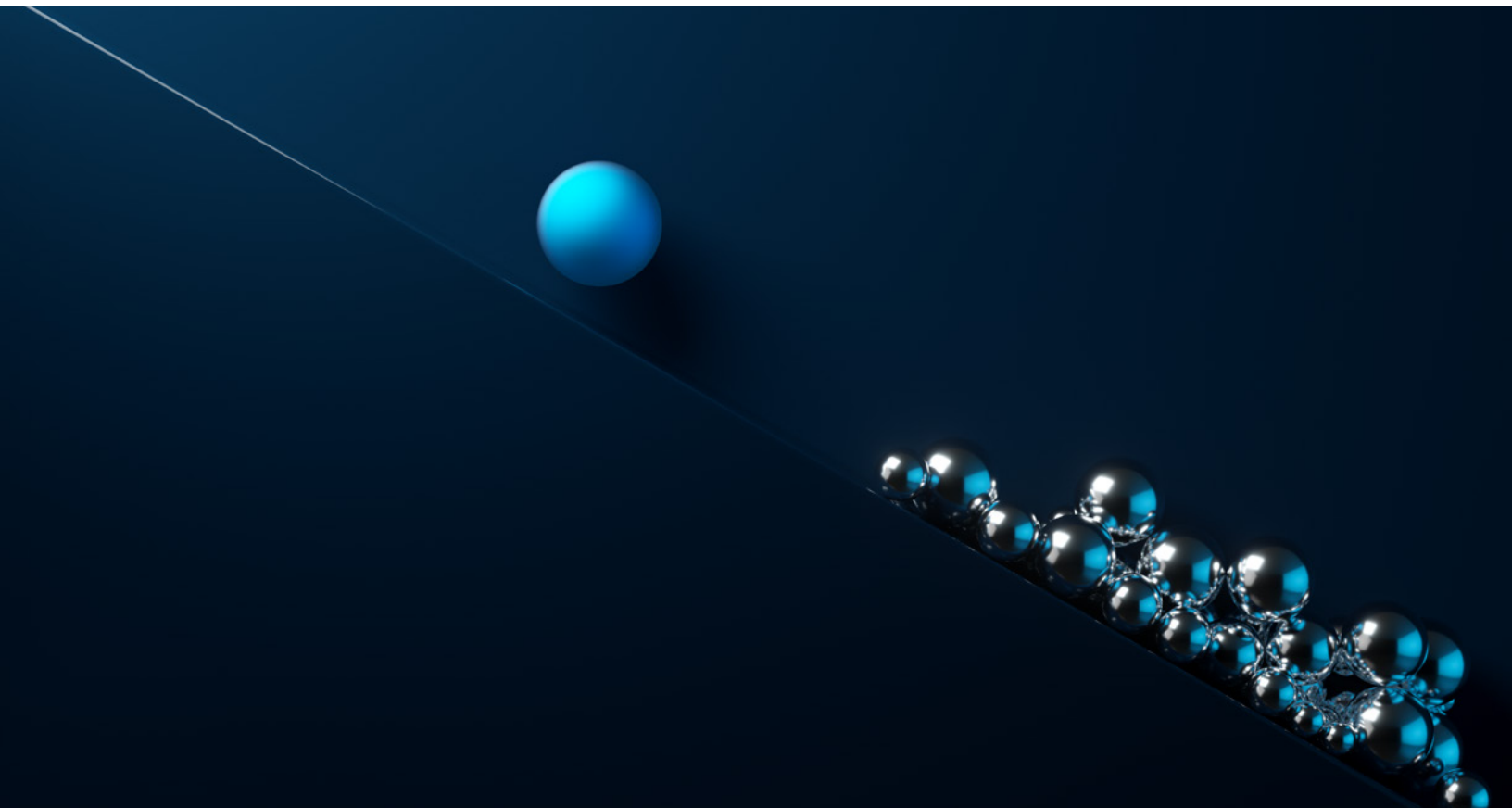# McKinsey & Company

Technology, Media & Telecommunications and McKinsey Digital

Tipping the scales in AI: How leaders capture exponential returns

Where many companies tire of marginal gains from early AI efforts, the most successful recognize that the real breakthroughs in AI learning and scale come from persisting through the arduous phases.

