract review process (risk, legal and compliance)

d) improving productivity, AI-enabled quality checks and predictive maintenance (operations)

e) AI-augmented customer service using voice bots and chatbots (customer service).

Our research suggests a positive outlook for this sector, with AI having a positive impact in terms of cost reduction and revenue growth. In fact, from 2020 to 2022, the percentage of organisations within the industry that have adopted AI/ML increased from 72% to 92% approximately in India alone. As the industry matures and organisations determine more specific use cases that have a good RoI and are aligned with changing consumer behaviours, AI/ML will be leveraged for new opportunities.

09

Trends across business functions

After 2020, organisations have diversified their portfolio by investing positively across all different business functions. In comparison with 2020, 2022–23 has seen an increase in spend on supply chain and logistics, followed by finance and tax and manufacturing and operations.

Table 6: Percentage change in AI adoption across business functions across industries

Business function	% Adoption (2020-21)	% Adoption (2022-23)	% Swing
Human resources	43%	68%	25%
Risk, legal, compliance	23%	62%	39%
Finance and tax	28%	67%	39%
Sales and marketing	61%	86%	25%
Customer service	68%	87%	19%
Manufacturing and operations	36%	75%	39%
Research and development/ innovation	40%	67%	27%
Supply chain and logistics	26%	69%	43%
IT and cybersecurity	60%	87%	27%

Source: Surveys conducted by PwC India in 2022–23

According to the 2022 Digital Supply Chain Trends survey by PwC,[14] within supply chain and logistics, organisations have found AI/ML to help address concerns about supplier risks, with 27% seeing the inability to secure raw materials from suppliers as a major risk. Further, 24% are concerned about operational issues among suppliers, and 21% are worried about suppliers' financial health. A large number of respondents (58%) are seeing higher-than-normal turnover among supply chain employees, and only 23% fully agree that they have the necessary digital skills to meet future goals. Companies have also reported a healthy payoff from investments in smart logistics and process insights, with an average payback period of 1.8 years for advanced supply chain capabilities. Although network optimisation within supply chain and logistics can be a tricky area, if successfully achieved, it can result in huge savings. On the other hand, mistakes can lead to enormous losses. For instance, one of PwC's clients wanted to achieve steady growth in their current markets. Their product placement and warehouse network, however, were not adaptable to the changes in demand profiles in the existing markets. Moreover, the client had a warehouse network that was heavily utilised but lacked the necessary tools to effectively control performance and accommodate development. By evaluating the entire performance of the distribution and logistics network, capabilities and procedures, and comparing those to industry norms, PwC assisted the client in reallocating warehouse investments of over USD 40 million and identified annual network savings of nearly USD 24 million. In addition, PwC helped the client by providing a roadmap for establishing a five-year strategy for investments in new capabilities and the creation and validation of the baseline model.

14 https://www.pwc.com/us/en/services/consulting/business-transformation/digital-supply-chain-2022-trends.html

Within finance and tax as a business function, the top three use cases which have resulted in significant improvements for the participating organisations include (1) tax notice processing to automate tracking and preparation of responses, (2) automating claims processes, and (3) reducing underwriting bias and risks. However, certain challenges arise while implementing AI within this business function.

Figure 10. Challenges in implementing AI in finance and tax

Source: Surveys conducted by PwC India in 2022–23

Finance and tax needs to consider innovative ways to collect and process financial data, moving away from manual manipulation and reconciliation to more forward-thinking analytics for real-time decision making. The recent trend towards **'small' automation** empowers tax professionals to be innovative without the need for big IT involvement, using extract, transform and load (ETL) solutions for pulling and analysing source system data. **Visualisation tools** are also being used to enhance the quality and dynamic display of data for dashboard and presentation purposes. However, **AI has the power to do much more.**

As manufacturing and operations, which ranked third among business functions in terms of increase in investment in AI/ML solutions, is a capital-intensive market, the adoption of AI/ML applications has been found to result in two types of GDP gains:[15] productivity (5 –7%) and product enhancements (5–7%).

Moreover, companies today need what only truly modern operations can provide: broad and deep visibility into the operational value chain, including supply, manufacturing, distribution and demand; accurate forecasts of what might impact those operations; resilience in the face of potential disruptions; tools to help them quickly sense and predict changes in market demand; and the ability to quickly adapt the value chain to deliver on its promises to customers.

