

Future-Ready Institutions:

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

Sponsored by Microsoft

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Executive Summary

Partnership with a Trusted Advisor and Enabler is Paramount



Artificial Intelligence (AI) is at the heart of digital disruption nearly across 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 just the students but also the institutions. It is enabling educators to engage with students like never. As per this joint IDC and MSFT study assessing “*Assessing US Higher Education Sector’s Use and Readiness for AI*”, AI is expected to increase **competitiveness, funding and innovation** two-fold over the next three years. The key drivers for AI are to increase efficiencies and drive better **student engagement** and the top use cases are focused on improving student & prospect experience, enabled by AI technologies to make learning more **accessible and inclusive**.

As per IDC’s AI MaturityScope 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 (sub dimensions 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 institutions ability to accelerate their adoption, realization of superior business outcomes and sustainable competitive advantage.



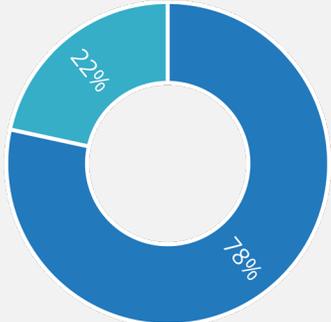


About the Research

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

Sample size: Total N= 509 US Institutions; 78% Public, 22% Private
215 Management, 294 Staff
Average gross income = \$300M
Currently using AI = 17.5%, Exploring or Evaluating options = 82.5%

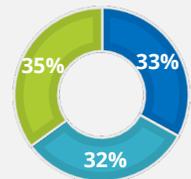
Public Institution Private Institution



Institution sizes
65% small and mid-sized, 35% large sized

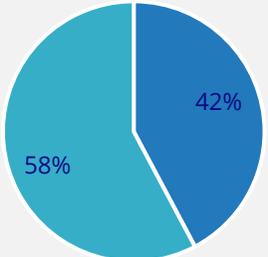
20 to 249 250 to 999 1,000 or more

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

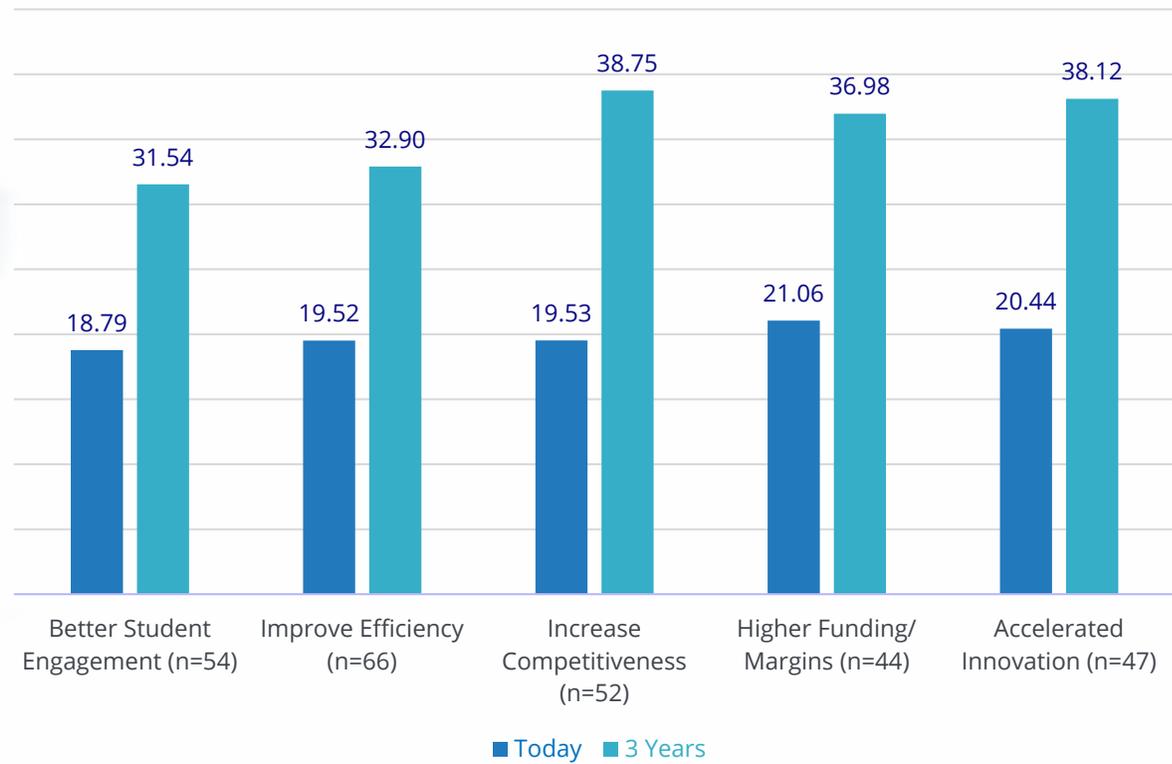
- Why AI for Higher Education?
- What do institutions need to realize the potential?
- What is the current state of readiness and What are key priorities for institutions in U.S.?
- What are the institutions' overall strengths and challenges?
- How Can Microsoft Help?



Why AI for Higher Education?



AI is expected to increase competitiveness, funding and innovation two-fold over the next three years.



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



99.4%

Have multiple use cases within their Institution

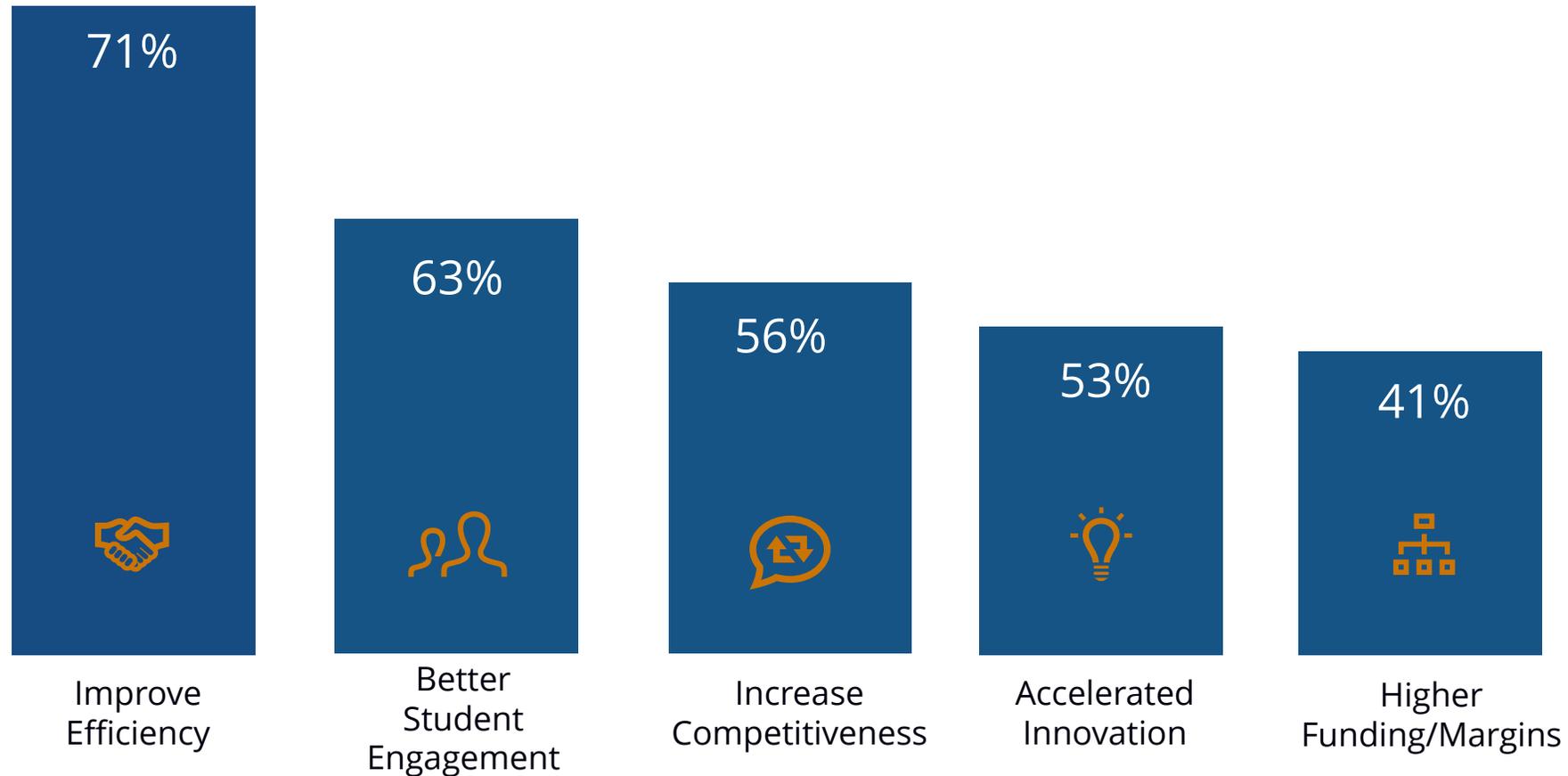


15%

Call it a Game Changer!



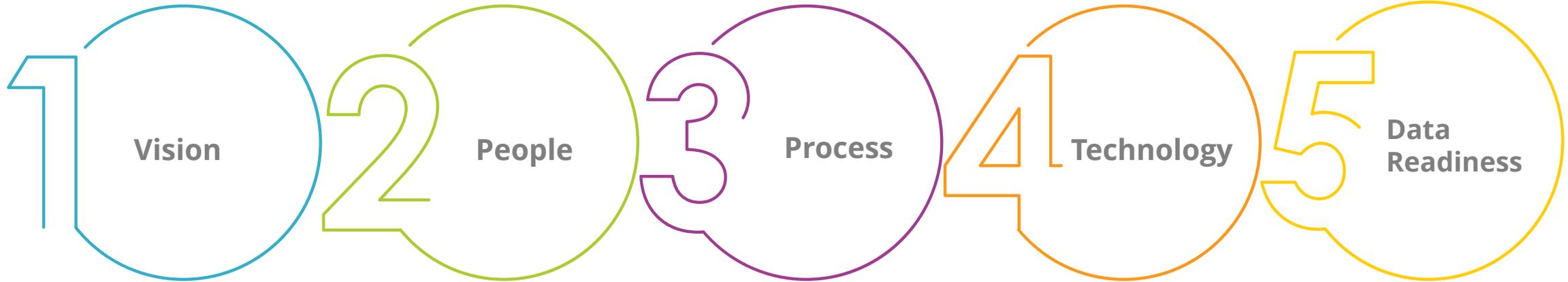
The key drivers for AI are to **increase efficiencies** and drive **better student engagement**





What do institutions need to realize the potential?

