



CompTIA®

Workforce and Learning Trends

Research Report

April 2025 release



Summary

In a period of exceptionally high uncertainty, “wait and see” is often the de facto strategic plan for many HR professionals across organizations of all sizes. Savvy leaders will double down on workplace best practices in areas such as change management, agility and teamwork, while also anticipating their next moves in building a future-ready workforce.

CompTIA's 6th annual Workforce and Learning Trends provides an inside look at what keeps HR leaders awake at night, how they are prioritizing talent management, skills building strategies, and more. The five key trends for the year ahead reflect the heavy focus on knowledge, skill and task (KST) validation in the face of a rapidly changing work landscape.

- 81%** Percent reporting the strategic prioritization (net) of addressing upskilling and reskilling needs with efforts such as skills gap assessments
- 91%** Percent of companies with a high degree of focus on skills development prioritizing career pathways and internal talent mobility
- #1** Rank of pace of technological change as the top contributing factor to skills gaps, skills shortages and skills mismatches
- 97%** Percent reporting the importance (net) of validating technical learning and skills attainment through industry-recognized certification assessments
- 93%** Percent reporting (net) industry-recognized certifications factor into the hiring process for candidates in technology job roles
- 57%** Percent of HR departments expecting to increase spending on training and development in the year ahead (a slight increase YoY, 57% vs. 55%)
- #1** Rank of artificial intelligence (AI) as the top skills domain that HR departments plan to increase investment in training; with cybersecurity ranking #2 and data analytics ranking #3

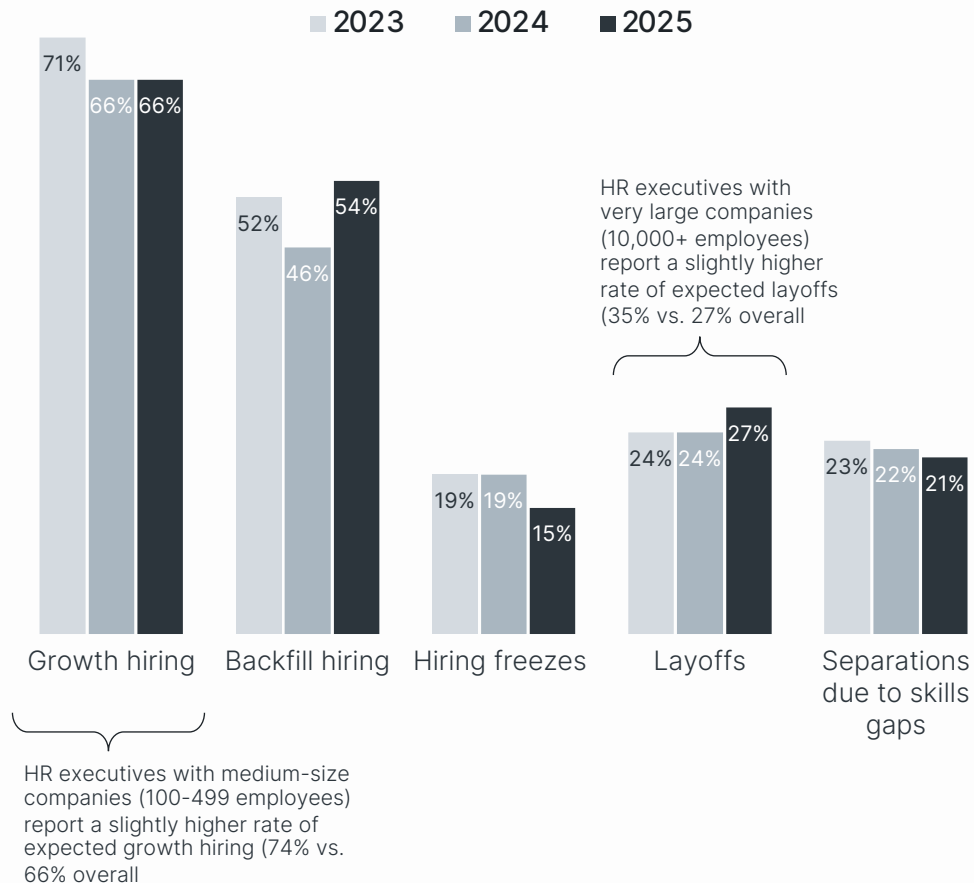
See Methodology page for survey administration and sample details, including international coverage

Trends

- 1** | Pace of technological change leads to new wave of skill shortages and gaps
- 2** | Validating knowledge, skill and task (KST) grows in importance
- 3** | Staff empowered to make own training decisions, for better or worse
- 4** | Human-AI interactions challenge legacy approaches to learning and development
- 5** | Essential digital fluency skills shape the future of work

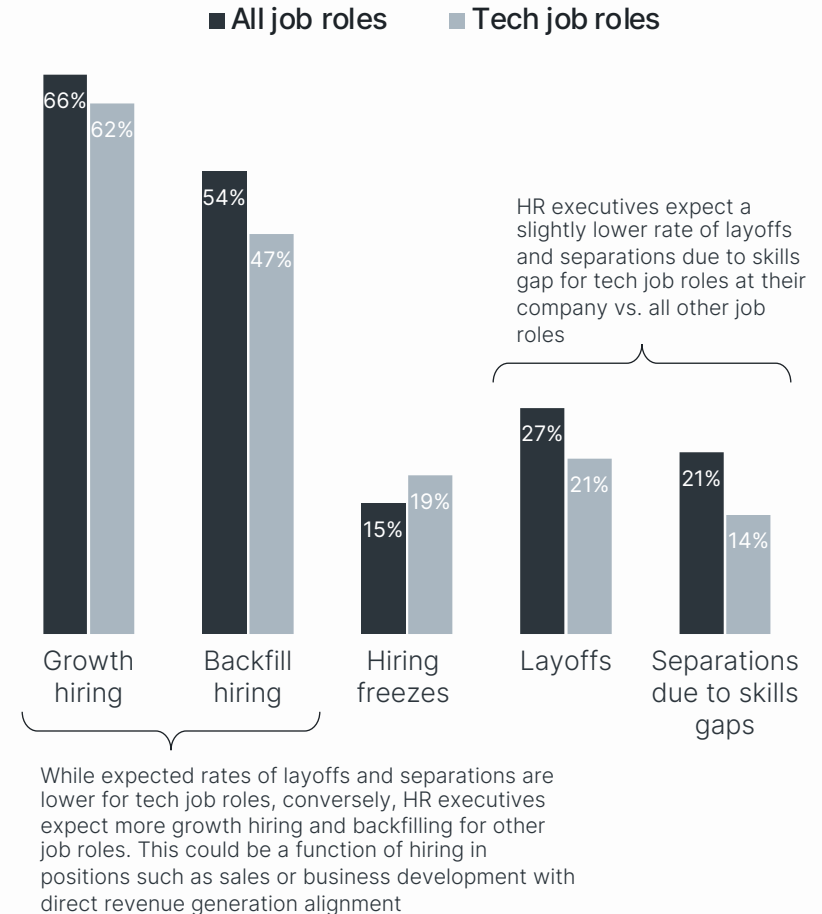
HR staffing actions indicate potential net hiring gains

Growth hiring intent expectations for 2025 matched the prior year rate, while backfill hiring intent increased. Offsetting these increases is the uptick in layoff expectations.



Layoffs a reality, but potentially lower for tech jobs

Overall about two-thirds of HR executives expect to be able recruit the quantity and quality of tech job candidates they seek; while one-third expect mixed results. Very large companies expect more challenges in recruiting, with 41% indicating they expect mixed results in finding the quantity and quality of tech job candidates they seek.



