

International  
Labour  
Organization

# ASEAN IN TRANSFORMATION

## HOW TECHNOLOGY IS CHANGING JOBS AND ENTERPRISES

### Viet Nam Country Brief | December 2016

#### Introduction

Viet Nam is a dynamic, emerging economy with a manufacturing sector on the rise.<sup>1</sup> In 2015, its gross domestic product (GDP) was US\$191.5 billion, of which manufacturing accounted for nearly 15 per cent.<sup>2</sup> Manufacturing in Viet Nam is heavily driven by two critical sectors: textiles, clothing and footwear (TCF) and electronics and electrical products (E&E).<sup>3</sup>

Among the Association of Southeast Asian Nations (ASEAN), Viet Nam is the TCF export leader, totalling US\$36.9 billion, twice the level of its closest ASEAN competitor, Indonesia.<sup>4</sup> Viet Nam's main export destination market is the United States, representing more than 39 per cent of TCF export value in 2014. Viet Nam is the world's third largest footwear exporter and fifth largest exporter of textile and clothing.

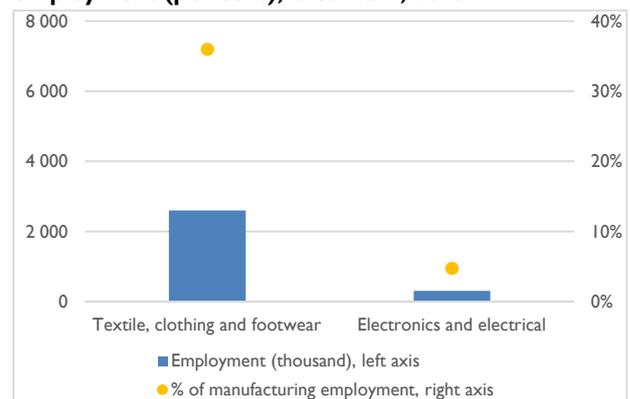
While less prominent in comparison, the E&E sector is developing rapidly. In 2014, it accounted for around one quarter of total exports. Moreover, Viet Nam's E&E export growth accelerated between 2000 and 2014, with compound annual growth of 29 per cent, compared to that of 3 per cent in Malaysia and 6 per cent in Thailand.<sup>5</sup> Viet Nam's major E&E export markets include China, Malaysia and Singapore.

Viet Nam has a total labour force of more than 54 million women and men.<sup>6</sup> Although agriculture remains the dominant sector of employment, manufacturing jobs have expanded and now account for nearly 17 per cent of total employment. Notably, TCF production contributes 36 per cent of all manufacturing employment, or around 2.6 million jobs (figure 1). By

comparison, E&E make up nearly 5 per cent of manufacturing jobs.

Due to growing market access, expanding domestic demand and a sizeable workforce, the current prospects for Viet Nam's TCF and E&E sectors are strong. However, in the medium and long-term, this outlook could be shaped by new technology and innovations that are transforming the workplace.

**Figure 1. Total employment in E&E and TCF (thousand) and share of total manufacturing employment (per cent), Viet Nam, 2013**



**Source:** Adapted from ILO: *ASEAN in transformation: How technology is changing jobs and enterprises*, op. cit.

This brief highlights the key findings relevant to Viet Nam from the ILO report *ASEAN in transformation: How technology is changing jobs and enterprises*. That report presents research across the ten ASEAN Member States based on surveys of both enterprises and university and technical vocational education and training (TVET) students.<sup>7</sup> These surveys were complemented by interviews and case studies conducted on five major manufacturing and services sectors. This Viet Nam brief focuses on technology dynamics in the TCF and E&E sectors as they represent two of the main sectors for the country's manufacturing

<sup>1</sup> This brief was prepared by Phu Huynh and Rosamaria Dasso Arana, with contributions from Jae-Hee Chang and Gary Rynhart, and is based on ILO: *ASEAN in transformation: How technology is changing jobs and enterprises* (Bangkok, 2016).

<sup>2</sup> ILO estimates from General Statistics Office of Viet Nam and IMF: *World Economic Outlook Database* (Apr. 2016).

<sup>3</sup> Other emerging manufacturing sectors include automotive and pharmaceuticals, for example.

