

IDC MaturityScape Benchmark

IDC MaturityScape Benchmark: Artificial Intelligence in Banking in the United States, 2021

Steven D'Alfonso

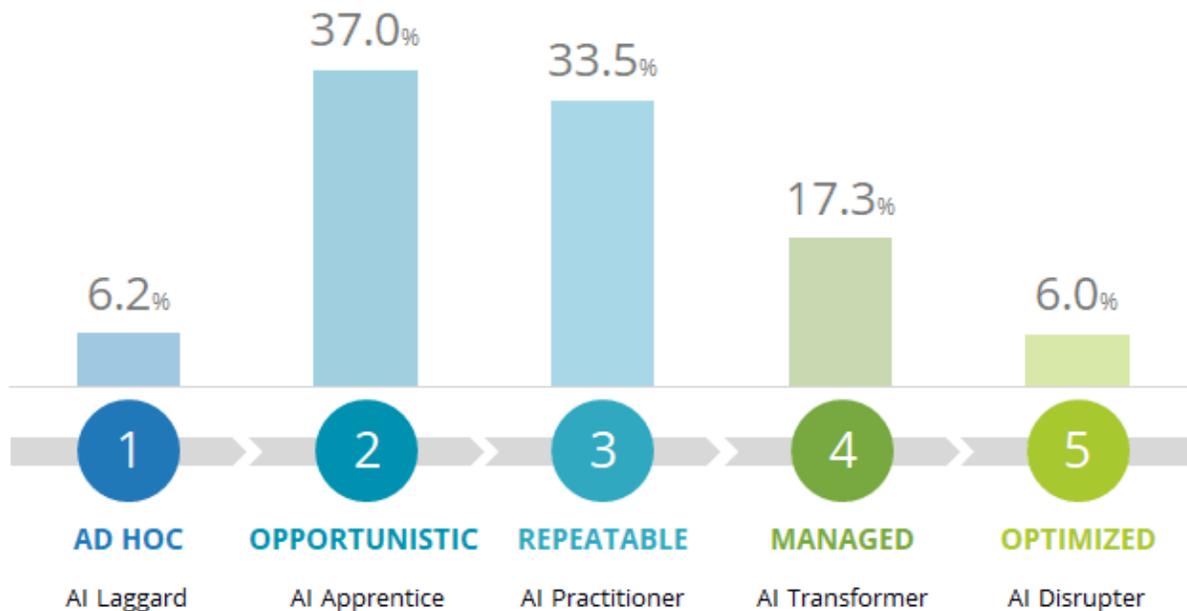
Marc DeCastro

Jerry Silva

IDC MATURITYSCAPE BENCHMARK FIGURE

FIGURE 1

IDC MaturityScape Benchmark: Artificial Intelligence in Banking – Maturity Distribution Across the Stages



n = 152

Source: IDC's *Artificial Intelligence U.S. Banking Benchmark Survey, 2020*

Figure 1 represents the maturity distribution across IDC MaturityScape stages from the simplest, unstructured ad hoc stage to the advanced, systemized optimized stage.

Please see the Appendix for detailed methodology, market definition, and scoring criteria.

EXECUTIVE SUMMARY

Artificial intelligence (AI) is the research and development of software and hardware that attempts to emulate a human being. IDC defines AI as systems that learn, reason, and self-correct. The fast-emerging field of AI is everywhere, including its use across banking functions. IDC forecasts that U.S. spending on AI in banking will grow at a CAGR of 14.6% for 2020-2024 to reach over \$6 billion in 2024. This is driven by the fact that all the data that comes from digital transformation (DX) initiatives will have limited value if the power of AI is not applied to extract valuable, accurate, and timely insights from that data. AI will be the key technology that will propel organizations through DX.