For example, a **global automobile manufacturer** wanted to improve the performance of moulding/press systems which were being impacted by wear and tear. Planned maintenance schedules often did not meet actual maintenance needs due to erratic utilisation patterns and conditions. High wastage rates, increasing production costs and unplanned downtimes of production facilities were severely impacting profitability. PwC developed a predictive anomaly detection system to capture and analyse the high-velocity data received. With this, the company could now detect potential anomalies early enough to take countermeasures and prevent costly downtimes and deteriorating product quality.

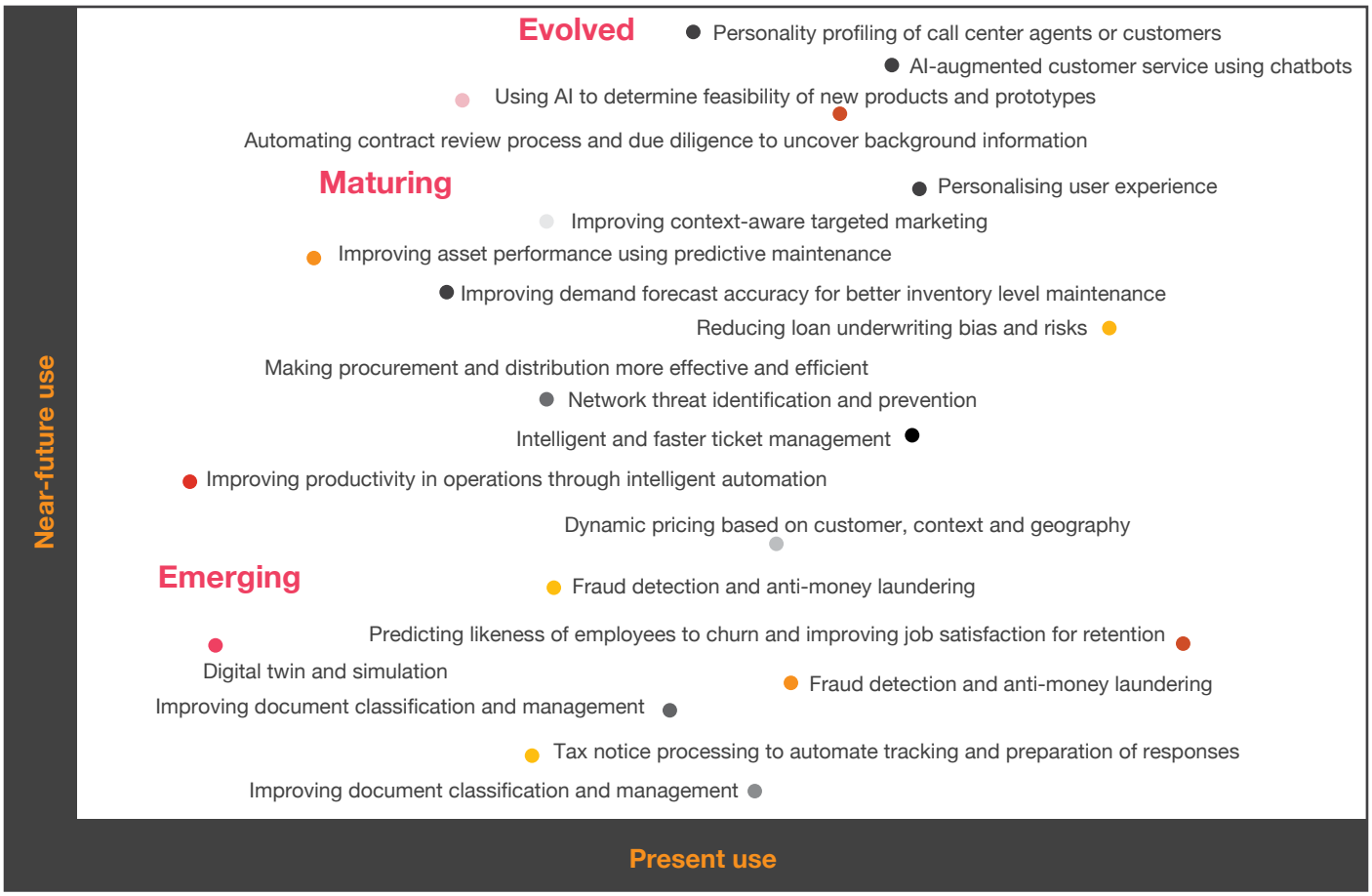
15 https://www.pwc.com/gx/en/industries/industrial-manufacturing/digital-supply-chain.html

10

Emerging use cases

AI/ML has become a basic ingredient of all modern solutions to complex business problems. The introduction of a gamut of new technology solutions by niche solution providers has made innovation a necessity. The 'Enhance' and 'Explore' framework below illustrates the use cases.