Institutions need maturity in these **five dimensions**



- Strategy
- Culture
- Business Value/ROI
- Business Model

- Skills
- Training
- Organization Structure
- Human-Machine Collaboration

- Business Processes Revamp
- IT, LOB, Compliance functions – joint governance
- Agile metrics & measurements

- Model Build/Deployment is Operationalized
- Intelligent Core
- Centrally governed Information Architecture

- Acquisition/Prep - includes real time processing and as-a-service
- Bias assessment & remediation
- Data lineage, Security & Risk

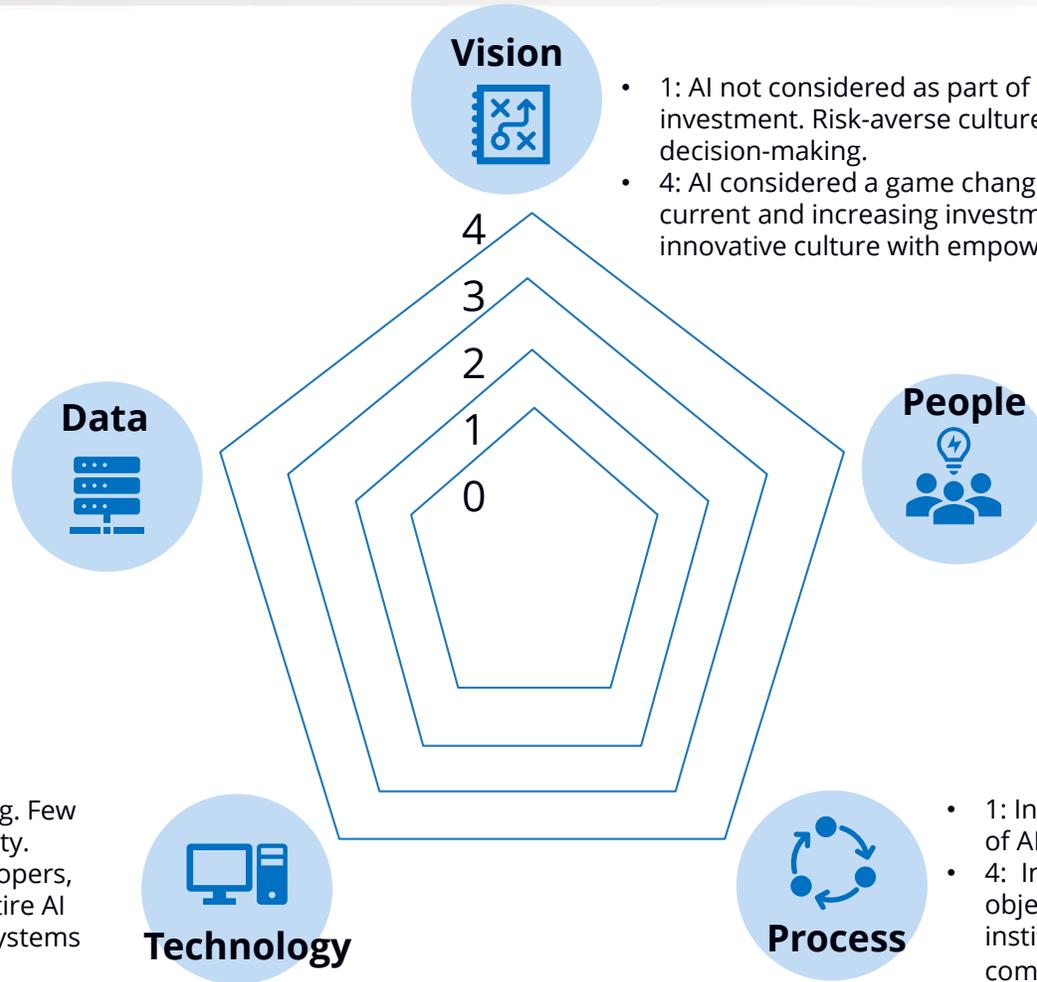
These will help drive improved competitiveness, funding and innovation

AI Readiness Model



- 1: Standalone datacenters with reliance on Excel as analytics tools.
- 4: Data is accessible to all business users through an enterprise data estate with well-managed quality control, access and governance services.

- 1: No internal capabilities for model development, deployment, or monitoring. Few AI tools/systems, with limited functionality.
- 4: Centralized, dedicated teams of developers, data scientists, and engineers across entire AI model lifecycle. Advanced AI tools and systems (RPA, NLP, etc).



Vision



- 1: AI not considered as part of institutional strategy, little to no AI investment. Risk-averse culture with rigid siloes and top-down decision-making.
- 4: AI considered a game changer and a core part of strategy, with current and increasing investment. Proactive, bottom-up innovative culture with empowered employees.

Data



People



- 1: Little to no human-machine collaboration, employees have limited AI-related skill sets.
- 4: Human-machine collaboration is a core part of multiple processes, high percentage of employees with AI-related skill sets.



Technology



Process

- 1: Institution is unaware of business drivers and benefits of AI. Data is siloed with little to no governance.
- 4: Institution strategically uses AI to achieve key business objectives. Data governance practices are ongoing, institution-wide, performed jointly by IT, LOB and compliance.



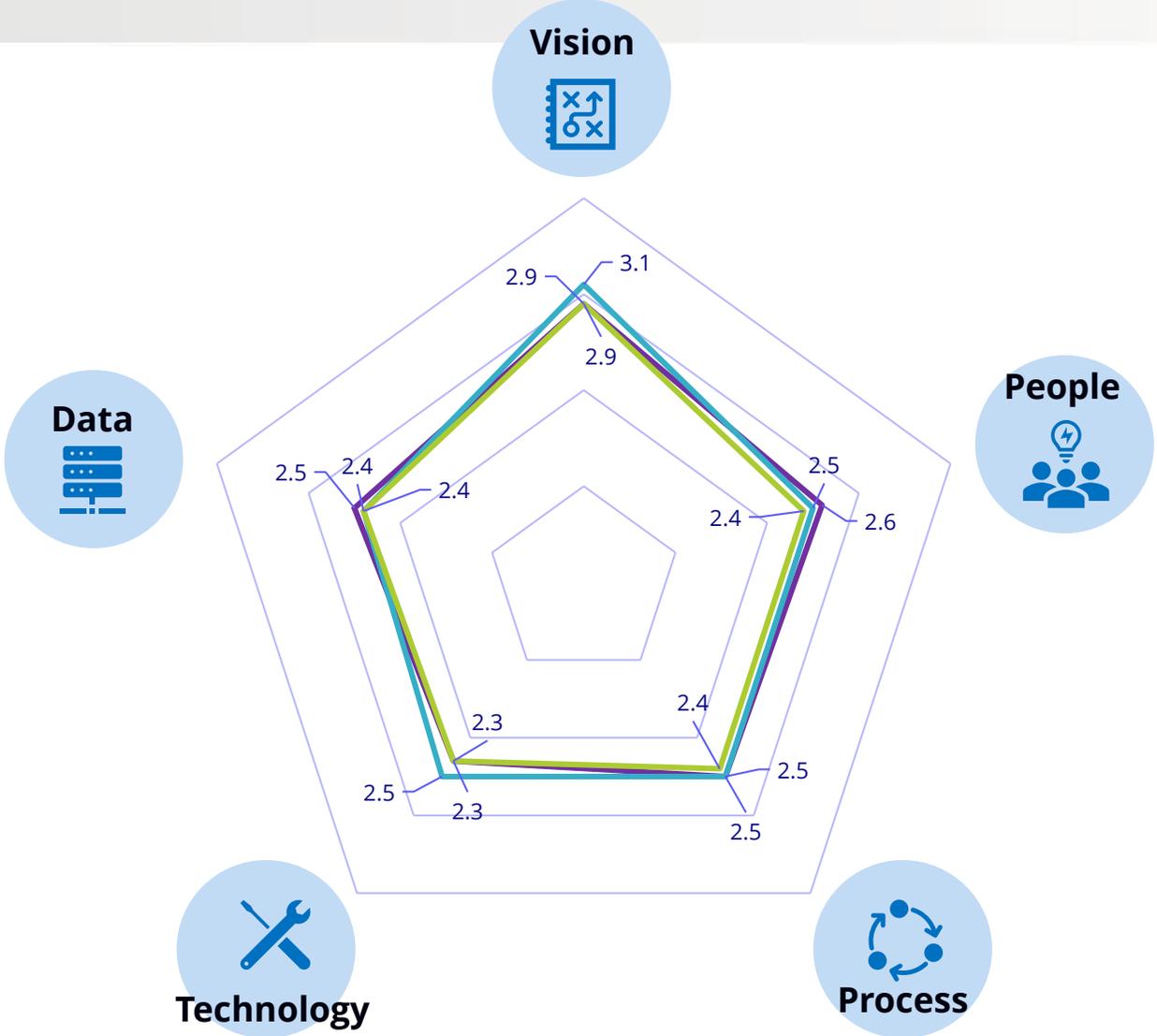
With the goal of **increasing competitiveness, funding and innovation** by nearly **2X** over the next three years, institutions need to **embrace AI to thrive**



What is the current state of **readiness and
What are **key priorities** for institutions in U.S.?**



AI readiness is similar across institution sizes



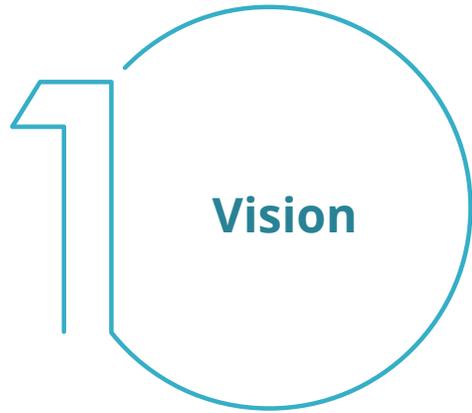
On a scale of 1 to 4 rating for overall AI readiness, institutions have the **highest rating** for the **Vision dimension**.



Institution Size (# of employees)

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

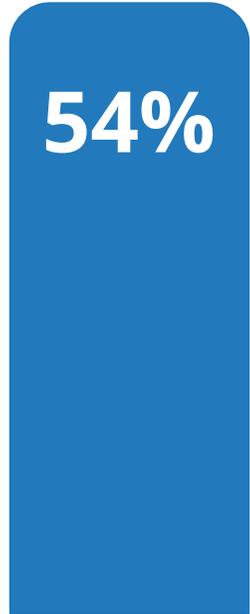
Assessing Vision Readiness



Strategy, Culture, Business Value, Business Models



Majority of institutions have started/adopted AI as part of their strategy



Have started to experiment with AI as part of our strategy



Have adopted AI as a core part of our strategy



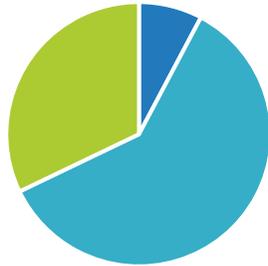
Have not started to consider AI as part of their core strategy



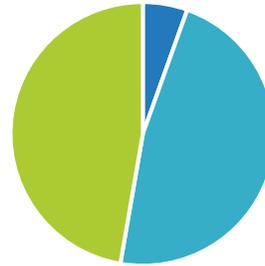
Strategy Readiness is Strongest in midsize Institutions