Contending with productivity drags and retention

Factors cited by HR professionals as concerns that may inhibit productivity or negatively affect staff retention

- 1 Burnout / Stress [52%] • Rate in line with 2024 iteration of research
- 2 General anxiety [40%] • Mid and staff level respondents cite burnout and stress as a concern at a higher rate than executive level respondents
- 3 Low morale / Disengagement [37%]
- 4 Restlessness / Eagerness for new opportunities [36%]
- 5 Status quo mindset / Complacency [33%]



Organizational talent management priorities

HR professionals must not only identify the “pieces,” but also understand how the pieces fit together to ensure the organization is built for success over the long-term

	Moderately high priority	High priority	Net priority
Upskilling/reskilling and skills gap assessments	33%	48%	81%
HR technology systems	33%	47%	80%
Data-driven performance management	37%	46%	83%
Organizational culture and employee experience	37%	45%	82%
• Career pathways and internal talent mobility	38%	43%	81%
Change management	35%	26%	61%

It follows that companies placing the highest priority on skills development have higher rates of prioritization in leveraging career pathways for internal talent mobility, and are investing more heavily in upskilling and reskilling:

91% Career pathways and internal talent mobility
87% Upskilling/reskilling and skills gap assessments

80%

Importance of skills development (net) in talent management and retention strategies.

Guiding staff in building skills through continuous learning helps to mitigate or proactively address the forces of concerns around the pace of technological change, low morale, disengagement and restlessness.

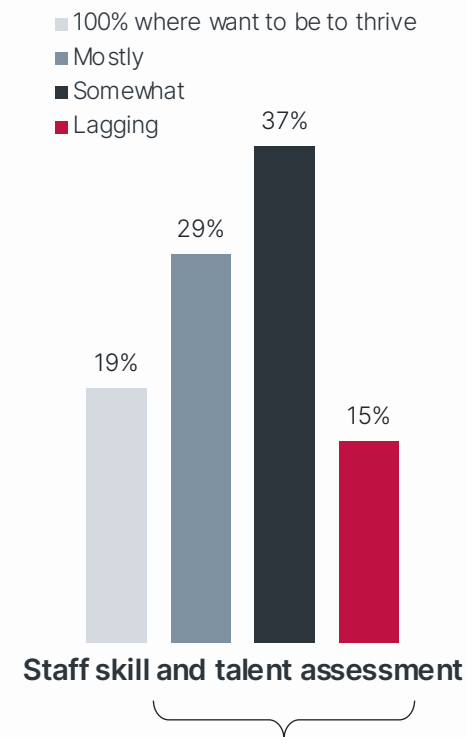
Greater than 4 in 10 HR professionals report this is even a higher priority for tech job roles.

Key contributing factors to skills gaps, shortages and mismatches

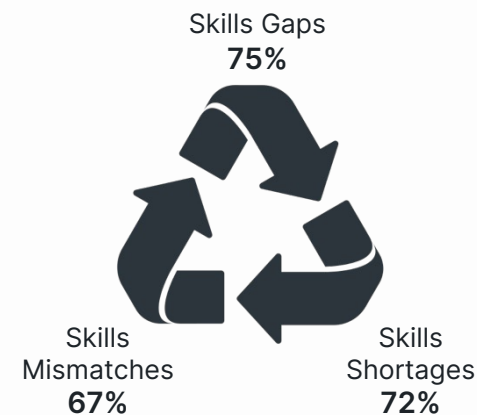
- 1 Pace of technological change
- 2 Pace of demographic and/or workplace dynamics change
- 3 Pace of market change
- 4 Pace of organizational change

Pace of technological change leads to new wave of skills gaps, skills shortages and skills mismatches

Since the industrial revolution, technological change has continuously reshaped workforce demands and organizational priorities. The unprecedented pace of innovation today has made these shifts even more pronounced and challenging to navigate. As such, identifying skills gaps and aligning talent with evolving needs has become a critical priority for employers.



In the aggregate, 81% of HR professionals report their organization falls short of the target level of skills and talent to thrive as a business.

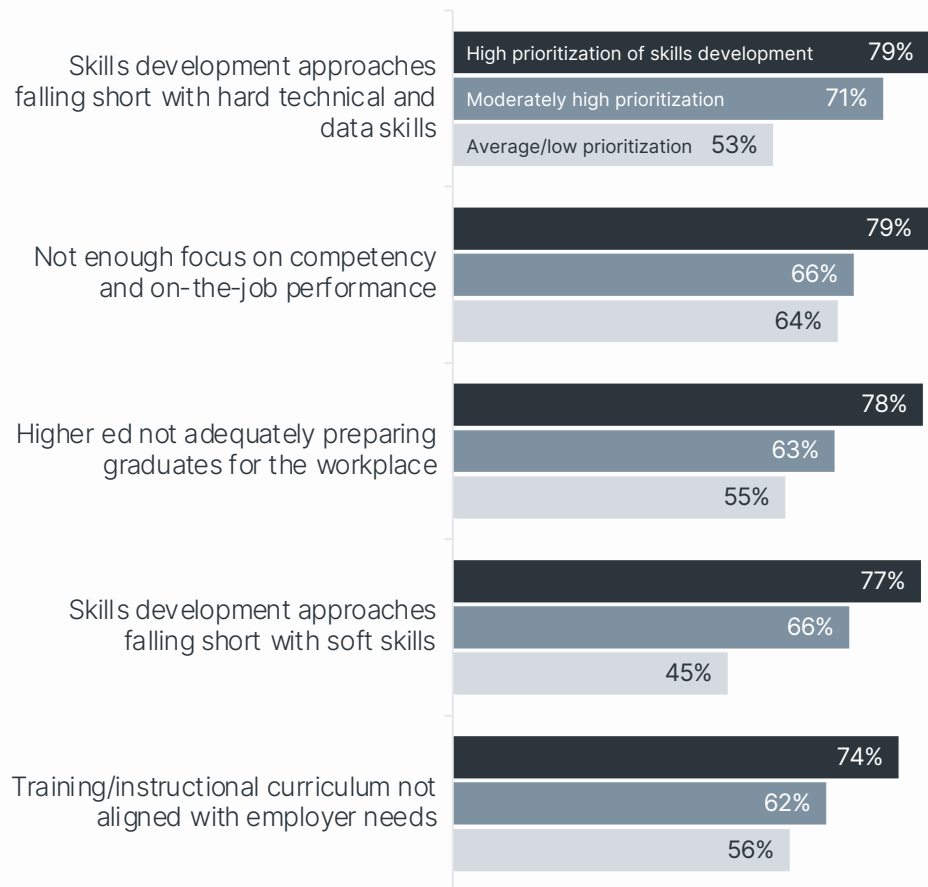


Addressing workforce challenges is a top priority (high + moderately high) with the majority of HR executives emphasizing the need to close skills gaps, overcome skills shortages and align skills with organizational needs in the coming year.



Skills gaps, shortages and mismatches stem from a combination of tactical and structural issues

While interrelated, there are distinct facets of skills gaps, skills shortages and skills mismatches. HR professionals report a combination of factors at play. The data indicates the companies placing the highest prioritization on skills development are most attune to the contributing factors, and presumably, more vested in addressing them.



Identifying the levers of change to improving training and outcomes

While just about every company speaks to the importance of a skills building and professional development mindset, putting that sentiment into practice is another matter. There are a host of internal and external factors that may derail the best of intentions.

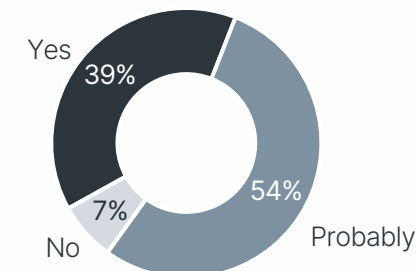
In addition to the usual “more budget,” the research identifies several key steps HR professionals believe help to keep training on track with desired outcomes.