<sup>4</sup> ILO: *ASEAN in transformation: Textiles, clothing and footwear: Refashioning the future* (Bangkok, 2016).

<sup>5</sup> ILO: *ASEAN in transformation: How technology is changing jobs and enterprises*, op. cit.

<sup>6</sup> General Statistics Office of Viet Nam: *Report on the Labour Force Survey: Quarter 1, 2016* (Hanoi, 2016).

<sup>7</sup> In total, 4,076 survey responses from enterprises in the manufacturing and services industries were collected, of which 446 responses were from Viet Nam (about 11 per cent). Additionally, more than 2,700 university and technical vocational education and training students were also surveyed, of which 462 responses were collected from Viet Nam (about 17 per cent).

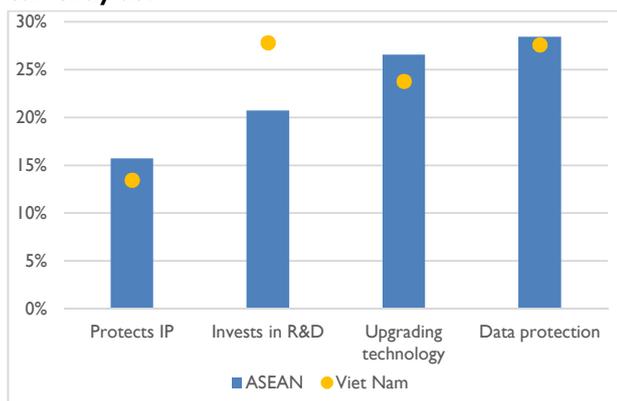


industry that are likely to be impacted by technological transformation.

## Technology uptake and enterprise and student outlook

ASEAN enterprises as a whole are not leaders in terms of technology adoption and innovation. By comparison, firms in Viet Nam tend to follow this overall trend and in some cases even lag behind the regional average (figure 2).

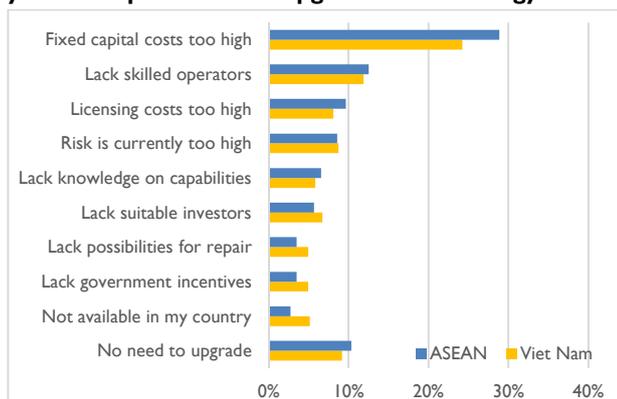
**Figure 2. Which of the following does your enterprise currently do?**



**Source:** Adapted from ILO: *ASEAN in transformation: Perspectives of enterprises and students on future work* (Bangkok, 2016).

For example, the ILO survey reveals that around 28 per cent of enterprises in Viet Nam delegated responsibility for protecting data, equal to the regional average. In addition, only 24 per cent of firms in Viet Nam delegated responsibility for upgrading technology, slightly lower than the ASEAN trend. Conversely, Viet Nam enterprises outperformed the region in terms of investment in research and development.

**Figure 3. What is currently the single biggest barrier your enterprise faces to upgrade its technology?**

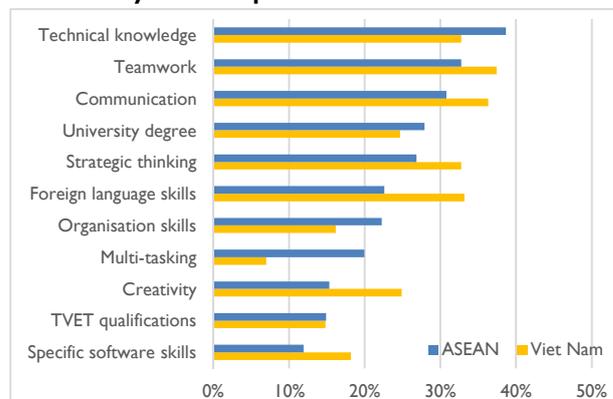


**Source:** Adapted from ILO: *ASEAN in transformation: Perspectives of enterprises and students on future work*, op. cit.