This report was a collaborative effort by Yuval Atsmon, Kim Baroudy, Pallav Jain, Sunil Kishore, Brian McCarthy, Sumesh Nair, and Tamim Saleh, representing views from McKinsey's Technology, Media & Telecommunications (TMT) and Digital Practices.

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Patience is a bitter plant, but its fruit is sweet. This Chinese proverb could well apply to the task of harvesting benefits from artificial intelligence (AI). Many organizations underestimate what it takes to sow true gains, be it selecting the right seeds, apportioning the right investment, or having a mindset willing to put up with the vagaries of the crop cycle. But for those that persevere, the rewards can be huge. McKinsey research finds that leading organizations that approach the AI journey in the right ways and stick with it through the tough patches generate three to four times higher returns from their investments.

These AI leaders get on a different performance trajectory from the outset because they understand that AI is about mastering the long haul. They prepare for that journey by anticipating the types of things that will make it easier to navigate the ups and downs, such as feedback loops that allow data quality and user adoption to compound and AI investments to become self-boosting. Where some companies tire of marginal gains from weeks of effort, leaders recognize that the real breakthroughs in AI learning and scale come from working through those small steps.

But only a small number of businesses have figured out how to make AI work in these ways. Our survey of some 800 companies in the technology, media, and telecommunications (TMT) sectors globally found that just 10 percent of companies are on this path (see sidebar, "About the research"). The rest remain mired in the low to middling stages of maturity, with laggards making up 60 percent of the population and aspirants 30 percent (Exhibit 1).
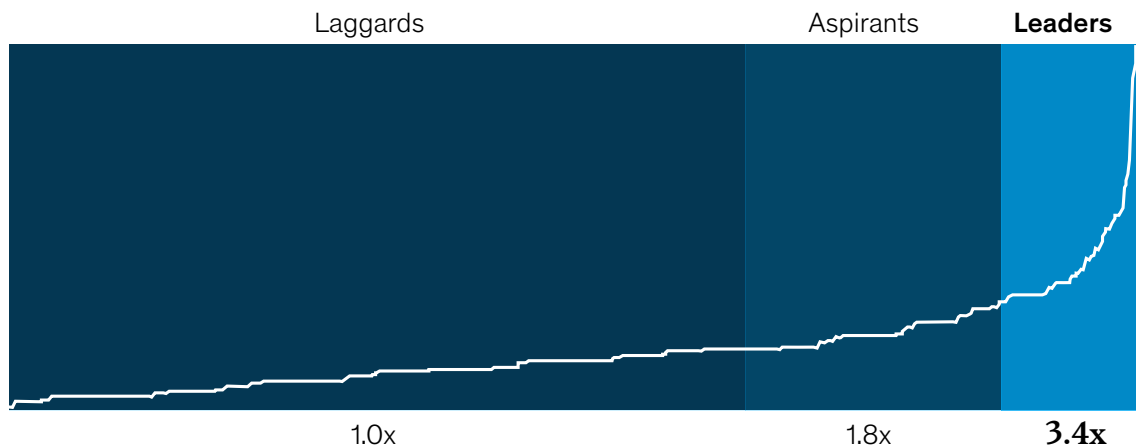
Underperformers can change their arc, but the window of opportunity to do so is narrowing. Waiting to redouble efforts in AI until the many disruptions of the pandemic begin to dissipate will put laggard companies at a long-term competitive disadvantage because the trajectory that leaders are on will lead to accelerating gains. Instead, we believe the example of these TMT leaders is broadly applicable, and that following it can help many companies, both in TMT and other sectors, tip the AI scales in their favor.

Exhibit 1

Leaders get disproportional impact from their AI investments.

Operating income impact, indexed to the average of laggards (bottom 60% of respondents)

AI leaders outperformed their respective industry (~8 percentage points additional EBIT margin in 2019)

| Laggards | Aspirants | Leaders |

1.0x   1.8x   **3.4x**

Mapping a more rewarding AI journey

Our research and client experience shows that AI leaders have a much better understanding of what achieving success with machine learning and other such tools entails. As a result, they are more willing to persist through the arduous phases, be it the painstaking work of training machines or the discomfort of laying out new ways of working. That clarity allows them to structure their AI journeys differently. Rather than dabbling in lots of different areas, they build strength and density in one or two domains, then expand from there. That approach allows them to deepen their use and application of unstructured data, access more sophisticated use cases, and layer in the necessary operational underpinnings—the investment, talent, data management, production, and other techniques that allow AI-enabled practices to become embedded into everyday routines (Exhibit 2).