1. Setting aside time for training and professional development (including manager training)
2. Better data-driven tools to identify, tailor and implement training and development
3. More innovative approaches to developing skills and competencies
4. Better skills taxonomies to more precisely map changing skills requirements to job roles
5. Cultural change from senior leadership down to rank-and-file employees



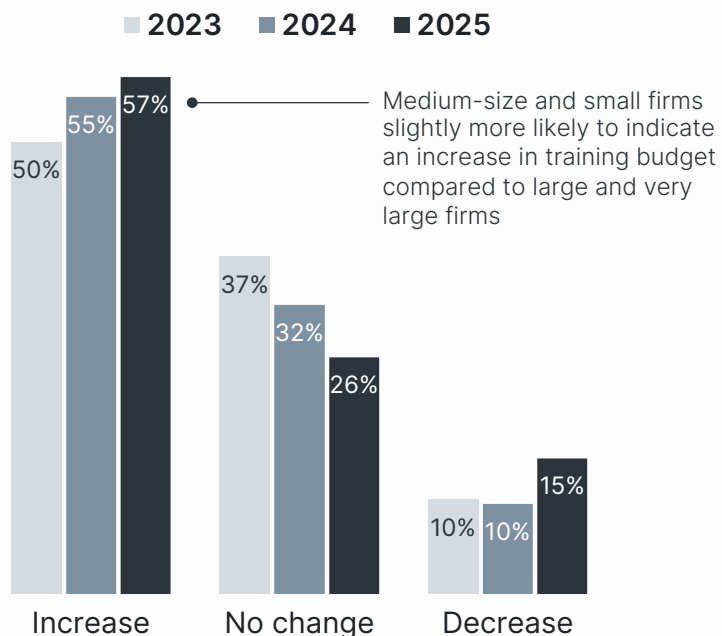
Employers acknowledge presence of over-spec'ing

Over-spec'ing job listings with unreasonably high education or other requirements tends to negatively affect both candidate and employer. And yet, many HR professionals acknowledge the practice persists.



Training spending expectations for year ahead

Any forward-looking spending projections will be affected by an environment of macroeconomic and policy uncertainty. This may entail curtailing or pausing spending in areas such as training and employee development. For many companies, this is short-lived, with operational spending resuming to planned levels knowing indefinite postponement is not an option when skills deficiencies may inhibit revenue-generating activities.

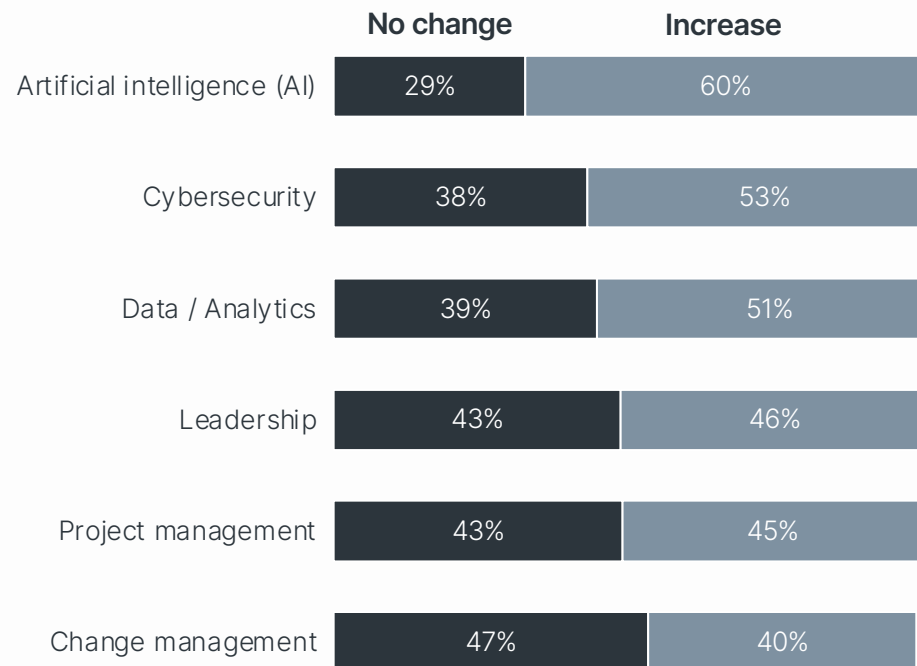


Training spending increase segmentation

70% Firms where tech skills development is a high priority (+21 point differential)

49% Firms where tech skills development is a medium or low priority

Training investment plans by subject matter domain



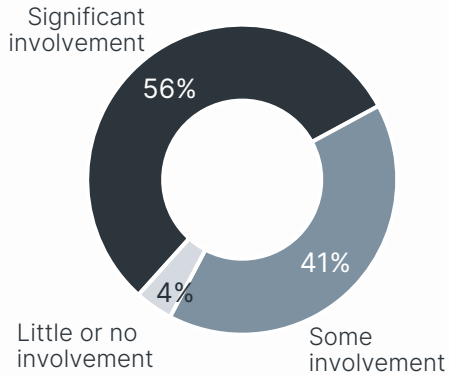
Degree to which skills development is formalized

49% Formal process, such as structured evaluations or skills assessments to identify skills gaps to guide training and development plans

40% Informal process, such as ad hoc evaluations; but short of structured processes or assessments

Manager involvement in training decisions

Degree of involvement of department managers in decision-making and budget allocations for training

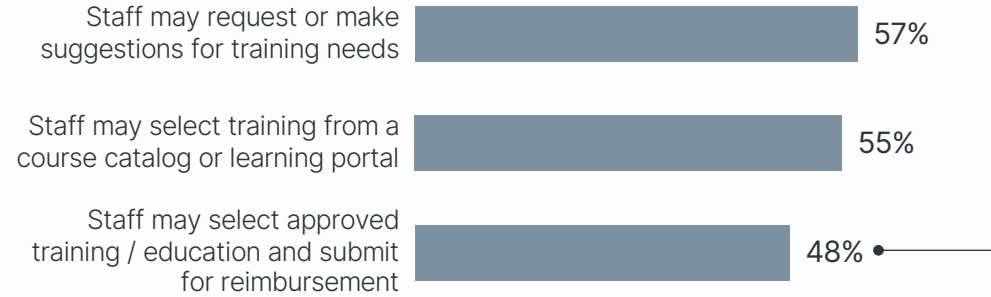


Large companies report slightly lower rates of managerial involvement in training decision-making or budget allocations. This may seem counterintuitive, but likely a function of large companies having more sophisticated learning and development (L&D) teams or working with outside training specialists to guide planning and implementation of training programs.

Mid-size and smaller companies are less likely to be in a position to have inhouse or external L&D experts, making it more likely managers will have to weigh in.

Staff empowered to make own training decisions, for better or worse

On the one hand there are many benefits to empowering staff to make their own training and development decisions. It helps to ensure commitment to putting in the work and to embracing a continuous learning mindset. On the other hand, it may be asking a lot of staff to figure it out on their own. Simply giving staff access to learning portals with vast catalogs of training content may result in information overload, indecision or staff seeing it mostly as a “check the box” offering by their employer.



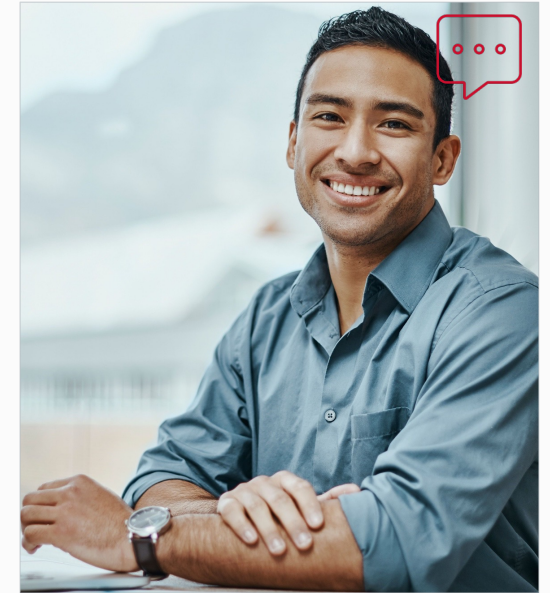
Higher rate for very large firms (57%)

Concerns or possible barriers that may inhibit successful training outcomes

- 1 Cost of training [35%]
- 2 Lack of quality instructors / insufficient “train the trainer” [34%]
- 3 Concerns staff will leave for another job after consuming training [33%]
- 4 Training fatigue among employees [31%]
- 5 Training option overload / finding right fit among so many providers [30%]