AI is driving digital transformation and disruption across the banking industry. While we typically associate innovation and disruption with DX, after 2020 resiliency should be part of the lexicon. DX is now as much about building resiliency in banking as it is about innovating and disrupting. How will your AI initiatives help you drive innovation while helping mitigate risk and optimize processes? AI is changing how consumers interact with financial institutions (FIs). It is also changing the expectations that consumers have of their financial institutions. How is your FI innovating to meet customer experience expectations? Financial institutions must not only transform their customer-facing applications but also use AI to transform processes from the front office to the back office. Too often, financial institutions invest to transform customer-facing applications without regard for the middle and back offices supporting adjacent functions, such as risk and compliance. Untransformed supporting operations can result in poor customer experiences and friction points as well as resiliency issues.

This IDC study on artificial intelligence maturity is intended to offer a systematic and rigorous approach for organizations to assess their competency and maturity. To help financial institutions evaluate current artificial intelligence maturity and identify the steps they need to advance to the next stages of maturity, IDC developed the IDC MaturityScape for artificial intelligence in banking 1.0.

Key findings from this benchmark study include:

- 49% of the financial institutions surveyed have an enterprisewide AI strategy that is aligned to business goals. These organizations have mature and consistent data readiness, governance, and technology across all AI initiatives. Many of these financial institutions have redesigned business models to repeatedly create new business value. In addition, most financial institutions have AI governance groups and associated policies for trust, ethics, and bias.
- 40% of the financial institutions surveyed indicated that measuring business value/ROI is inconsistent or that a methodology has not been devised. The respondents were split between both survivors and thrivers. This indicates that even for those organizations that are AI thrivers, measuring the business value achieved from AI initiatives is a problem area.
- Data acquisition and preparation showed the weakest level of maturity. 44% of financial institutions either had no companywide policy around data acquisition and preparation or individual data expert teams employed their own standards and tools. A third of financial institutions used bias assessments on limited data sets, with a small subset of those indicating that bias assessment is nonexistent. Further, a third of the financial institutions indicated that data definitions and lineage are known within a group for specific projects or are only known to a select few users, which is critical for transparency and auditability.

"The adoption of artificial intelligence in banking is growing as financial institutions accelerate digital transformation initiatives. Those institutions that have an AI-first approach across the enterprise and from the front office to the back office will drive better customer engagements, have accelerated rates

of innovation, develop new business models, and achieve greater resiliency. Financial institutions must evaluate their vision and transform their people, processes, technology, and data readiness to extract maximum value from AI and thrive in the digital era," said Steven D'Alfonso, research director, IDC Financial Insights.

ANALYSIS OF ARTIFICIAL INTELLIGENCE IN BANKING MATURITY BENCHMARK DATA

Stages of the Artificial Intelligence in Banking Maturity Framework

The IDC MaturityScope Benchmark for artificial intelligence includes five stages that represent a progression of increasing maturity of multiple organizations of an enterprise and not of an individual silo. Each stage builds on the capabilities of the one that immediately precedes it. The key characteristics of the five maturity stages are:

- **Ad hoc – artificial intelligence laggard:** Artificial intelligence is used in silos by select individuals or groups. There is no formal strategy or coordination as part of a broader view of the potential.
- **Opportunistic – artificial intelligence apprentice:** Artificial intelligence is used for isolated projects. Data readiness, governance, skills management, and technology selection are one off and limited to specific initiatives.
- **Repeatable – artificial intelligence practitioner:** Artificial intelligence is used for multiple projects. Data readiness, governance, skills management, and technology selection are repeated across those initiatives.
- **Managed – artificial intelligence transformer:** An enterprisewide artificial intelligence strategy aligned to business goals is in place. Data readiness, governance, skills management, and technology selection are consistent across rolled out AI initiatives.
- **Optimized – artificial intelligence disruptor:** An enterprisewide AI strategy aligned to business goals and redesigned business models repeatedly creates business value. Data readiness, skills management, governance, and technology usage maximize efficiency.

The five maturity stages are described in greater detail in *IDC MaturityScope: Artificial Intelligence in Banking 1.0* (IDC #US45823120, March 2020). Refer to Figure 4 in the Appendix for a visual representation of these stages.

