

Women leading through STEM and AI in Asia

A call to action for inclusive progress in education and careers to unlock positive impact in economies and societies

Article 1

Gender equality for STEM and AI in Asia: an untapped opportunity

In 2015, entrepreneur Janine Teo left a thriving career in hospitality management to put her computer science background to a very different use: a technology-based social enterprise called Solve Education, which helps disadvantaged youth build the skills and literacy they need to access employment.

Her motivation stemmed from family experience: “My parents did not have the best education - my mother had to drop out of school to fund her brothers’ education,” Teo said. “I knew that I wanted to do something that would make a meaningful contribution to society, which made me shift my career to tech for good.”

Across Asia, companies and entrepreneurs like Teo are harnessing technology to tackle environmental and social issues that range from climate action, health, and education to financial inclusion and beyond.

STEM and AI skills are the foundation of these technological solutions. To solve its environmental and social crises, Asia needs a critical mass of people with STEM skills. Expanding these skills in education and at work is crucial for addressing local and global challenges, and capitalising on opportunities for people and planet.

Yet the landscape of STEM and AI education and jobs is deeply uneven. Across Asia today, many women and girls are excluded from opportunities to engage in STEM and AI education and careers. That means the communities in which they live, study and work, are deprived of their potential for innovative and gender-responsive solutions.

In September 2023, the Women’s Forum and Standard Chartered Bank hosted a virtual roundtable with senior leaders across industries, aimed at exploring the state of play for Women, STEM and AI in Asia and identifying related calls to action. Participants shared their professional and personal experiences, and the roundtable highlighted the holistic, systemic approach that Asia needs to unlock the potential for truly inclusive progress through technology.

The state of play for women in STEM and AI careers in Asia

Asia is an extremely diverse region; due to myriad social, economic, cultural and historical factors, each market is at a different stage in its diversity and inclusion (D&I) maturity.

Some are ahead of global rates when it comes to women's participation in STEM and AI careers. In Southeast Asia as a whole, for example, [32% of the technology workforce consists of women](#), while in Singapore, women comprise 41% [of the tech workforce](#) - higher than the global average of [28%](#). Meanwhile, in Hong Kong and India, only [20%](#) and [18%](#) of the tech workforce comprises of women, respectively.

These data, as well as exploring trends in women's participation over time, offer an opportunity to examine best practices and what works for increasing women's representation and leadership in this space.

While some of Southeast Asia's tech sectors lead the way in hiring women, [research](#) highlights that within tech organisations, they are less likely to occupy senior management and C-Suite roles. For example, in Hong Kong, only [one in ten board chairs](#) in tech companies are occupied by women and only [5% of tech firm managing executives](#) are women.

What's behind a lack of parity across Asia?

The lack of gender parity in STEM and AI skills and roles in Asia is likely to stem from a complex cocktail of factors:

For school-aged girls, there is no ability gap: in some places, such as Hong Kong, [India](#) and [Sri Lanka](#), girls in fact outperform or are on a par with boys in science and mathematics, yet they are less likely than boys to opt to study STEM subjects at university level. At this age, parents, teachers, and education materials play a significant role: they are [more likely to reinforce](#) negative gender stereotypes and gender bias around STEM education. Conversely, in Indonesia, Malaysia, and Singapore, girls who pursued STEM education or jobs overwhelmingly also rated [parents as their greatest influence](#).

In Asia's emerging economies, **material factors** such as lack of [access to digital technology](#) intersect with gendered factors: In India, a [lack of access](#) to the internet, electronic equipment, training materials and teachers more broadly are also reported in many sources to disproportionately affect women's engagement in STEM education in Asia. In South Asian countries, women are [36% less likely](#) to use the internet when compared to men. Addressing these barriers is a crucial step in closing the gap in STEM education.

The intersection of gender with other **social and economic identities** also plays a role in women's participation in STEM. In Asia, like the rest of the world, the barriers to STEM education and careers are [particularly difficult to overcome](#) for women from under-resourced geographies, women with disabilities and women from minority communities and women who are LGBTQ2.

