



# Future-Ready Institutions:

## Assessing U.S. Higher Education Sector's AI Adoption and Capabilities

Sponsored by Microsoft

Research by: Ritu Jyoti and Hayley Sutherland February 2020



# Executive Summary

*Partnership with a trusted advisor and enabler is paramount.*



**Artificial intelligence (AI)** is at the heart of digital disruption across nearly every industry. AI is the now and future of education. There is an increasing recognition that AI solutions can optimize an extremely wide range of processes throughout the education field — benefiting not only the students but also the institutions. It is enabling educators to engage with students like never before. As per this joint IDC and MSFT study, *Assessing U.S. Higher Education Sector's Use and Readiness for AI*, AI is expected to increase **competitiveness, funding, and innovation** twofold over the next three years. The key drivers for AI are increasing efficiencies and driving better **student engagement**, and the top use cases are focused on improving student and prospect experience, enabled by AI technologies to make learning more **accessible and inclusive**.

As per IDC's AI MaturityScape framework, institutions need readiness with **vision, people, process, technology, and data** to realize the full potential. Trusted and ethical AI will be core to widespread adoption. While institutions of all sizes report strong cultural and strategic (subdimensions of vision) readiness, they are critically challenged with **people** (skills), **technology**, and **data strategy** for an AI-ready future. Partnering with a trusted advisor and enabler is crucial to an institution's ability to accelerate its adoption, realization of superior business outcomes, and sustainable competitive advantage.





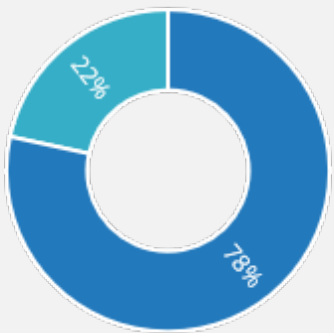


# About the Research

Source: AI Higher Education Survey, IDC, November 2019  
Managed by IDC's Quantitative Research Group

**Sample size: Total N = 509 U.S. institutions; 78% public, 22% private**  
**215 management, 294 staff**  
**Average gross income = \$300M**  
**Currently using AI = 17.5%, Exploring or evaluating options = 82.5%**

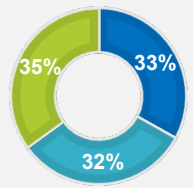
Public Institution Private Institution



**Institution sizes:**  
**65% small and midsize, 35% large**

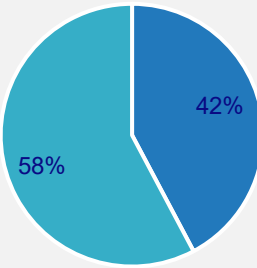
20 to 249 250 to 999 1,000 or more

# of employees



**Respondent profiles and roles:**  
**42% management, 58% staff**

Management Staff



- Head of Admin/Operations
- Dean of Technology
- Dean of Academic Resources
- ICT Director or VP
- Program Director or VP
- IT/Systems Admin Director or VP



# Sections

- Why AI for Higher Education?
- What Do Institutions Need to Realize the Potential?
- What Is the Current State of Readiness?
- What Are Key Priorities for Institutions in the U.S.?
- What Are Institutions' Overall Strengths and Challenges?
- How Can Microsoft Help?



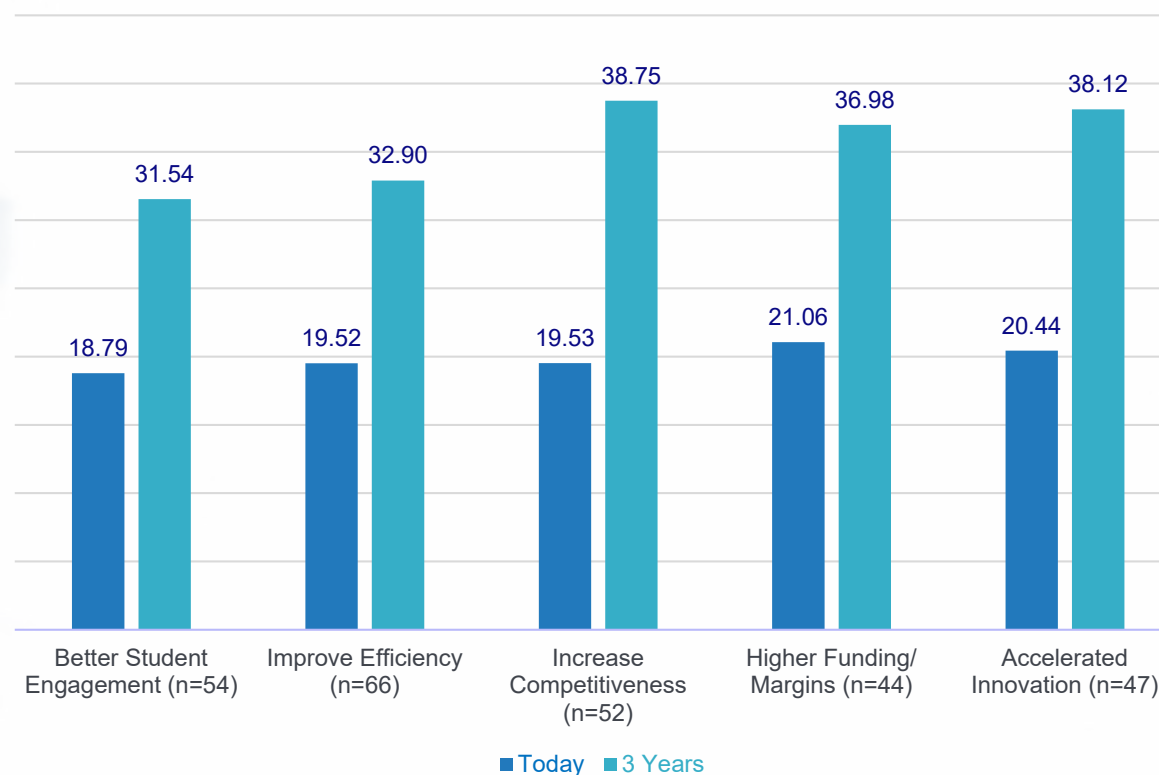


# Why AI for Higher Education?



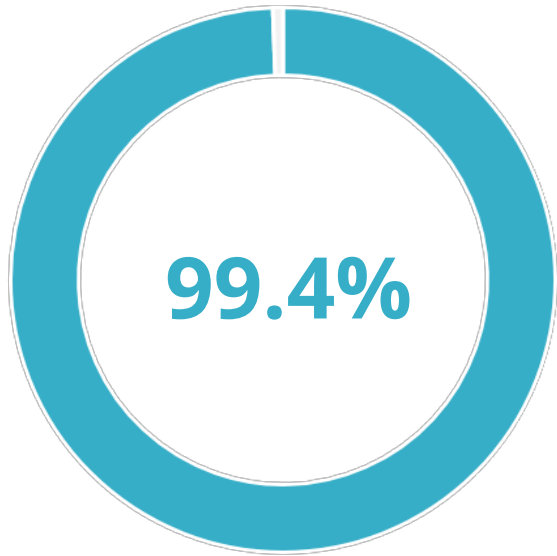


# AI is expected to increase competitiveness, funding, and innovation twofold over the next three years.





# AI is instrumental to institutions' competitiveness in the next three years.



Have multiple use cases within their institution.

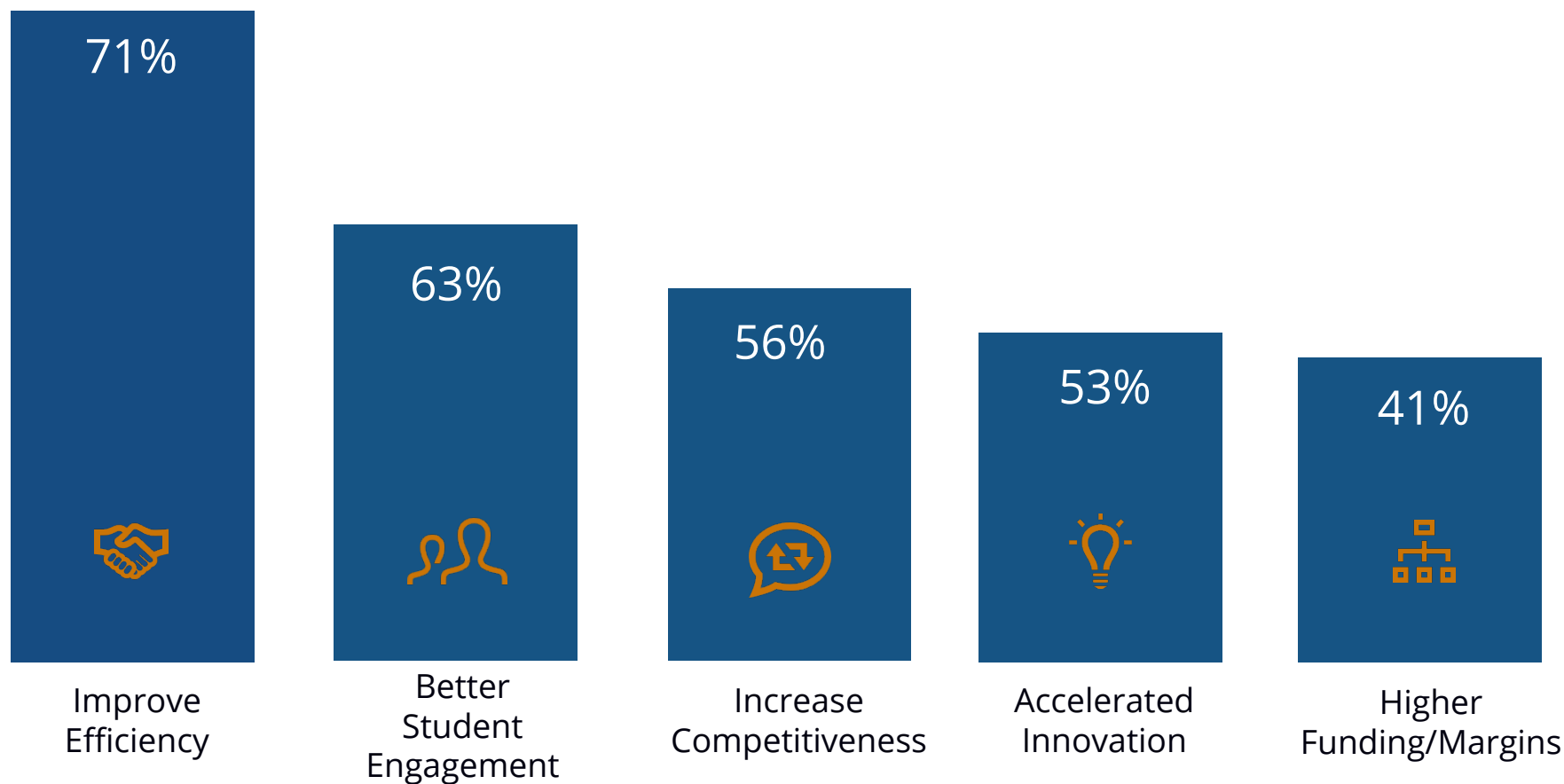


Call it a game changer!