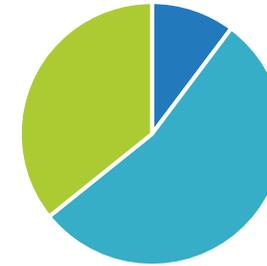
20 to 249



250 to 999



1,000+



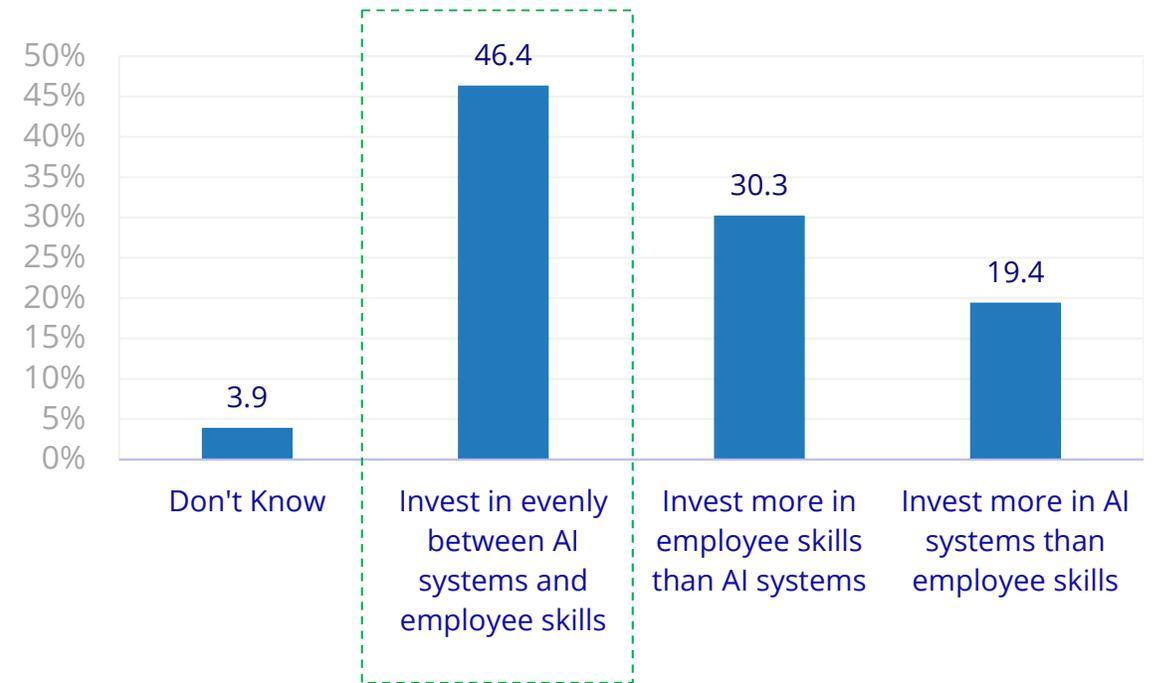
Which of the following statements best describes your institution's view on AI?

-  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?

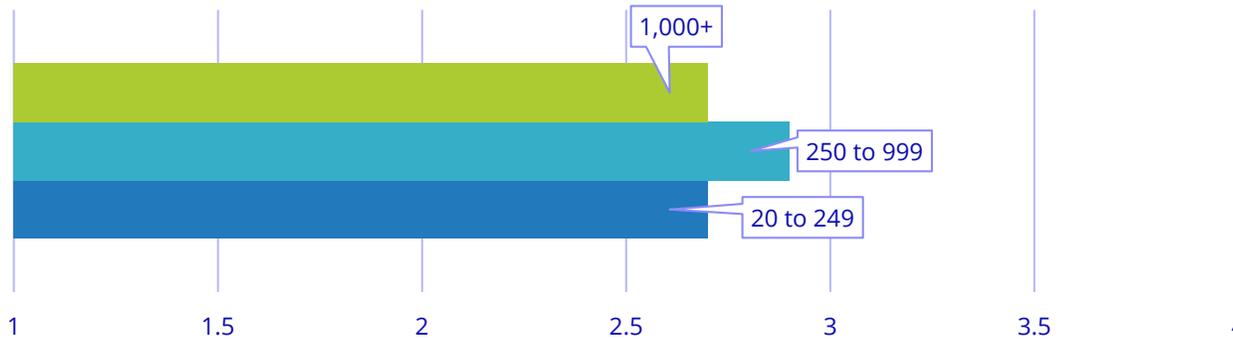


Q. Looking ahead, in which area is your institution likely to focus its AI investments and efforts?

Investment readiness of education sector by institution size: similar strategies, different spend.



Education organizations' current **investment strategy**

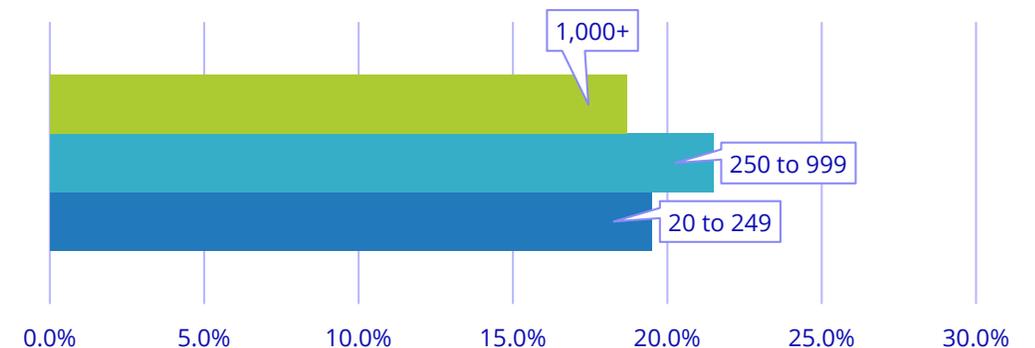


1. No investments have been allocated for AI initiatives.
2. We plan to allocate some investments for AI projects on an ad-hoc basis.
3. We plan to allocate a fixed investment budget to support AI projects on an annual basis.
4. We plan to increase our investments every year to support institution-wide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

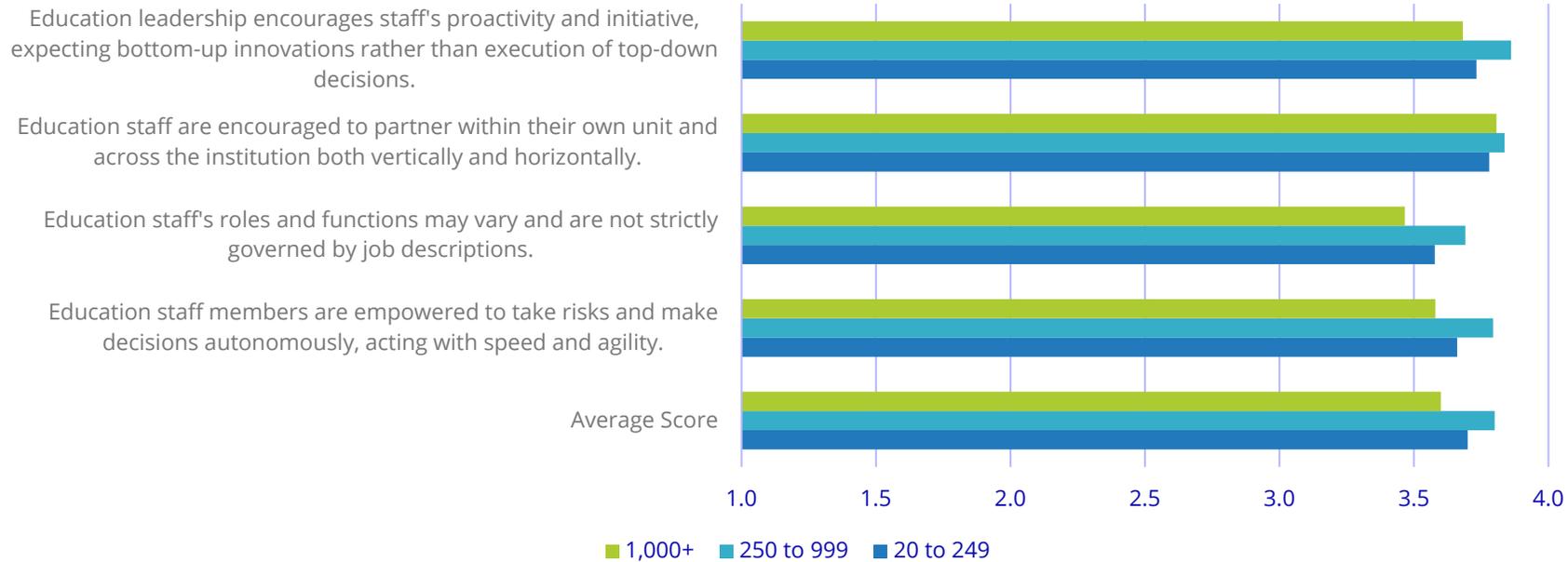
Education organizations' **current investment spend...**



...and **planned investment increase.**



Culture readiness is strong across institutions of all sizes



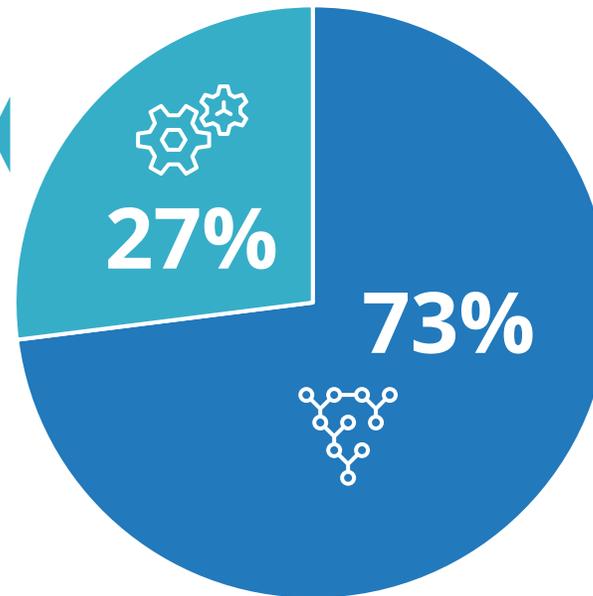
Q. Please rate how much the following statements describe your institution's culture and agility.

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

Automation is playing a significant role in institutions' operations.



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



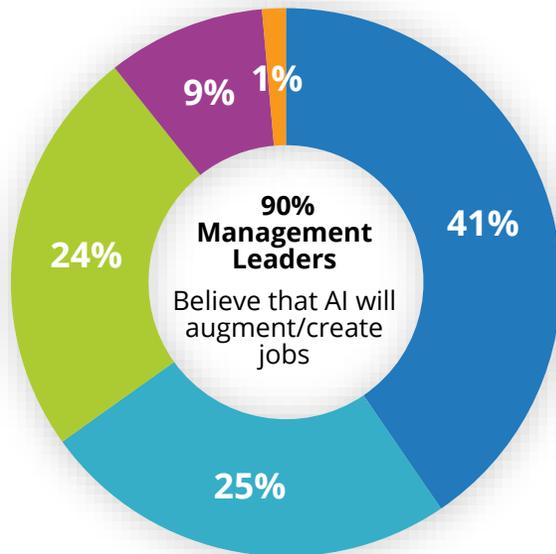
Almost three-quarters of institutions say automation is integral to multiple processes.

Q7. 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.