Moreover, as leaders build domain strength and reach a certain threshold in AI performance, their rate of learning and productivity increases, allowing them to progress through other domains faster and tackle problems of ever-increasing difficulty. They recognize that scaling AI solutions to deal with increasingly

Exhibit 2

Outsized returns on AI investments for leaders are driven by six key markers.

Key markers of AI value capture at scale

	Laggards	Aspirants	Leaders
AI investment (% of IT)	**5–10%** Independent, disconnected proofs of concept (POCs) across multiple domains	**10–15%** 2–3 domains with mature AI initiatives	**15%+** Enterprise-wide transformation delivering value
Talent	Pockets of AI talent, lack of structural initiatives	Emerging function-led initiatives to acquire, reskill AI talent	At scale, enterprise-wide AI talent acquisition and reskilling initiatives
Agile delivery	Sub-scale POCs, siloed initiatives	Pooling of resources, maturing adoption of digital tools (eg, Jira)	Structured governance (eg, chief data officer), agile operating model (business ownership, domain-focused squads)
Technology	Lack of common protocols/ tools and platforms	Some standardization and automation, but with large variances across enterprise	High degree of automation in data engineering, data science, with protocols deployed for developing and productionizing models
Data	Lack of clear data strategy, and fragmented, siloed data sources	Emerging transformative architecture, consolidation of enterprise-wide data sources toward unified vision	Modern architecture, extensive use of unstructured data and external sources, democratization of data
Adoption and business change (% of AI spend)	**<30%** Independent, disconnected proofs of concept (POCs) across multiple domains	**30–50%** 2–3 domains with mature AI initiatives	**>50%** Enterprise-wide transformation delivering value

About the research

The survey was conducted over six weeks in the summer of 2020. It generated roughly 1,100 responses from top executives and directors at some 800 companies in more than 20 countries across North America, Western Europe and Asia-Pacific regions (excluding China). A small number of responses from China (150), Latin America (65), and the Middle East and Africa (25) were excluded from the analysis to avoid the influence of outliers. The companies surveyed represented the wide range of technology, media and telecommunications (TMT), including hardware, software, media and entertainment, technology services, and telecom operators. The respondents were segmented into the 3 categories of leaders (8% of total), aspirants (17%) and laggards (75%) based on four main criteria—share of AI/analytics investments, senior leadership AI vision and strategy alignment, satisfaction with AI investment ROI, and Operating Income impact.

sophisticated problems is hard, but necessary to capture value. Teaching a machine to identify human faces is one milestone, for instance, but getting the machine to recognize particular faces and only those faces is a far more complex undertaking.

Once solved, companies gain compounding benefits quickly. In some cases, those benefits come from rapidly scaling to new use cases, such as using AI-powered chatbots to address an increasingly complex set of customer queries. In others, it comes from productivity and performance, such as improving the accuracy of recommendation engines for specific customer microsegments. Success also breeds success by spreading conviction across the organization about the potential of AI and generating increased user engagement and adoption. Understanding the path to value allows top performers to scale synergies and punch through to the exponential curve.

Key Lessons from AI Leaders

Analyzing top performers reveals five steps that differentiate their approach. Following that same playbook can put others on a similarly strong trajectory for AI growth.

1. Fund aggressively when conditions for success are in place

What distinguishes the most successful AI champions is the level of leadership engagement and committed investment. Leaders assemble a coalition of business, IT, and analytics leaders to forge consensus on ownership and outcomes. They also invest more in AI, setting clear milestones, and they continue to fund even when it's hard.

For example, a leading telco grew its AI investment from 15 to 20 percent of its total IT budget over a three-year period. They assembled a steering committee to set performance targets and committed a large seed round of funding to introduce AI capabilities to the customer operations function. The initial solutions helped troubleshoot service bottlenecks and improve field force productivity, lowering the company's cost to serve in modest, but tangible ways. With proof of concept established, the company continued to invest, setting new targets and milestones. Over the next year and a half, they deployed AI more deeply, for example using it to optimize scheduling in the contact center by linking propensity to call across different products. By the end of year three, the AI investments generated three to four times more impact annually than at the beginning.