# The key drivers for AI are **increasing efficiencies** and driving **better student engagement**.



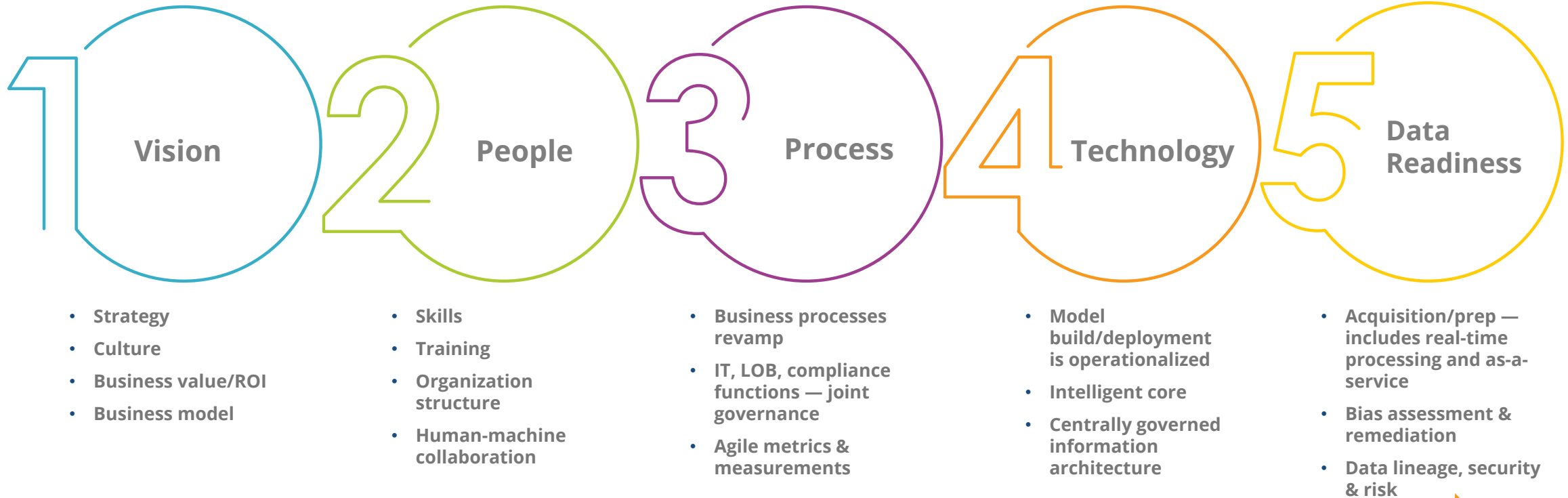




**What Do Institutions Need to  
Realize the Potential?**



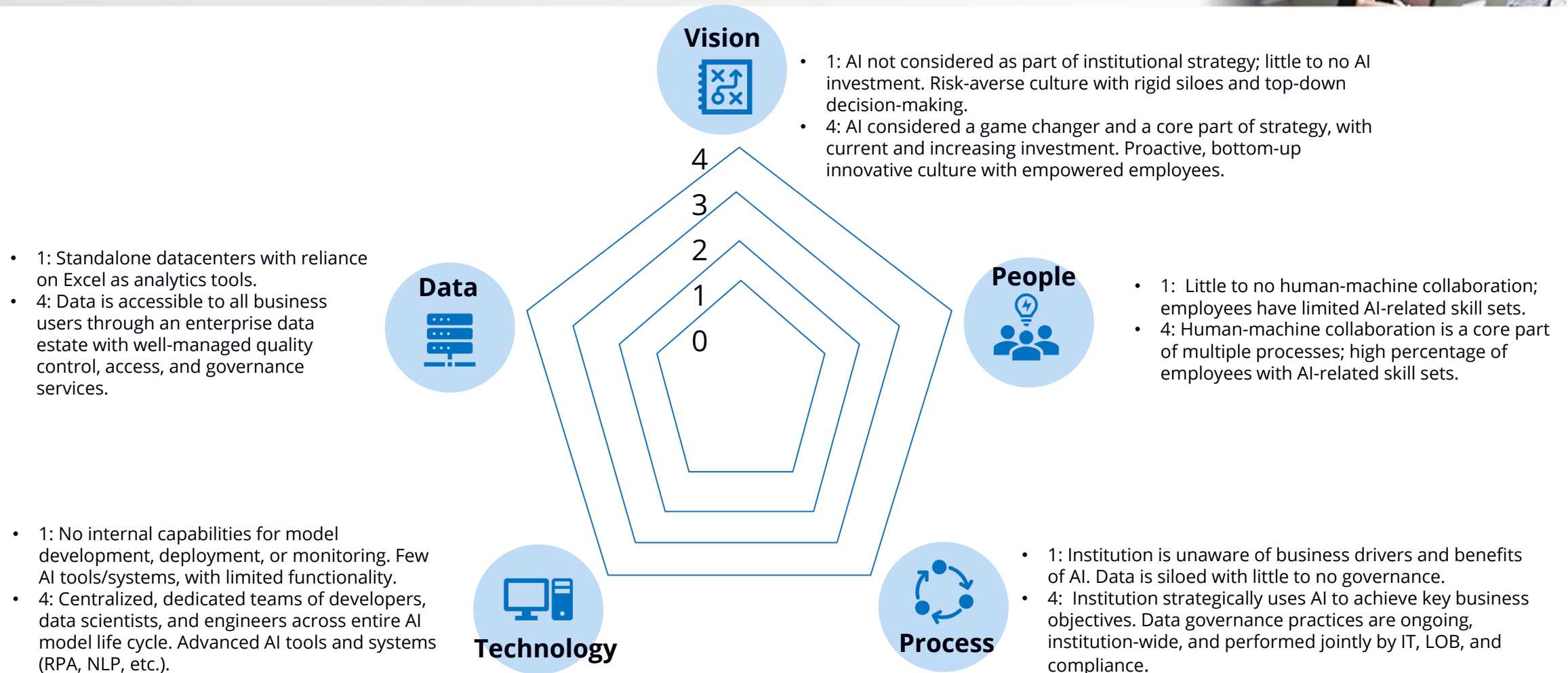
# Institutions need maturity in these **five dimensions**:



**These will help drive improved competitiveness, funding, and innovation**



# AI Readiness Model







With the goal of **increasing competitiveness, funding, and innovation** by nearly **2X** over the next three years, institutions need to **embrace AI to thrive.**

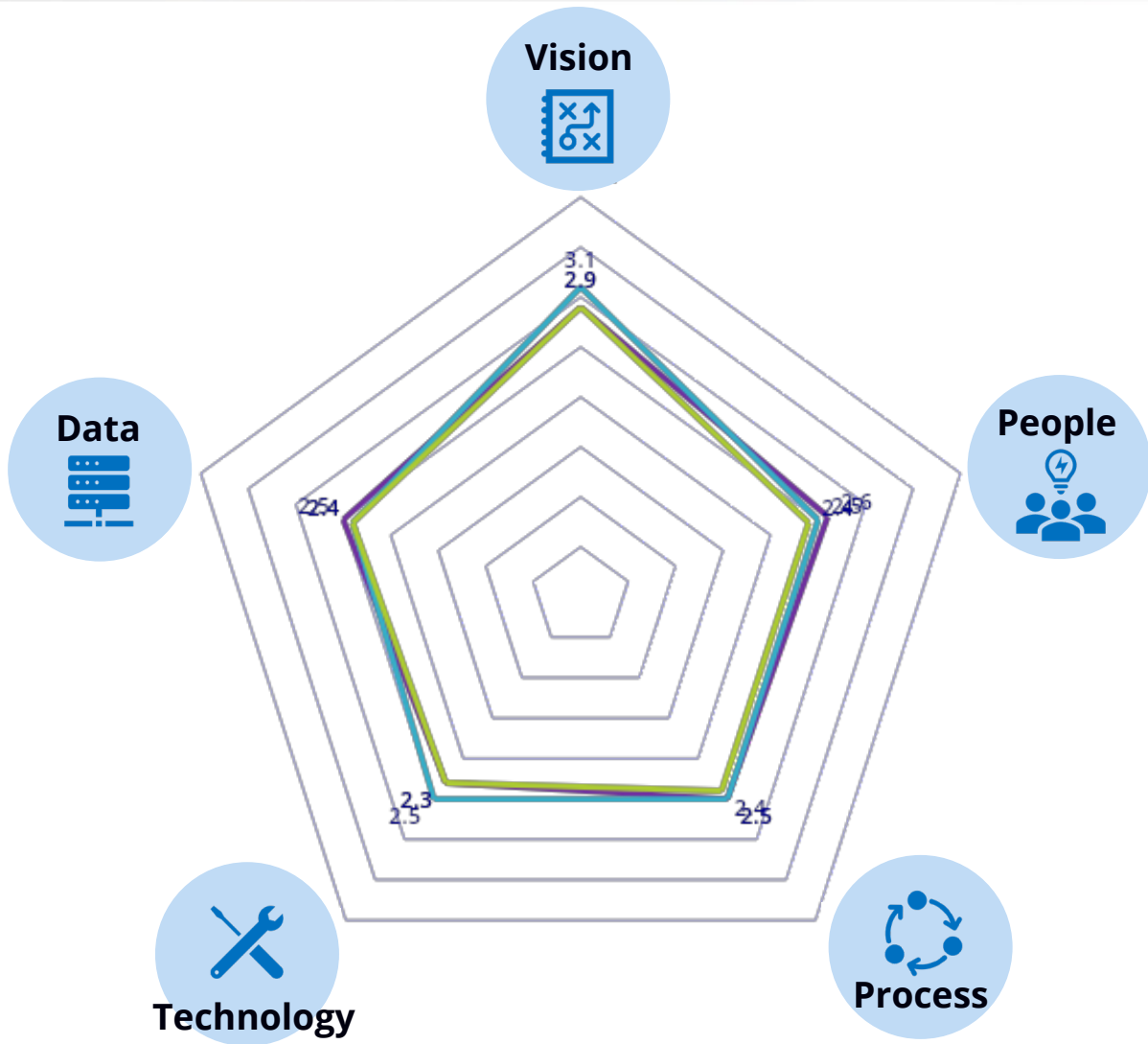




**What Is the Current State of Readiness?**



# AI readiness is similar across institution sizes.



On a scale of 1 to 4, rating overall AI readiness, institutions have the **highest rating** for the **Vision dimension**.

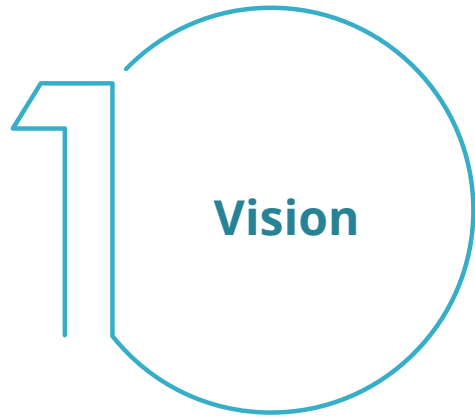


Institution size (# of employees)

- 20-249
- 250-999
- 1,000+



# Assessing Vision Readiness



**Strategy, culture, business value, business models**





# A majority of institutions have started/adopted AI as part of their strategy.



54%

Have started to experiment with AI as part of their strategy.

38%

Have adopted AI as a **core part of** their strategy.

