

Workshop on Human Capital Needs in Industry 4.0

By Shazly Zain

The Workshop on Human Capital Needs in Industry 4.0 was held on 17 July 2019. Conducted biannually by the Governance and Economy research cluster of the Institute of Policy Studies (IPS), it brought together over 100 participants comprising business leaders, educators, workers, futurists and policymakers. Four panels of speakers were convened, which considered Industry 4.0 and its implications on businesses and workers and policymakers. Also discussed were some of the policy interventions and key questions that businesses needed to ask themselves in order to become Industry 4.0 ready.

The closed-door workshop was conducted under the [Chatham House Rule](#) and organised by Shazly Zain, Research Assistant and Dr Faizal Bin Yahya, Senior Research Fellow at IPS. The discussions from the workshop will be documented in subsequent IPS publications.

OVERVIEW OF PANELS

Industry 4.0 in the Business Landscape

The first panel provided the background and major trends related to Industry 4.0 in the business landscape in Singapore and the government's response to these trends. Industry 4.0 was conceptualised as an amalgamation of the "digital physical" hardware and the "biological systems" software comprised of human capital. As such, Industry 4.0 had to be viewed from a human-centric approach in addition to the technological aspects. The discussion on key trends ranged from the accelerating technological changes in Singapore that have brought about new business models, and new ecosystems in which Singaporean companies can thrive. Roadmaps such as the Industry Transformation Maps (ITMs), the Smart Industry Readiness Index (SIRI) and the A*STAR Model Factories were highlighted as examples of policy interventions to enable businesses to thrive in Industry 4.0. However, participants recognised that individualised roadmaps for all sectors and companies were needed given the blurring of industry definitions, the pace and capacity in which industries were able to adopt new innovations, and the heterogeneity of businesses even in the same industry.

Developing Human Capital for Industry 4.0

The second panel examined the supply-side component of Industry 4.0: the workers. Education remains pivotal in developing and nurturing Singapore's human capital, more so given the ever-evolving landscape of Industry 4.0. While the emphasis has been on upskilling and retraining of workers, the reality of rapid technological change in Industry 4.0 could render workers' skill sets irrelevant within a short time span. Therefore, it is important

for the education system to evolve and to instil core industry knowledge and skills that will remain relevant in the new industrial paradigm. This skills resilience could be achieved by heavily integrating industry with the curriculum of educational institutions. This includes remodelling the education environment to meet industrial standards and partnering with businesses as they embark on their transformation journey. Representatives from educational institutions recognised that the traditional, broad and superficial education system is inadequate to meet the needs of Industry 4.0. It is critical that students are taught to “learn, unlearn and relearn” in order to remain adaptable in a dynamic environment. This also means that educators need to adapt and be afforded the opportunity to evolve traditional teaching methodologies so as to equip students and workers to be creative, innovative and possess problem-solving skill sets to thrive in Industry 4.0.

Transformation of Work and Businesses in Industry 4.0



Participants at the workshop.

The final panels highlighted examples of businesses transforming themselves in Industry 4.0 and the key challenges these companies faced. While companies are aware of the necessity to evolve, it remains difficult for businesses to conceptualise this transformation and without existing roadmaps or blueprints, business leaders are often left confused over the ever-changing Industry 4.0 landscape. To achieve an organisation that is future-ready, companies need to look beyond macro elements of industrial trends and solutions and appreciate the uniqueness of individual business models. Business models are shaped by context, processes and the relationship between these two elements. Therefore, companies today can be encouraged to assess and diagnose the inadequacy of their organisational structures, work environment and business processes. As such, businesses need to be

keenly aware of the major gaps in industry and how, as an organisation, businesses can fill in those gaps. Achieving the buy-in of staff in the entire organisation was highlighted as a pivotal element in future-proofing businesses as transforming a business is a complex, human-centric process.

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