Telco player defined the vision for customer service with cutting edge AI/analytics

Digitized self-care

Ensure customers have effective and dynamically updated self-care options for highest priority areas that can deliver personalized experiences.

Front-line robotics

30–50%

of all calls are automated; robots and virtual agents serve as gatekeepers for all live channels.

Agent enablement

Utilize AI to support and live-coach agents and predict most likely contact reasons.

Omnichannel

~75%

of customers use more than one channel; voice remains important.

Dynamic operations insights

Quickly identify outdated processes and provide reliable, fact-based automation recommendations.

Real-time speech analysis

Leverage real-time speech and sentiment and emotion detection to understand customer experience.

Enchance employee productivity

Identify pain points an unlock productivity gains by developing better coaching, training and decision support tools.

Back-end robotics

Leverage AI to automate repetitive tasks such as replacing manual activity tracking.

Like this company, the top performers in our study poured three times more investment into AI than aspirant companies between 2019 and 2020—committing 10 percent of their IT budgets versus 3 percent. And nearly three-quarters of these businesses plan to continue to increase their AI spending over the next 12 to 18 months.

2. Build density in domains

Many companies fall into the trap of letting use cases drive the AI road map rather than the other way around. They apply AI to a checklist of "top" applications, such as predictive maintenance or churn management, and then go around looking for places to implement them, an approach that often results in fragmented, subscale initiatives.

AI leaders take a different approach. They build density in targeted domains—interdependent functions like sales and customer service that have shared business outcomes, such as increasing growth by 5 percent in a particular segment. Focusing on domains allows AI leaders to go deeper, faster—employing more applications in more advanced ways. This approach has three inherent advantages: concentrated

business sponsorship, data synergies, and greater adoption. Leaders in our survey implemented up to 3 times more use cases per function compared to laggards and extracted 2-5 times more operating profit—for example, driving 5 times the impact from AI in G&A, 3.5 times the impact in service operations, and 2.2 times in research and development (Exhibit 3).

Exhibit 3
Use cases by industry

Operating income increase, % of respondents[1]

Legend: ■ Increase by <1%   ■ Increase by 1–3%   ■ Increase by >3%

HARDWARE OEM

Domain	Use case	Leaders	Laggards
Domain: Revenue			
Commercial and sales	B2B pricing	100	56 / 39
	Churn prevention	88 / 12	69 / 31
	Cross-sell/upsell	20 / 60 / 20	34 / 66
	Improving B2B sales productivity	14 / 57 / 29	44 / 56
	Segmentation & customer acquisition	100	64 / 36
Domain: Cost			
Customer service	AI-driven customer care	8 / 46 / 46	28 / 60 / 12
	Call center resourcing optimization	8 / 50 / 42	46 / 50
Field operations	Field-force deployment optimization	33 / 67	56 / 39
Procurement and supply-chain	Inventory optimization	40 / 60	46 / 48
Research & product development	R&D project efficiency	36 / 64	26 / 69

MEDIA & ENTERTAINMENT

Domain	Use case	Leaders	Laggards
Domain: Revenue			
Advertising sales	Ad targeting/personalization	83 / 17	59 / 38
B2B commercial & sales	Improving B2B sales productivity	25 / 75	58 / 42
B2C sales & marketing	Analytics-driven digital marketing	50 / 50	68 / 32
	Churn prevention	100	64 / 36
Programming/content	Content acquisition/commissioning	80 / 20	48 / 50
	Content recommendations	80 / 20	51 / 47

[1]Excludes respondents who did not indicate that they have adopted use case.

Exhibit 3 cont.