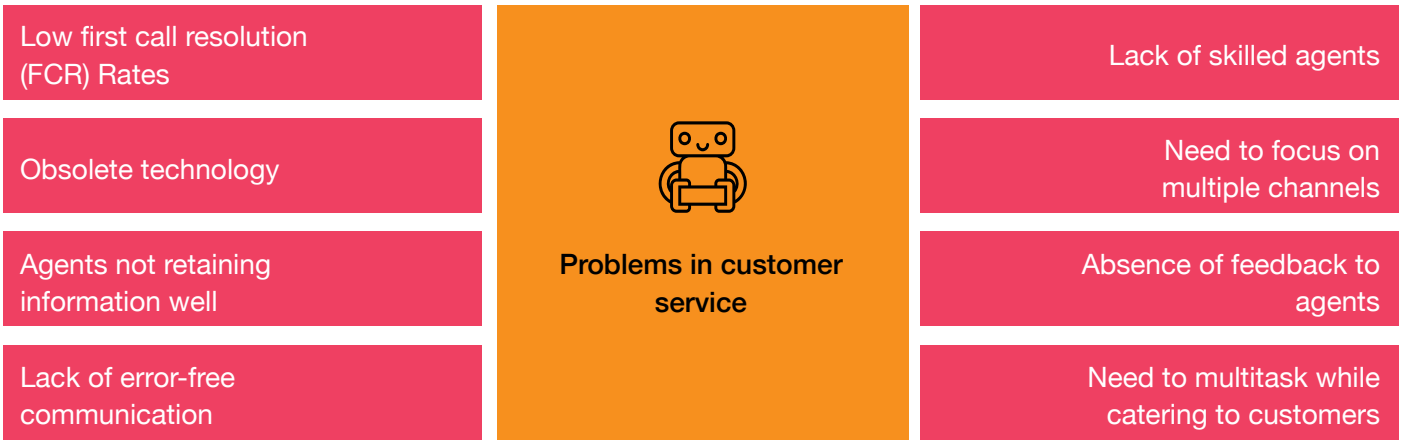
Figure 11. Enhance and Explore framework representing use cases according to their adoption across different industries



Source: Surveys conducted by PwC India in 2022–23

Of the many use cases, voice bots are revolutionising user interaction. Voice has always been the most commonly used medium of communication amongst humans and is preferred over writing as it's more spontaneous and natural. The tone of verbal communication distinguishes it from textual/written communication, ensuring that the former is more conversational and easier to comprehend on most occasions. Advancements in AI and speech recognition technologies have provided companies with huge opportunities and allowed them to gain significant advantages in meeting ever-growing customer expectations. This is evident from the huge growth in voice technologies in the last few years. Voice has become a significant part of technology-driven apps which are becoming increasingly better at communicating in a humanlike manner. Businesses stand to gain a twofold benefit from voice bots, namely cost and revenue.

Figure 12. Challenges voice bots and chatbots can address



Source: Evolution of voice technology, PwC India

Apart from voice bots, AI has also found growing adoption in social listening. The sales and marketing function uses the insights gained through social listening to develop the product strategy and understand consumer sentiments in order to make more informed and faster decisions while reducing utilisation of human resources. In cybersecurity, AI can be used to automate defence mechanisms against abnormal identification patterns, prioritise vulnerabilities so that the most urgent cases can be attended to, and detect phishing and deepfake cases through image recognition and automated tracking. Moreover, voice bots have use cases in all the different business functions ranging from operations excellence to risk. The table below shows the percentage change in the adoption of various use cases from 2020 to 2022.

Table 7. Percentage change in adoption/implementation of use cases (2020-21 vs 2022-23)

Use case	%Adoption (2020–21)	%Adoption (2022–23)	%Swing
AI-based virtual assistants for improved learning and development	24%	14%	-10%
Improving recruitment and onboarding of new employees	23%	27%	4%
Hyper-personalisation for customer experience through customer insights and predicting behavior	31%	40%	9%
AI-augmented customer service using chatbots and voicebots	33%	30%	-3%
Improving productivity in operations	19%	31%	12%
Network threat identification and prevention	18%	17%	-1%
Using AI to determine feasibility of new products and prototypes	21%	19%	-2%
Personalising user experience	26%	24%	-2%
Make my Salesforce more efficient and effective	23%	31%	8%
Improving context-aware targeted marketing	17%	24%	7%

Source: Surveys conducted by PwC India in 2022–23

Furthermore, the advent of GenAI has enabled companies to increase the capability, speed and volume of content search and content creation. For example, a GenAI model can assist with the simultaneous creation of scripts, voiceover, translation and images for a successful ad campaign.

