

Building a Disruptive Workforce

Sourcing Talent in a Time of Change

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1.

Introduction and Executive Summary

As COVID-19 upended long-planned strategies, migrated work from offices to living rooms, and transformed entire industries overnight, companies quickly sorted into two camps: those who could adapt to disruption, and those who could not. Adaptable firms were able to maintain collaboration and comradery in a remote workplace. They were able to build digital solutions to physical problems. And they were able to innovate while peers simply tried to survive.

Identifying the disruptive skills most important for companies to develop was the motivation behind Burning Glass's Skills of Mass Disruption report, in which we identified 10 skills poised to be the most disruptive skills in tech and recommended strategies firms may take to build a future-ready workforce well-versed in these skill sets. Now

we turn attention to talent utilizing these disruptive skills, distinguishing between managers and practitioners, and the career pathways of existing tech workers with disruptive skills so that organizations may uncover new ways to source – or develop – workers with the most transformative abilities.

This analysis leverages Emsi Burning Glass's database of hundreds of millions of professional social profiles to identify workers who are either practitioners or managers in one of the 10 disruptive skill areas and investigates the transitions they made to arrive at their current roles. The intent of this report is twofold: first, to identify the strategies that companies are using now to hire this high-value talent and, second, to suggest new, better ways for companies to source workers with disruptive skills.

Key Findings

- + **Companies are missing the disruptive workers right under their nose:** Only 31% of disruptive tech workers were sourced from other roles internally, suggesting that employers are focused on buying the disruptive talent they need from outside their organization. While this can help bring in new talent, it can be costly and suggests that employers may be missing an opportunity to build the disruptive skills they need by upskilling existing workers.
- + **Disruptive workers can come from anywhere, so companies need to look everywhere.** About two-thirds of existing disruptive tech workers – both practitioners and managers – transitioned into their current role from a different occupation, and over half of existing practitioners were sourced from a different industry.
- + **Most managers of disruptive tech teams are new to management.** Of all current managers of disruptive tech teams, 70% came into their current roles without prior management experience. This suggests that the most disruptive tech teams at most companies are overseen by leaders who are learning leadership on the job, requiring an investment in management training.
- + **The pipeline of new talent into disruptive roles is clogged, hindering the growth of new workers into disruptive fields.** Only 16% of disruptive tech workers were sourced as entry-level workers, and only 5% of disruptive tech workers have less than a bachelor's degree. This limits the ability to grow the talent pool of disruptive workers and encourages competition between firms all bidding for the same limited pool of workers. Potentially this may hinder diversity goals if employers are not seeking out workers from new fields or backgrounds. This suggests that more employers can invest in building entry-level opportunities to expand their pipeline of disruptive tech workers.
- + **Sourcing strategy (buy versus build) impacts worker retention.** Retention of practitioners is roughly equivalent regardless of whether the workers were developed internally or hired externally. This suggests that one fear employers have about internal training — that giving workers new skills will encourage them to find jobs elsewhere — is overblown. However, managers sourced from outside of an organization are 61% more likely to stay with the organization for at least two years compared to internal promotions. This finding suggests that companies might want to compare the cost of upskilling an existing worker to a management position versus buying a manager from outside. The outside option is more likely to remain with the organization for longer, which provides continuity, stability, and likely increased productivity for direct reports.



2.

Sourcing Workers With Skills of Mass Disruption

To Buy or to Build?

Hiring workers with disruptive skills are crucial for organizations looking to build future-ready capabilities, but their scarcity can leave employers grasping in the dark for the right recruiting strategy. While there are many tactical levers employers may pull to acquire disruptive tech talent, most of them boil down to two main strategies: they can buy the talent they want, or they can “build” it via training. Often, buying talent is the more costly strategy, especially in a market with a limited supply of talent.

However, our analysis makes clear that this is the preferred strategy for most employers. Of existing tech practitioners and managers with disruptive skills, 69% and 54%, respectively, were sourced from outside their current organization. This means that organizations may be missing valuable – and more cost-effective – opportunities to invest in upskilling the workers they have around new, disruptive skillsets.

Additionally, disruptive workers do not currently transition along a clearly defined pathway. About two in three disruptive tech workers were sourced from a different occupation than their current role, and more than half came from an entirely different industry (55%). This suggests that employers are looking for workers from myriad backgrounds and are willing to source workers with the right skills, regardless of their immediate career history.

