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Become an AI-First Organization: 5 Critical AI Adoption Phases

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Utilizing adoption phases and indicators for artificial intelligence (AI) allows IT leaders to optimize their AI strategy and implementations with appropriate measures of capacity and skills that will deliver value, make tangible business impact and mitigate risk, while managing cost.

Strategic Planning Assumptions

By 2025, the concentration of pretrained AI models among 1% of AI vendors will make responsible AI a societal concern.

By 2025, 70% of enterprises will have operationalized AI architectures due to the rapid maturity of AI orchestration platforms.

By 2026, GenAI will facilitate an increased use of other AI technologies (aside from GenAI) by 1,000%.

By 2027, data science organizations will cut AI technical debt by 70% by using simulation platforms and technologies to manage the complexity of AI systems.

By 2028, 50% of organizations will have replaced time-consuming bottom-up forecasting approaches with AI, resulting in autonomous operational, demand and other types of planning.

Analysis

The building blocks of AI adoption are various and diverse in real life. Nevertheless, when assembled, they follow general principles that support AI progress. Applying these principles is necessary to set realistic expectations, avoid common pitfalls and keep AI initiatives on track.

AI applies advanced analysis and logic-based techniques — including machine learning (ML) — to interpret events, support and automate decisions, deliver experiences, and take actions.
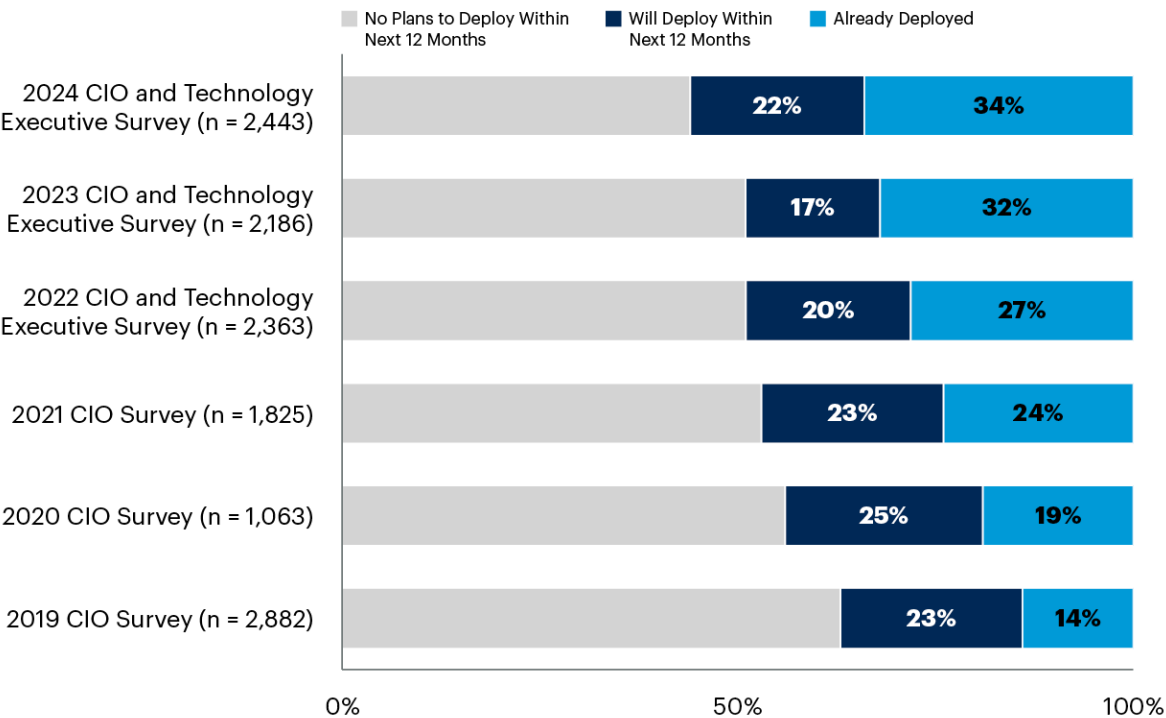
AI represents a class of mechanisms for enhancing existing applications, decisions and processes. This enhancement often takes the form of accelerating existing processes. Three common examples of AI include systems that:

- Automate decisions that otherwise require human intervention.