Moreover, under risk and legal, PwC's partnership with the AI-powered legal start-up Harvey exemplifies a use case wherein the GenAI technology adds value in areas of due diligence, regulatory compliance and contract analysis.

GenAI may have potential applications in creation of complex 3D designs and prototypes, conversational analytics, hyper-personalised and interactive recommendation chatbots, etc.

11

Building trust and delivering sustained outcomes

Here are two cases that illustrate PwC's New Equation strategy which is built on trust and sustained outcomes. A global automobile manufacturer recognised the need to invest in alternative transportation services – autonomous ridesharing fleets – due to shifts in consumer preferences. To keep up with the market preferences, the client needed help in analysing vehicle requirements to determine locations for key infrastructure like charging stations and parking and ensure vehicle monitoring with respect to a predefined set of conditions. PwC developed a system to process and transform large quantities of sensor information from vehicles into actionable insights. Our model analysed more than 200,000 go-to-market scenarios to identify target markets and develop operational strategies. With the help of simulation modelling, synthetic trip lists were fabricated to understand where customers travel and when. The model also created a straightforward interface and experimented with control variables – such as parking garages and charging stations displayed on a map – to ensure thorough, risk-free testing.

Conclusion: PwC built a dynamic simulation model to help the client understand the value from gained efficiency.

A client in the healthcare industry wished to industrialise and scale up its home hospital service.

PwC performed an analysis of diagnosis-related groups (DRGs) that can be delivered through a home hospital and developed a model of the cost-effectiveness of scaling up home hospital services under numerous scenarios. We analysed the different options for delivery of home hospital services, including the timing and sequencing of scaling up, locations, number of service delivery providers to enable economies of scale, and any other criteria essential to the economic sustainability of the model. We prepared an implementation plan covering the activities required to implement the model successfully, and provided a benefits realisation tool to monitor and evaluate the KPIs.

Conclusion: PwC helped the client explore, evaluate and demonstrate the sustainability and economic benefits of a scaled-up home hospital service.

12

Way forward

Summary of challenges faced by organisations across industries:[16]

Approximately one in every four organisations still fails to measure the RoI and therefore can't make a strategic decision on investing in AI/ML solutions within their organisation.

a) Approximately one in every three organisations in India today fails to find a proper use case within their organisational framework for applying AI/ML solutions.

b) Recruiting and upskilling employees who can meet organisational goals is a critical issue, with 14% of organisations identifying this as a challenge.

c) Nearly 15% of organisations find it difficult to scale up AI/ML solutions at an enterprise level.

d) Nearly 95% of the Indian market believes that AI/ML can help to create more opportunities than threats for businesses and not utilising AI/ML solutions would mean losing opportunities to a competitor.

e) Sales and marketing will be heavily automated by a majority of businesses. Investing in finance and tax solutions, R&D and cybersecurity will be equally crucial, with AI adoption seeing significant acceleration in the next one to two years.

Using explainable AI, PwC assists firms in adopting AI in a responsible manner. Integrated with PwC's comprehensive framework for best practices in AI (viz. responsible AI), is a set of proposals that recommends new use cases based on revenue, rate, rigour, regulation, reputation and risk. For existing AI implementations, we perform gap analysis to demonstrate an organisation's preparedness to deliver on AI. To measure the RoI realistically, it is important that an organisation is able to trust the decisions made by AI. PwC's responsible AI framework – a suite of customisable frameworks, tools and processes – can help explain both overall decisions making, as well as individual choices and predictions made by AI systems.[17] Simulation techniques and digital twins allow an organisation to consider thousands of potential outcomes and then select the best strategic bets, option-value bets and no-regret strategies that are robust, thus minimising any negative impact on investment and efforts.[18] Furthermore, PwC's ADAPT framework, together with its New Equation strategy, can help clients develop the right use cases in their respective industries.