Enterprises in Viet Nam face a number of barriers to upgrading technology (figure 3). While somewhat lower than results for ASEAN as a whole, around one in four firms surveyed in Viet Nam cited high fixed capital costs as the leading obstacle. The second largest barrier chosen by firms in both Viet Nam and across ASEAN was the lack of a skilled workforce to operate the technology. These are important findings, but ones that

could shift in the coming years as technology costs decline while labour costs increase. It also points to the need to upgrade skills development systems to better prepare future jobseekers for changing workplace requirements.

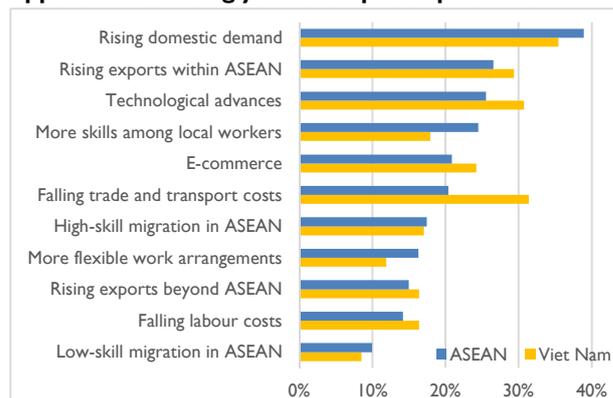
**Figure 4. Which type of skills are currently the most critical for your enterprise?**



**Source:** Adapted from ILO: *ASEAN in transformation: Perspectives of enterprises and students on future work*, op. cit.

The survey also gathered insights into the most critical skill requirements for enterprises (figure 4). ASEAN firms overall cited a mix of technical skills combined with core skills such as teamwork and communication as the most important areas. By comparison, Viet Nam enterprises listed the same mix of critical skills, but also identified strategic thinking and foreign language competencies as the most important. These results highlight the significance of balancing skills development in technical areas with fostering core skills that remain essential regardless of imminent technological advances in the workplace.

**Figure 5. Which do you perceive are the biggest opportunities facing your enterprise up to 2025?**

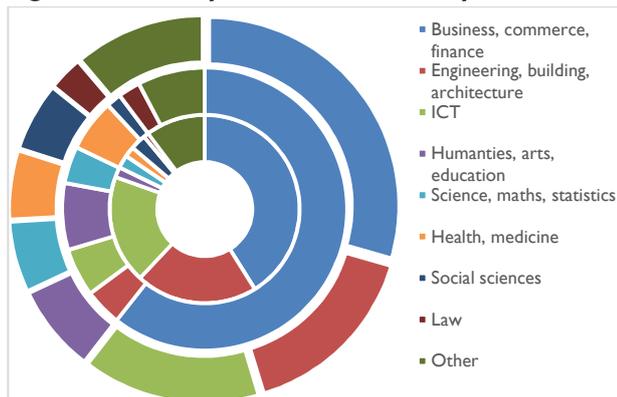


**Source:** Adapted from ILO: *ASEAN in transformation: Perspectives of enterprises and students on future work*, op. cit.

Looking ahead to 2025, enterprises across ASEAN foresee the biggest opportunities arising from expanding markets, both domestically and within the region, as well as technological innovations (figure 5). Similarly, Viet Nam firms highlighted the same areas of opportunities, but also cited falling trade and transport costs, likely in relation to prospective trade agreements and rising investment in infrastructure and logistics. Notably, Viet Nam enterprises were less optimistic about the opportunities created by skills upgrading among the local workforce in comparison to its ASEAN

neighbours.<sup>8</sup> This also could partly reflect concerns about relatively lower productivity levels in Viet Nam.