8%

**Have not started to consider AI** as part of their core strategy.





# Strategy readiness is strongest in midsize institutions.



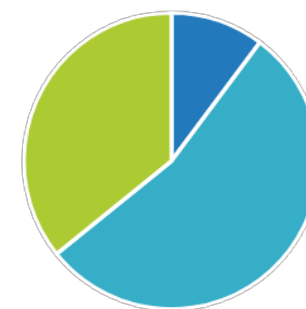
20 to 249






250 to 999



1,000+

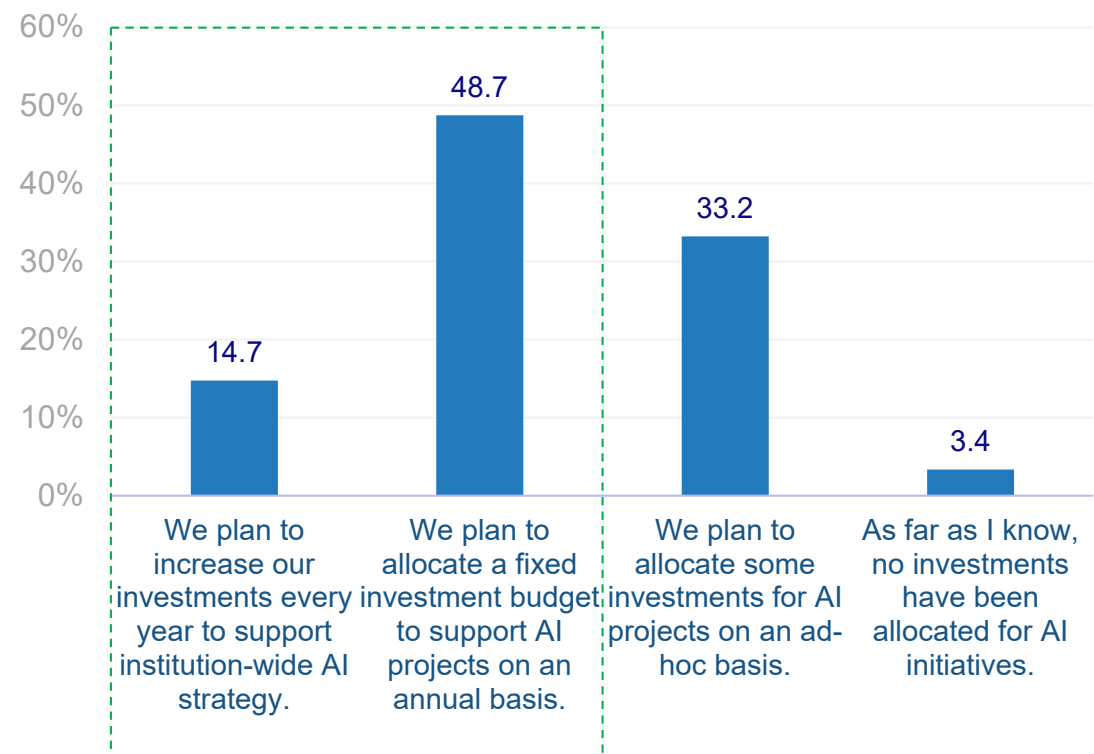


**Which of the following statements best describes your institution's view on AI?**

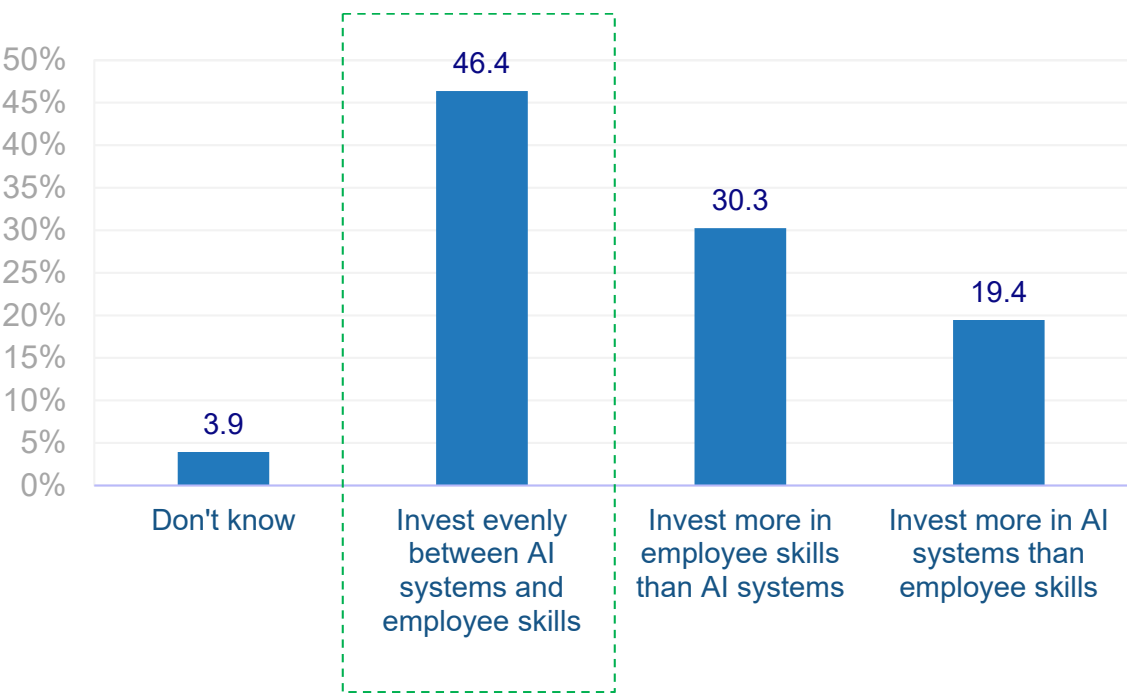
-  We have not started to consider AI as part of our strategy.
-  We have started to experiment with AI as part of our strategy.
-  We have adopted AI as a core part of our business strategy.



# Two thirds see investments in AI as strategic, and half plan to invest evenly between solutions and employee skills.



Q. Which of the following best describes your institution's investments for developing, deploying, and maintaining AI solutions?



Q. Looking ahead, in which area is your institution likely to focus its AI investments and efforts?

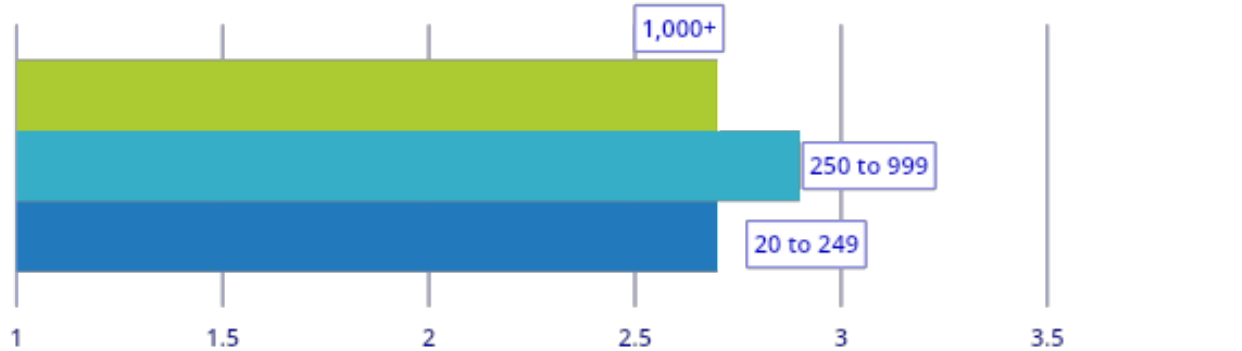


# Investment Readiness of Education Sector by Institution Size

*Similar strategies, different spend.*

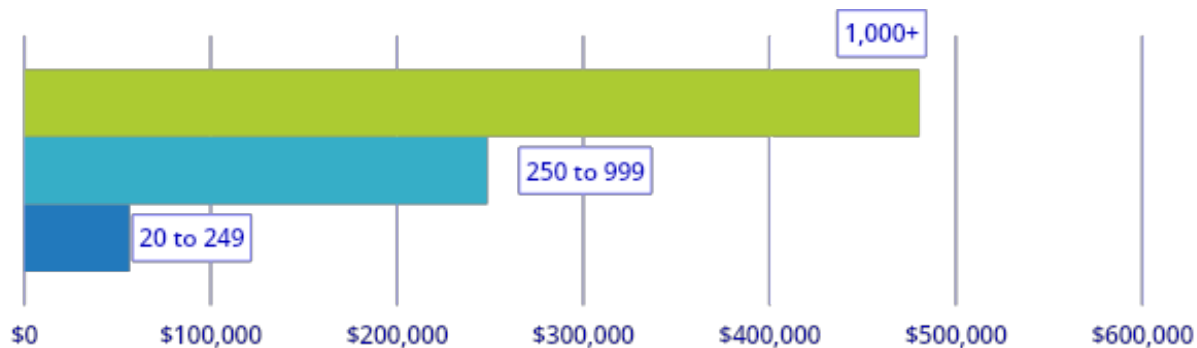


## Education organizations' current **investment strategy**:

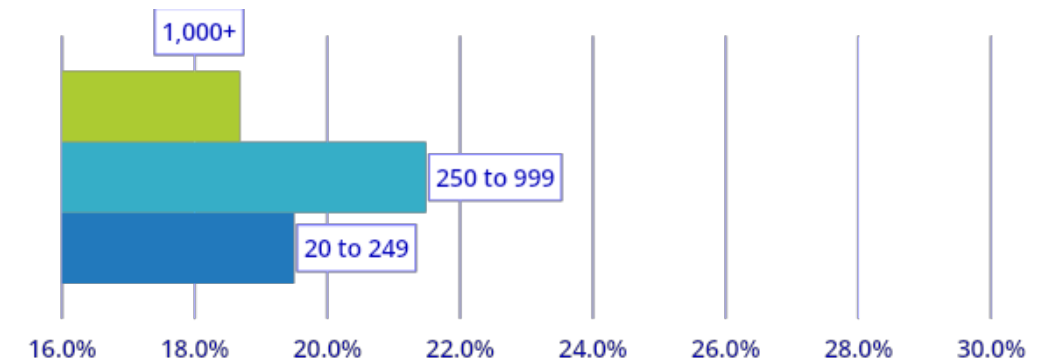


1. No investments have been allocated for AI initiatives.
2. We plan to allocate some investments for AI projects on an ad-hoc basis.
3. We plan to allocate a fixed investment budget to support AI projects on an annual basis.
4. We plan to increase our investments every year to support institution-wide AI strategy.

