TAIWAN'S LABOR SHORTAGES IN KEY SECTORS AND THE SKILL MISMATCH

by
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Introduction

Taiwan started 2026 by registering economic growth at its fastest pace in 39 years, driven mainly by exports of AI technologies and semiconductors. However, to sustain this momentum, Taiwan must address a critical national challenge: labor shortages. Indeed, its demographic structure has changed drastically over the past decades, with a declining birth rate and a rapidly aging population reshaping the labor force. Taiwan currently has the lowest fertility rate in the world and is classified as a "super-aged society" under UN criteria. This indicates that its working-age population is shrinking rapidly.

However, Taiwan's labor market is affected not only by a problem of quantity, but also by one of quality. As the country strengthens its role in high-tech industries, the demand for highly skilled workers and specialists capable of adapting to rapid technological developments continues to increase. The challenges are therefore multidimensional. Skills mismatches and talent shortages represent major issues in Taiwan's labor market and could hinder the country's long-term economic performance.

Impact of Labor Shortages on Taiwan's Key Sectors

The steady decline in fertility over the last several decades has strongly impacted Taiwan's labor market, altering its size, composition, and productivity while threatening its overall competitiveness in key sectors such as manufacturing and technology. The National Development Council has projected that labor shortages could amount to 480,000 workers by 2030. As recently as September 2025, a survey conducted by the Ministry of Labor revealed that there were 276,000 job vacancies in Taiwan, of which 33.5 percent were in manufacturing. Labor shortages in Taiwan are not solely concentrated among low-skilled workers but are increasingly affecting mid and high-skilled occupations. Professionals alone represent 25.7 percent of vacancies, followed by machine operators at 23.8 percent and technicians and associate professionals at 20.8 percent, while supervisory and clerical roles together account for nearly half of all shortages. This implies that Taiwan's labor market faces not only a quantitative issue concerning the size of the labor force, but also a qualitative issue regarding workers' skills.

The semiconductor industry is particularly vulnerable to talent shortages. In May 2025, there were 34,000 job vacancies, especially in three main categories: "production/quality control/environmental safety," "research and development" and "operations/ technical support and maintenance." This represented a substantial increase from the 27,701 unfilled engineer positions recorded in 2021. Data from the latest survey by Robert Walters, a leading global professional recruitment consultancy and talent solutions firm, showed that in 2026 demand for talent within the technology and digital transformation sectors remained strong, with employers struggling to hire qualified professionals. The survey also revealed that the most sought-after professionals were semiconductor engineers with high-speed interface experience, firmware engineers, and IT specialists with hybrid/multi-cloud experience.

In short, these patterns suggest a persistent and widening talent gap in high-skilled occupations, particularly in sectors central to Taiwan's technological competitiveness. This is especially significant given the country's heavy reliance on semiconductors and its ongoing investment in AI technologies, a point also reflected in President Lai Ching-te's remarks at Computex 2026 regarding Taiwan's strategic role in global AI development.

Reasons Behind Workforce Shortages in High-Tech Industries

The decline in fertility represents only the first dimension of the problem. At the heart of these workforce shortages lies a mismatch between the skills possessed by young graduates and those required by industry. The education system is therefore inherently part of the problem, failing at cultivating talents and

contributing to another structural contradiction: an overeducated young cohort on the one hand, and a shortage of highly qualified PhD graduates in STEM fields on the other, resulting in a lack of candidates for teaching and research positions. This issue is especially evident in the coexistence of numerous job vacancies in the semiconductor sector and a high rate of youth unemployment of around 12 percent, the second highest in East Asia after China. Although this may appear contradictory, it highlights a significant structural problem within the labor market. Not only are fewer young graduates entering the workforce, but the skills they possess are often misaligned with the country's economic trajectory.

However, the issue should also be analyzed from the perspective of Taiwanese youth and the ways in which younger generations navigate the increasing precarity of the labor market. The cultural dimension of the issue should not be underestimated, as many young Taiwanese are gradually shifting away from the traditional "work hard to advance your career" mindset and placing greater value on work-life balance, flexibility, and workplace environments that prioritize employee well-being.

This cultural shift is closely linked to phenomena such as the "lying flat" anti-work movement that originated in China and later spread to Taiwan. This trend reflects a growing sense of pressure, dissatisfaction, and disillusionment among young people toward highly demanding working cultures characterized by long hours, intense competition, and economic insecurity. As a result, many young workers increasingly seek more flexible career paths and alternative lifestyles.

These changing values often clash with the semiconductor industry, which is widely perceived as highly demanding, requiring long working hours, while not always offering sufficiently competitive salaries relative to the level of pressure involved. In this context, brain drain represents another piece of the puzzle behind Taiwan's labor shortages, as many highly skilled Taiwanese workers relocate to countries such as Singapore, Japan, China, the United States, Australia, and other parts of Southeast Asia in search of better career opportunities and improved working and living conditions.