- Classify complex data, such as text, video and audio, that would otherwise require human effort.

- Generate new derived versions of content, strategies, designs and methods by learning from large repositories of original source content.

AI implementations are challenging to organizations because, rather than following known adoption phases, many of them learn the hard way how to progress. Organizations underestimate the time it takes to deploy: they start with a wrong activity for their adoption level and miss the necessary steps. What is right to do at one adoption phase could be too late or too early at another phase, causing delays of AI projects and frustration among the stakeholders. Organizations often plan way in advance and make hard commitments without gaining the right experience — this doesn't allow them to take advantage of the latest AI trends that change dynamically. These mistakes help explain why the majority of AI projects fail to deploy as projected. Figure 1 shows that 17% to 25% of organizations planned to deploy AI within the next 12 months every year from 2019 to 2024, while the annual growth of production deployments was only 2% to 5%. For example, in 2023, the production deployments increased from 27% to 32% (5%). But 20% of the surveyed CIOs were planning to deploy AI in production within the next 12 months in 2022. If all of them succeeded, the 2023 production deployments would have grown 20% instead of only 5%.

What CIOs Report About AI in Production Globally

Legend:
- No Plans to Deploy Within Next 12 Months
- Will Deploy Within Next 12 Months
- Already Deployed

Survey	Will Deploy Within Next 12 Months	Already Deployed
2024 CIO and Technology Executive Survey (n = 2,443)	22%	34%
2023 CIO and Technology Executive Survey (n = 2,186)	17%	32%
2022 CIO and Technology Executive Survey (n = 2,363)	20%	27%
2021 CIO Survey (n = 1,825)	23%	24%
2020 CIO Survey (n = 1,063)	25%	19%
2019 CIO Survey (n = 2,882)	23%	14%

n = varies by survey year, CIOs and technology executives answering

Q. What are your enterprise's plans for artificial intelligence?

Source: Gartner CIO Surveys (2018 – 2024)
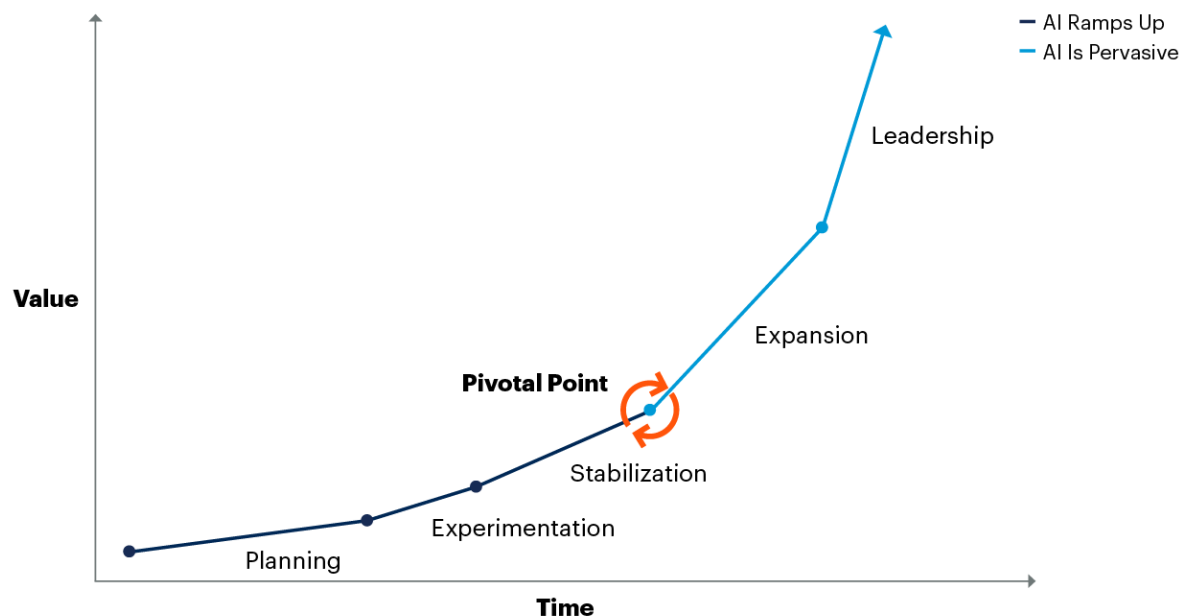
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By carefully monitoring the phases of their AI adoption, organizations will avoid major pitfalls and maximize the chances of successful AI implementation. AI adoption is best measured in conjunction with deliberate adoption aids, such as a strategic view of AI and implementation of an AI center of excellence (COE). However, even without those formal entities, measuring the phases of AI adoption allows IT leaders to determine the progress in using AI across categories.