## Education organizations' **current investment spend**...

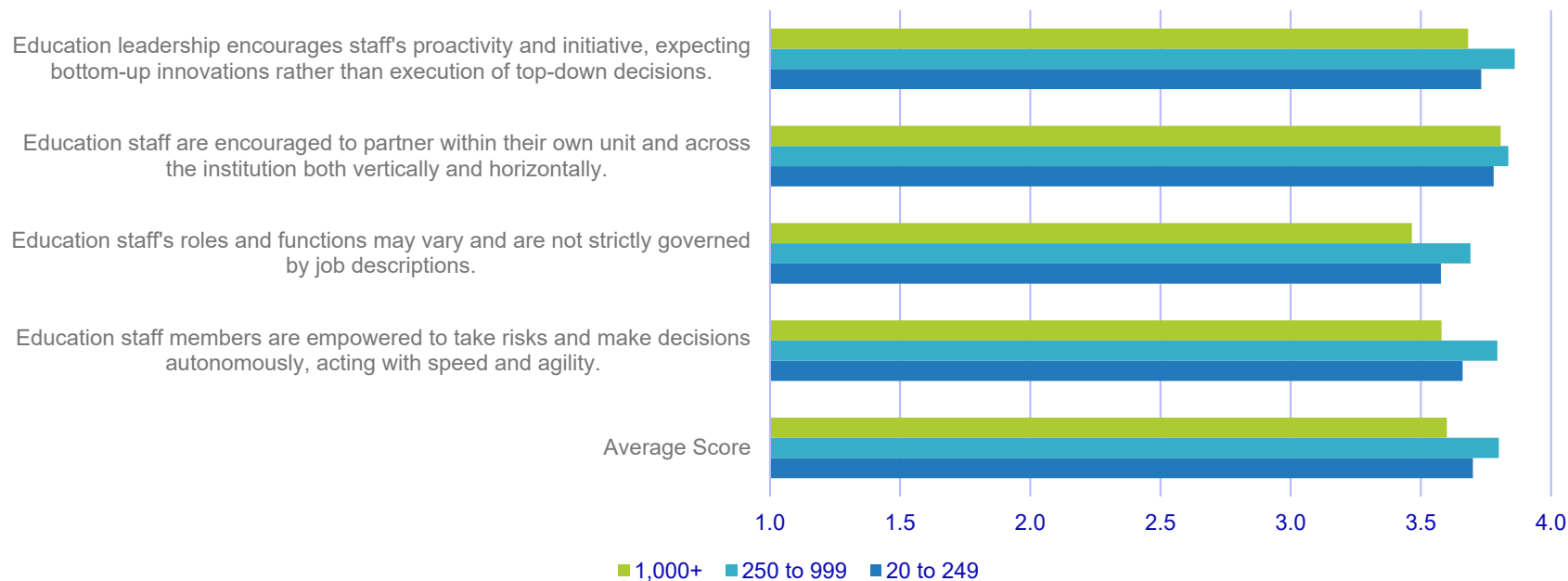


## ...and **planned investment increase**:





# Culture readiness is strong across institutions of all sizes.



Q: Please rate how much the following statements describe your institution's culture and agility.

N = 509; Source: AI Higher Education Survey, IDC, November 2019



# Skills, training, organization structure, human-machine collaboration

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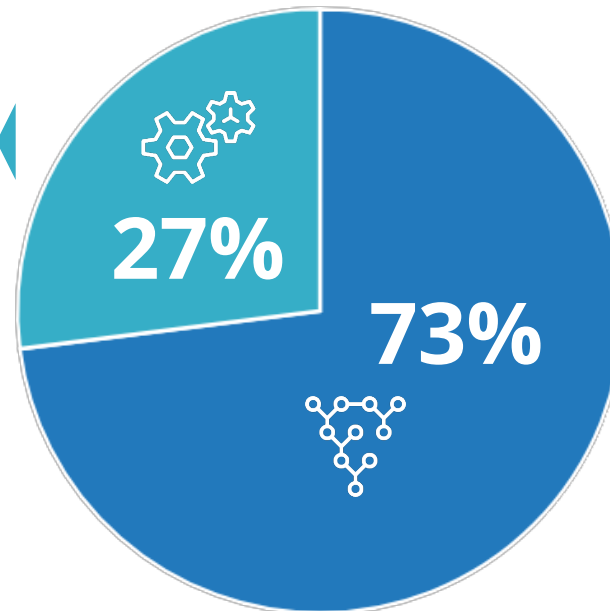




# Automation is playing a significant role in institutions' operations.



More than one quarter of institutions say automation is part of some of their processes.



Almost three quarters of institutions say automation is integral to multiple processes.

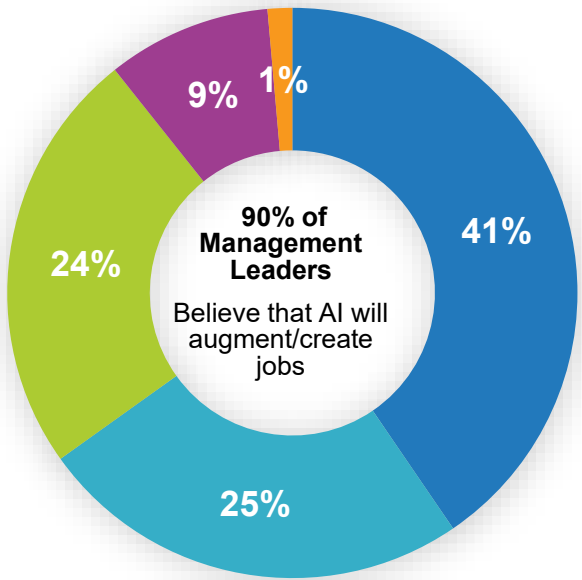
Q: How much would you say automation is playing a part in your institution's operations?  
N = 509; Source: AI Higher Education Survey, IDC, November 2019



Education leaders and staff both believe AI will **augment or create new jobs**, far outweighing any negative impacts to jobs. There is good alignment on human-machine collaboration.

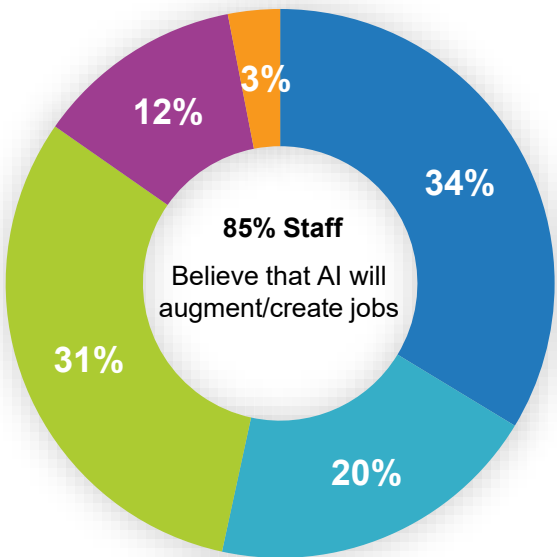


N = 215



- Help employees do their jobs better
- Reduce repetitive routine tasks
- Create new knowledge-based jobs
- Will take over jobs
- No impact on jobs

N = 294

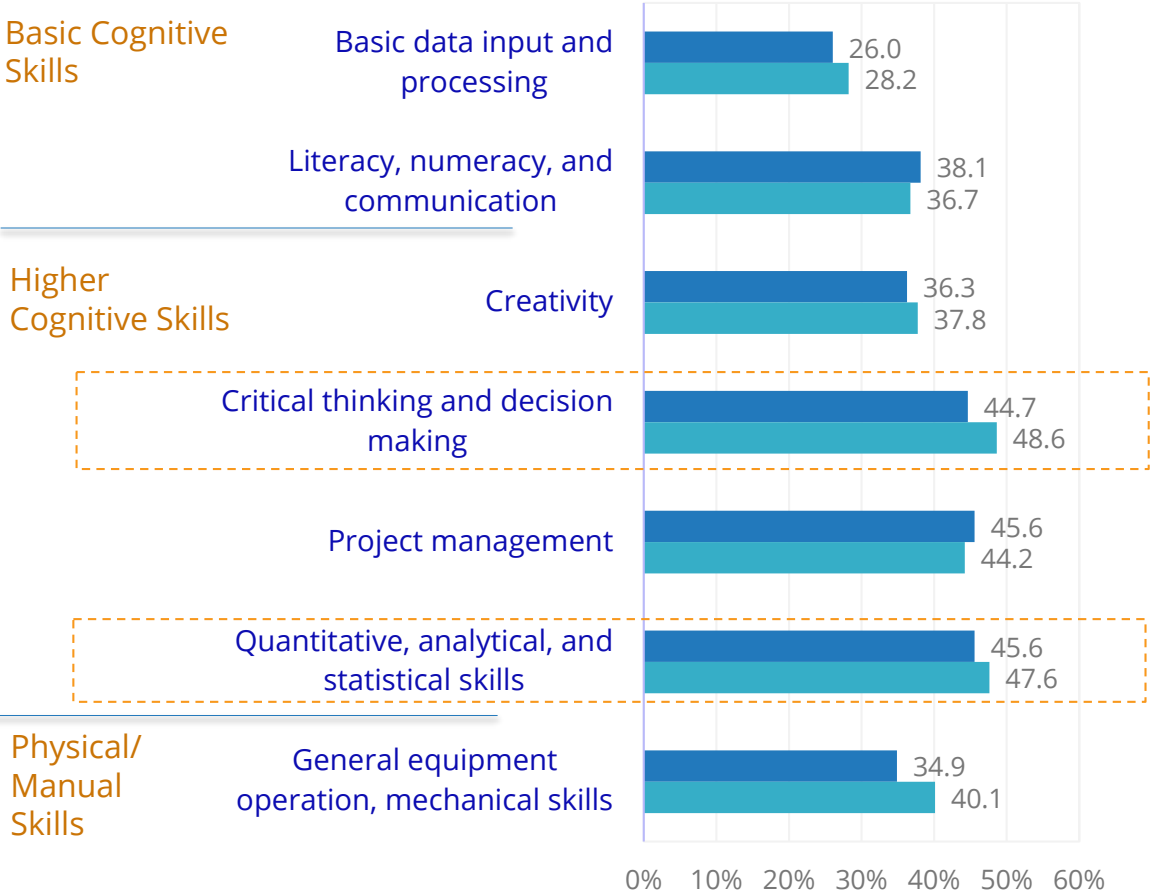


- Help employees do their jobs better
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- Will take over jobs
- No impact on jobs

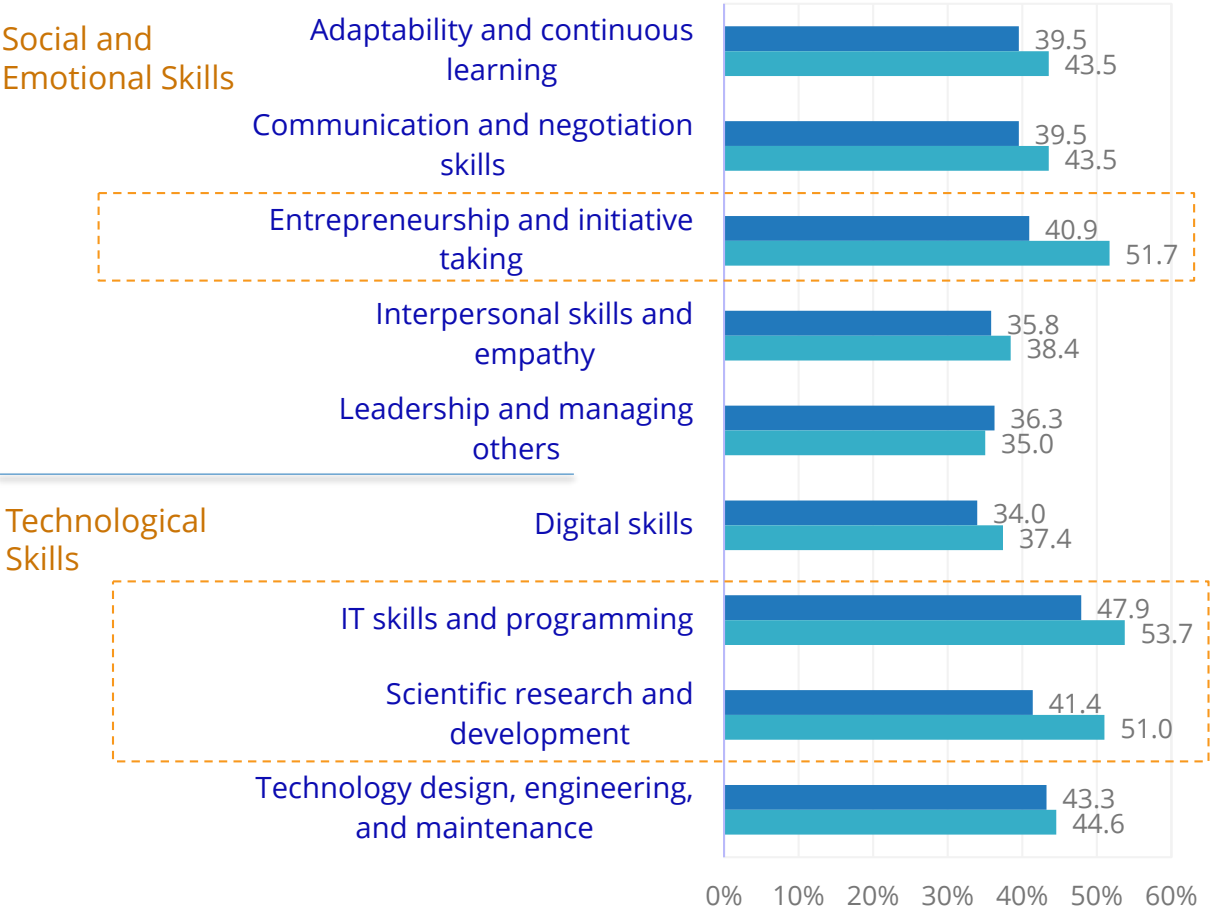
Q: How do you think AI will MOST impact jobs in the education sector?  
N = 509, N = 215 (leaders), N = 294 (staff); Source: AI Higher Education Survey, IDC, November 2019