Early- and mid-career women perceive systemic obstacles to gender diversity and find it difficult to see a career path; they may feel they have limited opportunities to progress. For example, the share of women in STEM reporting obstacles to closing the gender gap is [higher in China and](#)

[India](#), where more than two-thirds report such barriers. In Southeast Asia, [18%](#) of women in their first tech job say that it is often difficult to perceive a career path, while [15%](#) of women in tech cite limited opportunities to progress in their careers.

Finally, **on the path to leadership** in STEM industries and roles, women's **caregiving responsibilities** for both children and elders contribute to the lack of parity: According to a survey of women in the STEM workforce in Asia-Pacific, [32% of women](#) with caregiving responsibilities have listed family responsibilities as a reason they would leave the STEM workforce. In Korea, [53.1% of women professionals in one study](#) dropped their STEM careers to provide care for children, while across Southeast Asia, United Nations [research](#) finds that women spend more time on unpaid care work than men. Paid domestic help, care services and informal extended-family help are available in many Asian countries and cultures and help support women's workforce participation, but they are not equally available to all and may not necessarily address systemic biases in hiring or promotion.

The fast-moving nature of tech and AI fields poses a challenge for those who take time off for care responsibilities, observed Emily Yang, AI & Innovation Lead, Human Resources for Standard Chartered Bank. In 2019, internal qualitative user research on working parents at Standard Chartered highlighted that many women face significance challenges after returning from leave, due to the pace of change in tech and AI, said Yang. "Every day is a new scene. To keep up pace is one thing, but to come back into a new arena is another."

To address the challenges that working mothers face, Standard Chartered identified a comprehensive set of solutions that covered wellbeing, benefits, IT and other administrative support, career advice and coaching. The Bank also offers guidance to employees on maternity leave about their rights and optional 'Keep-in-touch Days' which allow them to stay connected with the business

The opportunity: using STEM for good

The good news is: there is a clear and effective opportunity to inspire girls and women across Asia to opt for STEM subjects and develop STEM skills. **Highlighting the connection between STEM, AI and positive impact** can close the gender gap, get girls and women into future-proof, high-growth career trajectories, and create a multiplier effect for economies and societies.

Research by the Women's Forum and Boston Consulting Group (BCG) [finds](#) that women and girls are more motivated to upskill and reskill in STEM skills by the prospect of using these skills for good in real-world applications.

In fact, as She Loves Tech co-founder Rhea See noted during the Women's Forum roundtable, most women tech entrepreneurs participating in the She Loves Tech accelerator and competitions are developing impact driven solutions for big and hard problems such as in the wellness, healthcare, education and artificial intelligence sectors. What's more, they are building

solutions for sectors where the primary consumers are women. “Women are building for women,” as See put it.

For example, in India, Dr Geetha Manjunath of [NIRAMAI](#) is an example of how ‘women are building for women’ to deliver impact-driven solutions in the health sector. NIRMAI has developed a novel artificial intelligence-based screening tool that is radiation-free, low-cost and painless. The tool can be used at any clinic to detect breast cancer at a much earlier stage than traditional methods or self-examination.

Companies like Standard Chartered are already capitalising on the finding. Standard Chartered and Singapore Management University recently launched a [Women in Entrepreneurship programme](#) to provide entrepreneurs with training and resources to help them develop solutions that have a social impact.

And, in 2022, the bank launched [SC WIN – the Women’s International Network](#) – to support women entrepreneurs through tailored financial solutions, access to business skills, mentorship, and networking opportunities. Available to customers in Hong Kong, India, Malaysia, Kenya and Singapore, SC WIN will have lent some US\$100M to women entrepreneurs globally by the end of 2023.

The Women’s Forum believes that the link between STEM skills and positive impact in Asia is an untapped opportunity for companies to address business challenges, increase their social and environmental impact, and boost gender equality at the same time. In our next article in this series, we’ll share more on the role of business and explore some promising avenues for companies to make a difference.

This article draws on desk research and interviews recently conducted by the Women’s Forum alongside its Asia Strategic Lead, Standard Chartered Bank, as well as insights from a virtual roundtable held in September 2023 with senior leaders aimed at generating the state of play for Women, STEM and AI in Asia and identifying related calls to action.