However, employers have been far less likely to source disruptive tech workers with less education or experience. Nearly all disruptive tech practitioners possessed at least a bachelor’s degree (96%) and prior work experience (84%) when they were hired. On average, disruptive tech workers have nearly eight years of prior work experience. This suggests a possible paradox in employer hiring patterns: They are willing to hire disruptive tech workers with limited experience in a certain occupation or industry, but they are less willing to hire disruptive tech workers with limited experience or education more generally.

If employers are willing to loosen their hiring requirements for workers with a bachelor's degree who have been in the workforce for multiple years but have limited experience in the role they are being hired for, employers may have an opportunity to rethink whether they can loosen hiring requirements elsewhere.

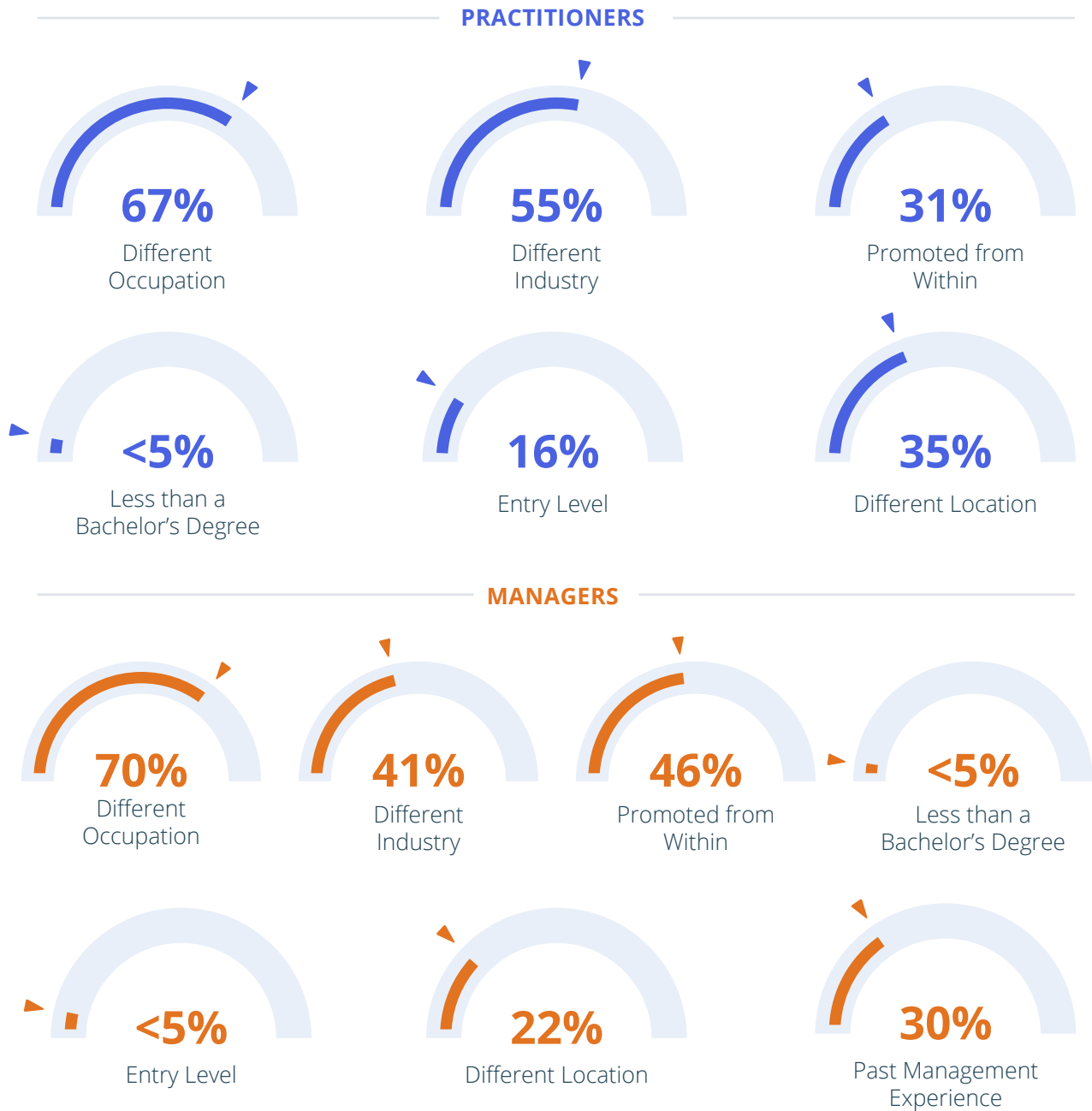
Sourcing strategy likely affects worker retention. For practitioners, sourcing strategy does not correlate with much difference in the percent of workers who have tenure of at least two years, with two-year retention rates of 47% for those sourced internally and 50% for those sourced externally. The cost of empowering existing workers with disruptive skills would likely be more cost-effective, as we know that buying disruptive skills can be a very costly endeavor. Half of managers promoted internally (49%) remain with an employer for two years or more post promotion, as compared to 79% for those sourced externally. This large disparity indicates that the cost of increasing a worker's capabilities and promoting a manager from within may be an expensive solution in the long term if the worker needs to be replaced more frequently.