Other concern mentions:

- Lack of dedicated internal training development lead
- Insufficient career pathway information / ill-defined career growth opportunities



#1 Concern

Among companies with a high skills development focus, the #1 concern:

Stale training curriculum and outdated training modalities [38%]



Validating knowledge, skill and task (KST) grows in importance

97%

Net importance¹ of validating technical learning and skills attainment through industry-recognized certification assessments

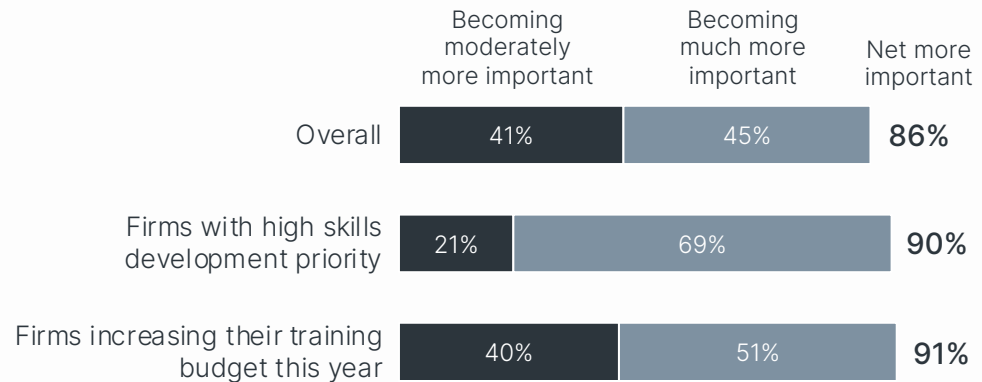
93% Net rating of industry-recognized certifications factoring into the hiring process for tech job candidates

Top reasons HR reports use of industry-recognized certifications

- #1** Alignment to specific job roles, along with associated knowledge, skill and task (KST)
- #2** Meet regulatory requirements or compliance needs
- #3** Helps to expand candidate pool beyond traditional 4-yr degrees
- #4** Industry-recognized certifications signal “stamp of approval” to employees and customers **[#1 among firms with a high skills dev. prioritization]**
- #5** Time savings in skills-based hiring evaluations of candidates

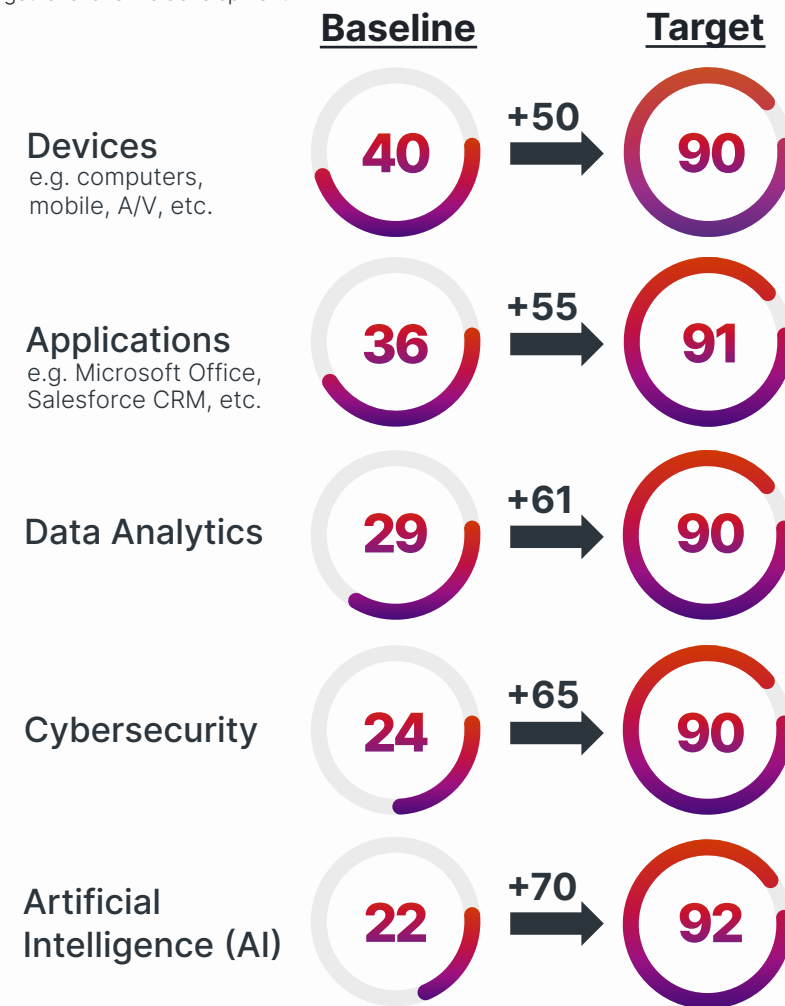


Essential digital fluency skills shape the future of work



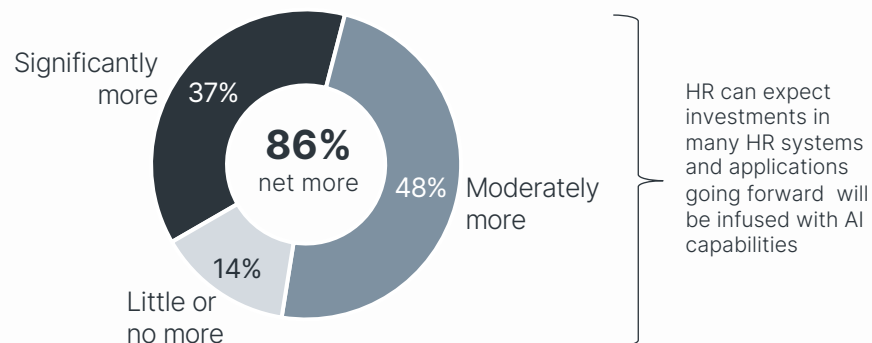
Digital fluency skills targets come into focus

HR rating of training prioritization, a directional proxy for relative distance between the baseline and target level of skills development



Expected change in HR technology and data in use

Technology underpins just about every business function. This is especially true with HR, where systems, applications and data are core to managing and developing a productive and engaged workforce. A significant majority of HR professionals (86% net) expect to build upon their existing HR tech stack with new or enhanced technology investments.

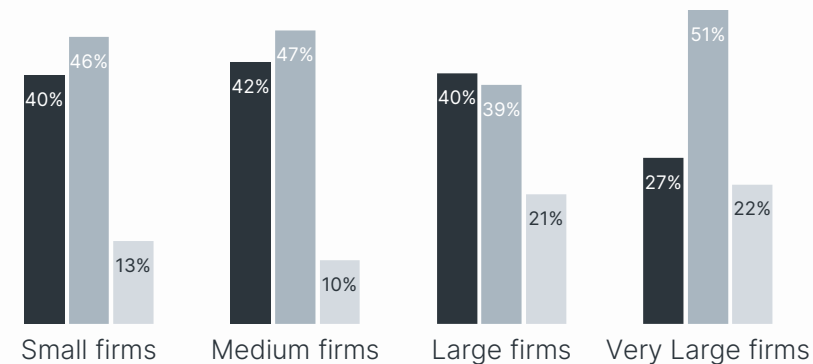


Where HR professionals seek value from AI

- 1 Improving employee experience [52%]
e.g. onboarding, employee support, benefits management etc.
- 2 Innovative uses [51%]
e.g. personalized coaching, virtual assistants, AI-enabled training
- 3 Improving HR data management and analytics [50%]
- 4 Better/faster talent search and hiring [49%]
- 5 Eliminating repetitive or time-consuming HR administrative tasks [43%]