AI Value Creation Accelerates With Adoption

Despite a wide variety of AI capabilities and methods, AI adoption phases have been crystallized and confirmed by thousands of implementations. The AI adoption phases are intended to provide D&A leaders with a framework for their AI strategy. They are not intended to be a prescriptive slope that all organizations should climb at the same rate or intensity. Organizations will find that their required AI adoption will vary with different categories of AI application. Not all organizations should strive to get to the top phase of the adoption curve, but rather, to the adoption phase appropriate to their business and technology ambitions. The AI adoption curve is not linear. Figure 2 shows an actual value curve for the adoption phases.

AI Value Creation

AI Value Curve

Source: Gartner
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Use these phases to:

- Place yourself on the potential growth curve toward mastery of leveraging AI.

- Communicate to management where you stand and how far you have to travel, and at what rate you can expect it.

- Strategize about what internal organizational steps you should take to be confident you are capable of addressing AI at such a pace with such an ambition in mind.

- Avoid common mistakes of doing the wrong things or seemingly the right things at a wrong time.

- Manage risks related to AI governance and responsible use of AI, as well as typical technology risks to being on time and on budget with available resources.

AI is a fast-paced and volatile field of innovation. Therefore, do not use these adoption phases to develop a multiyear, predefined roadmap. Allow your AI strategy to be adaptive to change and new opportunities. Leave ample room for experimentation, by, for example, recalibrating your strategy periodically, using this adoption curve as a common framework for stakeholders and artifacts. It is important to not just understand the adoption phases, but also how to get to the next level from where you are now.

After completion of the Stabilization phase, organizations reach the pivotal point. Before this point, organizations learn and gain experience and ramp up AI to increase adoption. AI adoption requires proven AI value and business trust in AI. Your investment in people, process and technology will likely outspend your AI returns during this phase, so it is important to set the organization's and the board's expectations. During this time, you will figure out the end-to-end AI process, which will let you develop a realistic and impactful AI strategy.

After reaching the pivotal point, during the Expansion and Stabilization phases, you make AI pervasive and critical for the business. This is when you scale AI, employ a variety of AI techniques and automate the AI life cycle. You will have skills and experience to take higher risks for higher returns. During these phases, AI value, as well as AI spending, will accelerate.

Follow these key recommendations when advancing along the AI adoption curve:

- Align your AI capabilities to your AI ambitions by periodically matching the adoption phases to your own activities for AI-powered applications and projects. IT leaders should plan how to get to the next adoption phase from where they are now and set expectations appropriately.

- Measure the performance and impact of your existing projects and pilot projects in new areas; document areas where your organization lags in adoption and match that against reasonable ambitions and pragmatic approaches to improve.

- Invest in human, process and technology frameworks that ease the transition between phases, such as a funded COE, practical knowledge of cloud AI APIs, and executive awareness that leads to knowledge and skills sharing.