Legend: ■ Increase by <1% ■ Increase by 1–3% ■ Increase by >3%

	Use case	Leaders (<1% / 1–3% / >3%)	Laggards (<1% / 1–3% / >3%)
Domain: Cost			
Advertising sales	Audience forecasting	80, 20	59, 38
	Inventory optimization	67, 33	68, 32
Programming/content	Production	83, 17	37, 61
	Scheduling	100	47, 50

SOFTWARE & PLATFORMS

	Use case	Leaders (<1% / 1–3% / >3%)	Laggards (<1% / 1–3% / >3%)
Domain: Revenue			
Commercial and sales	B2B pricing	21, 71, 8	79, 14
	Churn prevention	20, 80	64, 27, 9
	Cross-sell/upsell	21, 71, 8	59, 29, 13
	Improving B2B sales productivity	21, 63, 16	60, 33
	Segmentation & customer acquisition	17, 67, 17	54, 39
Domain: Cost			
Customer service	AI-driven customer care	13, 38, 50	37, 58
	Call center resourcing optimization	19, 33, 48	40, 52, 8
Field operations	Analytics-driven issue resolution	9, 57, 35	50, 28, 22
	Onsite engineering deployment optimization	11, 63, 26	68, 23, 9
Research & product development	R&D project efficiency	44, 50	56, 39

TECHNOLOGY SERVICES

	Use case	Leaders (<1% / 1–3% / >3%)	Laggards (<1% / 1–3% / >3%)
Domain: Revenue			
Commercial and sales	Analytics-driven digital marketing	14, 64, 21	65, 31
	B2B pricing	20, 70, 10	87, 13
	Churn prevention	17, 83	64, 36
	Cross-sell/upsell	29, 71	59, 36
	Improving B2B sales productivity	15, 69, 16	68, 32

Exhibit 3 cont.

Legend: ■ Increase by <1% ■ Increase by 1–3% ■ Increase by >3%

Use case		Leaders (<1% / 1–3% / >3%)	Laggards (<1% / 1–3% / >3%)
Domain: Cost			
Service delivery	AI-driven customer care	43 / 50 / —	64 / 36
	Analytics-based issue resolution	53 / 40 / —	67 / 22 / 11
	Service desk resource optimization	40 / 60	47 / 37 / 16
	Optimized ticket assignment to engineers	31 / 62 / —	50 / 45 / —
Support functions	People supply chain optimization	36 / 36 / 27	52 / 44 / —

Industry: Telecom operator

Use case		Leaders	Laggards
Domain: Revenue			
B2B commercial & sales	Analytics-driven digital marketing	50 / 50	39 / 57 / —
	Cross-sell/upsell	50 / 50	41 / 47 / 12
B2C sales & marketing	Analytics-driven digital marketing	80 / 20	22 / 70 / —
	Churn prevention	100	57 / 43
	Cross-sell/upsell	100	50 / 50
Domain: Cost			
Customer service	AI-driven customer care	17 / 17 / 67	57 / 43
	Call center optimization	40 / 20 / 40	59 / 22 / 19
Network	Field-force deployment optimization	25 / 75	31 / 69
	Predictive/preventive maintenance	20 / 60 / 20	50 / 47 / —
Procurement and supply-chain	Forecasting/demand planning	10 / 40 / 50	38 / 62

Breaking a journey or function into its component parts can put the domain approach into action. Within sales and marketing, for example, one leader deployed AI-enabled analytics to improve strategy and planning, uncovering deeper insights on market trends and customer buying behaviors. Under lead generation, they created bots to score, prioritize, and nurture contacts. To improve post-sales performance, they used AI to track sentiment analysis and supply next-best-action recommendations. These changes drove adoption as well as effectiveness. The more integrated AI became, the more the synergies they created. Teams were able to make use of data investments in adjacent departments such as customer care and grow the user base. AI-enabled lead-generation and qualification capabilities improved sales productivity by 15 to 20 percent and increased order management throughput by 20 percent.

Case example

B2B OEM vision for sales function: AI and automation-enabled salesforce of the future

Sales strategy and planning

- Market intelligence insights through advanced analytics
- AI-driven pipeline health monitoring
- Smart quota planning
- AI-based customer profiling and targeting

Lead identification and qualification

- AI-driven lead evaluation and prioritization
- Bot-driven lead nurturing
- Automated workflow for marketing and sales interaction

Configuration, pricing and quotation

- Automated proposal /RFP response generation
- NLP-based Inquiry resolution
- Smart pricing recommendations

Order management

- RPA-based receivables and payables workflow
- Smart workflows including customer billing and inventory management