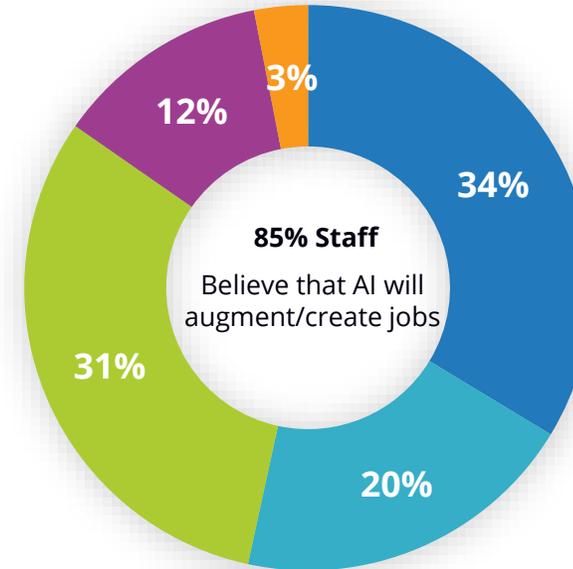


N= 215



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

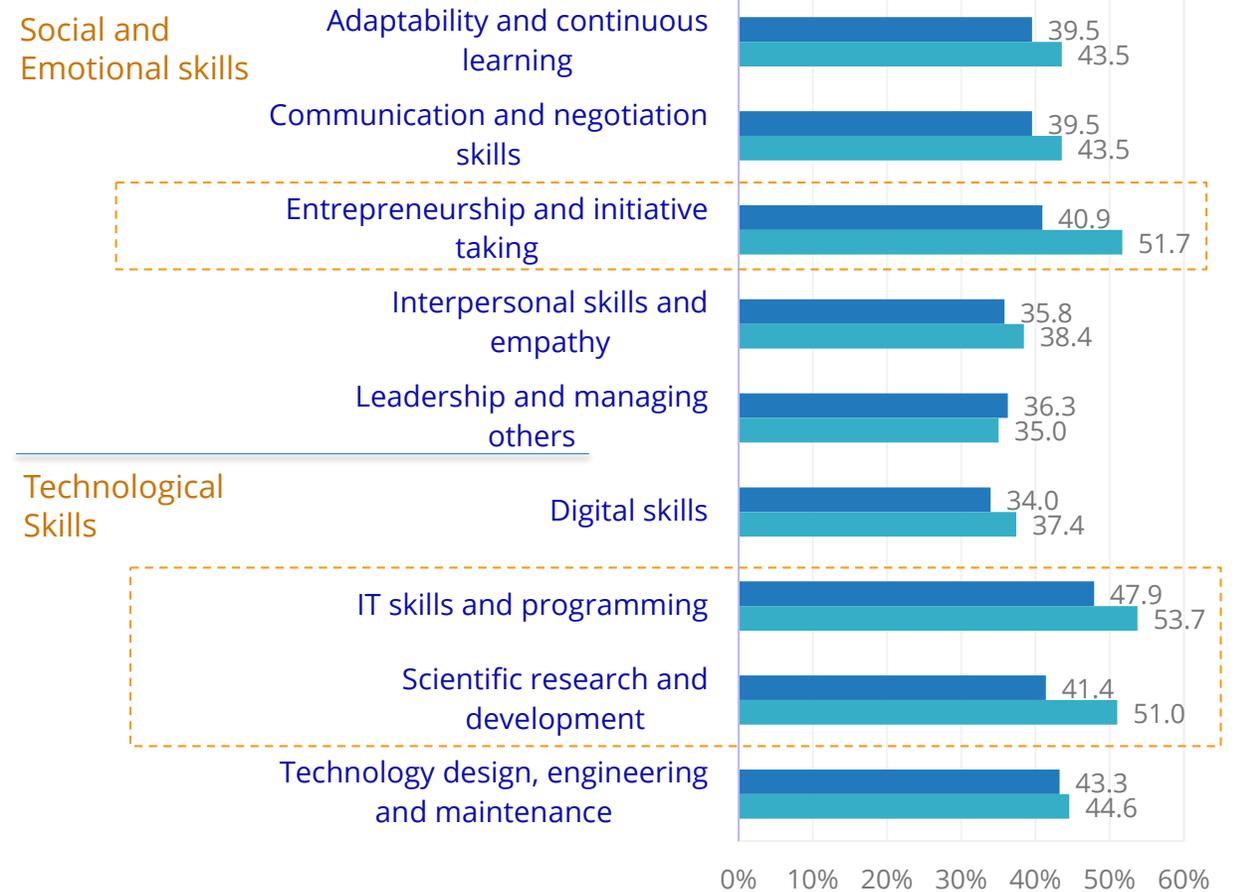
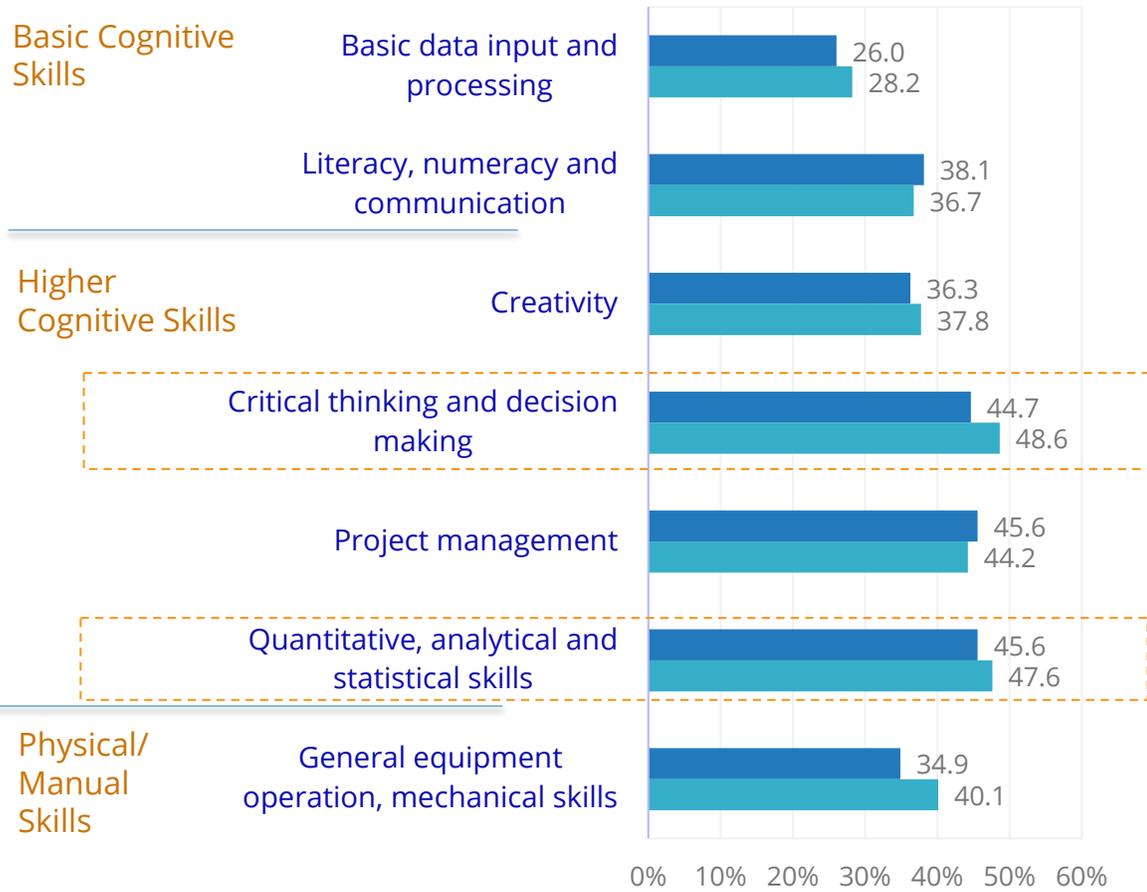
N= 294



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

Q8. 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

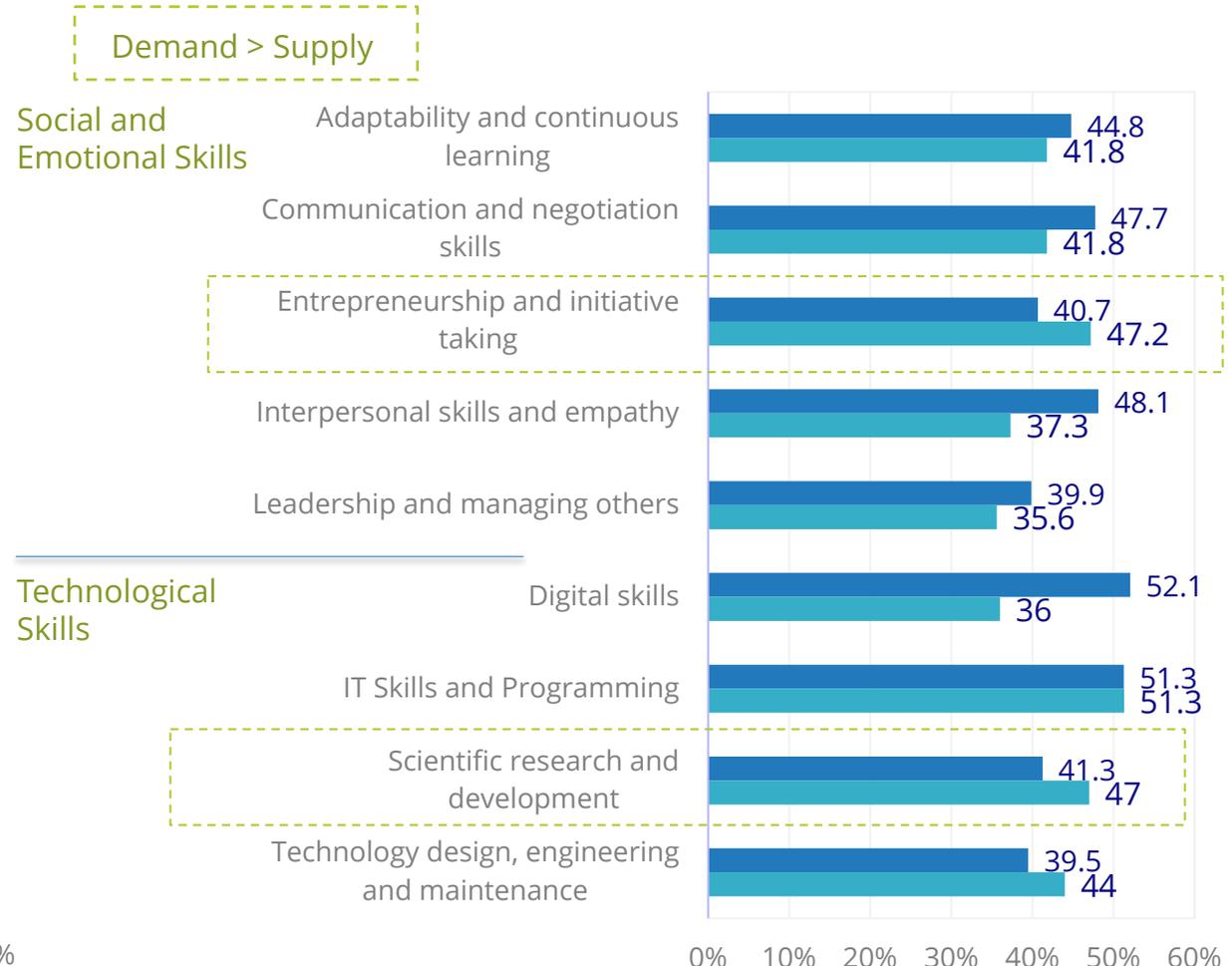
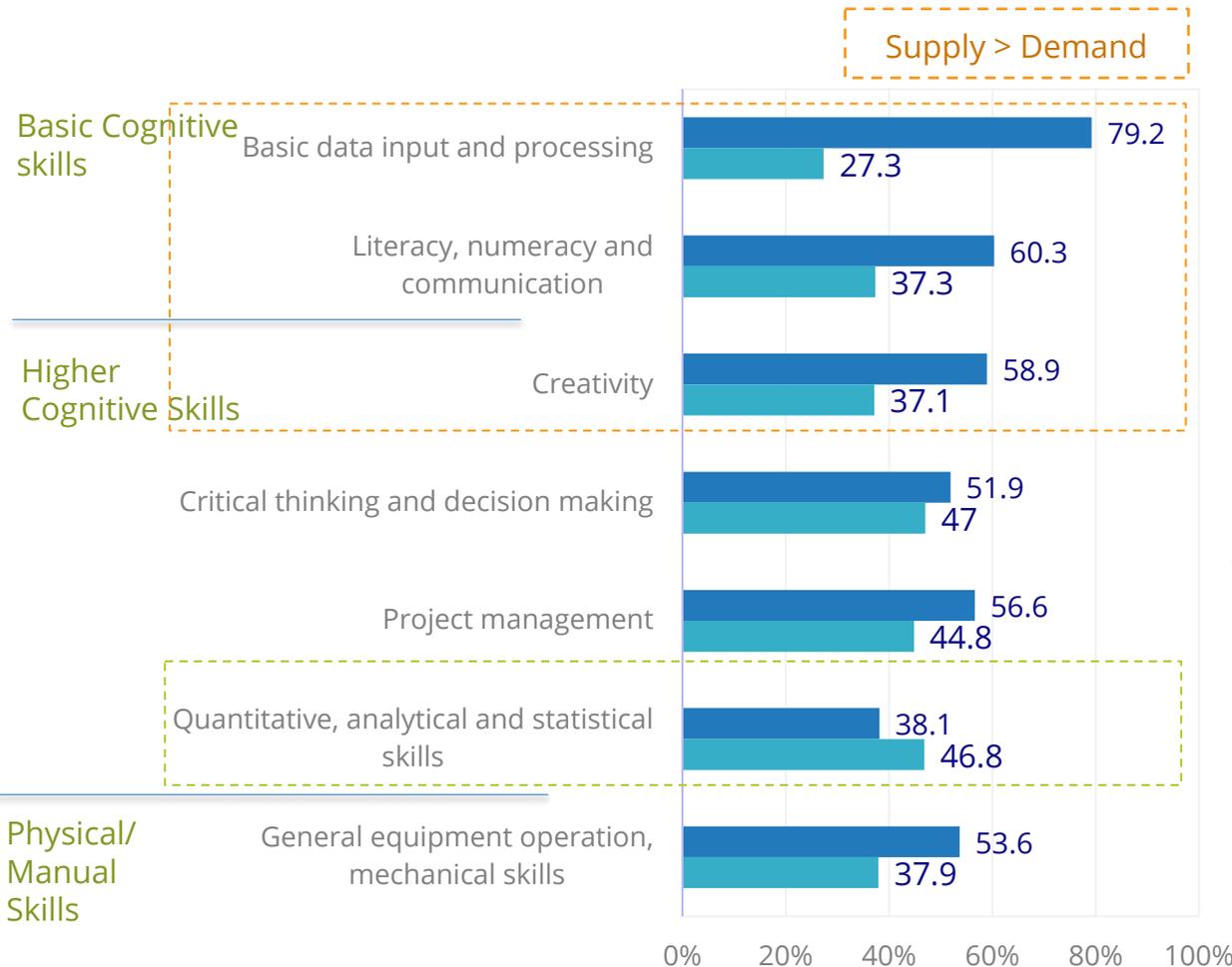
Higher cognitive, technological & entrepreneurship skills are the most needed skills for an AI future.