AI generally meeting or exceeding HR expectations

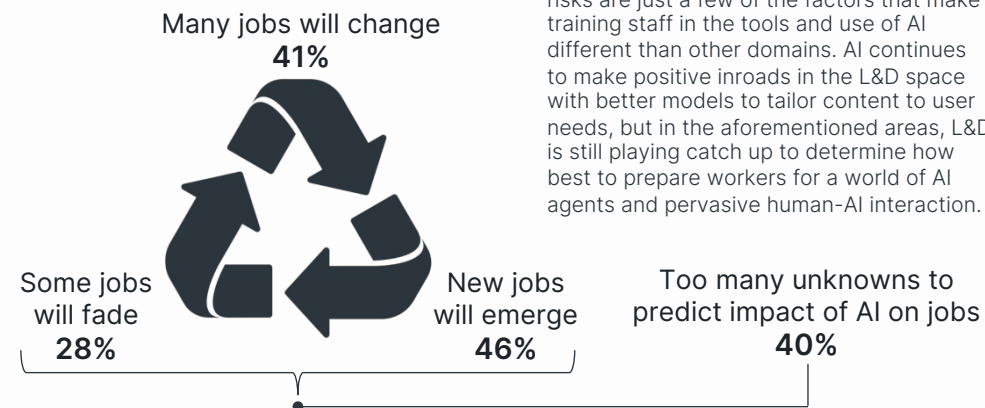
- Exceeding expectations in delivering value and outcomes
- Meeting expectations
- Falling short of expectations or unsure



Human-AI interactions challenge legacy approaches to learning and development

Perspective of HR professionals and their current view of how AI will change, grow and displace jobs

Hallucinations, bias, slop, intellectual property risks, security risks and "black box" risks are just a few of the factors that make training staff in the tools and use of AI different than other domains. AI continues to make positive inroads in the L&D space with better models to tailor content to user needs, but in the aforementioned areas, L&D is still playing catch up to determine how best to prepare workers for a world of AI agents and pervasive human-AI interaction.



Methodology

CompTIA's Workforce and Learning Trends study was conducted via a quantitative survey fielded online during January 2025. A total of 1,109 human resource (HR) and learning and development (L&D) professionals completed the survey, yielding an overall margin of sampling error proxy at 95% confidence of +/- 3.1 percentage points. Subsets of the data and segmentations will have higher estimated sampling error rates.

The United States component of the study resulted in 562 responses, with remaining responses roughly evenly distributed across the countries of Australia, Canada, United Kingdom, Japan, South Africa, and the region of Benelux (Belgium, Netherlands, and Luxembourg).

As with any survey, sampling error is present and will be higher for subsegments of the dataset. While non-sampling error cannot be accurately calculated, precautionary steps were taken in all phases of the survey design, collection and processing of the data to minimize its influence.

For additional trending information, please see the prior year releases of CompTIA's Workforce and Learning Trends research.

CompTIA, Inc. is a member of the market research industry's Insights Association and adheres to its internationally respected Code of Standards. Any questions regarding the study should be directed to CompTIA Research and Market Intelligence staff at research@comptia.org.





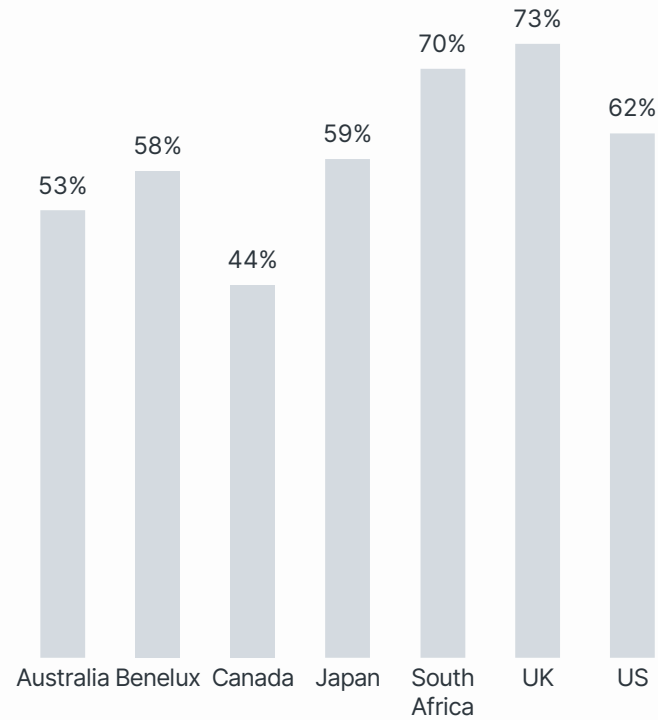
Appendix

International summary data

Employers across countries expect to engage in both boosting and shrinking their tech workforces

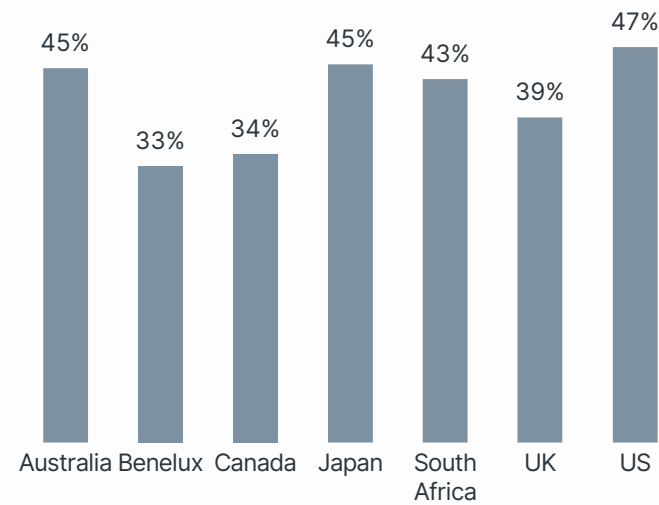
These actions tend to occur simultaneously, with the net effect over the long-term resulting in growth of the tech workforce

Tech hiring due to growth needs

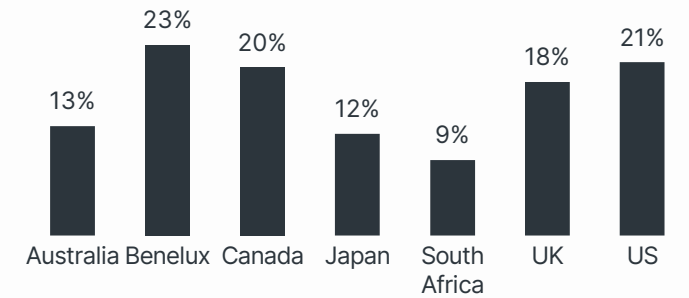


Tech hiring due to backfilling needs

e.g., retirements and other departures



Layoffs due to economic conditions

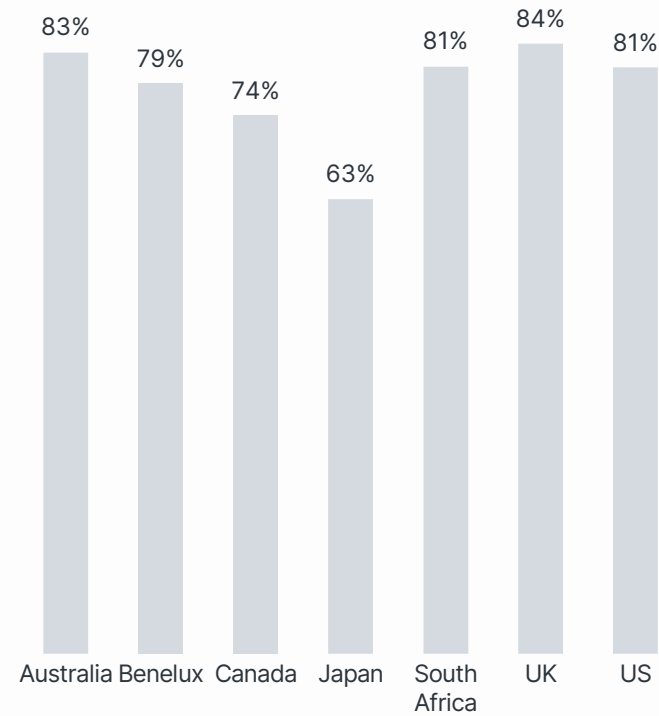


Belgium, Netherlands, and Luxembourg (Benelux)