# Higher cognitive, technological, and entrepreneurship skills are the most needed skills for an AI future.

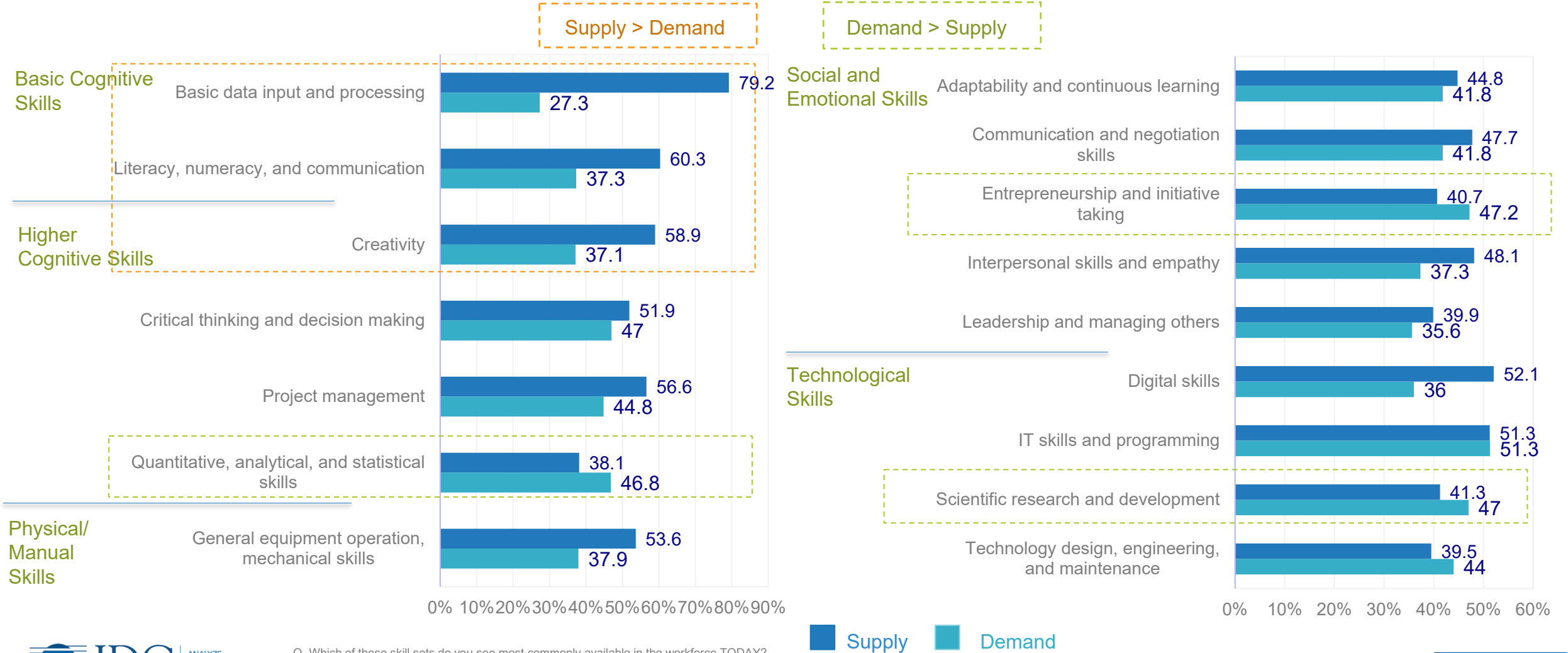


Management (N=215) Staff (N=294)





# Scientific R&D, quantitative, and entrepreneurship skills have the highest demand-and-supply gap.

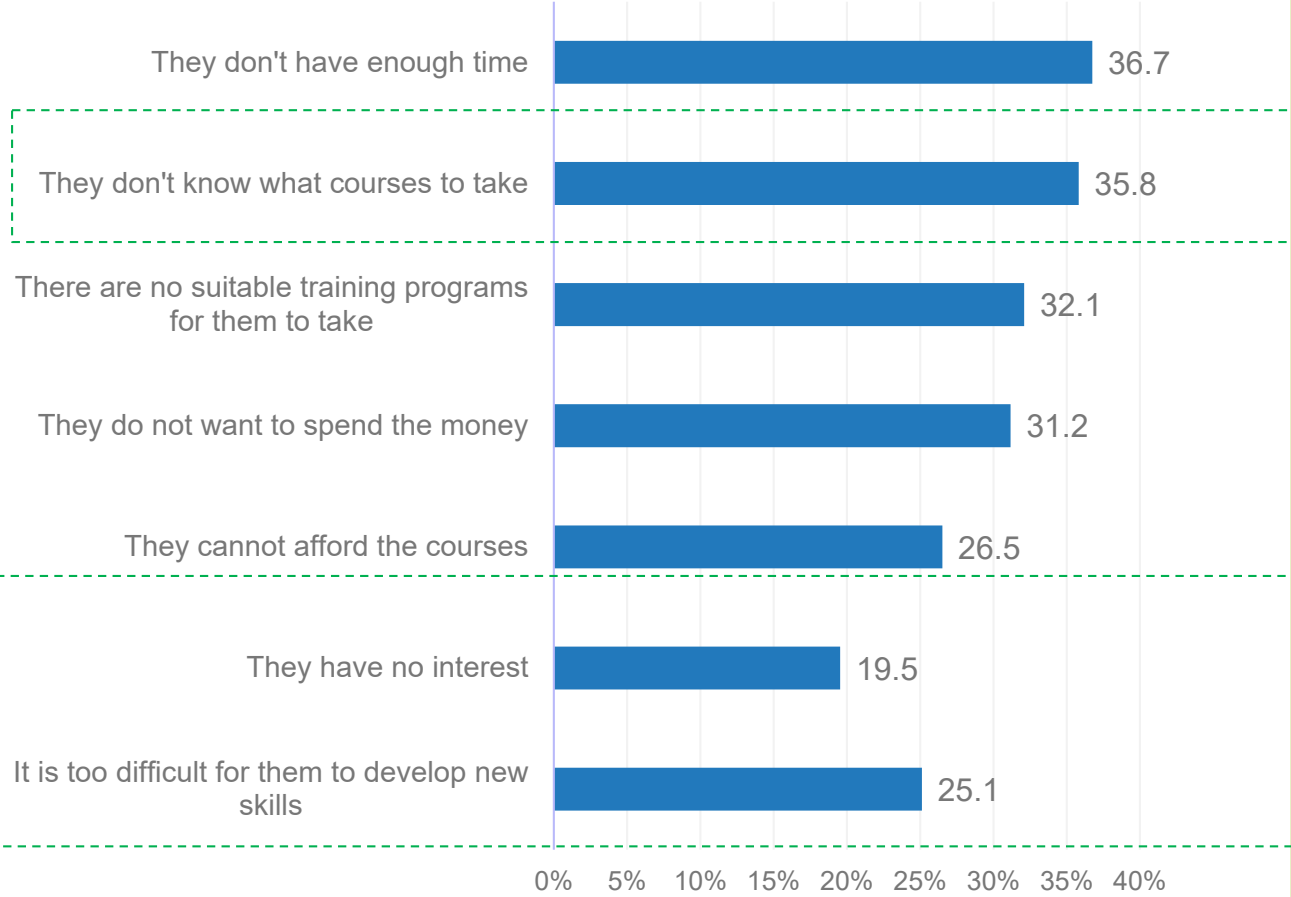




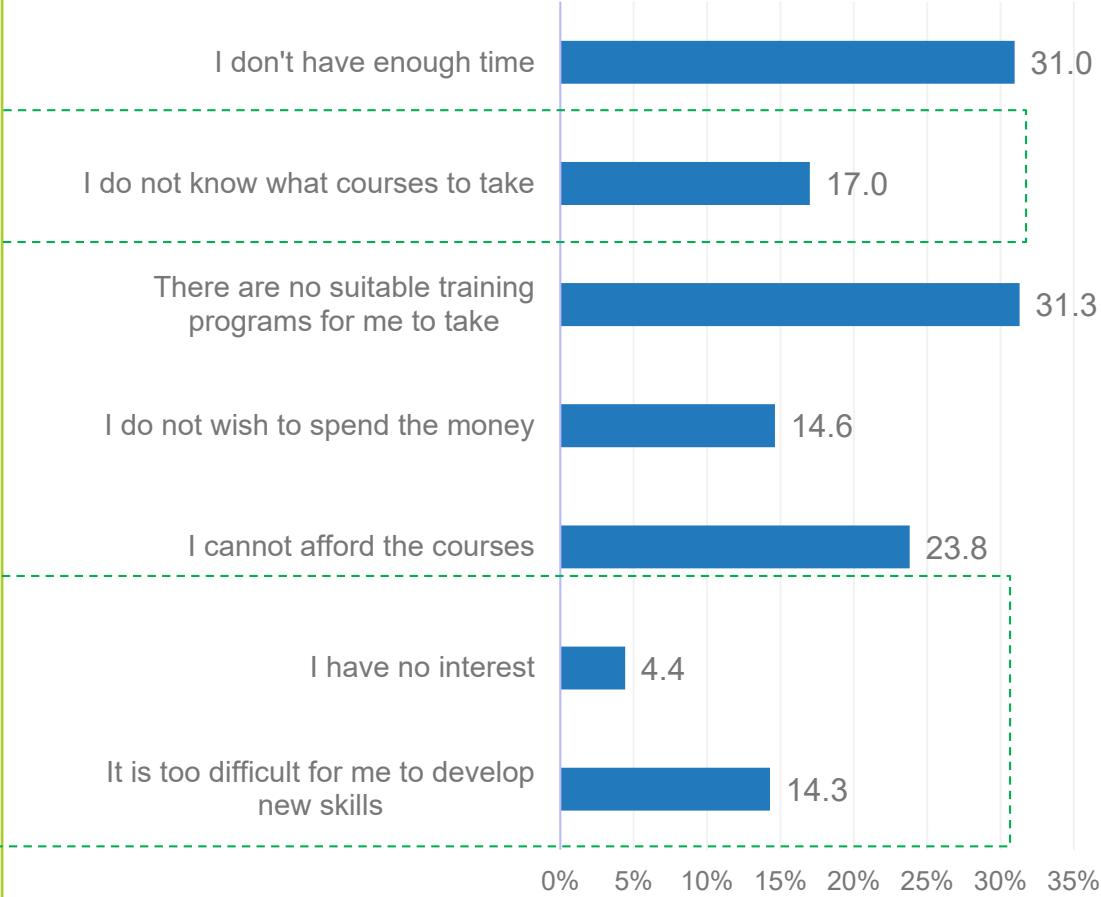
# Barriers to reskilling are high among management and staff.