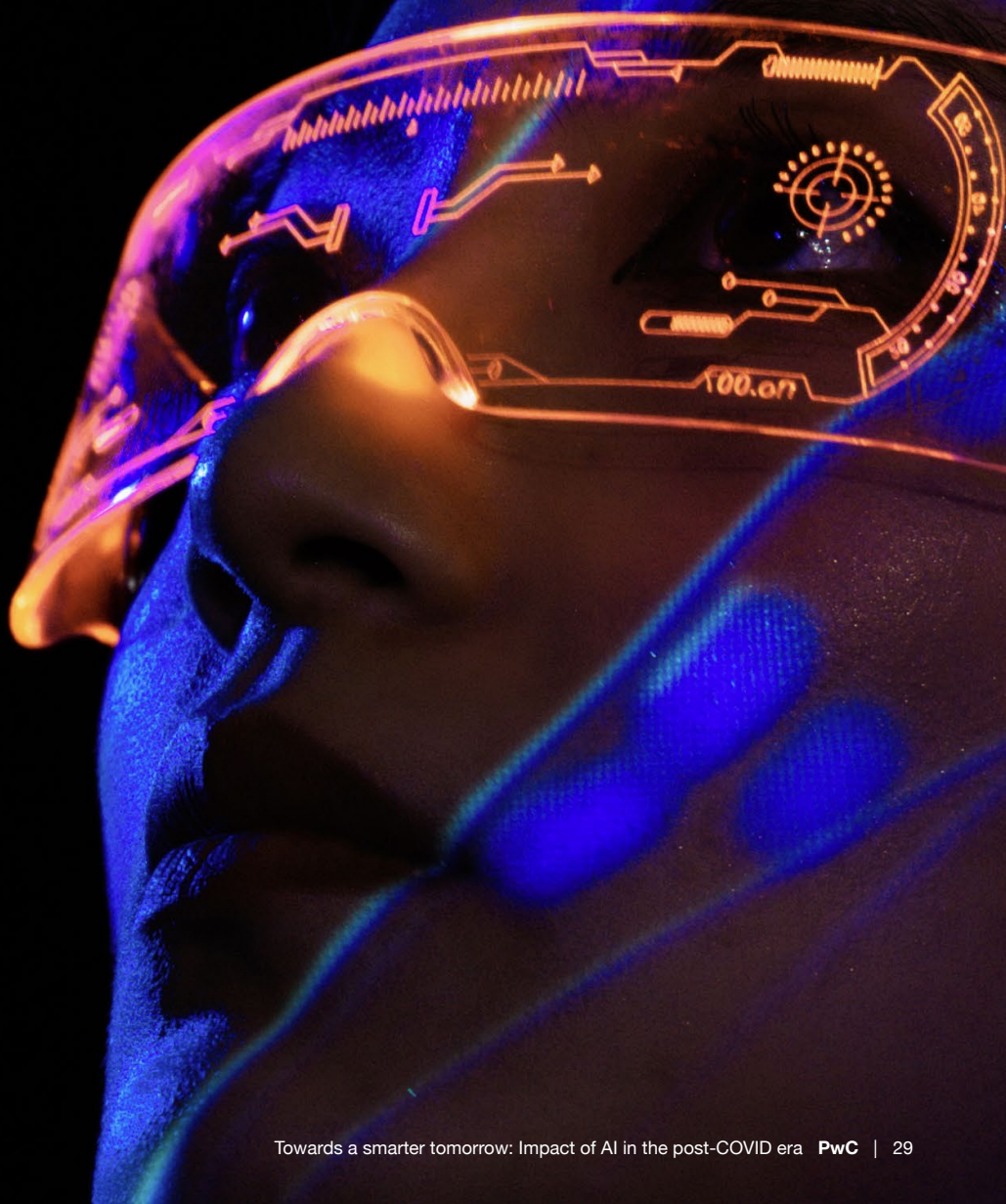
16 Surveys conducted by PwC India in 2022–23

17 https://www.pwc.com/rai

18 https://www.pwc.com/us/en/services/consulting/analytics/artificial-intelligence.html

Appendix

Categorisation	Industry
Financial services	Banking, capital markets and private equity, financial services, asset and wealth management, insurance, digital payments, and FinTech
Health and pharmaceuticals	Pharmaceuticals and life sciences, hospitals, pharmacies and diagnostic centers, and healthcare
Industrial products and manufacturing	Automotive, engineering and construction, industrial manufacturing, metals and mining, petroleum, petrochemical, oil and gas (upstream and downstream), power and utilities, and chemicals
Retail and consumer	Organised retail, e-commerce, consumer goods and services (e.g. hyperlocal, advertising, market research)
TMT	Telecom and communications, media and entertainment and technology
Travel and hospitality	Transportation and logistics (airline, railways, organised bus transport, delivery ports, airports), hospitality and leisure (hotels, aggregators, tourism, etc.)



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At PwC, our purpose is to build trust in society and solve important problems. We're a network of firms in 152 countries with over 328,000 people who are committed to delivering quality in assurance, advisory and tax services. Find out more and tell us what matters to you by visiting us at www.pwc.com.

PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity. Please see www.pwc.com/structure for further details.

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