Research Highlights

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AI Adoption Phases

1. Planning

At this phase, internal conversations about AI are ad hoc and speculative. No experimentation or pilot projects exist yet. The first few inquiries with Gartner are placed, with topics such as "what do we need to know about artificial intelligence?" and "how can AI benefit my line of business?" The AI teams socialize the AI ideas to detect the most promising use cases and find a business champion who will act on and benefit from the first AI solutions. To evolve to the next phase, identify three to six use cases, preferably aligned with a single theme and a small group of stakeholders. Make sure the use cases utilize the same core data. This way, every following use case will be delivered faster.

Recommended Readings for Planning Phase

- What Is Artificial Intelligence? Ignore the Hype; Here's Where to Start

- Applying AI — Industries

- Applying AI — Business Domains

- Uncovering Artificial Intelligence Business Opportunities in Over 20 Industries and Business Domains

- What CIOs Need to Know About AI

- Quick Answer: What Is ChatGPT?

2. Experimentation

In this phase, Initial proof-of-concept projects plans are drafted and may be in pilot. On average, organizations take 7.2 months to develop AI initiatives from prototype to production. Time to develop AI initiatives from prototype to production tends to increase with company size. On average, 54% of projects make it from pilot to production. [1] An informal community of practice may have met a few times for knowledge sharing and early standardization efforts. About 22% of respondents to the 2024 Gartner CIO and Technology Executive Survey expect their enterprise to deploy AI within the next year. [2] Aim to prove AI value (not technology) to evolve to the next phase.

Recommended Readings for Experimentation Phase

- How to Pilot Generative AI

- Quick Answer: What Should We Do to Measure AI Impact and Value?

- Research Roundup: Realizing Value From Artificial Intelligence (AI)

- Cool Vendors in AI Core Technologies

- Magic Quadrant for Cloud AI Developer Services

- Tool: Job Description for the Data Scientist Role

- CaseStudy: Simple Machine Learning Pilots (Iron Mountain)

- Case Study: In ML, Starting With Diagnosis-Resistant Problems Yields Greatest ROI (Pacific Dental)

3. Stabilization

The first AI projects are in production. An executive sponsor exists. Budget for AI projects is available and protected by executive management. A COE has been instantiated, making AI experts, best practices and technology available for projects. An AI governance organization with decision rights issues first policies and assures compliance. A basic AI operating model is in place. The organization develops a fully-fledged AI strategy based on its experience with the real implementations. To evolve to the next phase, finalize a formal organizational structure and an end-to-end process for development and deployment of AI, and stabilize your platform for further AI expansion and governance.

Recommended Readings for Stabilization Phase

- Tool: AI Strategy Document

- Develop an Enterprise Strategy for Natural-Language Use Cases

- Research Roundup for Artificial Intelligence Operating Models

- Use Gartner's MLOps Framework to Operationalize Machine Learning Projects

- Toolkit: Delivery Metrics for DataOps, Self-Service Analytics, ModelOps and MLOps

- 4 AI Governance Actions to Make a Swift Business Impact

- AI for the Board — Presentation Materials

4. Expansion

AI scales up and scales out. Successful LOB projects scale to the wider organization — this is democratization of AI. New AI projects accelerate and multiply — this is industrialization of AI, and it requires automation. New roles, such as MLOps engineer, AI architect, AI validator, UX designer and AI developer, are the new normal. Organizations have enough experience to run high-risk and high-return use cases in addition to the existing use cases. All new digital projects, including process overhauls for optimization, consider employing AI as a way of delivering value. New products and services have embedded AI. To evolve to the next phase, expand data sources and succeed with high-risk/high-return use cases.