The reliance on highly educated and experienced workers may also reduce the diversity of the disruptive candidate pool, which may hinder the ability of companies to meet their diversity and inclusion goals. Expanding the pool of talent to workers from nontraditional backgrounds can, therefore, not only expand the talent pipeline but also increase the diversity of the tech workforce.

One place where additional years of experience almost certainly is valuable for managers, and this is reflected in employer hiring. On average, managers of disruptive tech teams have 12 years of work experience after completing their highest level of education. However, 70% of these managers were sourced from nonmanagerial roles. This suggests that the most disruptive tech teams at most companies are overseen by leaders who may not have much leadership experience. This may require an investment in management training to ensure organizations are getting the most out of their disruptive tech teams.

Taken together, these findings suggest that most employers choose to buy disruptive tech workers most often –

Figure 1: Sourcing Managers and Practitioners



especially if they are practitioners – and look for workers who have significant experience and at least a bachelor’s degree. Whether this is the most cost-effective solution for a company depends on many factors – such as the locations they recruit from, the training resources available to them, and the nature of the technology they need their workers to build – but shifting to a build strategy could, in many cases, bring down the cost of acquiring workers with disruptive skills considerably.

Similarly, when it comes to managers with disruptive skills, many companies prioritize disruptive skills competencies over management experience and choose to promote budding managers from within. Internal promotion brings down talent acquisition costs, as finding workers with disruptive skills is often a difficult and costly endeavor. This suggests an overall pattern of identifying and sourcing those with disruptive skills from a wide array of sources at the practitioner level, and then possibly promoting from within to source managers. This further suggests that employers have determined that building the managerial skills of a worker may be less costly than training

an existing manager with one or more disruptive skills, but they may be missing an opportunity to apply the same logic to internal practitioners who can be upskilled in targeted disruptive skills.

Across companies who enjoyed success despite the pandemic, a common thread emerged as a key driver of their success: their people. Organizations with the right people and the right skills were better positioned to not only sidestep pandemic-fueled disruption more gracefully, but to build innovative solutions and become disruptors themselves. This suggests a key lesson for all firms: To thrive in disruptive times, invest in workers with disruptive skills.

Longer term, a strategy of investment in existing workers’ human capital is often a more cost-effective strategy. While it is likely true that buying practitioners can bring in new skills, it is going to be costly in the longer term if that sourcing strategy is not supplemented or superseded by a build strategy. A more appropriate solution may be to upskill existing workers in disruptive skills, which may enhance worker retention and morale while simultaneously defraying hiring costs.

3.

Diving Into the Details: Not all Disruptive Skills are Sourced the Same

Table 1: Practitioner Sourcing Overview

	All	Proactive Security	Fintech	Software Dev	NLP	IT Automation	Cloud Technologies	AI and Machine Learning	Connected Technologies	Quantum Computing	Parallel Computing
Percent from a different occupation	67%	72%	70%	59%	68%	52%	68%	69%	69%	82%	60%
Percent from a different industry	55%	54%	53%	54%	57%	57%	54%	57%	52%	76%	52%
Percent who transitioned from same employer	31%	31%	32%	32%	31%	30%	31%	31%	32%	15%	33%
Percent hired with less than a Bachelor's Degree	4%	6.7%	1.4%	2.8%	1.5%	0.3%	2.3%	6.7%	0.2%	0.5%	2.7%
Percent Entry-Level	16%	13%	17%	10%	25%	13%	7%	26%	18%	7%	19%
Percent sourced from a different State	36%	32%	38%	34%	44%	37%	30%	42%	40%	56%	41%
Average Years since graduation	7.7	8	7.2	9.6	4	7.6	12.2	4	7.6	5.2	4.7

Methodological Note: Quantum computing has very small sample sizes, so any comparisons made with other skills presented above may not reach statistical significance.

*Measured as those who started the job the same year they graduated

Many of the sourcing trends utilized for all disruptive tech workers are consistent across most of the specific disruptive skills. However, there are outliers. For example, Natural Language Processing and AI and Machine Learning both have significantly more entry-level workers than the average, suggesting that these may be roles that employers could look to new graduates to fill. This finding is echoed by the average years of experience as measured by the years since graduation with the highest degree for both NLP and AI/ML. This may be due to an increase of analytics degree programs but, interestingly, other fields that have also seen a spate of new training programs emerge have not seen similar upticks in entry-level workers, such as Proactive Security.