Survey Findings: Maturity Distribution Across Stages

Refer back to Figure 1 to see the aggregated maturity distribution across all five dimensions of artificial intelligence maturity. The highlights of IDC's 2020 *Artificial Intelligence U.S. Banking Benchmark Survey* are as follows:

- 6.2% of financial institutions are in the ad hoc stage. At this stage, there is little or low awareness for employing artificial intelligence for business initiatives and its broader impact on an organization. AI is used in silos by select individuals or groups. There is no formal strategy or coordination as part of the broader view of AI potential. From a business outcome perspective, there are a few successes but several failures because of lack of data, talent, and tools. There is no formal quantification of business value for the successes.
- 37% of financial institutions are in the opportunistic stage. At this stage, artificial intelligence is used for isolated projects. Data readiness, governance, skills management, and technology

selection are one off and limited to specific initiatives. New business value is realized at the opportunistic level.

- One third (33.5%) of financial institutions are in the repeatable stage. At this stage, organizations have developed a comprehensive artificial intelligence strategy and goals, but these are only beginning to align across the entire enterprise and are internally focused. AI is used for multiple projects. Data readiness, governance, skills management, and technology selection are repeated across those initiatives. New business value for some parts of the business is realized, and strategic value of AI is established.
- 17.3% of financial institutions are in the managed stage. At this stage, the enterprisewide AI strategy is aligned to business goals. Data readiness, governance, skills management, and technology are consistent across rolled out AI initiatives.
- 6% of financial institutions are in the optimized stage. At the optimized stage, the comprehensive artificial intelligence strategy and goals are in place across the entire enterprise. AI is used for all the initiatives. Data readiness, governance, skills management, and technology selection are consistent across all those initiatives.

Dimensions of the Artificial Intelligence in Banking Maturity Framework

IDC has defined five critical dimensions for which an organization's artificial intelligence maturity is assessed. The dimensions of the IDC MaturityScape Benchmark for artificial intelligence and their characteristics at each state of the maturity are highlighted in *IDC MaturityScape: Artificial Intelligence in Banking 1.0* (IDC #US45823120, March 2020). The details of the dimensions are as follows:

- **Vision:** Strategy, culture, business value/ROI, and business model
- **People:** Skills, training, organization structure, and human-machine collaboration
- **Process:** Business processes, governance, data management, metrics, and measurements
- **Technology:** Algorithms, software platforms, accelerated computing, and architecture
- **Data readiness:** Acquisition, bias, trust, and risks and security

Survey Findings: Maturity Distribution Across Dimensions

Figure 2 illustrates the maturity distribution of each of the five dimensions of the artificial intelligence maturity model. In detail:

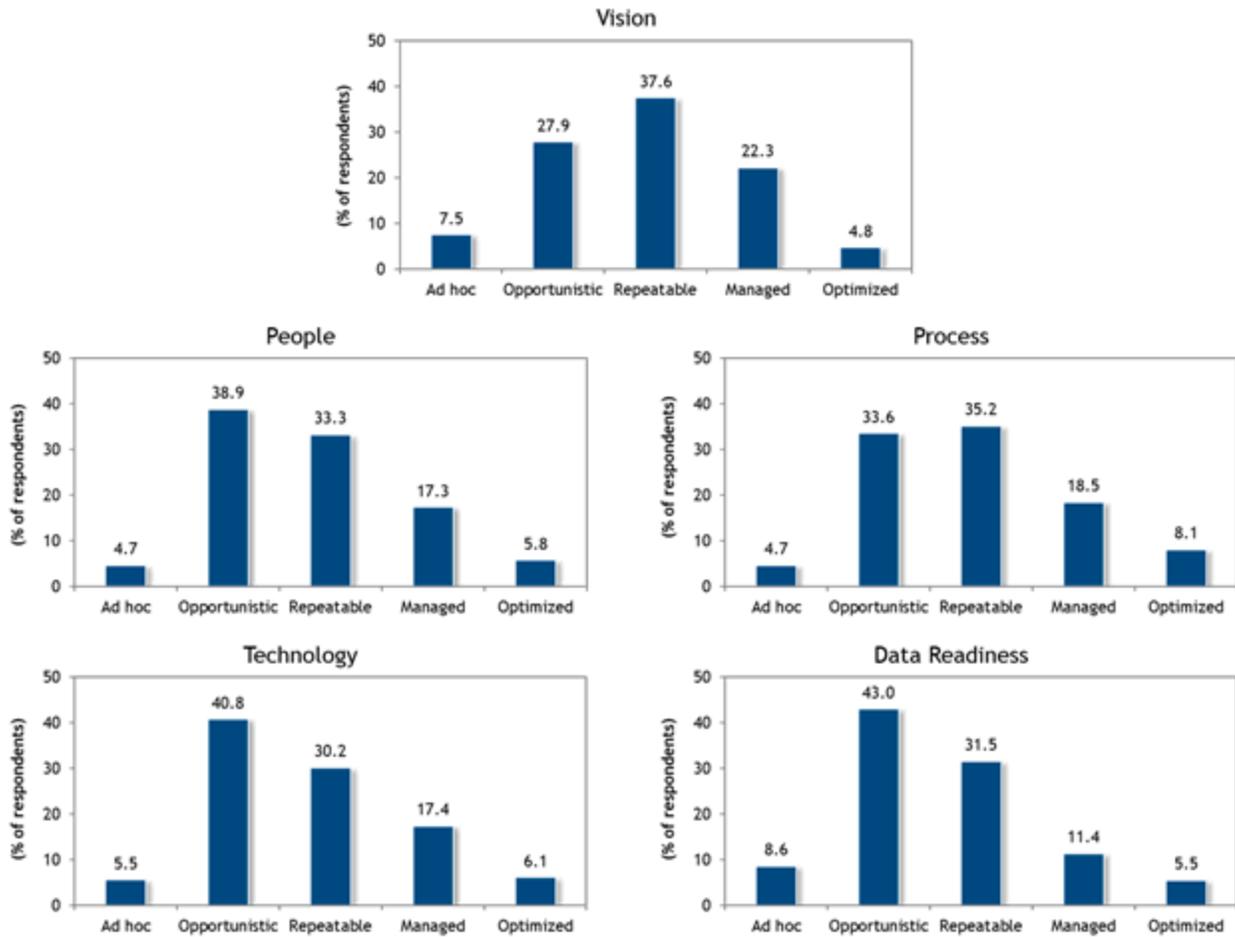
- **Vision:** 37.6% of financial institutions are at the repeatable stage. These financial institutions are challenged to continue to move toward an enterprisewide AI strategy overseen by a board-level director or CXO. These organizations have an AI-first culture and are moving toward empowering employees to take risks, make decisions autonomously, and act with speed and agility. These financial institutions have a methodology to measure business value but are challenged to apply it consistently and more broadly.
- **People:** 72.2% of financial institutions are nearly evenly split at the opportunistic and repeatable stages. These organizations have begun to build AI workforces that exhibit entrepreneurship and initiative taking and prioritize training related to data readiness. These institutions are challenged to continue building a distributed AI-skilled staff across IT, LOBs, and analytics groups and enhance cooperation on methodologies through an AI center of excellence (COE).
- **Process:** More than 1 in 4 (26.6%) financial institutions are at the managed/optimized stage. These more mature organizations exemplify strong governance frameworks and agile data management processes that are continuously improved by quantitative feedback. Metrics

have been established and are used across the organization. Ongoing assessment, revision, and learning are increasingly built into decision-making processes, and business benefits are systematically tied to initiatives, business planning, and strategy.