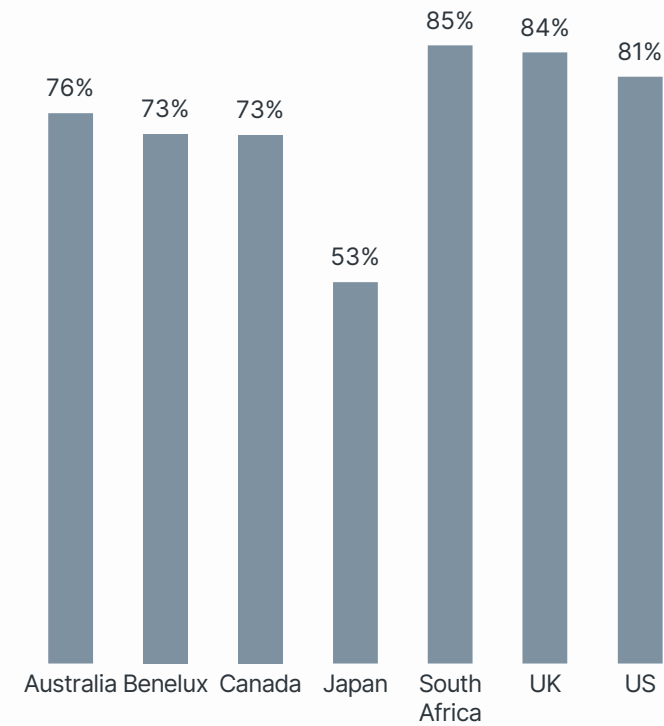
Upskilling and reskilling remain a high priority

Net of high priority + moderately high priority

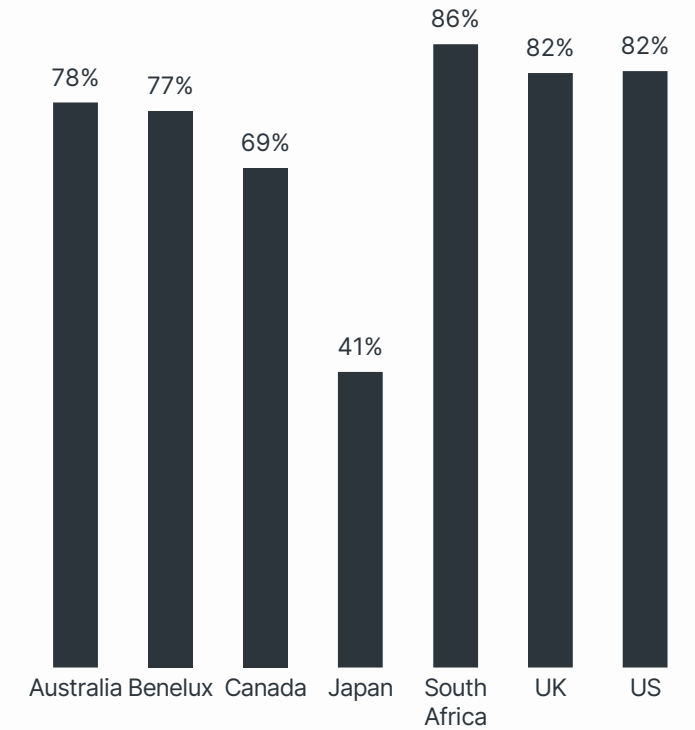
Upskilling and reskilling prioritization



Career pathways and internal talent mobility prioritization

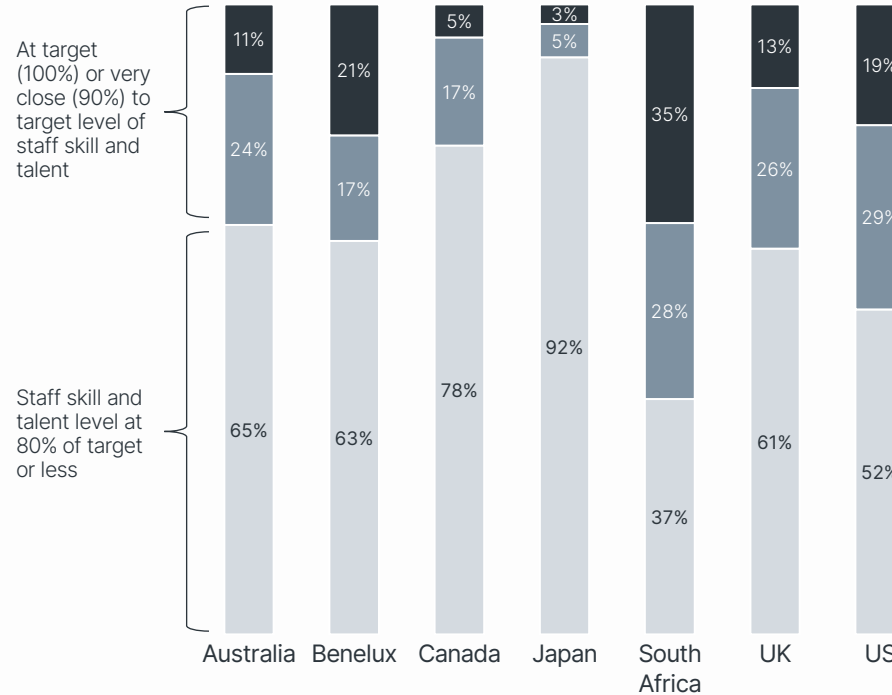


Organization culture and employee experience prioritization



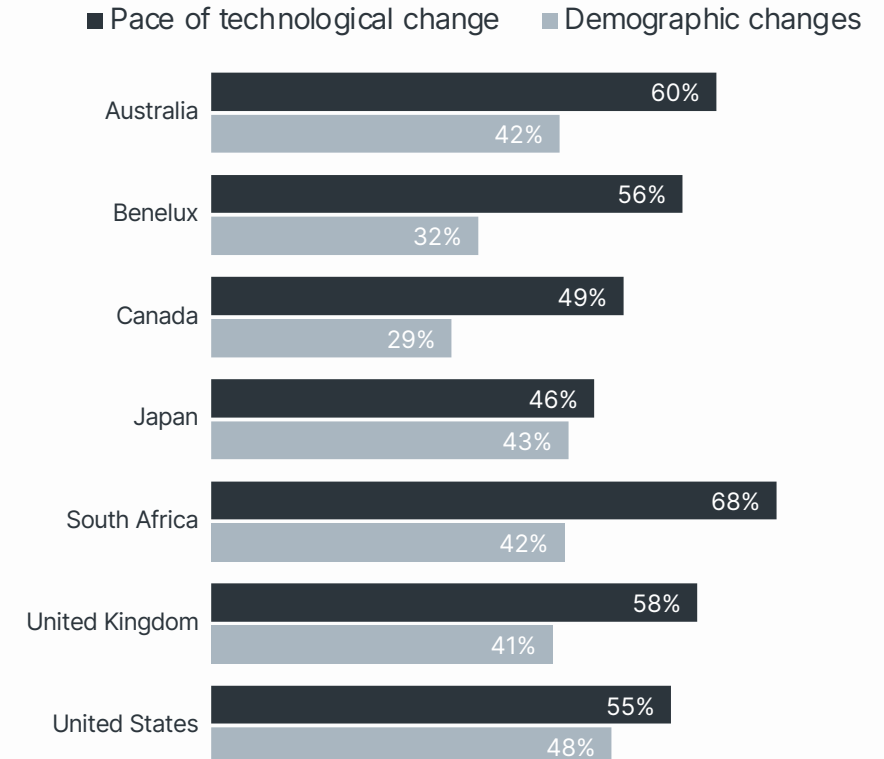
Belgium, Netherlands, and Luxembourg (Benelux)

Organizations across countries acknowledge falling short of workforce skill and talent level targets