Cloud Technologies as a disruptive skill is also notable for the average years of experience, as measured by years since graduation from the highest degree attained. While disruptive skill practitioners as a group average nearly eight years of prior experience, those with Cloud Technology skills specifically

have on average 12 years of experience. This additional tenure may come with a salary premium, which employers must weigh against the potential value of hiring a more experienced worker.

Managers for specific disruptive skills generally follow the pattern of the group, with a few notable exceptions. Managers with Cloud technology skills have on average 14 years of experience, while those in NLP or AI and ML are at the lower end, with roughly nine years of experience. Managers in NLP also have the lowest rate of past management experience, indicating that the NLP skills themselves may be both newer and harder to find, resulting in less experienced managers.

Connected Technology managers have the highest share of managers who are promoted from within a company, while Proactive Security and Fintech have the lowest. This may have to do with the type of work being done at companies interested in these skills, where company-specific knowledge is valued differently.

Table 2: Manager Sourcing Overview

	All	Proactive Security	Fintech	Software Dev	NLP	IT Automation	Cloud Technologies	AI and Machine Learning	Connected Technologies	Quantum Computing	Parallel Computing
Percent from a different occupation	70%	76%	76%	66%	58%	55%	73%	65%	73%	n/a	60%
Percent from a different industry	41%	46%	39%	44%	35%	42%	43%	34%	33%	n/a	30%
Percent who transitioned from same employer	46%	40%	41%	44%	53%	49%	45%	53%	58%	n/a	51%
Percent hired with less than a Bachelor's Degree	3%	4.8%	0.7%	1.8%	0.3%	2.0%	5.1%	0.3%	2.4%	n/a	0.0%
Percent Entry-Level	4%	5%	9%	3%	5%	1%	3%	6%	7%	n/a	4%
Percent sourced from a different State	22%	25%	26%	23%	22%	25%	21%	22%	28%	n/a	22%
Average Years since graduation	12.3	11.1	9.9	12.9	9	11.8	14.1	8.6	12.9	n/a	8.4
Managers with Past Management Experience	30%	22%	25%	36%	17%	31%	24%	21%	30%	n/a	16%

4.

Looking to the Future

Moving forward, employers may be able to realize significant advantages if they transition from a buy-focused strategy for disruptive talent and embrace more opportunities to build the disruptive workers they need.

The first reason: cost. Sourcing practitioners and managers who have seven and 12 years, respectively, of experience on average, is costly. Requiring additional years of experience may not be necessary or even realistic in many cases, especially for practitioners, since the most disruptive fields often are relatively new and rapidly evolving. Therefore, the number of years someone has been in the workforce is less relevant than their command of an emerging field. If employers invest in existing workers – or less experienced or less educated workers – and upskill them in new, disruptive skills, they may realize significant cost savings.

The second reason: worker retention.

By choosing to upskill existing workers, employers are likely to have workers who will stay with their company for longer periods, and worker morale will likely increase. The cost of upskilling workers is also likely to be lower than replacing them with workers who are already empowered with disruptive skills, since it will avoid recruiting costs and reduce time-to-proficiency with internal systems and protocols.

The third reason: diversity. Hiring from a pool of workers who are highly experienced and possess at least a bachelor's degree is likely to result in a less diverse workforce. If increasing workplace diversity is a corporate goal, then looking to pools of nontraditional talent is critical.

Defining Disruptive Skills

To help organizations move past the buzzwords and pinpoint the disruptive technology skills they can begin building today, Emsi Burning Glass analyzed more than 17,000 unique skills demanded across our database of over one billion current and historical job listings. The analysis grouped similar technology skills into associated skill areas and assessed both the projected growth of each skill area over the next five years, as well as each skill area's difficulty to fill – a composite measure of the average time it takes to fill jobs requesting each skill and the average cost premium to fill each skill. Disruptive skill clusters can be defined as those that are projected to grow rapidly, are undersupplied, and provide high value. The result of this analysis was presented in The Skills of Mass Disruption report where 10 skills were identified as the most disruptive.

These skills include

- + AI and Machine Learning
- + Cloud Technologies
- + Connected Technologies
- + Fintech
- + IT Automation
- + Natural Language Processing
- + Parallel Computing
- + Proactive Security
- + Quantum Computing
- + Software Development Methodologies

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