■ Management (N=215) ■ Staff (N=294)

Q. Which do you think is most needed 3 years from now in the AI-enabled workplace?

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



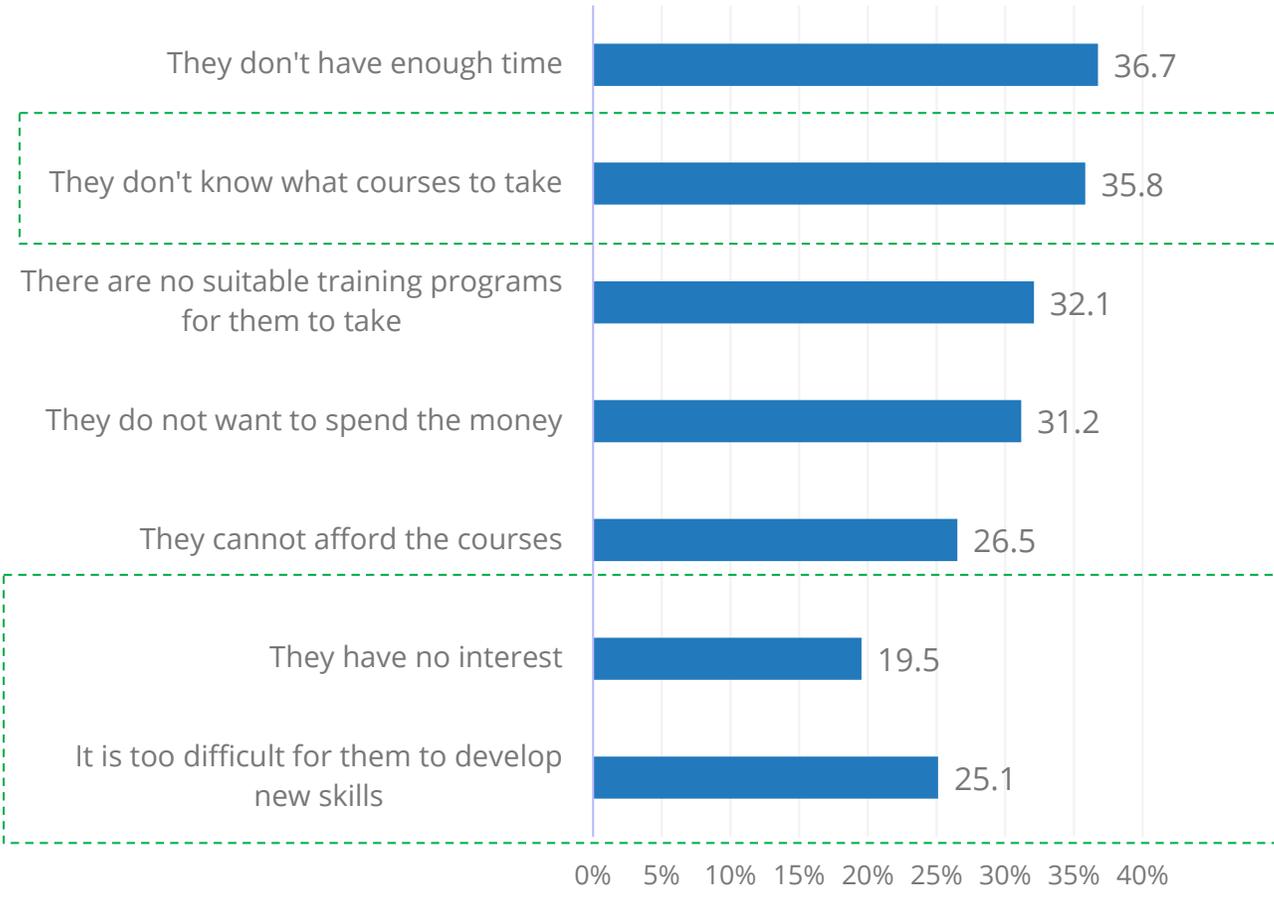
■ Supply ■ Demand

Q. Which of these skill sets do you see most commonly available in the workforce TODAY?
 Q: Which do you think is most needed 3 years from now in the AI-enabled workplace?

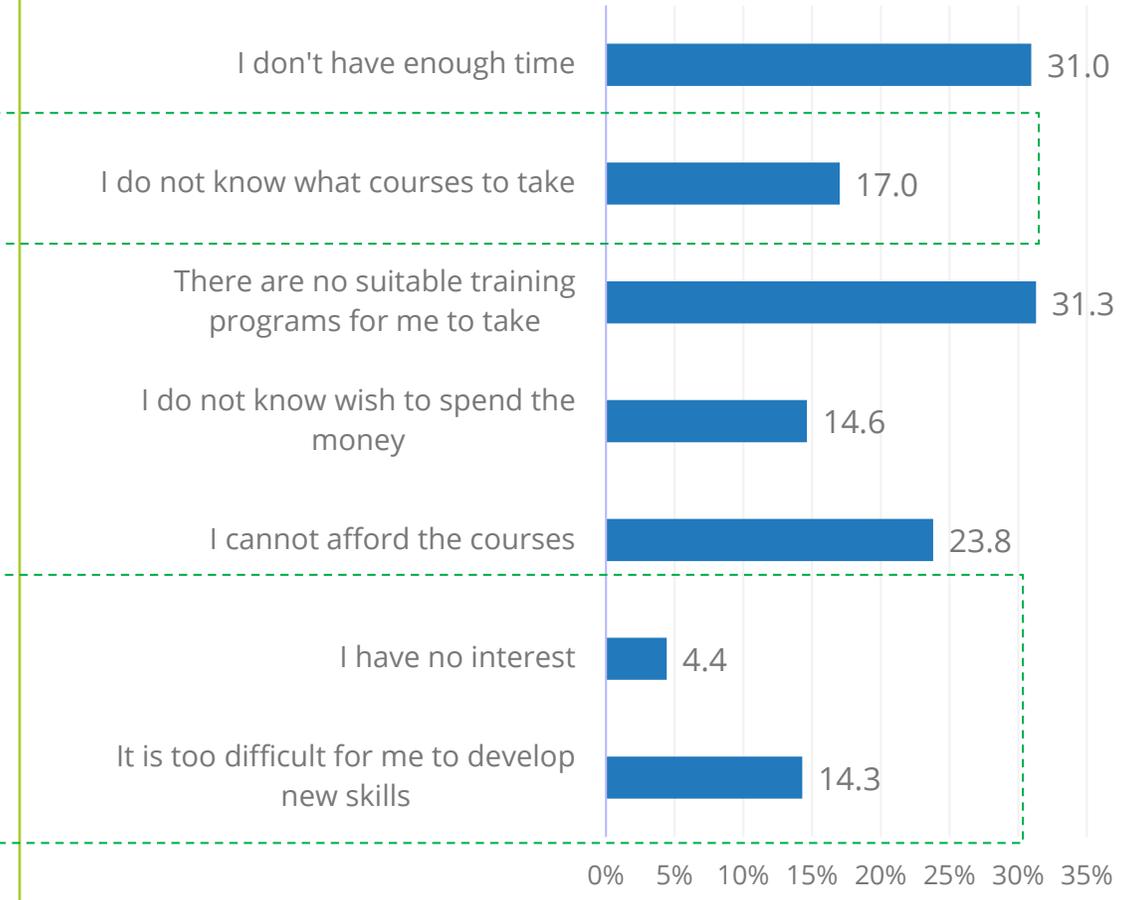
Barriers to reskilling are high among management and staff