How Taiwan is Addressing the Issue

The situation is complex: the number of new graduates will continue to decline due to demographic changes; those who remain often lack the skills required by Taiwan's evolving high-tech economy; and many others leave the country is search of better working conditions. The challenges facing Taiwan's government are therefore multifaceted, requiring a comprehensive whole-of-society approach that connects government, industry, and the educational system.

President Lai has recently announced a new plan, the "Taiwan Population Strategy 2.0: Family Support," to address declining fertility. The plan consists of eight measures, including child allowances from ages 0 to 18, family subsidies, flexible workplaces, increased parental leave and enhanced childcare services. These measures indicate that the government views demographic change as a national priority. However, they address only the quantitative side of labor shortages, and their effects will materialize only over the long term. By contrast, the most concrete policy targeting the urgent qualitative dimension of the issue has been the "Key Talent Cultivation and Recruitment Program (2021–2024)," launched by the National Development Council, which focused on enhancing STEM education, improving digital skills, and attracting both domestic and international high-skilled talent. This has been further reinforced by the "National Talent Competitiveness Jumpstart Program (2024–2027)," which builds on previous efforts by prioritizing talent attraction, industry–academia cooperation, and the development of emerging AI-related skills.

Talent cultivation remains the core strategy for bridging the gap between the education system and labor market needs. To this end, in 2022, under the National Key Fields Industry-University Cooperation initiative, several universities introduced semiconductor colleges or departments and designed curricula in collaboration with local enterprises. To date, at least 13 Taiwanese universities offer specialized degrees in

semiconductors, eight of which also participate in an international scholarship program administered by the Taipei Representative Office in Singapore, with the intention to attract Singaporean students. Moreover, Synopsys, a U.S. chip design software firm, organized a summer camp in 2025, offering courses in both English and Mandarin to attract overseas talent. Taiwan and the U.S. have also strengthened cooperation in semiconductor education through initiatives such as the 2026 U.S.-Taiwan Semiconductor Higher Education Networking Event held on May 27, 2026.

The Ministry of Education also introduced semiconductor-related courses in high schools in 2023 to familiarize students with STEM subjects and promote a multidisciplinary educational foundation. The "Ten AI Initiatives Promotion Plan (2025-2028)" further aims to establish AI education at the elementary school level. In addition, the "Youth Employment Investment Program (2023–2026)," led by the Ministry of Labor, adopts a whole-of-government approach to support young people's transition into the workforce by addressing skill mismatches and improving employability through training and targeted support.

Taken together, these initiatives reflect a growing recognition among policymakers that Taiwan's labor shortages are not only demographic in nature but also deeply rooted in structural and skills-related imbalances.

Conclusion

The talent supply–demand mismatch in Taiwan's semiconductor sector represents an urgent structural challenge. Beyond threatening the sector's long-term competitiveness, this imbalance creates systemic inefficiencies by simultaneously failing to meet industry demand and the career aspirations of young graduates. The mismatch is likely to intensify as Taiwan continues to expand its high-tech industries and generate demand for increasingly specialized skills. Consequently, there is a pressing need to better align the needs of the semiconductor sector with those of the educational system and society at large.

The government's current policies address the issue from multiple angles with an emphasis on talent cultivation, indicating that policymakers recognize the both the strategic importance and urgency of the challenge. However, closing the gap between academic training and industrial practice will require educational institutions to adopt more flexible, interdisciplinary, and industry-oriented curricula. Such programs must be capable of adapting to rapid technological change while preparing students for a broad range of functions and roles, including product development, supply chain management, and sustainability. At the same time, companies should continue investing in internal upskilling to address short-term needs while also modernizing the culture of the semiconductor sector in response to changing values of younger generations. To remain competitive in attracting and retaining talent, companies should move beyond traditional salary-based incentives and adopt strategies such as hybrid work arrangements, flexible scheduling, career development opportunities, and enhanced workplace well-being programs.

Ultimately, labor shortages in Taiwan's semiconductor sector are the result of multiple interconnected demographic, educational, and cultural factors rather than simply a consequence of demographic decline. Addressing this challenge will require sustained cooperation between government, industry, and educational institutions to better integrate and realign these interconnected dimensions. What remains clear is that labor shortages have evolved into a matter of national strategic concern, as they affect the foundation of Taiwan's economy, its central role in the global semiconductor supply chain, and its broader international standing. Ensuring an adequate supply of skilled human capital is therefore not only an economic necessity but also a strategic imperative to ensure Taiwan's long-term resilience and security.

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