- **Technology:** 40.8% of financial institutions are at the opportunistic stage. These organizations are engaged in training models at a limited scale for just a few use cases. Each part of the organization acquires AI technology independently, with some strategic initiatives targeting one or several critical platforms to consolidate applications and services. There is limited know-how and use of accelerated computing based on decision criteria (cost, performance, operating environment, energy demand, flexibility, and skill set) to support AI projects' processing needs. AI workload deployments are based on a rigid architecture.
- **Data readiness:** Over half (51.6%) of financial institutions are at the ad hoc/opportunistic stage where no company guidelines govern data acquisition and preparation, or various data expert teams apply their own standards and toolsets. These organizations are challenged to establish bias assessments for data sets, and data definitions and lineage are known to few users.

FIGURE 2

Artificial Intelligence in Banking Dimensions Dashboard: Individual Dimensions Maturity



n = 152

Source: IDC's *Artificial Intelligence U.S. Banking Benchmark Survey*, 2020

Evaluating Artificial Intelligence in Banking Maturity: Survivors and Thrivers

As part of the IDC MaturityScape Benchmark for artificial intelligence, we asked respondents to self-assess their organization's overall approach. Based on the results, we segmented organizations into two categories:

- **Survivors:** Characterized as organizations applying minimum or limited efforts toward artificial intelligence initiatives across vision, people, process, technologies, and data readiness to help drive digital transformation and achieve superior business outcomes and sustainable competitive advantage

- **Thrivers:** Characterized as organizations embracing artificial intelligence initiatives across vision, people, process, technology, and data readiness to help drive digital transformation and achieve superior business outcomes and sustainable competitive differentiation

Excluded are those organizations whose artificial intelligence behavior is between survivors and thrivers.

Survey Findings: Comparison of Survivors and Thrivers

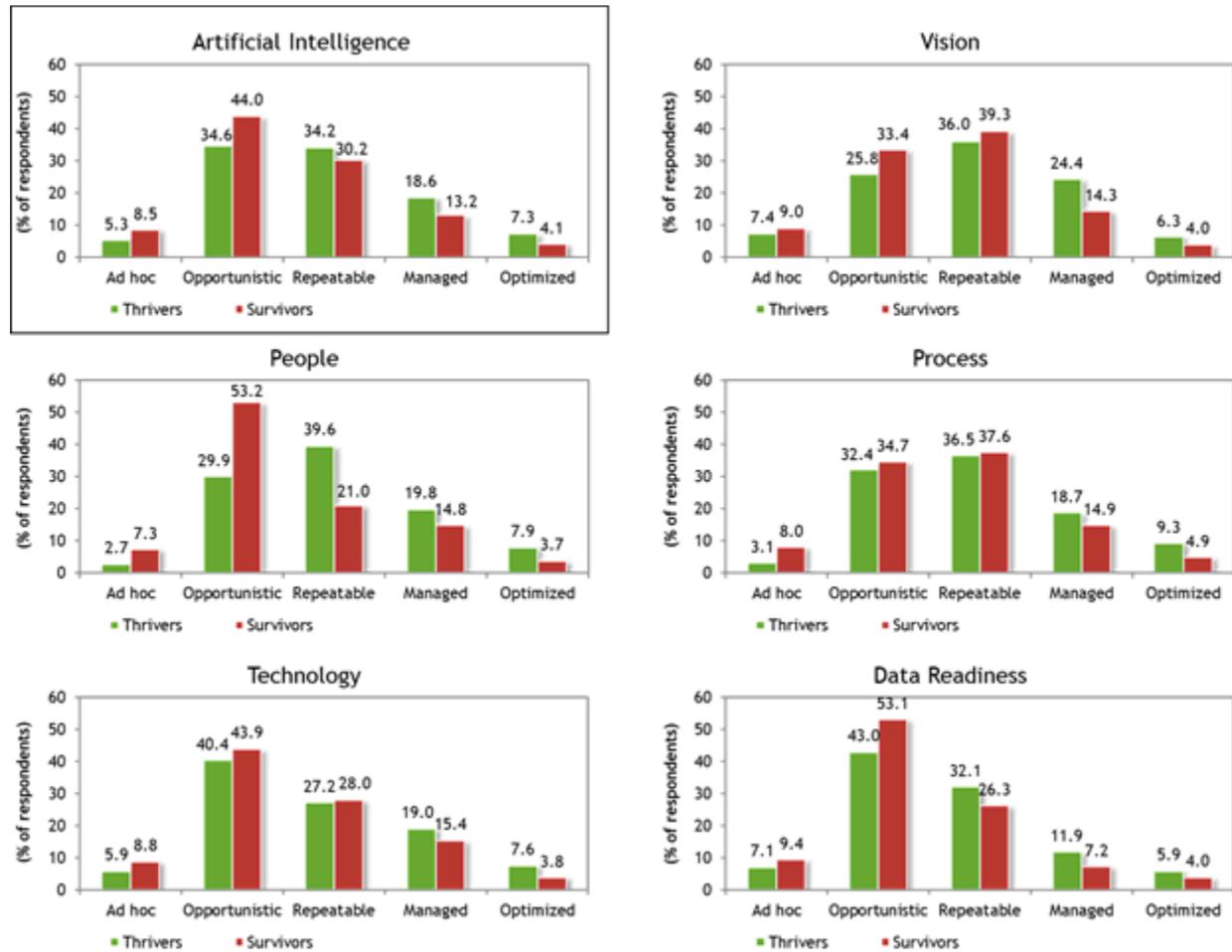
Figure 3 provides the comparison of artificial intelligence maturity between survivors and thrivers, as previously defined. These results show that, in aggregate, thrivers gravitate to higher maturity levels across all the dimensions. Despite some parity between a few banking thrivers and survivors that have reached the highest levels of maturity in their ability to execute, thriving financial institutions have far greater momentum built toward potential speed to execution.