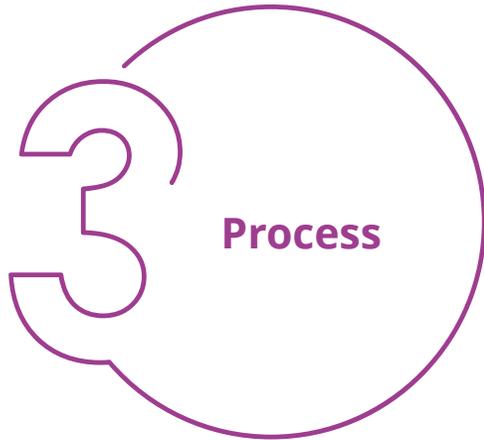
Management N= 215



Staff N= 294



Assessing Process Readiness



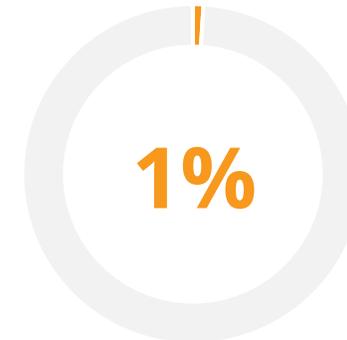
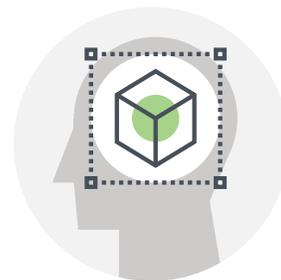
- **Business processes revamp**
- **IT, LOB, compliance functions – joint governance**
- **Agile metrics & measurement**



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



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

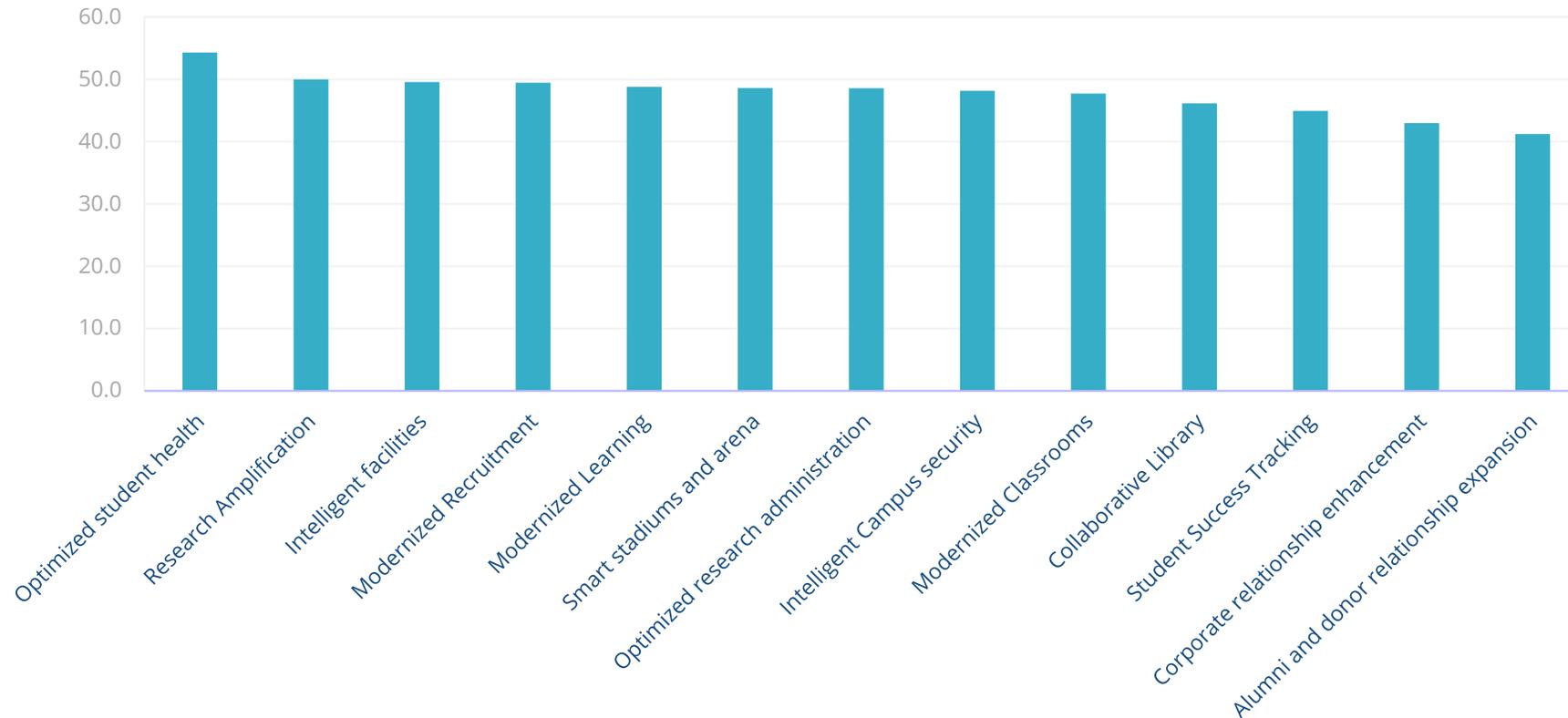


Don't know or yet to solidify their drivers

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



Intelligent Task or Process Automation

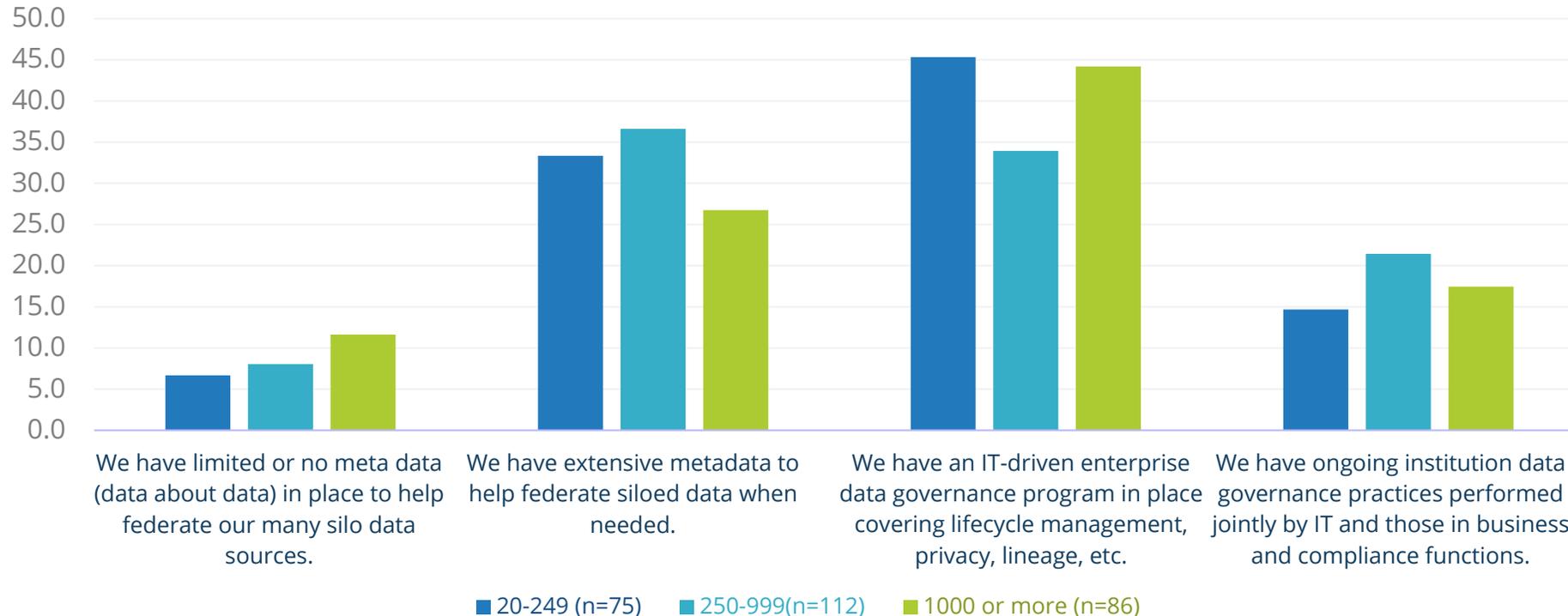


Majority of the institutions recognize the importance of data governance

An IT driven program is in place; LoB and Compliance function collaboration is shaping up



Data Governance by Institution Size – Number of Employees



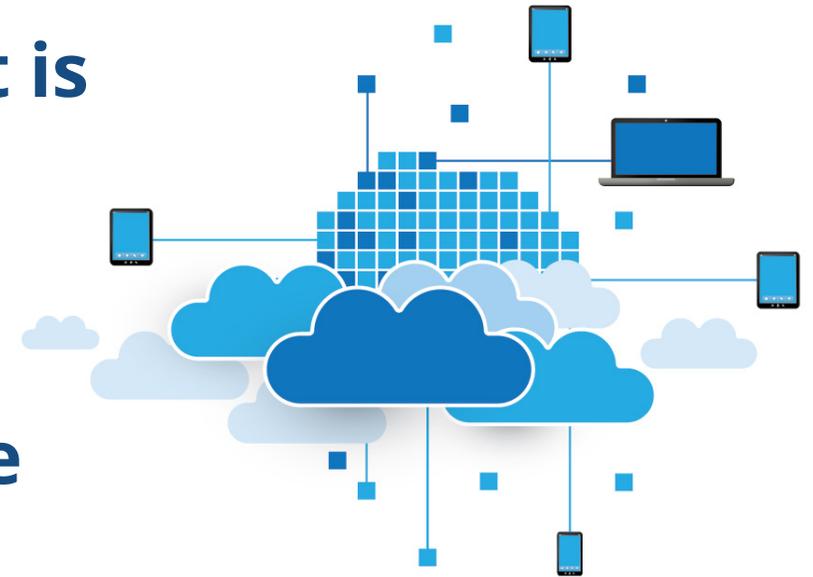
Q. Which of the following best describes your institution's governance of data to potentially train task-based AI solutions?

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

Assessing Technology Readiness



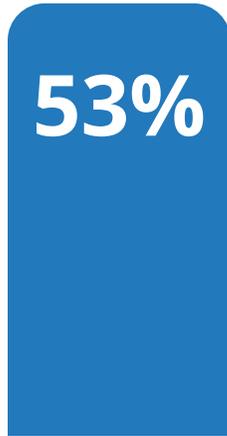
- **Model build/deployment is operationalized**
- **Intelligent core**
- **Centrally governed information architecture**



Most of the institutions are half-way on their technology readiness journey.



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.



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



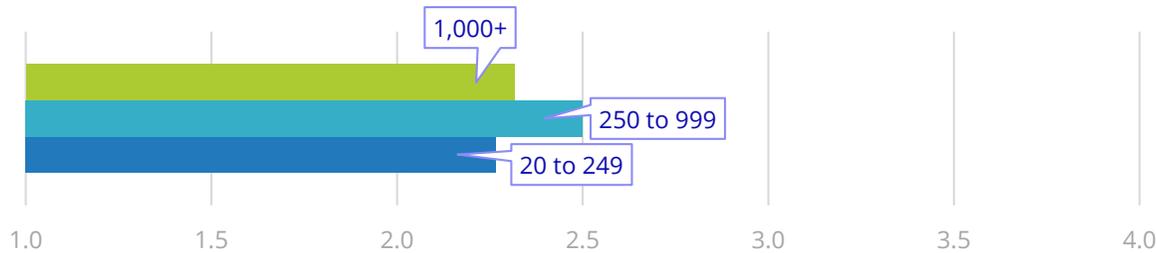
We have an institution data warehouse that captures the bulk of our analytic data or have department-level siloed databases.