**Figure 6. What is your main field of study?**

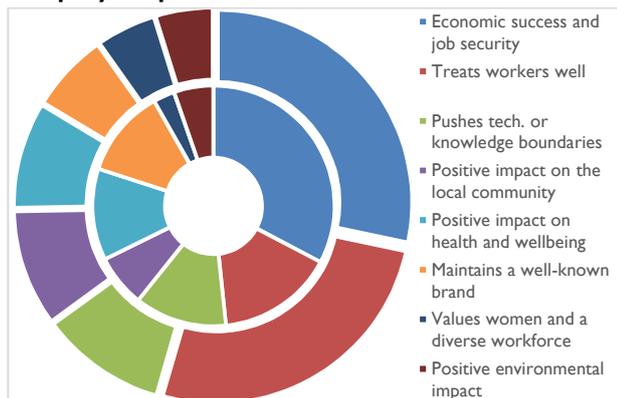


**Note:** The outer ring represents all responses across ASEAN, the middle ring represents female responses in Viet Nam, and the inner ring represents male responses in Viet Nam.

**Source:** Adapted from ILO: *ASEAN in transformation: Perspectives of enterprises and students on future work*, op. cit.

The students in Viet Nam that were surveyed came from a diverse range of academic fields (figure 6). The leading discipline was business and commerce (41.2 per cent for men and 60.6 per cent for women) which significantly outpaced the ASEAN regional average of 29.5 per cent. For Vietnamese men, other prominent areas of study included engineering (20.8 per cent) and information, communications and technology (18.6 per cent), scientific disciplines commonly sought after by employers in manufacturing. For Vietnamese women, however, less than 10 per cent of the sample pursued these two technical areas of study, pointing to potential disadvantages that these women may face when entering the job market.

**Figure 7. What is the most important factor for a company's reputation?**



**Note:** The outer ring represents all student responses across ASEAN, the inner ring represents student responses in Viet Nam.

**Source:** Adapted from ILO: *ASEAN in transformation: Perspectives of enterprises and students on future work*, op. cit.

The student survey also asked respondents the most important factor for a company's reputation (figure 7). Unsurprisingly, around three in ten students across ASEAN and in Viet Nam cited economic success and

job security as the most significant aspect. On average, around one in four students across ASEAN also prioritized the company's treatment of staff, while one in six students in Viet Nam indicated this factor as the second most critical. Worth noting, moreover, is that students in Viet Nam ranked innovative technology and knowledge as the third most important feature.

## Technology trends, disruptors and impacts

TCF manufacturing in Viet Nam is predominantly characterized by labour-intensive, low-skill production. Advances in new technology and automation, however, could bring significant changes to the industry in the coming decades. ILO estimates indicate that 86 per cent of all wage workers in Viet Nam's TCF manufacturing could face a high risk of automation due to advances in technological engineering.<sup>9</sup> This could have a profound impact on women workers in particular, who across all industries in Viet Nam are 2.4 times more likely than men to be employed in an occupation at high risk of automation.

Some key technologies that are driving the TCF industry worldwide are related to product customization technology such as additive manufacturing, body scanners and computer-aided design (CAD). Other advances impacting the sector include smart apparel, nanotechnology, robotic automation and sewbots (automated sewing robotics).

Some TCF enterprises are redefining production methods through technology innovation in order to improve product quality and workplace productivity. For example, factories are adopting technologies that eliminate manual labour from the dangerous process of fabric cutting. Examples of automated cutting machines are already being implemented in some ASEAN countries such as Cambodia and Indonesia. Likewise, automated cutting machines were introduced in a foreign-owned garment factory in Viet Nam in 2015. Each machine replaced 15 workers in the cutting section, and a break-even point for investment was reached in 18 months.

Technology creates significant opportunities for closing the productivity gap in the TCF sector. Viet Nam's labour productivity in TCF is alarmingly low – only 20 per cent of the level in Thailand and nearly the same as in Cambodia.<sup>10</sup> Viet Nam's TCF industry struggles not only with old technology but also with low workforce skill levels.

Nevertheless, incentives for TCF production in Viet Nam remain centred on a few factors. First, Viet Nam is highly competitive in terms of labour costs. Average wages in the TCF sector in Viet Nam are low at around

<sup>8</sup> Conversely, Viet Nam's strong performance in recent international assessments of education may signal a positive outlook for workforce readiness. See: S. Parandekar and E. Sedmik: *Unraveling a secret: Vietnam's outstanding performance on the PISA test*, Policy Research Working Paper 7630 (Washington, DC, World Bank, 2016).