Post-sales activities

- AI-driven follow-up recommendations for cross-sell /upsell
- AI-based customer sentiment analysis
- Contract auto-renewal

Structural support

- AI-enabled compensation management
- Automated report generation/distribution
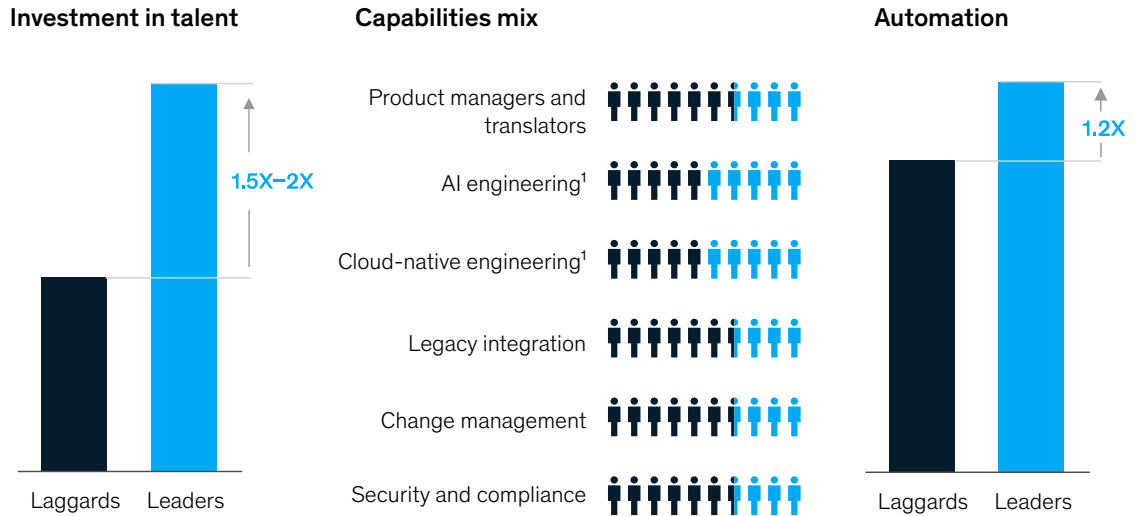- AI-based performance assessment and training

Source: Software provider landscape, expert interviews, and McKinsey engagements

3. Bring a rounded set of skills and invest in productivity

AI leaders hire 65 percent more AI-related workers than other companies do, varying the mix of capabilities they hire in proportion to their organization's learning curve; that means engaging more data analysts and translators in the beginning of the AI journey, then shifting their hiring mix toward engineering and data science as the organization gains AI experience (Exhibit 4). This is when AI leaders begin to reap significant scale effects in terms of productivity and performance. By helping the organization build the muscle needed to engineer and deploy AI applications, they can scale to multiple domains and capture the exponential gains sooner.

Exhibit 4

Leaders invest more in talent across the full suite of capabilities, and automate to improve developer productivity.

Investment in talent

1.5X–2X

Laggards   Leaders

Capabilities mix

Product managers and translators	
AI engineering[1]	
Cloud-native engineering[1]	
Legacy integration	
Change management	
Security and compliance	

Automation

1.2X

Laggards   Leaders

[1] Includes operations roles (eg, DevOps, MLOps, DataOps, etc).

Case example

Leading global software company leveraged AI to improve quality and productivity of R&D.

The goal

Aiming to identify drivers of development quality and productivity

The challenges

No holistic measurement of development performance

Large number of potential improvement levers and unclear how to prioritize

Data dispersed across siloes

Connected data sources and developed a sophisticated model

Stitched together data sources and cataloged data

Tested different models for maximum interpretability and flexibility

Identified top drivers of development quality and productivity and created improvement initiatives

Identified leading causes of defects and productivity loss in development

Derived and piloted priority actions to kick-start the transformation

Impact

25%

fewer defects leading to lower rework

20%

estimated improvement in development productivity

At the start of its AI transformation, for instance, one company needed to hire and retrain several translators to serve as a bridge between the business and IT, since the company had little fluency in AI. Over time, as the company became more proficient in developing use cases, digital and data teams also grew comfortable working with each other. They no longer needed translators for every project and could redeploy specialists to more advanced initiatives, which allowed the company to adjust its talent strategy. Instead of training lots of translators, what the company now needed was a deeper bench of architects, engineers, and scientists to build on the organization's data assets, refine their AI processes, and introduce more sophisticated initiatives. By building critical mass where and when they needed it most, the company squeezed more value from its investments—growing AI-related ROI by 50 percent over three years.