Management N = 215

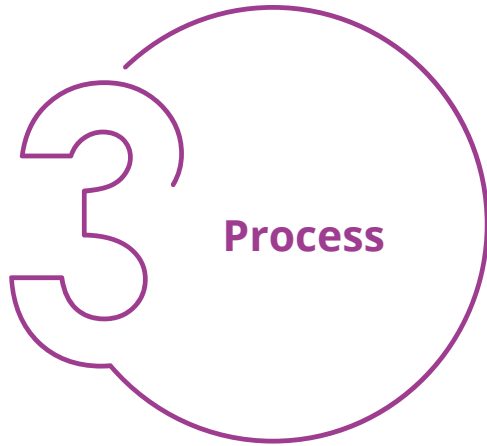


Staff N = 294





# Assessing Process Readiness



- **Business processes revamp**
- **IT, LOB, compliance functions — joint governance**
- **Agile metrics & measurements**

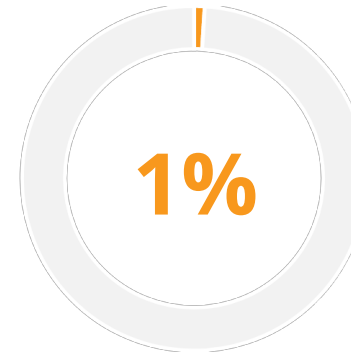
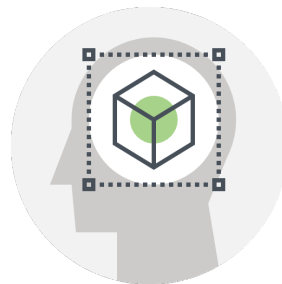




# Almost all institutions have well-defined agile metrics for measurement of success.



Have defined  
their **business  
drivers** for AI  
adoption.



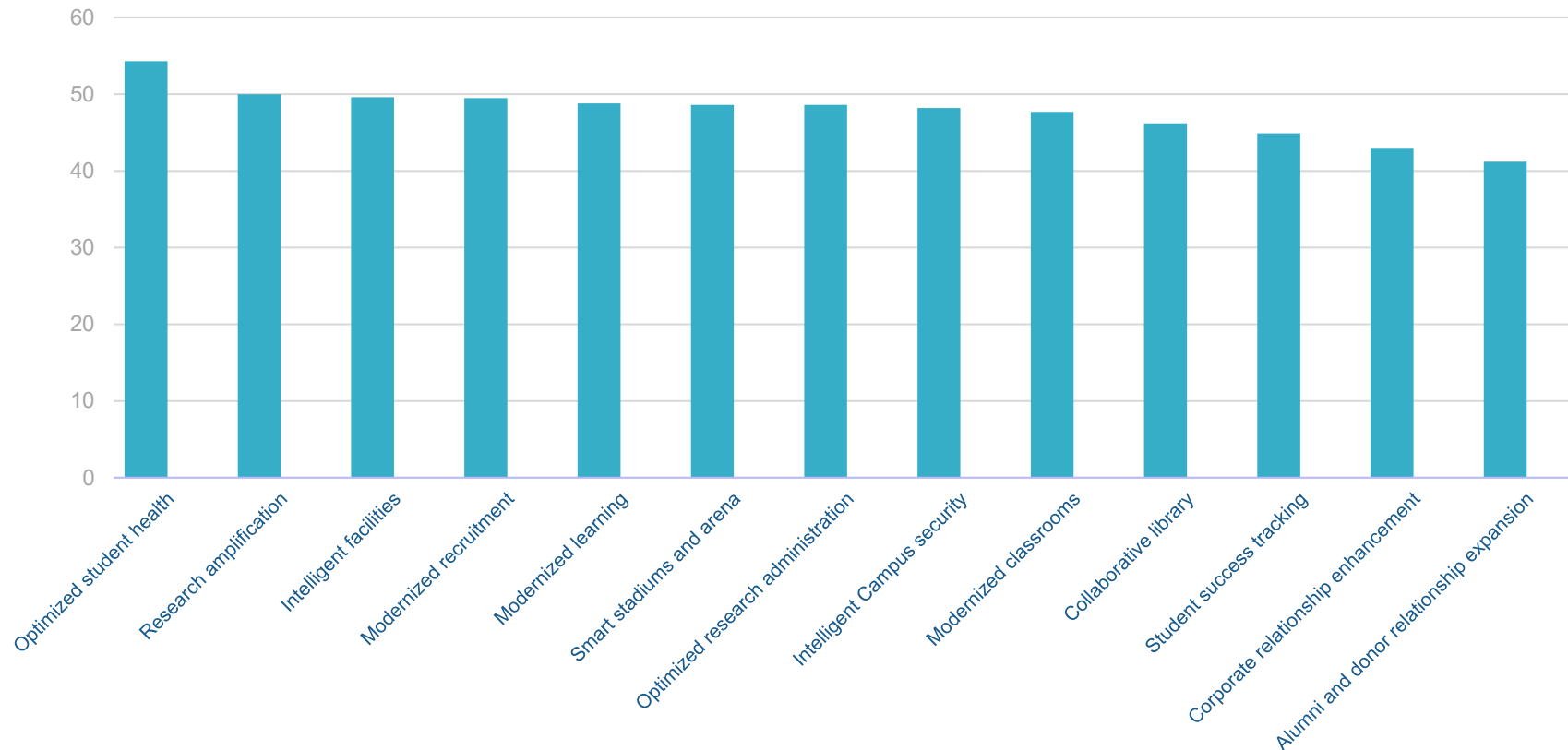
**Don't know or  
have yet to  
solidify their  
drivers.**



# Institutions are undergoing business process transformation across the breadth of their key functions.



Intelligent Task or Process Automation



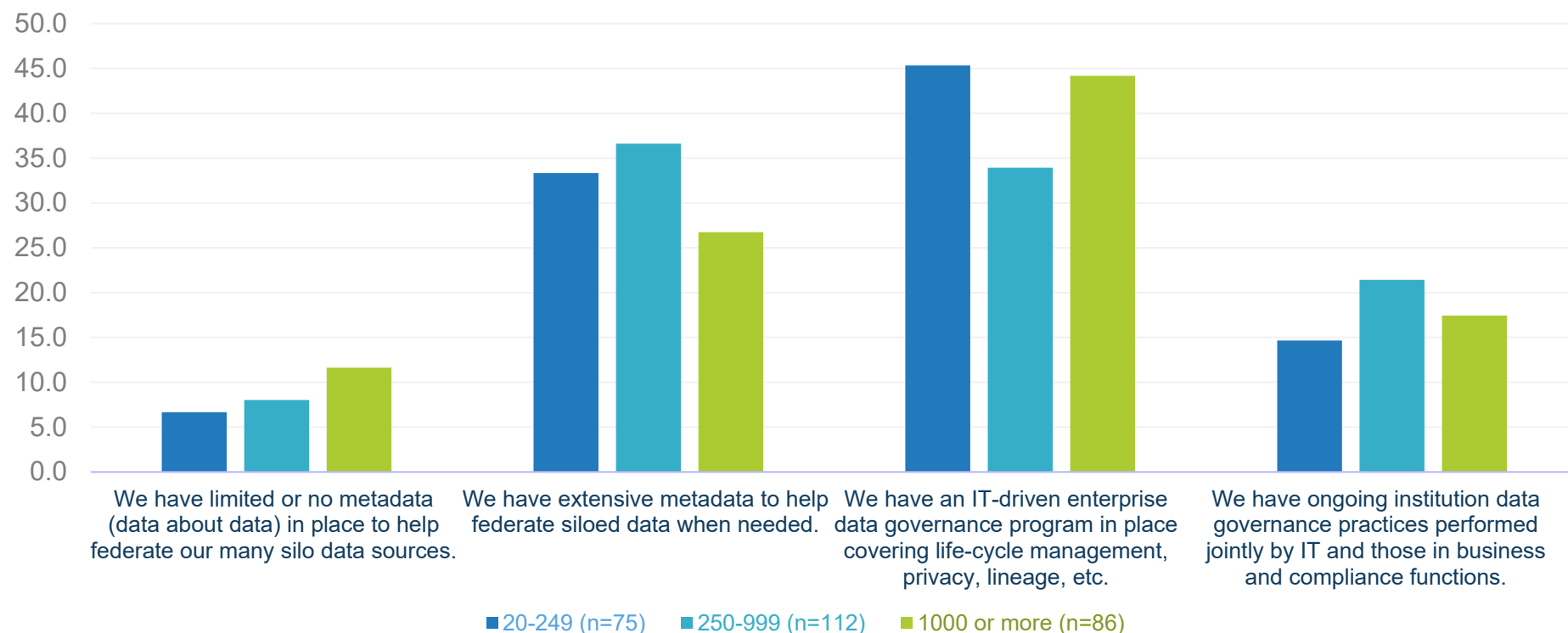


# A majority of the institutions recognize the importance of data governance.

*An IT-driven program is in place; LOB and compliance function collaboration is shaping up.*



Data Governance by Institution Size – Number of Employees

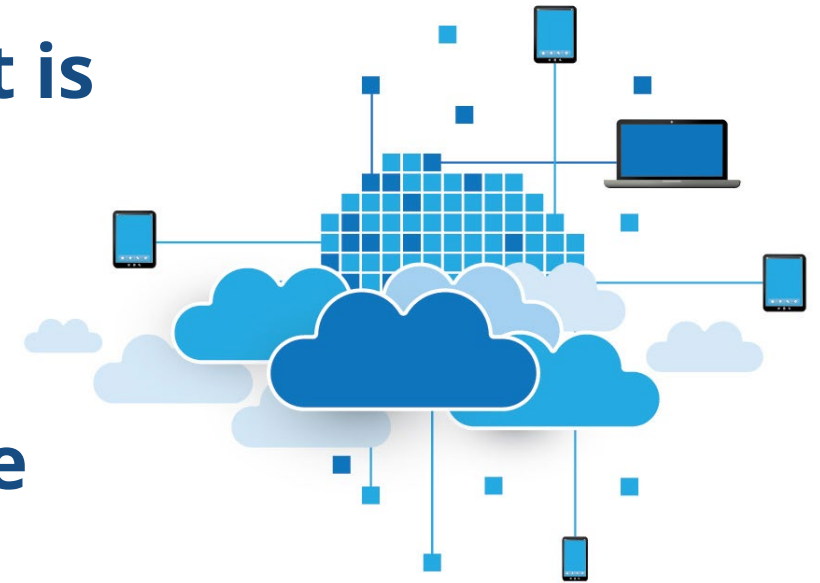




# Assessing Technology Readiness



- **Model build/deployment is operationalized**
- **Intelligent core**
- **Centrally governed information architecture**





# Most of the institutions are in the early stages of their technology readiness.



Institutions need to build on skills that could be scaled across a spectrum of initiatives. In order to enable a broad set of AI-powered transformation, they also need to expand their data infrastructure for unstructured content, and expand data across cloud and hybrid cloud deployments.