Pace of technological change leads to new wave of skill shortages and gaps

Demographics poses a challenge as well, with waves of retirements and the loss of experience and expertise, coupled with generation Alpha just entering the workforce



Skills gaps, shortages and mismatches stem from a combination of tactical and structural issues

	Australia	Benelux	Canada	Japan	South Africa	United Kingdom	United States
Skills development approaches falling short with hard technical and data skills	73%	58%	55%	54%	72%	76%	70%
Not enough focus on competency and on-the-job performance	63%	61%	53%	52%	63%	62%	70%
Higher ed not adequately preparing graduates for the workplace	65%	60%	64%	39%	70%	65%	66%
Skills development approaches falling short with soft skills	66%	57%	51%	49%	77%	65%	65%
Training/instructional curriculum not aligned with employer needs	60%	67%	48%	50%	72%	66%	65%

Employers acknowledge over-spec'ing a contributing factor to skills disconnects

	Australia	Benelux	Canada	Japan	South Africa	United Kingdom	United States
Net employers a contributing factor	86%	94%	84%	88%	85%	89%	92%
Yes, definitely	27%	41%	22%	24%	49%	29%	39%
Yes, probably	59%	53%	62%	63%	36%	60%	54%
No or unsure	6%	16%	12%	15%	11%	8%	6%

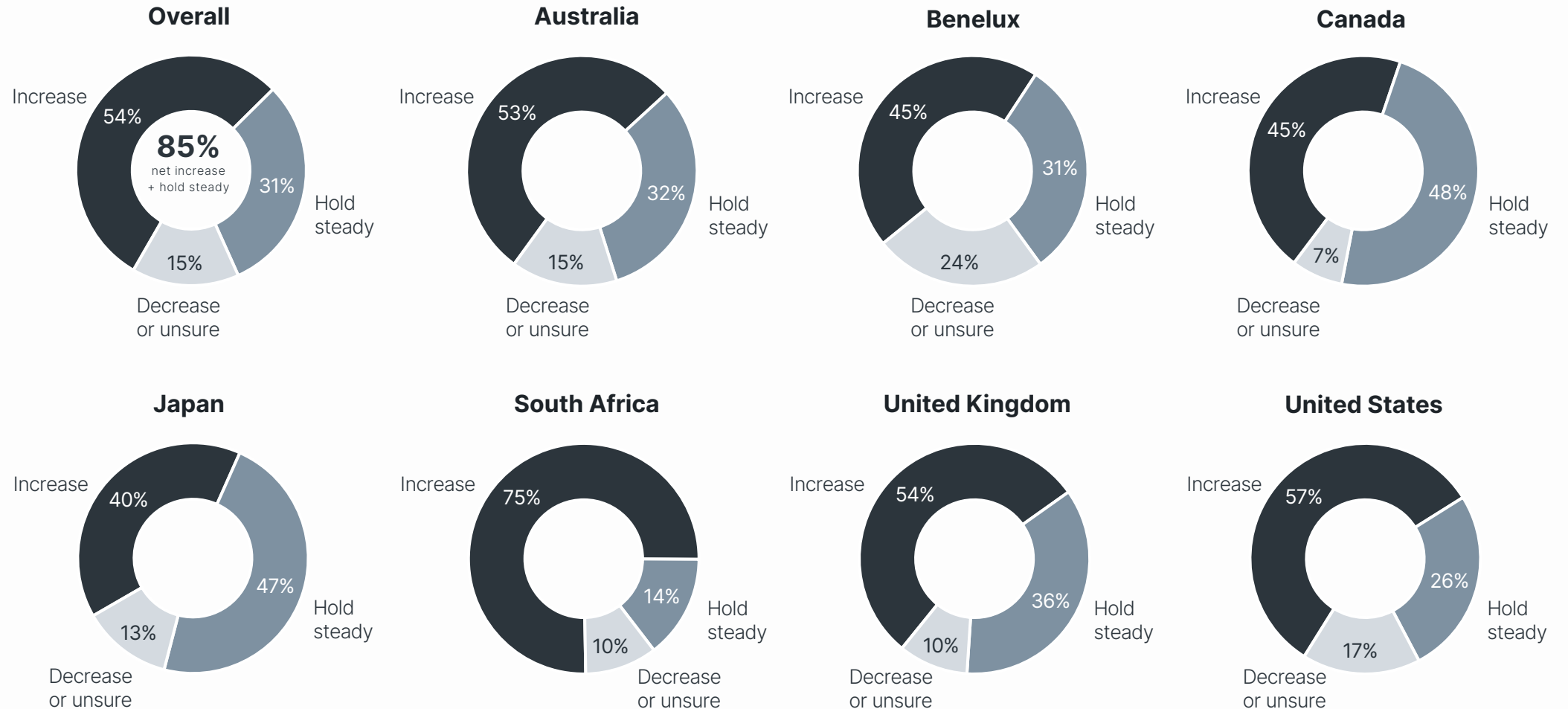
Identifying the levers of change to improving training and outcomes

	Australia	Benelux	Canada	Japan	South Africa	United Kingdom	United States
Setting aside time for training and professional development (including manager training)	58%	50%	42%	45%	57%	51%	51%
More innovative approaches to developing skills and competencies	49%	37%	47%	29%	68%	48%	49%
Better data-driven tools to identify, tailor and implement training and development	36%	36%	41%	37%	72%	44%	50%
Better skills taxonomies to more precisely map changing skills requirements to job roles	35%	30%	29%	44%	40%	45%	47%
Budget and resources	36%	44%	45%	44%	56%	43%	38%

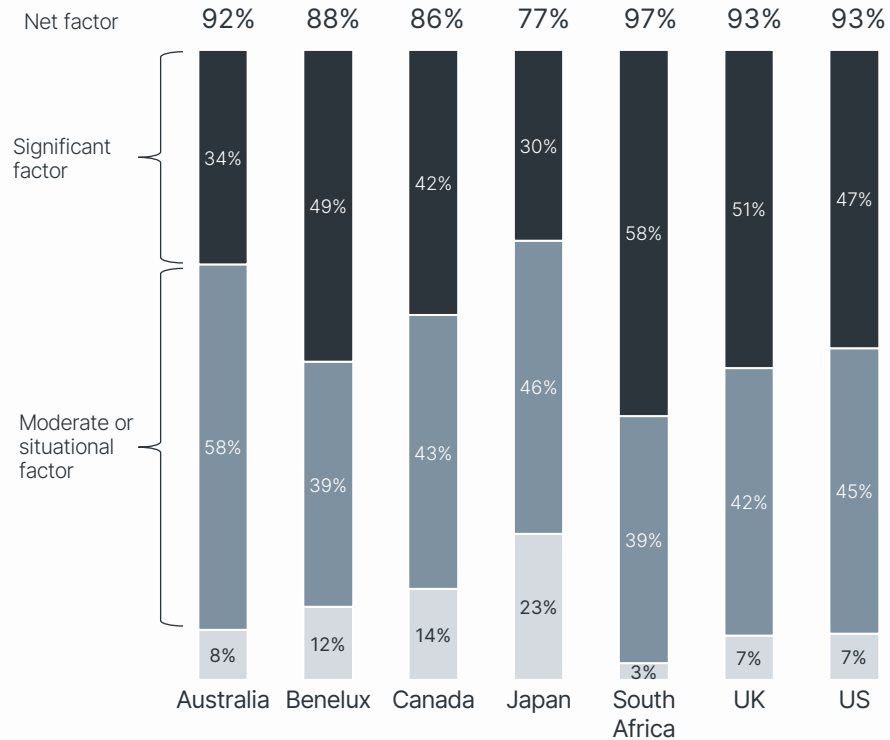
Incidence of formal process to identify and address skills gaps via assessments

	Australia	Benelux	Canada	Japan	South Africa	United Kingdom	United States
Formal process of staff skill assessments	35%	42%	24%	23%	59%	42%	49%
Informal or ad hoc use of staff skill assessments	45%	38%	47%	32%	27%	46%	40%
No, but something plan to implement	14%	12%	17%	16%	14%	10%	8%
No, and no plans at this time	6%	5%	9%	27%	0%	1%	2%