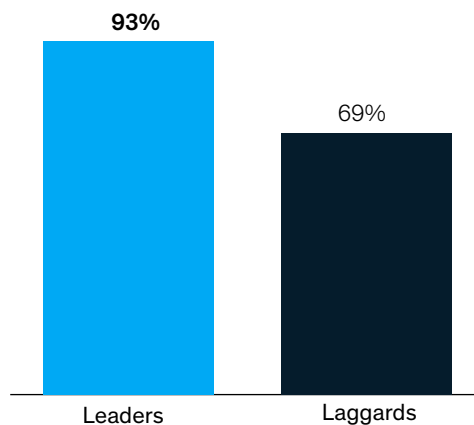**4. Speed execution with iterative releases**
Agile teaming is essential to AI, given the testing and experimentation required. Creating interdisciplinary teams comprised of business and technical skillsets, and involving users in development where appropriate, ensures initiatives address broad organizational priorities and avoid getting mired in technical minutiae. Diverse teams are also more likely to recognize the needs of adjacent teams, such as whether maintenance workflows will need to be overhauled to get the most from a predictive maintenance application and manage process handoffs more effectively.

Leaders organize "guilds" around specific disciplines, like data science and data engineering, that allow practitioners to push their art forward in a structured way. They also conduct their analytics development in a "lab" setting that facilitates prototype building and experimentation, after which they move analytics models into production where they can be scaled. Feedback loops monitor the effectiveness of the solution, with the results used to inform the next experimentation cycle.

One European telco deployed an AI-driven campaign that automatically sends SMS communications to customers with offerings based on their profile. The AI team meets weekly to review campaign performance and tweaks the algorithms based on the results. Campaigns that used to take 15 to 20 days to launch now take two to three days. The company is also using AI to hone its target audiences. Instead of marketing to whole segments, the company creates offerings tailored to microsegments using data-generated next-best-action recommendations. The AI-enabled campaign approach delivered 6 percent revenue growth in 12 months and is now being scaled to other parts of the business.

Leaders are more likely to have an AI platform that allows for quick and flexible implementation of initiatives.

Rather than waiting for data silos to be knocked down, leaders are also significantly more likely than laggards (93 percent versus 69 percent) to have an AI platform that allows for quick and flexible implementation of initiatives. The AI platform typically includes flexible cloud computing and storage resources and automated pipelines for training, testing, and deployment of models to production. Data lakes provide teams with a convenient "workbench" that makes information and computing resources easily available.

Media player set ambitious vision for integrating AI in every aspect of content analytics

Content creation and licensing

AI-driven assessment of target audience size and composition for original and licensed content based on semantic classification of content and viewers.

Front-line robotics

30–50%

of all calls are automated; robots and virtual agents serve as gatekeepers for all live channels.

Agent enablement

Utilize AI to support and live-coach agents and predict most likely contact reasons.

Omnichannel

~75%

of customers use more than one channel; voice remains important.