53%

**We have some AI and analytics skills scattered throughout the institution, which can be leveraged on a project basis.**

Q: What best describes your institution's capability to develop AI models and other complex analytics?

N = 509; Source: AI Higher Education Survey, IDC, November 2019



48%

**We have an institution data warehouse that captures the bulk of our analytic data or have department-level siloed databases.**

Q: Which of the following best describes your institution's data infrastructure?

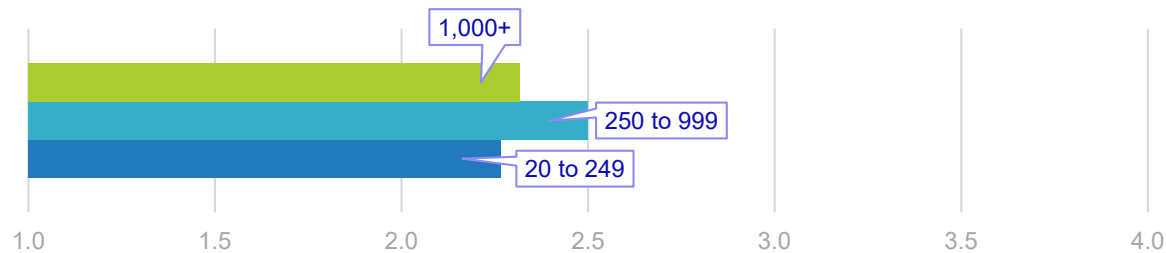
N = 509; Source: AI Higher Education Survey, IDC, November 2019



# Model development/deployment readiness of midsize institutions is the highest.



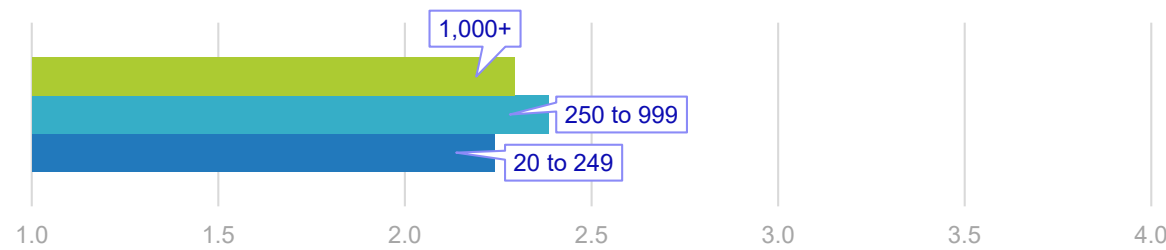
## EDU organizations' AI model development capabilities:



Q. Which of the following best describes your institution's capability to develop AI models and other complex analytics?

1. We do not have internal capabilities for model development.
2. We have some AI and analytics skills scattered throughout the institution which can be leveraged on a project basis.
3. Most LOBs have data analytics specialists and business intelligence staff.
4. We have centralized teams of data scientists and data engineers to develop and validate AI and analytics models.

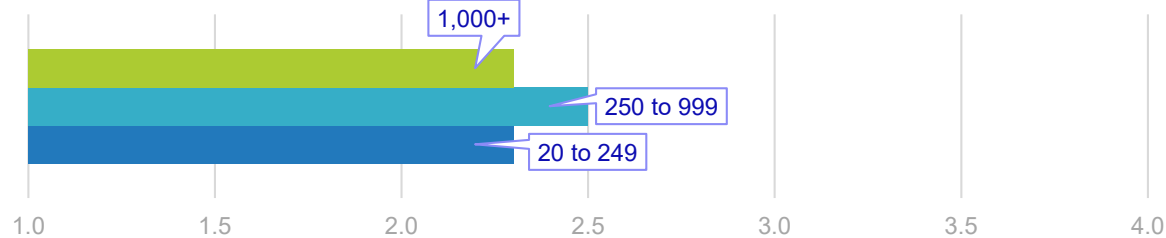
## EDU organizations' AI model deployment and monitoring capabilities:



Q. Which of the following best describes your institution's capability to deploy and monitor AI models, projects, and applications?

1. We would rely on solution providers and business partners to handle that for us.
2. We would rely on a mix of an internal development team and external partners to handle that for us.
3. We mainly use our internal development team to handle it for us.
4. We have dedicated developers, specialists and data engineers to deploy and monitor our AI applications.

## EDU organizations' AI development and deployment tools:



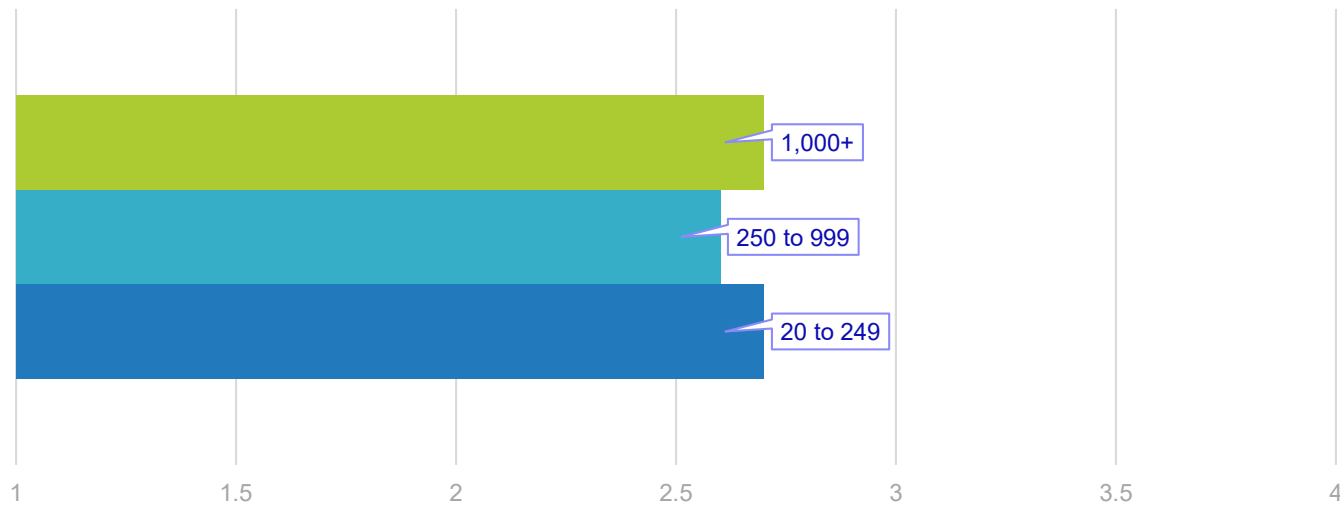
Q. Which of the following describe the availability of tools and systems to support specialized analytics and AI model development and deployment in your institution?

1. We have simple end user tools such as Excel.
2. We have business intelligence and reporting tools.
3. We have augmented business intelligence, machine learning tools, and predictive systems.
4. We use cloud or on-premise AI analytics and tools such as robotic process automation, natural language processing, etc.



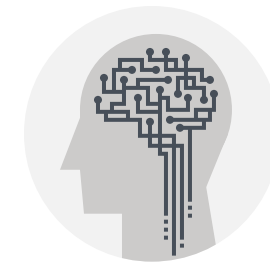
# Infrastructure Readiness by Institution Size

*Midsized institutions are slightly behind the small and large institutions.*



Institution size = Number of employees

1. Our data infrastructure is mostly department-driven with silo databases and data marts.
2. We have an institutional data warehouse that captures the bulk of our analytic data.
3. As well as a data warehouse we have an on-premise data lake to capture additional unstructured data.
4. We have structured and unstructured enterprise data warehouses running on cloud or hybrid cloud.



Q. Which of the following best describes your institution's data infrastructure?  
N=509; Source: AI Higher Education Survey, IDC, November 2019



# Assessing Data Readiness



- **Acquisition/prep — includes real-time processing and as-a-service**
- **Bias assessment & remediation**
- **Data lineage, security & risk**

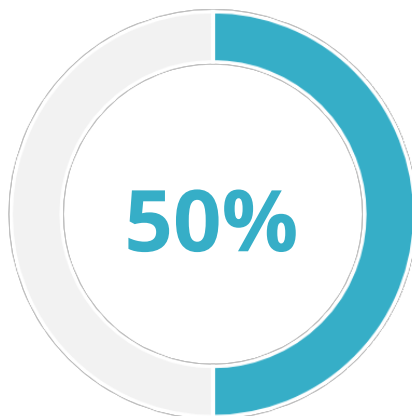




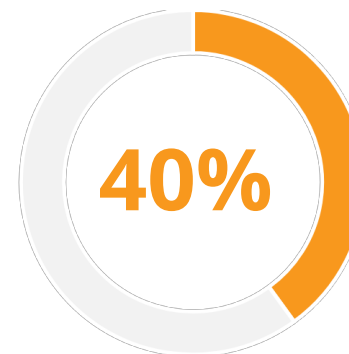
# Most of the institutions are in the early stages of their data readiness journey.



Institutions need to build continuous data pipelines, embrace tools and technologies to help improve data quality, and make them accessible to all data scientists in the institution, including those in the LOB units.



**Have centrally federated data accessible to centralized or departmental analytics teams.**



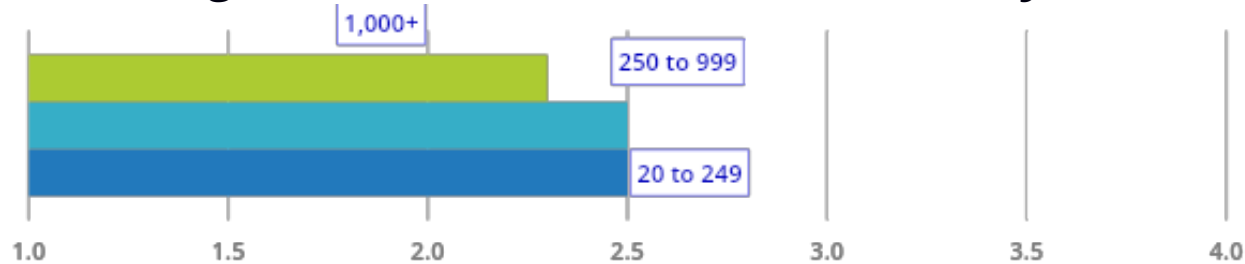
**Have major data quality and timeliness issues, which are dealt with on an ad hoc basis by LOBs.**



# Data readiness of the education sector is similar across institution size.

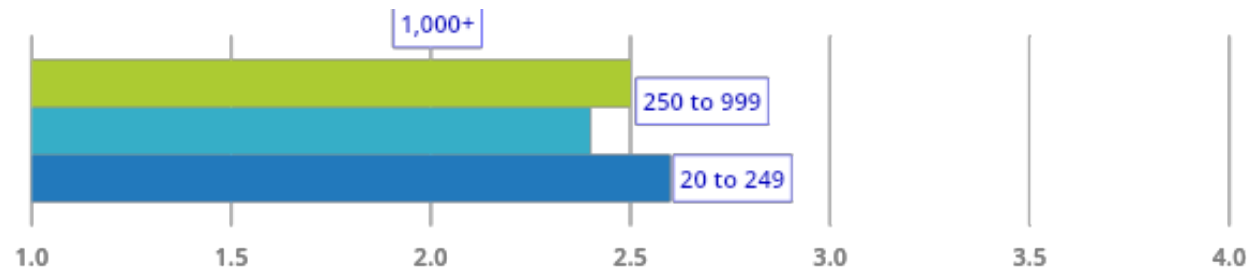


## EDU organizations' current **data availability**:



1. Data is scattered in siloed departmental systems and difficult to access.
2. Data is centralized and accessed by a centralized analytics team.
3. Data is centrally federated and accessible to analytics teams in each department.
4. Data is centrally federated and accessible to all departmental business users.