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

Model development/deployment readiness of mid-size institutions is the highest



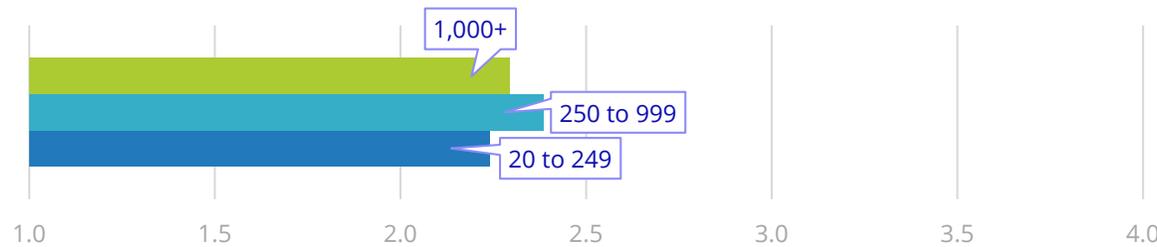
EDU organizations' AI model development capabilities



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.

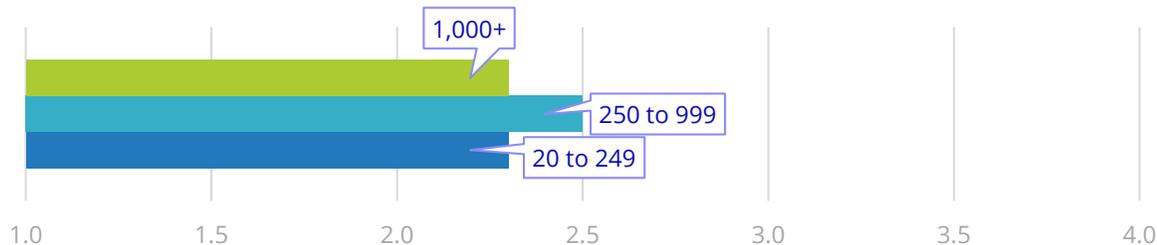
EDU organizations' AI model deployment and monitoring capabilities



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

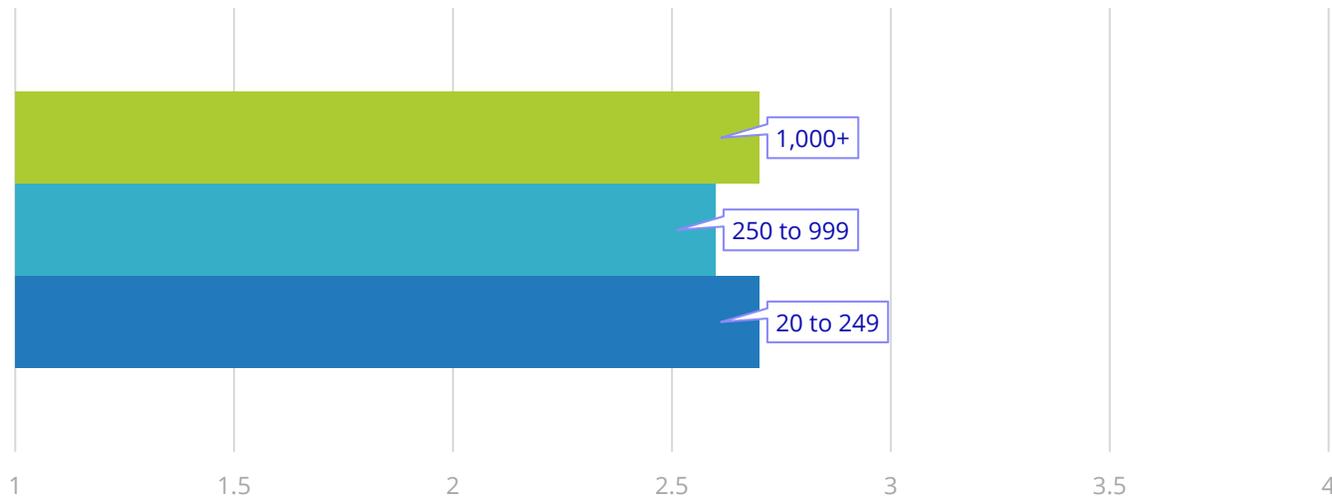


Q. Which of the following describe the availability of tools and systems to support specialized analytics and AI model development and deployment in your institution?

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

Mid-size 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 and remediation**
- **Data lineage, security and risk**



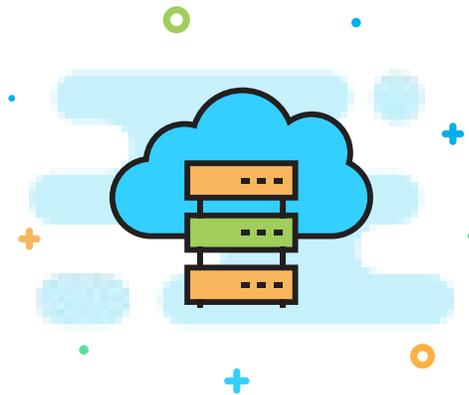
Most of the institutions are in the early stages of their data readiness journey.



Institutions need to build continuous data pipelines, embrace tools and technologies to help improve the data quality, and make them accessible to all the 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 ad hoc basis by LOBs

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?

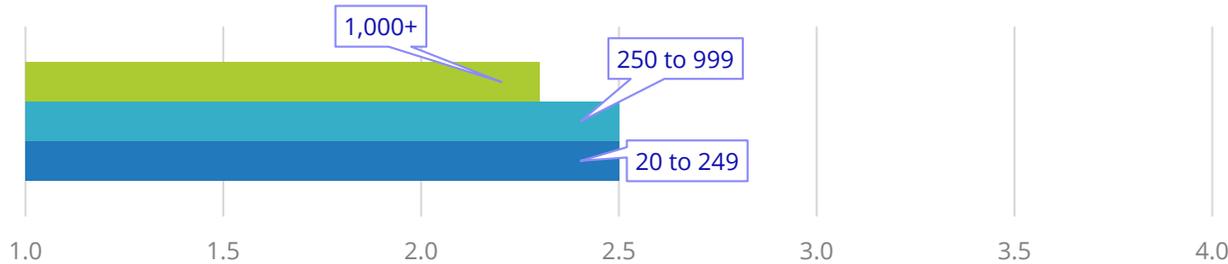
N=509; Source: AI Higher Education Survey, IDC, November 2019

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Data readiness of education sector is similar across institution size.

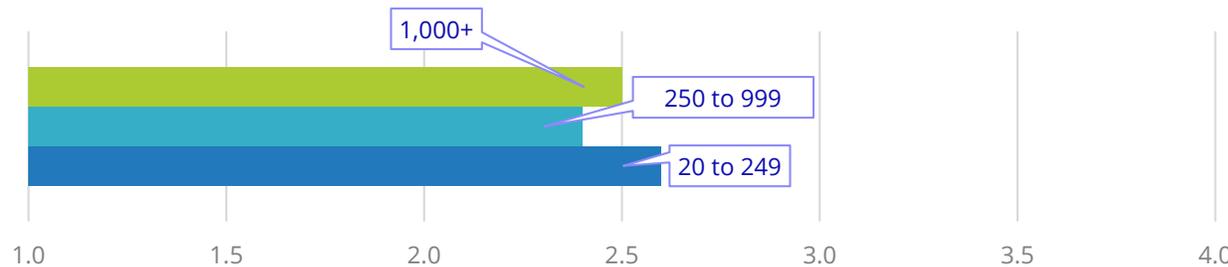


EDU organizations' current **data availability**



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**



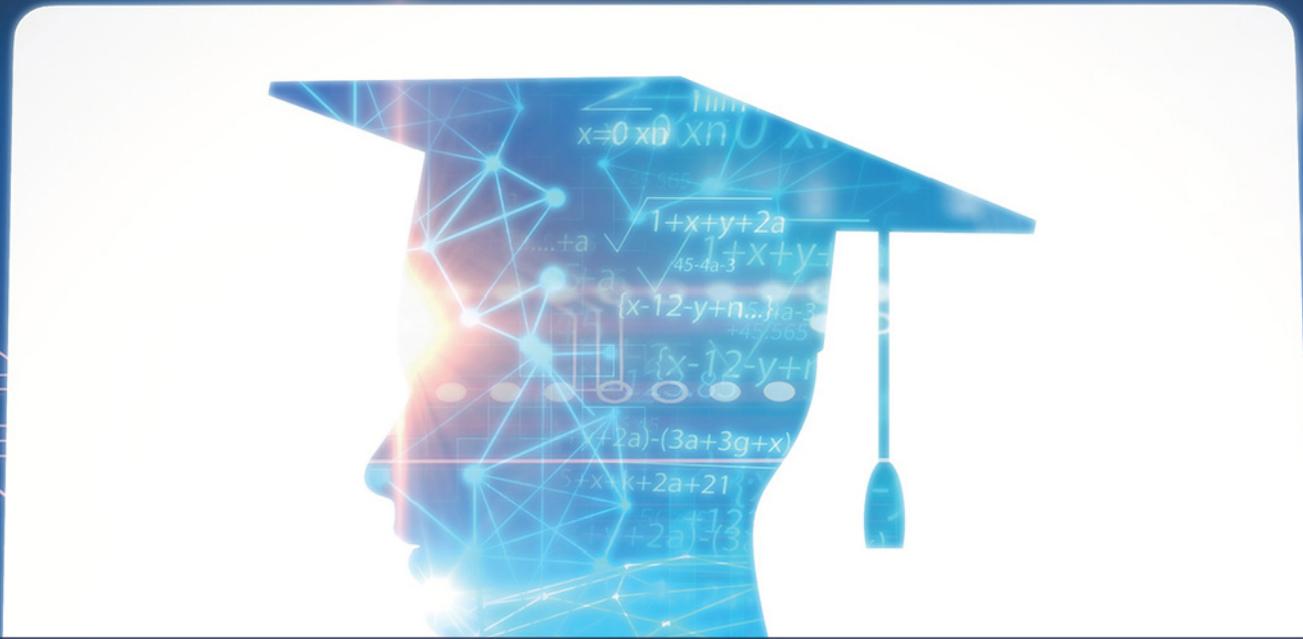
1. Data timeliness and quality are driven by data sources and are not really addressed at an institution level.
2. Data quality and timeliness are still major issues which are dealt with on ad hoc basis by LOBs.
3. Data is maintained in an institution data warehouse with detailed data quality controls 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?