Organizations across countries mostly expect to increase or hold training budget steady in year ahead

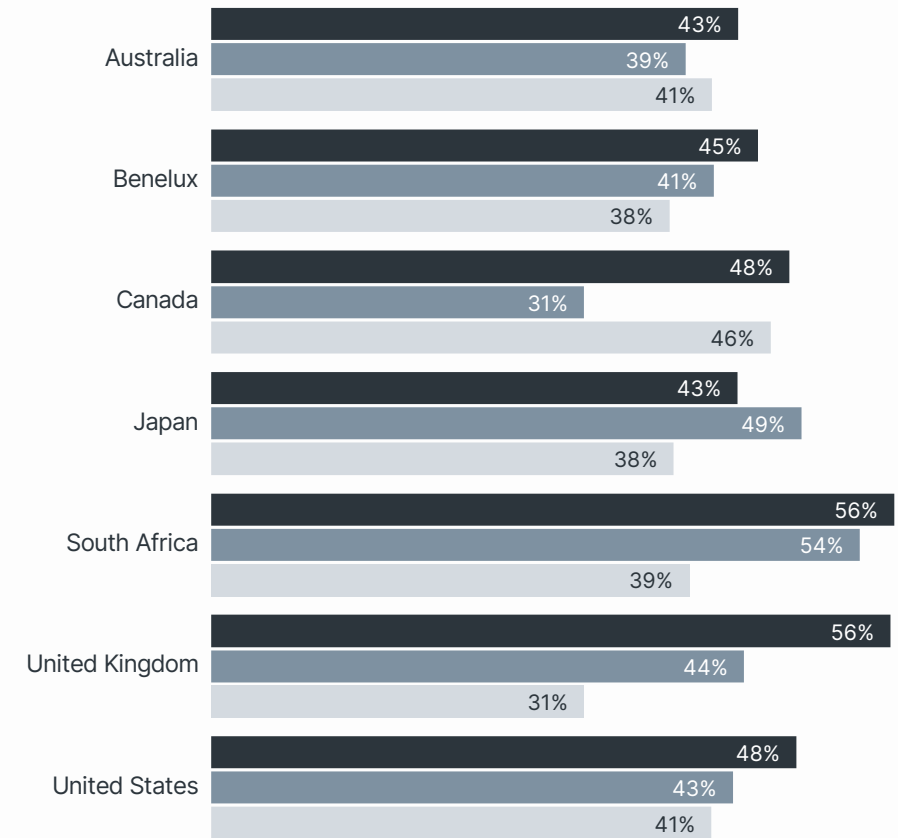


Industry-recognized certifications an important factor in validating knowledge, skill and task (KST)



Reasons HR relies on industry-recognized certifications

- Alignment to specific job roles
- Industry-recognized certifications signal “stamp of approval”
- More up-to-date than bachelor degrees



Essential digital fluency skills shape the future of work

While already important, employers across countries indicate digital fluency skills are becoming even more important in the face of rapid technological and other changes

Overall

83%

Australia

84%

Benelux

83%

Canada

68%

Japan

69%

South Africa

95%

United Kingdom

83%

United States

85%



Digital fluency focus priorities for staff skills building and development

Note: top 5 domains from research depicted

	Australia	Benelux	Canada	Japan	South Africa	United Kingdom	United States
1	Cybersecurity	AI	AI	Cybersecurity	AI	AI	AI
2	AI	Cybersecurity	Cybersecurity	AI	Data / Analytics	Cybersecurity	Cybersecurity
3	Devices / HW	Devices / HW	Data / Analytics	Data / Analytics	Cybersecurity	Data / Analytics	Data / Analytics
4	Data / Analytics	Data / Analytics	Devices / HW	Devices / HW	Applications	Applications	Applications
5	Applications	Applications	Project Mgt.	Project Mgt.	Devices / HW	Devices / HW	Devices / HW

Domains where employers expect to increase staff training spending

Note: top 5 domains from research depicted

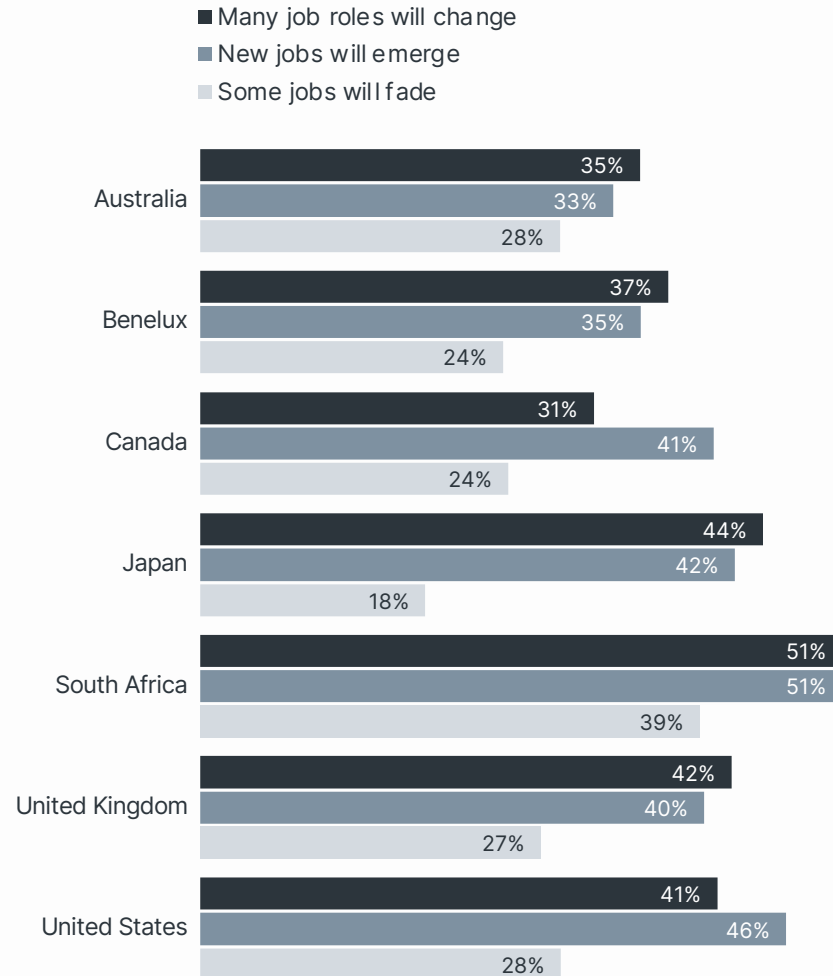
	Australia	Benelux	Canada	Japan	South Africa	United Kingdom	United States
1	Cybersecurity	AI	AI	AI	Cybersecurity	AI	AI
2	AI	Data / Analytics	Cybersecurity	Data / Analytics	AI	Cybersecurity	Cybersecurity
3	Data / Analytics	Cybersecurity	Data / Analytics	Cybersecurity	Data / Analytics	Data / Analytics	Data / Analytics
4	Project Mgt.	Leadership	Leadership	Project Mgt.	Project Mgt.	Leadership	Leadership
5	Leadership	Project Mgt.	Project Mgt.	Leadership	Leadership	Project Mgt.	Project Mgt.

Factors that inhibit successful training effectiveness / desired outcomes

	Australia	Benelux	Canada	Japan	South Africa	United Kingdom	United States
Lack of quality instructors	26%	28%	24%	44%	41%	25%	34%
Training fatigue among staff	30%	23%	19%	26%	40%	32%	31%
Training option overload / finding right fit	31%	20%	15%	21%	41%	29%	30%
Stale training curriculum / outdated modalities	28%	25%	28%	21%	37%	25%	28%

Employer expectations for AI's impact on workforce

From perspective of HR professionals



AI mostly meeting or exceeding expectations

From perspective of HR professionals and use of AI in AI-enabled HR applications, HR platforms or related