<sup>9</sup> ILO: *ASEAN in transformation: The future of jobs at risk of automation* (Bangkok, 2016).

<sup>10</sup> ILO: *ASEAN in transformation: Textiles, clothing and footwear: Refashioning the future*, op. cit.

US\$200 per month.<sup>11</sup> Although the occupations in the garment sector are indeed at high risk of automation from a technological capabilities perspective, it would take some time for the cost of technology to decrease and labour costs to rise to a point that would justify such investment in automation.

In addition, trade agreements could also promote growth in the Viet Nam TCF sector. A recent example is the free trade agreement between Viet Nam and the European Union, which, if ratified, would reduce trade barriers to Viet Nam's second largest export market for textiles and garments. The agreement could spur increases in TCF export demand and job creation.

Looking ahead, TCF production in Viet Nam could be indirectly affected in the medium and long-term by external developments related to technology adoption. First, dynamics within China, such as rising labour costs and increasing labour shortages, were supposed to benefit Viet Nam TCF producers by relocating operations in China to the ASEAN region. However, these changes have not yet occurred to the extent expected. Due to higher productivity and automation through robotics, China has been able to increase TCF exports despite the declining number of workers employed in the sector since 2008.

Second, new technology advances like sewbots increasingly could be deployed in final destination markets such as the United States. Besides labour costs, offshoring also entails costs in terms of shipping, duty and reputational risks. If the total cost of using sewbots proves to be more efficient than offshoring, retailers may increasingly turn to reshoring garment production to places like California. Taken together, these technology trends could disrupt TCF production in Viet Nam.

Similar to the TCF sector, competitive labour cost is the key factor attracting investment in Viet Nam's emerging electronics industry. Most E&E factories target low-value production and low-skilled assembly work, with a focus on integrated circuits (ICs), semiconductor devices, and printed circuit boards (PCBs). Given the repetitive and codifiable nature of assembly work in the E&E sector, a high proportion of wage workers (around three in four) are at high risk of automation in the coming decades.<sup>12</sup> However, the main difference with respect to the TCF sector is that automation in the E&E industry is often "human centric". In other words, technology innovation tends to aid workers rather than replace them. This is also referred to as "autonomation" or semi-automation.

Technological advances such as the internet of things (IoT) will drive demand for electronic sensors and can spur production upgrading in the E&E sector. As consumer products and robotic technology for enterprises become more sophisticated, the E&E sector in ASEAN will need to accommodate higher-value production and higher skilled assembly work. This is especially important in the case of Viet Nam, where the bulk of E&E factories are able to provide only low-value production and low-skilled assembly work.

Viet Nam has promoted employment creation in the E&E sector. One initiative is the Saigon Hi-Tech Park, which houses major electronics manufacturers such as Canon, Intel, LG, Panasonic and Samsung. These manufacturers are given preferential treatment regarding land leases and tax allowances. Also, stimulus programmes such as the National Technology Innovation Fund work as an incentive for companies to create new jobs.

## Summary

Viet Nam has not yet witnessed the impact of technology in the workplace to the same degree as some of its more advanced ASEAN neighbours. This is primarily due to its competitive labour costs coupled with relatively high technology investment costs. Nevertheless, innovations such as robotic automation are already penetrating different industries, including TCF and E&E, across ASEAN and China. Therefore, the question is not if, but when, these advances will affect Viet Nam.

In this context, a priority focus on skills and workforce readiness in Viet Nam is critical. This should involve close collaboration between policymakers, employers and training institutions to modernize skills development system to better anticipate changing workplace dynamics and new technology innovations. Promoting academic pursuits in science, technology, engineering and mathematics (STEM) is important, particularly among young women. Also key is to foster strong core skills such as communication, teamwork and creative and analytical thinking which will be increasingly instrumental in technology-centred enterprises.

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<sup>11</sup> Estimates based on 2013 national labour force survey. See: P. Huynh: *Employment, wages and working conditions in Asia's garment sector: Finding new drivers of competitiveness*, ILO Asia-Pacific Working Paper Series (Bangkok, ILO, 2015).

<sup>12</sup> ILO: *ASEAN in transformation: The future of jobs at risk of automation*, op. cit.