Specifically, the banking industry results reveal that 60.1% of thrivers report leadership on all dimensions of vision, people, process, technology, and data readiness that deliver sustained competitive advantage. This compares with just 42.8% of the cross-industry benchmark survey previously published by IDC. Additional details from Figure 3 include:

- **Vision:** The vision dimension is where the thrivers in the banking industry have achieved a higher level of maturity faster than other dimensions. From the perspective of those that are in the managed or optimized stages, 30.7% of thriving institutions have achieved that status compared with just 18.3% of survivors. Having that vision allows an organization to set the appropriate strategic course of action when implementing AI within the organization.
- **People:** Banks categorized as survivors are really struggling with getting the right people to help with their AI strategies compared with the thrivers; 60.5% of survivors are still in the ad hoc or opportunistic stages compared with just 32.6% of thrivers. Finding the right talent to implement an AI strategy is going to be a challenge and may require forming more partnerships with third-party providers to assist in the process.
- **Process:** There is parity among the thrivers and survivors when it comes to the process dimension, although 42.7% of survivors are in the ad hoc or opportunistic stages compared with only 35.5% of thriving institutions.
- **Technology:** Like most industries, the technology supporting AI initiatives continues to be at the early stages. However, the banking industry is better situated than most industries, as within banking 26.6% of the thriving banking institutions are at managed or optimized stages compared with 10.7% of thrivers from the cross-industry benchmark.
- **Data readiness:** Few banking institutions have reached mature levels of data readiness, which is on par with most industries at this time. Data readiness appears to be an area ripe for guidance from technology providers to banks.

FIGURE 3

Artificial Intelligence in Banking Dimensions Dashboard: Comparison of Survivors and Thrivers



n = 152

Source: IDC's *Artificial Intelligence U.S. Banking Benchmark Survey, 2020*

ADVICE FOR TECHNOLOGY BUYERS

IDC believes that for organizations to realize digital transformation, they need to lay the groundwork for successful artificial intelligence initiatives across dimensions of vision, people, process, technology, and data readiness. A financial institution that wishes to maximize the value of the IDC MaturityScape for the artificial intelligence and progress along the maturity stages should begin by assessing the current state of its usage of artificial intelligence and business strategies, policies, procedures, and technology infrastructure, including those focused on:

- Establishing an organizationwide AI strategy aligned with business goals

- Revamping business processes to maximize the value proposition of AI usage
- Exploring AI-powered newer business models
- Proactive change management, retooling of skills, and embracing an innovation-focused, risk-taking collaborative work culture with diverse teams
- Increasing human-machine collaboration
- Being data driven with focus on eliminating bias and improving data quality
- Establishing scalable and cost-efficient infrastructure architecture to support AI initiatives
- Having ongoing enterprise data governance practices performed jointly by IT as well as those in business and compliance functions

Financial institutions should also consider establishing a cross-functional center of excellence for managing the usage of AI as part of an existing digital transformation initiative. IDC data has shown that COEs evolve as enterprise AI maturity increases, helping establish AI and data priorities across the enterprise and enabling competitive advantages.

Successful initiatives don't always materialize as expected. Be prepared to reevaluate and iterate on initial programs; build in AI capabilities as appropriate to drive innovation and business outcomes. In addition, successful AI programs are predicated on a mature data management environment. Basing AI capabilities on such a data infrastructure will improve the quality and accuracy of the insights gained from an AI initiative.

Table 1 shows the most important factors that define thrivers with respect to their artificial intelligence capabilities for each dimension of the IDC MaturityScape.

TABLE 1**Top 5 Traits of Thrivers' Artificial Intelligence in Banking**

Maturity Dimension	Trait
Vision	There is an adaptable enterprisewide strategy and an "AI first" culture to employ the usage of AI closely aligned to business goals where the organization is repeatedly creating new business value from AI.
People	Enterprisewide AI skill set is fed by continuous processes, redeployment, recruiting, and training. AI skilled staff are distributed among IT, LOB, and analytics groups, and their efforts and common methodologies are coordinated by the center of excellence. Human-machine collaboration is executed at process and system levels.
Process	Organizationwide usage of newer business processes, automation, and digitization maximizes the ROI of AI projects. Ongoing assessment, revision, and learning are built into decision making across the organization, and business benefits are systematically tied to initiatives, business planning, and strategy.
Technology	Enterprise platform includes an intelligent core allowing universal access to data and intelligence services; operationalization of AI/ML model deployment is structured. Explainability is inbuilt. Organizations are dynamically balancing the use of accelerated computing and general-purpose computing for AI projects and stage of the AI workflow.
Data readiness	Data acquisition and data preparation are provided as a service that supports real-time provisioning of all needed resources including data sets, expertise, and tools. Bias assessment and remediation are done as a standard practice with proactive improvements in the approach and implementation of the techniques. Risk and security management are comprehensive across the enterprise and among partners and customers, allowing for continuous feedback and improvement.

Source: IDC's *Artificial Intelligence U.S. Banking Benchmark Survey*, 2020

LEARN MORE**Related Research**

- *IDC FutureScope: Worldwide Financial Services 2021 Predictions* (IDC #US45821120, October 2020)
- *U.S. Survey Results: Contact Centers and Chat Tools Role in a Successful "New Normal" Omni-Strategy* (IDC #US46770320, August 2020)
- *U.S. Consumer Banking Survey: AI, Chatbots, and Conversational Banking Need to Lead Digital Experiences – Customer Not Yet Convinced* (IDC #US45821920, June 2020)
- *Critical Banking Technologies for the 2020s* (IDC #US46413020, May 2020)
- *IDC MaturityScope: Artificial Intelligence in Banking 1.0* (IDC #US45823120, March 2020)
- *AI-Based Automation Framework for Risk and Compliance in Financial Services* (IDC #US45710719, December 2019)