Recommended Readings for Expansion Phase

- The Future of Data and Analytics: CreateCompetitiveDifferentiation Through Better Decision Making

- CaseStudy: Driver-Based Machine Learning Planning Foundations

- A Mandate for MLOps, ModelOps and DevOps Coordination

- Market Guide for Multipersona Data Science and Machine Learning Platforms

- Go Beyond Machine Learning and Leverage Other AI Approaches

- A Comprehensive Guide to Responsible AI

- Assess the Value and Cost of Generative AI With New Investment Criteria

- Case Study: AI Model Operations at Scale (Fidelity)

5. Leadership

On average, mature organizations have 59 use cases in production. These are the ones that span AI across various business units and processes, and AI use cases stay in production for more than three years. The organization has an "AI first" culture from the top down, which allows it to innovate with AI rapidly. Artificial intelligence is routine and expected as an element of performing all business processes. All workers in process and application design are trained in and understand AI's strengths and weaknesses. AI-powered applications interact productively within the organization and across the business ecosystem. AI innovators team up with AI vendors to co-innovate and jointly deliver products or services.

Recommended Readings for Leadership Phase

- Predicts 2023: AI's Profound Impact on Products and Services

- Project to Product Is an Essential Transformation for Product Managers

- Top Tech Provider Trend for 2023: Co-innovation Ecosystems

- Applying AI — Key Trends and Futures

- Video: The Gartner Hype Cycle, Generative AI and the Future of AI

- The Future of AI: Reshaping Society

- Technological Implications of Generative AI

- Quick Answer: Safely Using LLMs With an Active Metadata and Data Fabric Layer

- Innovation Insight: AI Simulation

- Innovation Insight: Causal AI

- Cool Vendors in Quantum Computing

- Hype Cyclefor Generative AI, 2023

Establishing the way an organization should see AI as a means to accomplish its mission demands a vision. It also requires stewards of the vision who will actively initiate projects to turn that vision into reality.

Key Activities to Succeed With AI Adoption

The overarching driver for developing AI adoption should be an understanding of what you should achieve before and after the pivotal point that follows the completion of the Stabilization phase that separates more mature organizations from others (see Figure 2). Differentiate your goals before and after the pivotal point on the adoption curve. First, set objectives to reach the pivotal point, and when you reach it, adjust your approaches as your AI adoption scales and value creation accelerates (see Table 1).

Table 1: Activities for Ramping Up AI and Activities When AI Is Pervasive

Activity	Ramping Up AI	AI Is Pervasive
Set the goal	Figure out the end-to-end AI process	Achieve enterprisewide AI adoption
Evolve AI use cases	Identify quantifiable use cases for AI value by improving existing business processes	Use innovative use cases to achieve digital transformation
Manage AI risk	Build governance structures	Govern to scale
Engineer and operationalize AI	Establish an end-to-end AI life cycle	Scale AI with automation
Adopt AI technology	Minimize complexity with off-the-shelf AI solutions	Implement technology that works for a variety of roles
Leverage data for AI	Focus data on the use cases	Expand data sources

Source: Gartner

Use the AI adoption curve to identify and achieve your goals for activities that increase AI value creation by solving business problems better, faster, at a lower cost and with greater convenience. This adoption guide also helps to manage and mitigate AI risks. Develop your AI vision and strategy by including the most important activities mapped to the adoption curve. First, detect where you are on your adoption journey. Make sure you are not far ahead or far behind on specific indicators. Match AI to its mission.

Develop a means of understanding how the acceleration or automation of dangerous, dirty, boring or expensive tasks can combine with new achievements that were previously impossible because of the lack of human and technical resources to accomplish them. Develop a vision for the use of AI to address existing concerns, and build an approach for its expansion to change the way the organization pursues its goals. AI strategy should be carried out with constant AI experimentation and innovation in parallel. Adjust your goals and approaches with the growing AI adoption. The activities below include specific phase indicators.