## EDU organizations' current **data quality**:



1. Data timeliness and quality are driven by data sources and are not really addressed at an institution level.
2. Data quality and timeliness are still major issues, which are dealt with on an ad hoc basis by LOBs.
3. Data is maintained in an institution data warehouse with detailed data quality controls and checks.
4. Data is maintained in an enterprise data lake with well-managed quality control, access, and governance services.

Institution size = Number of employees

Q: Which of the following best describes your institution regarding the availability of data to train task-based AI solutions?

Q: Which of the following best describes your institution regarding the quality and timeliness of data to train task-based AI solutions?

N = 509; Source: AI Higher Education Survey, IDC, November 2019

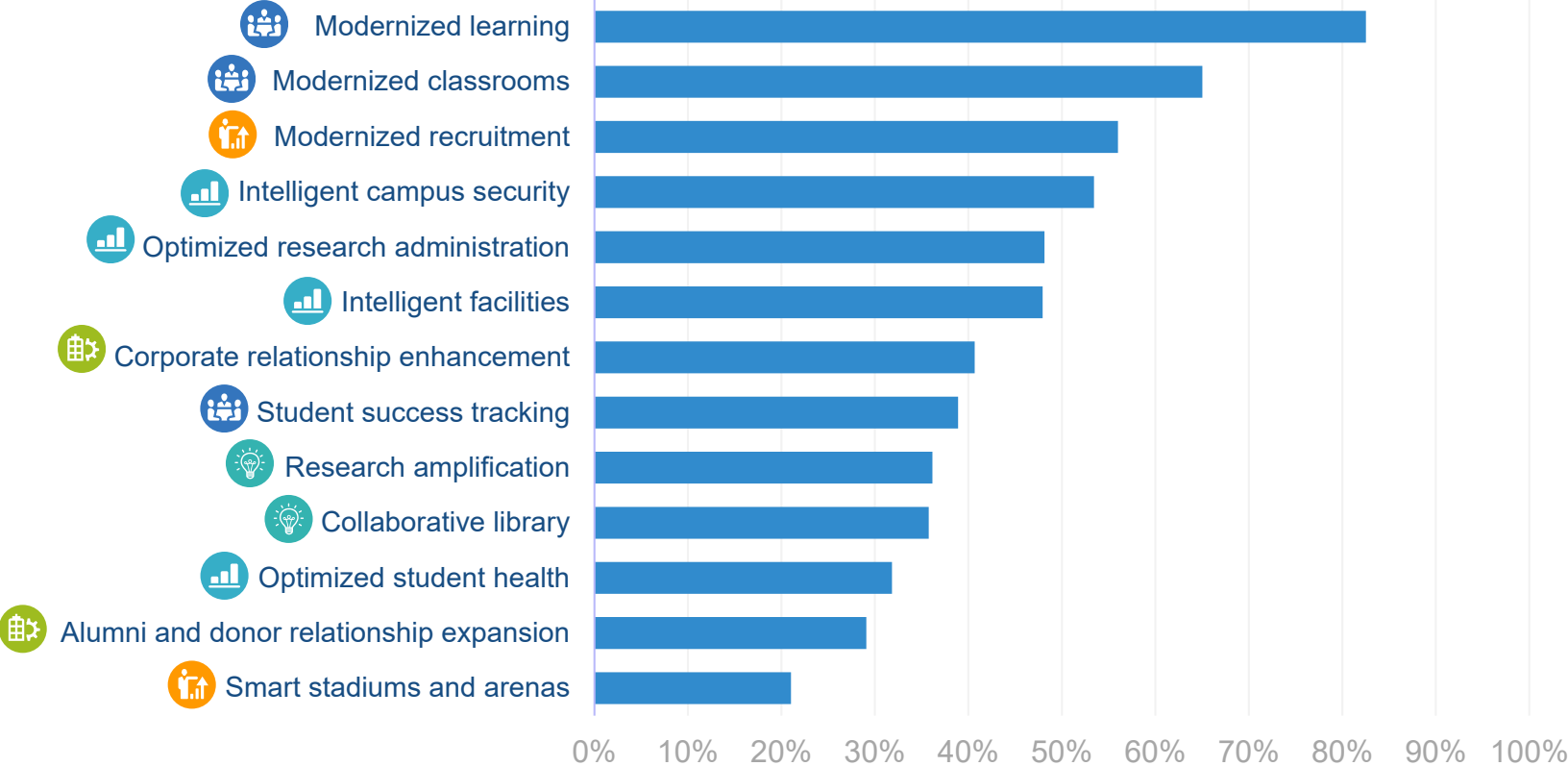




## Priorities for Institutions of All Sizes



# Improving student & prospect experience, campus safety, and maintenance are the top use cases.



## PRIMARY GOALS

- Better Student Engagement
- Increase Efficiency
- Increase Competitiveness
- Higher Funding/Margins
- Accelerated Innovation



Education institutions are focused on using AI to **improve learning outcomes and implement solutions** that will help all students succeed.

AI is helping to make learning more **accessible/inclusive.**



**AI-powered translation tools** can transcribe classroom lectures in real time for hundreds of enrolled students who are deaf and hard of hearing.

Closed captions can be projected onto lecture hall screens via **Presentation Translator.**



# **What Are Institutions' Overall Strengths and Challenges?**





# Across education institutions of all sizes, **culture is the industry's greatest strength** in terms of AI readiness, followed by overall strategy and investment strategy.



On a scale from 1-4, please indicate your agreement with the following statements.



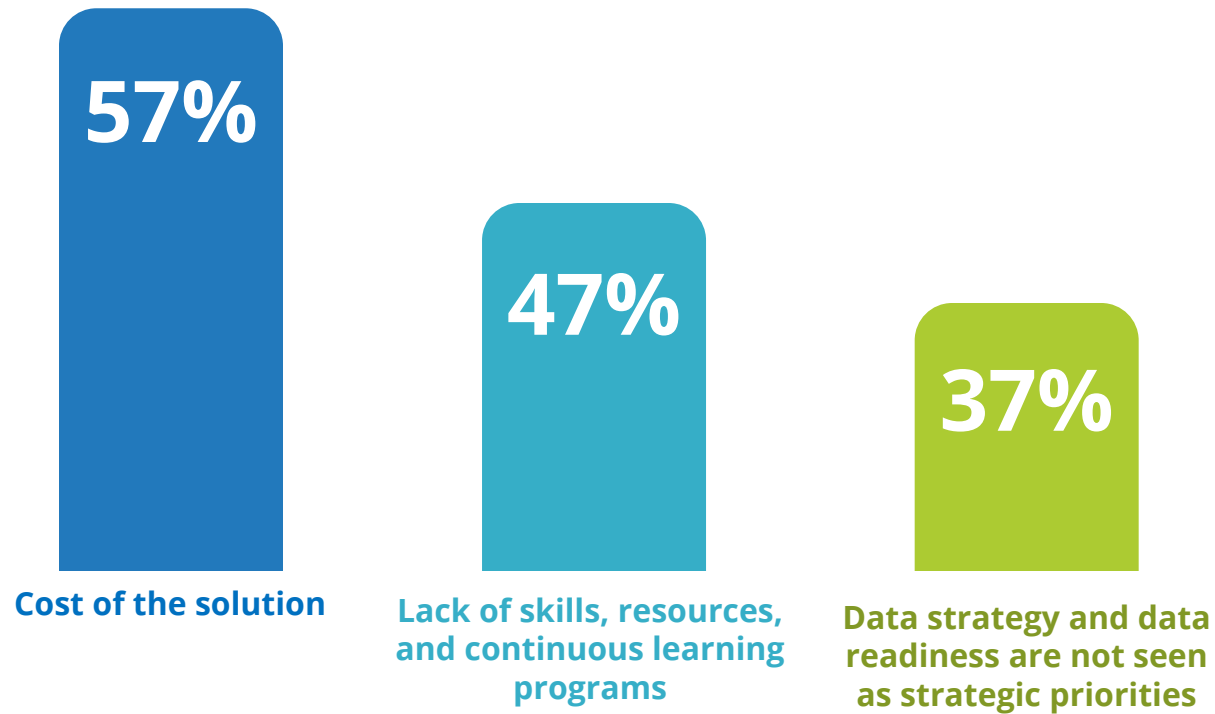


# Top AI Adoption Challenges for Education

*Cost, skills, and data*



Solution cost and lack of skills are top challenges impacting the adoption of AI-enabled solutions, while lack of a data strategy shows that many institutions aren't clear on what's needed to execute.





# Conclusion

*AI will help transform every step of the education journey. The time to act is now!*



## INSTITUTION



### Improving student outcomes and institutional standings

- ✓ Attracting the brightest students and creating industry-ready graduates
- ✓ Enabling the workforce of the future (new skill sets and lifelong learning)
- ✓ Engaging and/or competing with MOOCs and professional education programs
- ✓ Managing loans, sponsor or beneficiary funds through grants management
- ✓ Improving accessibility and inclusion

### Optimizing campus administrative & operational efficiencies

- ✓ Innovating for smart campus operations
- ✓ Enabling digital ID and data security
- ✓ Supporting federated research clouds
- ✓ Developing staffs' (academic, teaching, or administrative) digital competencies

## STUDENT



### Enhancing personalized learning

- ✓ Digital teacher-to-parent and teacher-to-student portals/applications for "out-of-classroom" interactions
- ✓ Personalized learning
- ✓ Flipped classrooms and peer learning
- ✓ Next-generation virtual classrooms
- ✓ AR/VR for blended learning



**How Can Microsoft Help?**



# Microsoft is at the forefront of AI for accessibility



Accessible,  
affordable  
technology



Skills and continuous  
learning



Partnership for  
long-term AI strategy



# Message from the sponsor

To learn more about Microsoft's offerings, select one of the options below:

- ❖ The [AI Business School](#) is Microsoft's starting point for guidance to understand AI and build workable short- and long-term strategies.
- ❖ Faculty and teachers can use [Microsoft Teams](#) for an inclusive classroom.
- ❖ Level the playing field with powerful [accessibility](#) features in Windows 10 and Office 365.
- ❖ Get [inclusive classroom training](#) and explore [free learning tools](#).
- ❖ Use the [Microsoft Power Platform](#) to build apps, bots, and solutions today.
- ❖ [Microsoft provides a number of learning paths](#) to develop skills on the Power Platform.
- ❖ Visit [Microsoft AI Innovation](#) to learn more about Microsoft's AI and ML offerings.