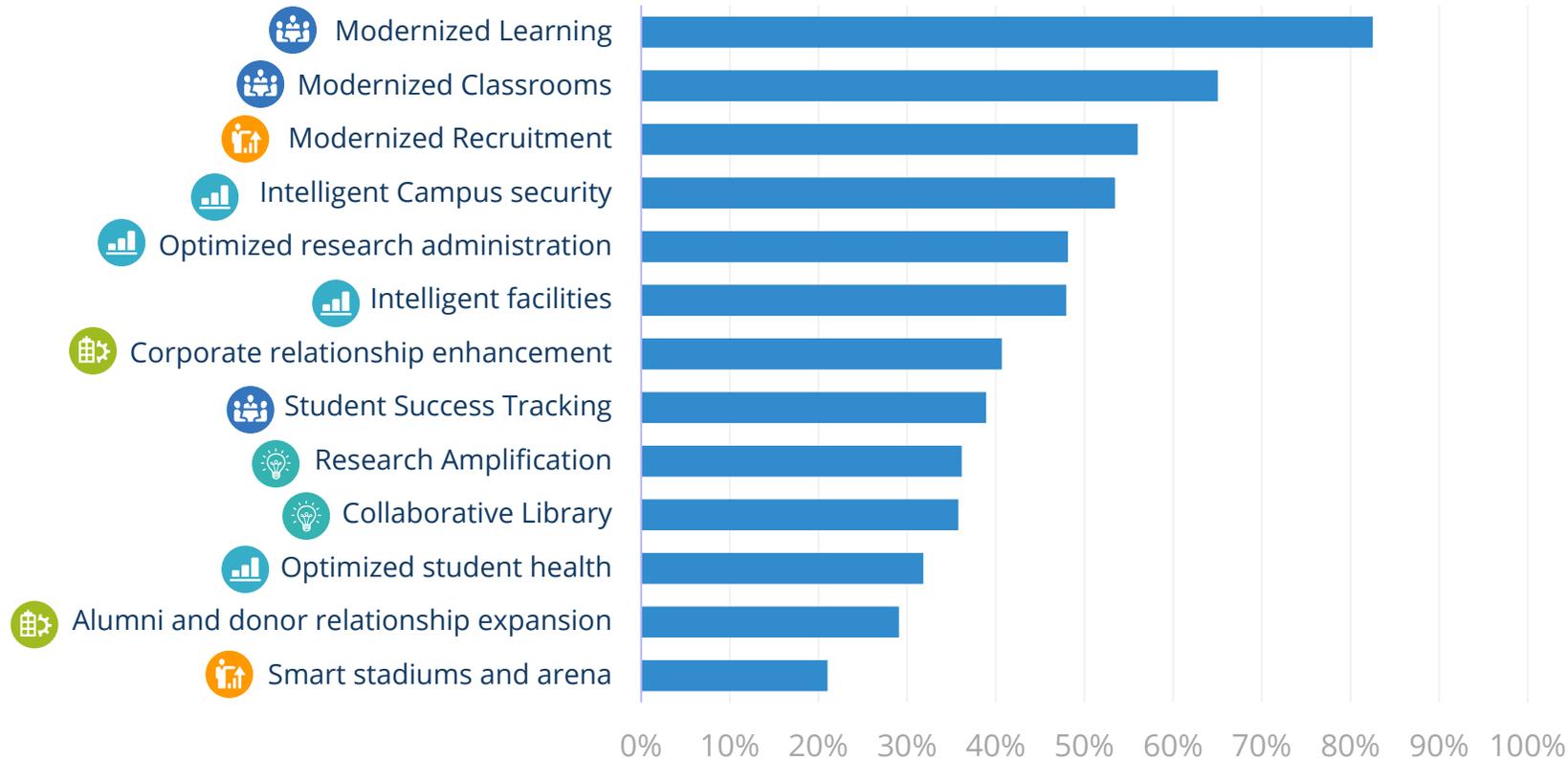
Q. Which of the following best describes your institution regarding the quality and timeliness of data to train task-based AI solutions?

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



Key Priorities for Institutions of All Sizes

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

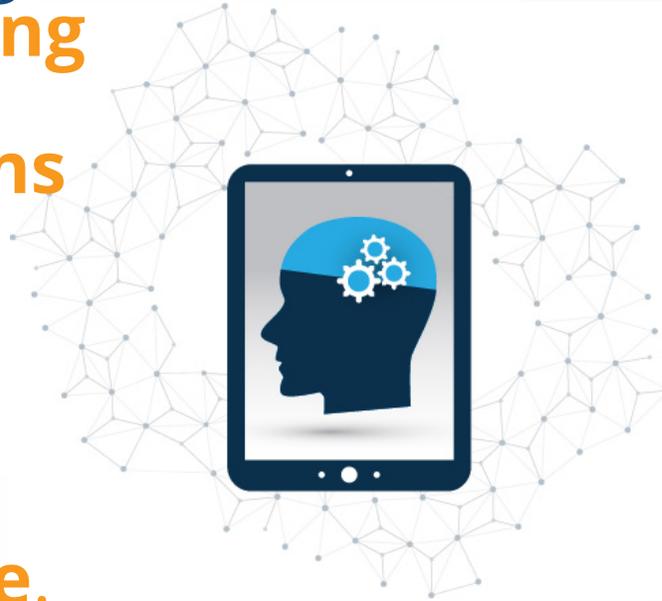


PRIMARY GOALS

- 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 make learning more **accessible/inclusive.**



AI-powered translation tool 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.**

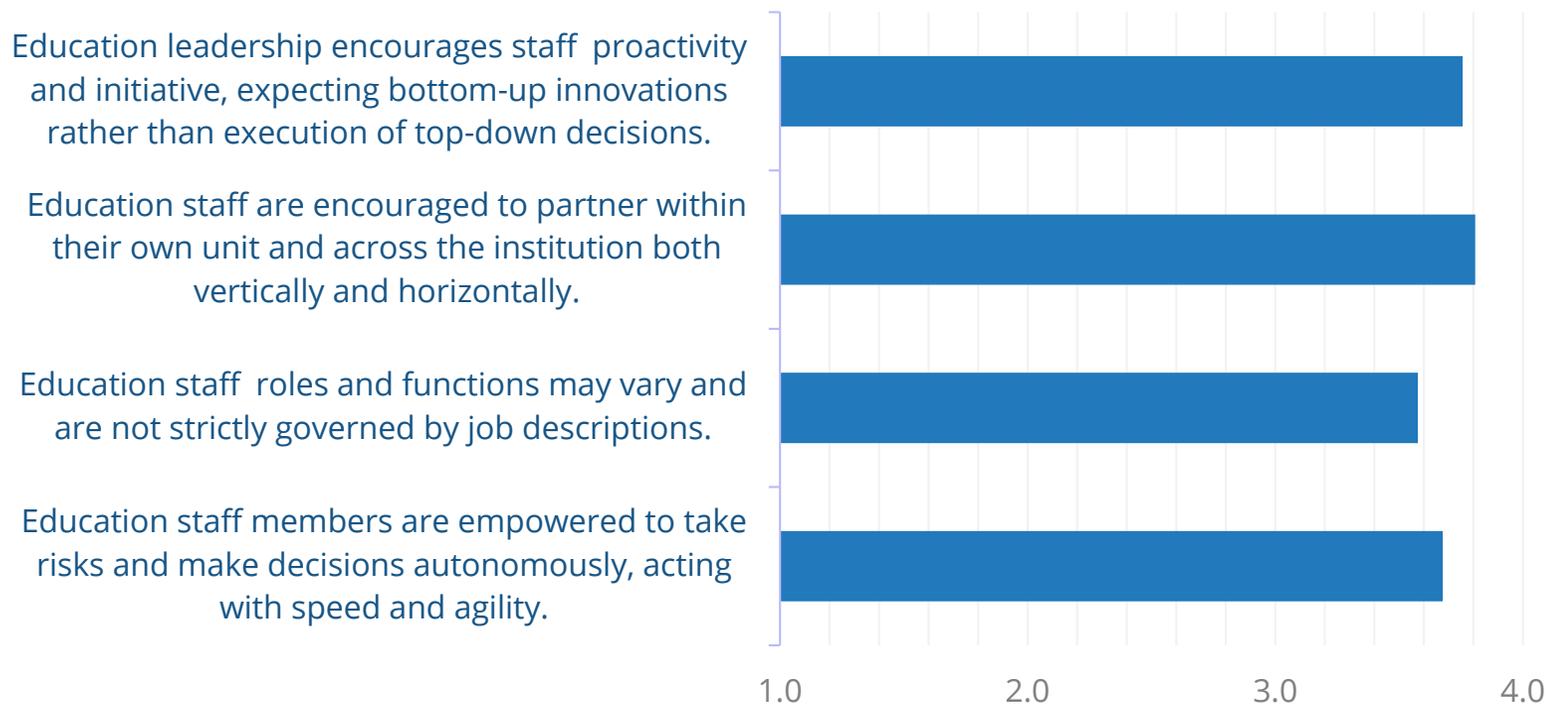


**What are the Institutions'
Overall
Strengths and Challenges?**

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.

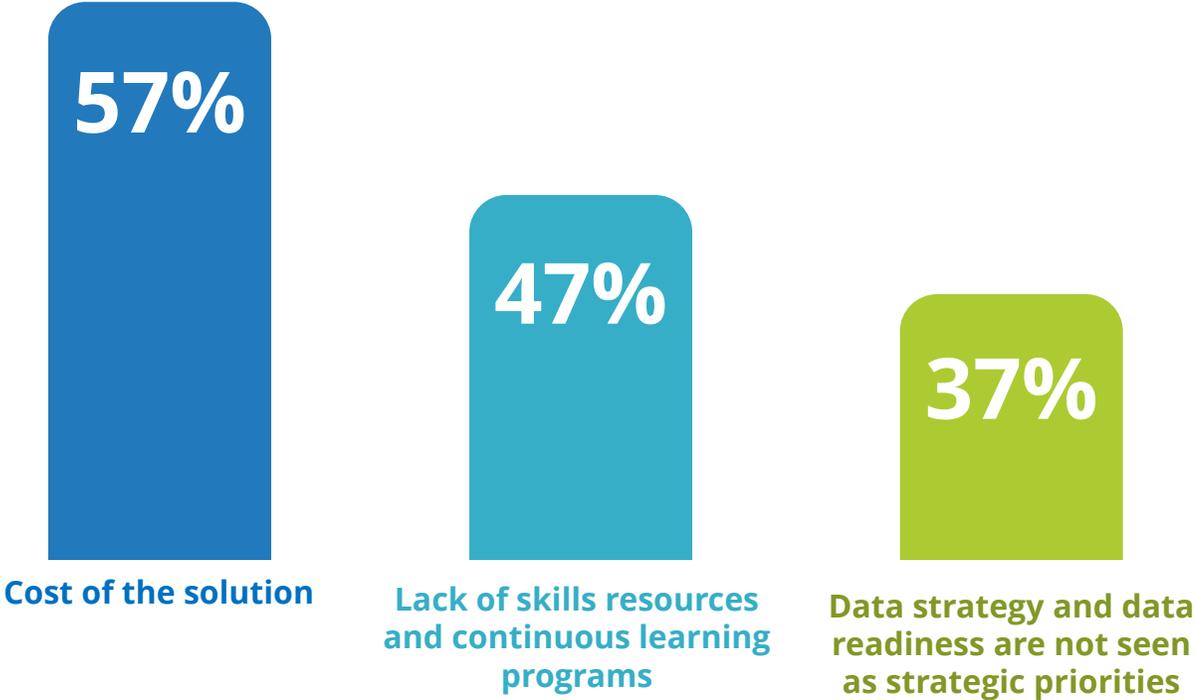


Top AI Adoption Challenges for Education:

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 Teach-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
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