Evolve AI Use Cases

Key Adoption Indicators

1. Planning: Initial three to six use cases with the measurable value selected.

2. Experimentation: Proven business value of the use cases in a pilot.

3. Stabilization: AI strategy includes a roadmap for a variety of use cases.

4. Expansion: Industrialization and democratization of use cases.

5. Leadership: Use cases support new business models. Product approach to delivery of use cases.

Recommendations

- Include in AI strategy accountability approaches for IP, risk, reputation and ethics, such as in selection and prioritization of use cases.

- For each use case, find a business champion who will act on AI outcomes and who will work side by side with the AI team on a part-time basis.

- Develop a prioritization heuristic that allows tactical and strategic projects to emerge from shared efforts and understanding of AI's capabilities. It's okay to be prescriptive at the early phases, but later, do not prioritize too prescriptively. Given the innovative and disruptive nature of AI, there should always be room for experimentation and disruption.

- Measure the value of the use case on a regular basis after it is deployed. Focus on a concrete metric or a set of interrelated metrics — don't try to have vague and broad use-cases.

Develop AI Organization and Roles

Key Adoption Indicators

1. Planning: Pioneers are starting to build knowledge about AI technology, practical applications and possible value creation.

2. Experimentation: First AI lab to facilitate experimentation, cluster expertise and foster innovation in collaboration with AI vendors and research institutes. Skills are developed around those techniques that show the most promising business results after experimentations.

3. Stabilization: A multidisciplinary AI team. A (virtual) center of excellence, or at least a community of practice, for sharing best practices and driving technology employment. Training or upskilling for AI core roles.

4. Expansion: Executive sponsorship. AI reaches the CIO organization. AI impacts the workforce in many business areas, changing roles and required skills. Upskilling for new roles.

5. Leadership: AI is an integral part of every job and daily life. AI literacy for the entire organization, also at C-level. Product managers for shifting from AI projects to AI products.

Recommendations

- Develop COEs for AI, although they may be best developed within or together with COEs for analytics, customer experience or automation, depending on the organization's vision. Make AI experts, best practices and technology available for projects via the COE.

- Upskill internal talent, especially engineering and analytics roles, to be part of the AI process. Mature AI organizations prefer IT teams for the orchestration and budget allocation of AI use cases. Enable collaboration across various roles in the multidisciplinary teams.

- Plan AI literacy education enterprisewide.

Manage AI Risk and Responsible AI

Key Adoption Indicators

1. Planning: Haven't thought about responsible AI or AI risk.

2. Experimentation: Regulations around what is permissible and what is not around AI.

3. Stabilization: Once there is a problem, it is tackled in an ad hoc fashion.

4. Expansion: Principles and guidelines that are followed to ensure responsible use of technology and data lead to business value.

5. Leadership: A formal risk assessment, followed by a go/no-go or changes for each use case.

Recommendations

- Discuss each AI use case with legal and security at the phase of ideation. Risk factors are critical when considering AI.

- Detect where governance and risk management are necessary to enable innovation and support AI progress, and focus there.

- Define standards early on. Otherwise, everyone will define their own.

- Determine decision rights and accountability for AI initiatives. Pay special attention to how you divide accountability between your organization and AI vendors.

- Be ready for new (and unexpected) challenges. Define means to put together temporary teams to meet and resolve these challenges.

Adopt AI Technology

Key Adoption Indicators

1. Planning: Ad hoc process for selecting an AI technology.

2. Experimentation: Emerging technology selection processes to support initial AI experimentation.

3. Stabilization: Standardization of technology operating model.

4. Expansion: A portfolio of techniques is available for various types of users.

5. Leadership: Solutions/business workflows embedding multiple AI techniques (composite) and components (ensemble).

Recommendations

- Have a process and specialists to make educated "build versus buy" decisions.

- Evolve your AI framework to eventually accommodate all roles. Build reusable AI components (models, core services, low-code/no-code/code) as part of supporting multiple AI roles and business functions. At the higher levels of adoption, deliver models using an internal AI marketplace or a model repository.

- Keep the AI technical debt at a minimum and keep the learning within the organization by building an AI expertise organizational structure designed for knowledge transfer and problem solving.

