



Perspective

Semiconductor workforce development strategies

Addressing the global talent shortage

The semiconductor industry is at an inflection point: Revenue is expected to reach \$1 trillion by 2030, but the industry continues to face widespread talent challenges—including an aging workforce and the rise of GenAI. Explore workforce strategies to address short-term talent needs and set the semiconductor industry up for long-term success.

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The global semiconductor talent shortage

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Semiconductor industry employment trends

In 2022, Deloitte expected that the global semiconductor industry would need to add a million skilled workers by 2030, or more than 100,000 annually. Two years later, that forecast still holds. But key industry trends continue to compound the talent challenge:

1. Advanced skills driven by demand for Generative AI (GenAI): The talent needed for advancing technologies, such as GenAI, is often in high demand and can be difficult to attract and retain in a competitive talent market.
2. Looming talent cliff and low industry appeal: The semiconductor industry is facing an aging workforce without a clear plan for succession, which may be further exacerbated by low industry appeal compared to the broader tech industry.
3. Global solutions needed for a global challenge: Localization of manufacturing, as well as overall global demand trends, is contributing to a talent and skills shortage that spans the globe. Semiconductor companies are often left competing over the same insufficient pool of existing talent.
4. Talent outcomes tied to global chips laws: Both the US and European Chips Acts include specific objectives and grant application requirements regarding workforce development that companies should commit to receive funding, remain in compliance, and achieve growth objectives.
5. Repatriation of manufacturing and back-end processes: Geopolitical concerns and supply chain fragility continue to contribute to the onshoring of manufacturing (advanced node, trailing node,

memory) and back-end ATP (assembly, test, and packaging) processes.

The cyclical chips industry experienced its seventh downturn since 1990, with revenues declining 9% to \$520 billion for 2023. As a result, development of some new fabrication capacity has been extended, which has also likely delayed some of the immediate, short-term need for talent. This downturn is expected to be temporary, with revenue set to grow by 16% in 2024 to an all-time high of \$611 billion.

With the industry back on track to reach the \$1 trillion figure for 2030, talent will be needed to fuel that growth. But now there's more time to optimize talent forecasts, mix, pipeline, skills and capabilities, and development plans. A richer understanding of the challenges driving the semiconductor talent shortages can enable semiconductor leaders to deploy targeted strategies to help address their looming talent needs.

Talent strategies and solutions

To help mitigate the challenges outlined above, semiconductor companies—and the industry as a whole—should consider strategies across workforce planning and access; workforce skills, development, and retention; and technology and HR enablement.

Workforce planning and access

Companies should enable agile workforce planning by implementing talent strategies with a workforce mix that can help address their immediate operational needs while also allowing them to adjust to market fluctuations. And, in addition to improving brand marketing and job attractiveness to better recruit talent, semiconductor companies should have comprehensive pipeline development and recruiting strategies. These should be defined and implemented in coordination with other semiconductor companies, educational institutions, and industry and community organizations, prioritizing underrepresented populations for a more comprehensive global solution.

Workforce skills, development, and retention

A right-skilled workforce starts with a skilled pipeline. While the pipeline is under development, companies should have a comprehensive view of their current skills and gaps, strategic knowledge management tools and processes, and flexible upskilling/reskilling programs that can allow for career path flexibility as technology advances and skills requirements change. Semiconductor companies can improve industry appeal and talent retention through a shared value proposition with an attractive and supportive culture, total rewards strategy, and more clearly defined and attainable career paths to help improve brand perception and meet the expectations of today's workforce.

Technology and HR enablement

HR organizations should have the capabilities, tools, technology, and data insights to assess their organizations' workforce supply, demand, and current and projected spend—enabling successful

implementation of enterprise workforce strategies. With AI-enabled tools that span the talent life cycle, capabilities such as complex workforce scenario modeling can be more effectively leveraged. Changing workforce technologies also require comprehensive change management strategies to upskill employees, increase adoption, and optimize technological capabilities.

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