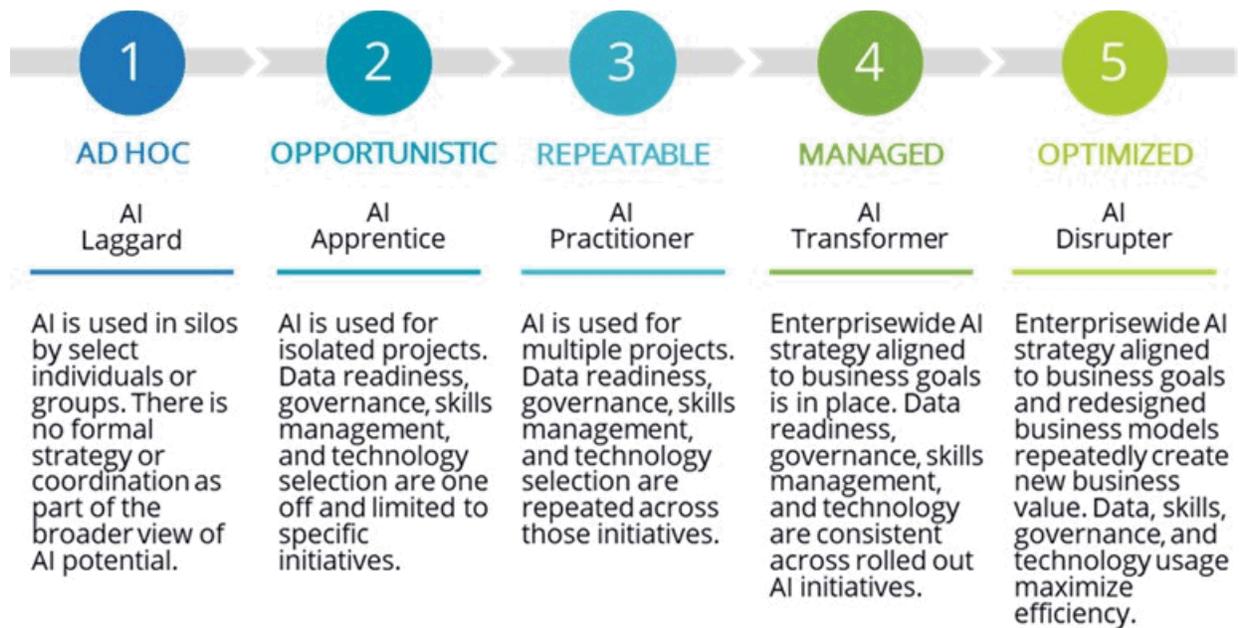
- *IDC's Worldwide Digital Transformation Use Case Taxonomy, 2019: Banking* (IDC #US44300119, July 2019)

Appendix

Figure 4 provides a graphical representation of the five stages of managing artificial intelligence maturity. The five maturity stages are described in greater detail in *IDC MaturityScope: Artificial Intelligence in Banking 1.0* (IDC #US45823120, March 2020).

FIGURE 4

IDC MaturityScope: Artificial Intelligence in Banking – Stage Overview



Source: IDC, 2020

Methodology

The results in this study are based on IDC's 2020 *Artificial Intelligence U.S. Banking Benchmark Survey* of 152 banking organizations in the United States, conducted in December 2020. The survey, executed online, was based on a structured questionnaire of 30 questions. These survey questions were focused on the five dimensions of the IDC MaturityScope for artificial intelligence. For each dimension, we created a set of questions to assess the level of capability/maturity for the dimension.

Note: All numbers in this document may not be exact due to rounding

Survey Respondent Segmentation

The survey respondents were segmented as follows:

- All the respondents were from the United States.

- Organizations' breakdown: 91% banking; 9% credit union
- Organization size based on number of people/employees worldwide and in the United States:
 - 500-999 employees – worldwide: 21%; United States: 28%
 - 1,000-4,999 employees – worldwide: 48%; United States: 47%
 - 5,000+ employees – worldwide: 30%; United States: 26%
- Organization size based on assets:
 - Under \$10 billion: 31%
 - \$10 billion-29.9 billion: 38%
 - \$30 billion-199.9 billion: 29%
 - \$200+ billion: 2%
- Respondent role within the organization:
 - CIO, CTO, or SVP of IT: 9%
 - Director of IT: 66%
 - Managing director of IT: 5%
 - SVP/VP or director of Analytics: 10%
 - SVP/VP or director of Data Science: 11%

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