- Support the AI team's ongoing education and experimentation to ensure it is comfortable with a variety of techniques, ensembles and cutting edge open source.

Engineer and Operationalize AI

Key Adoption Indicators

1. Planning: Building AI models in a proof of concept (POC) or lab environment without integration to production application or business workflow.

2. Experimentation: Integration of AI models with an application workflow with manual model deployment or customization of off-the-shelf models/AI applications.

3. Stabilization: Automation with MLOps pipeline.

4. Expansion: Development and deployment orchestrated through multiple pipelines. AI involvement in mature AI organizations is more diverse and includes more software engineers.

5. Leadership: Model governance and full model life cycle management with observability.

Recommendations

- Scale AI with automation. Reuse design and build elements when available. Embed MLOps as a discipline.

- Support uninterrupted transitions for models across operational and maintenance environments to reduce friction with AI engineering framework.

- Stay in control of AI's growing complexity by adopting emerging practices such as ModelOps and AI engineering and recognizing the growing diversity of AI skills, models and techniques that go beyond ML.

Leverage Data for AI

Key Adoption Indicators

1. Planning: Get an idea about what data is available,

2. Experimentation: Initial assessment of data quality. Development of data understanding guidelines.

3. Stabilization: Integrate data. Achieve trust/confidence in the data. DataOps. Stabilize the AI infrastructure with a cross-enterprise data management platform to serve AI needs.

4. Expansion: Publish and share the data analysis (catalog, development support, DaaS, marketplaces, microservices, APIs, etc.). Data observability.

5. Leadership: Data fabric. Business crowdsourcing to determine data communities.

Recommendations

- Make data central to AI strategy. Ensure data understanding for each use case.

- Address at each phase, or defer to the next level of adoption, any of the five data management components below. Ensure all five components exist at the Expansion phase.

1. Determine data availability

2. Enable data integration

3. Assure data quality

4. Implement DataOps

5. Institute and observe data governance

- Schedule updates for business descriptors and data trend analysis to support AI-related use cases.

- Accumulate metadata references for AI projects and data in use. You will be able to further automate your AI delivery by applying ML to analyze the collected metadata.

Evidence

[1] **P-21023 2021 Gartner AI in Organizations Survey.** This survey was conducted to understand the keys to successful AI implementations and the barriers to the operationalization of AI. The research was conducted online from October through December 2021 among 699 respondents from organizations in the U.S., Germany and the U.K. Quotas were established for company size and for industries to ensure a good representation across the sample. Organizations were required to have developed AI or intended to deploy AI within the next three years. Respondents were required to be part of the organization's corporate leadership or report into corporate leadership roles, and have a high level of involvement with at least one AI initiative. Respondents were also required to have one of the following roles when related to AI in their organizations: determine AI business objectives, measure the value derived from AI initiatives or manage AI initiatives' development and implementation. The survey was developed collaboratively by a team of Gartner analysts and Gartner's Research Data, Analytics and Tools team. Disclaimer: Results of this survey do not represent global findings or the market as a whole, but reflect the sentiments of the respondents and companies surveyed.

[2] **P-23026 2024 Gartner CIO and Technology Executive Survey.** This survey was conducted online from 2 May to 27 June 2023 to help CIOs determine how to distribute digital leadership across the enterprise and to identify technology adoption and functional performance trends. Ninety-seven percent of respondents led an information technology function. In total, 2,457 CIOs and technology executives participated, with representation from all geographies, revenue bands, and industry sectors (public and private). Disclaimer: The results of this survey do not represent global findings or the market as a whole, but reflect the sentiments of the respondents and companies surveyed.

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Applying AI — A Framework for the Enterprise

Uncovering Artificial Intelligence Business Opportunities in Over 20 Industries and Business Domains

Survey Analysis: An AI-First Strategy Leads to Increasing Returns

Research Roundup for Generative AI

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Source: Gartner

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