Dynamic operations insights

Quickly identify outdated processes and provide reliable, fact-based automation recommendations.
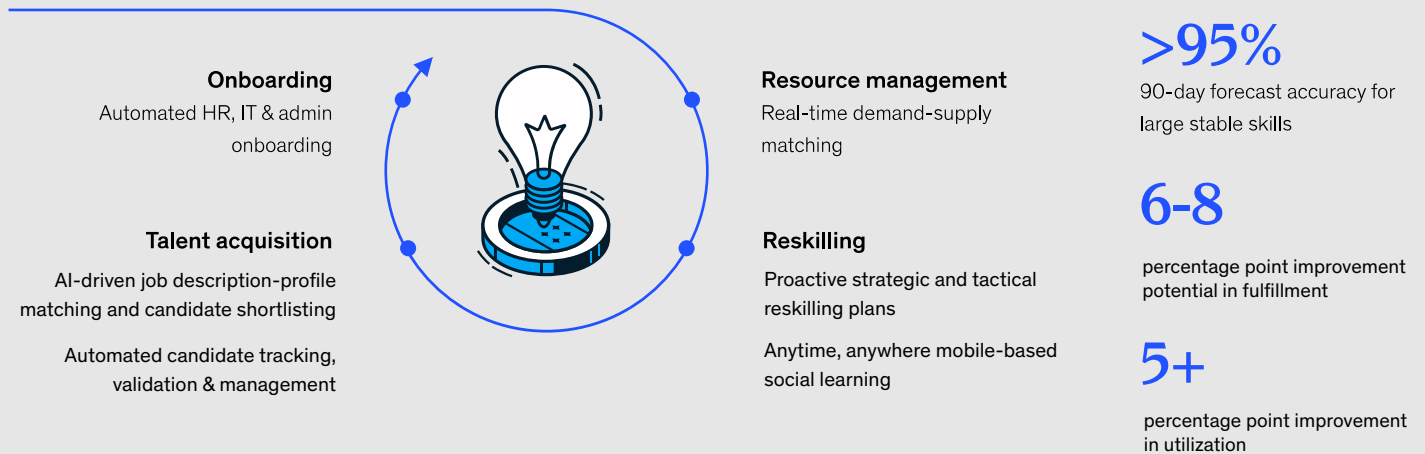
5. Win the front line

A company may build a fantastic propensity-to-churn model, but if frontline executives and teams don't trust the analytics behind it, or feel resistant to changing tried-and-true approaches, businesses won't get the performance advantage they seek. Among successfully scaling companies, 87 percent spend more than half their analytics budget on landing the last mile (versus only 23 percent of all others). As a result, leaders are 40 percent more likely than laggards to gain buy-in and commitment across the organization. Further, 90 percent of AI leaders say they hold frontline managers accountable for adoption as compared to just 69 percent of aspirant organizations.
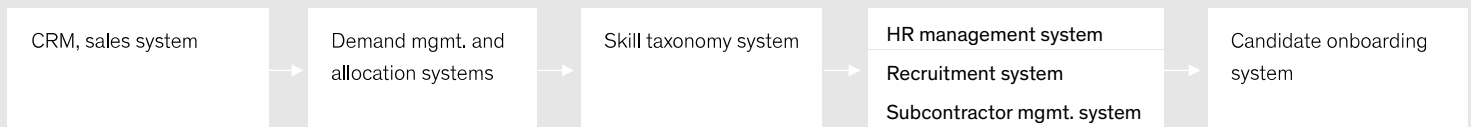
For example, a network equipment manufacturer looking to embed AI in its network services domain knew it would encounter several frontline barriers, including a culture of tribal knowledge and a lack of trust in data-driven decision making. To build trust, transparency, and a shared sense of ownership, they invited frontline users into the development process and established a control group to compare new methods to old ones. The test group's results showed that the AI-enabled practices drove significantly more benefits, helping cement the case for change. The company spent more than 50 percent of its total AI budget on the last mile. After years of falling behind competitors, it has now set industry-leading innovations and captured more than $300 million in cost savings through efficient service delivery in two years.

Tech services player fully redesigned its talent processes and systems to be AI-driven

Demand planning and management

Impact

Onboarding
Automated HR, IT & admin onboarding

Talent acquisition
AI-driven job description-profile matching and candidate shortlisting

Automated candidate tracking, validation & management

Resource management
Real-time demand-supply matching

Reskilling
Proactive strategic and tactical reskilling plans

Anytime, anywhere mobile-based social learning

>95%
90-day forecast accuracy for large stable skills

6-8
percentage point improvement potential in fulfillment

5+
percentage point improvement in utilization

End to End integration

| CRM, sales system | → | Demand mgmt. and allocation systems | → | Skill taxonomy system | → | HR management system
Recruitment system
Subcontractor mgmt. system | → | Candidate onboarding system |

AI is no longer just nice to have. Our research shows that early-mover advantages put leaders on a fundamentally different trajectory. Over the next few years, current leaders—and those that quickly commit to the same transformation rigor—will achieve a level of performance that slower movers won't be able to match. As another Chinese proverb puts it: The best time to plant a tree was 20 years ago, the second-best time is now.

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