FEATURE

MALAYSIA NATIONAL INDUSTRY 4.0 POLICY-INDUSTRY4*WRD*: OPPORTUNITIES AND CHALLENGES

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Today, the manufacturing industry faces even bigger challenges. A slowdown in productivity growth, decline in competitiveness, globalisation and new technology have redefined the industry.

Because of this, Germany developed a new strategy to improve its competitiveness internationally. The world has embraced the term, Industry 4.0, which originated from a Germany high-tech strategy project on digital manufacturing.

The term was revived in 2011 at the Hannover Fair. In 2012, a set of recommendations for the implementation of Industry 4.0 was presented to the German government. On 8 April, 2013, at the Hannover Fair, the final Industry 4.0 report of the working group was presented and it created a huge impact on existing manufacturing industries [1]. Many countries such as China, Korea, UK, US and EU nations, announced new policies to support local manufacturing towards a high value manufacturing chain. For example, China announced its "Made in China 2025" and "Internet Plus" policies in 2015 to support its industries towards high-tech manufacturing [2]. Singapore launched Smart Industry Readiness Index as the tool to catalyse the transformation of industrial sectors toward 4th Industrial Revolution [3]. In Malaysia, the first initiative was started by the Ministry of International Trade & Industry (MITI) to develop a National Industry 4.0 Policy Framework since 2017.

NATIONAL 4.0 POLICY ON INDUSTRY 4.0

In 2017, the Malaysian government initiated a national-level technical working group led by MITI to develop a National Industry 4.0 policy, comprising members from the Ministry of Communications & Multimedia, Ministry of Higher Education, Ministry of Human Resource, Ministry of Finance, Ministry of Science, Technology & Innovation and SME Corporation Malaysia. In addition, various organisations such as Federation of Malaysian Manufacturers (FMM), Intel Malaysia, Malaysia Investment Development Authority (MIDA), Malaysia Technology Development Corporation (MDEC), Universiti Teknologi Malaysia, etc. also contributed to the input for the Industry 4.0 draft. The Industry4*WRD* - Malaysia National Industry 4.0 Policy (Figure 1) was launched on 31 October, 2018, by Prime Minister Tun Dr Mahathir Mohamad.

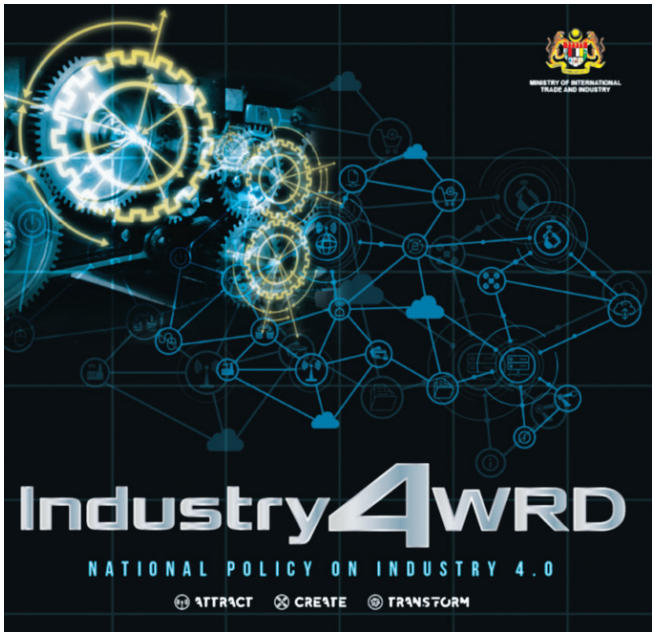

Figure 1: The Malaysia National Policy on Industry 4.0 [photo reprinted from 4]

There are seven factors that drive Malaysia Industry4*WRD* [4]:

1. The change of global economic order.
2. The wide coverage and lower cost of technological products.
3. New knowledge and skills.
4. The systematic of global supply chain management.
5. Greater global competitiveness.
6. The increased of regulations.
7. Dynamic customer behaviour.

The 11 technological drivers for Malaysian industries towards Industry 4.0 are [4]:

1. Systems integration (SI).
2. Internet of things (IoT).
3. Additive manufacturing.

4. Autonomous robots.
5. Simulation.
6. Big data analytics.
7. Artificial intelligence (AI).
8. Augmented reality (AR).
9. Cloud computing.
10. Cybersecurity.
11. Advanced material.

These will impact social and geopolitical transformation, systematic change and new mental models. With the technology adoption, these will create smart production systems in factories and nurture talent in the new generation. The adoption of Industry 4.0 will in-crease productivity, efficiency and competitiveness.

The vision of Industry4*WRD* is to enable Malaysia to become a strategic partner for smart manufacturing and related services in the Asia Pacific region as well as become the primary destination for the high tech industry and a hub for advanced technology solutions providers [4]. Its goals are [4]:

1. To increase the level of productivity in the manufacturing sector.
2. To elevate the contribution of the manufacturing sector to the economy.
3. To strengthen the Malaysian innovation capacity and capability, reflected in global innovation rankings.
4. To increase the high-skilled worker in the manufacturing industry.

The 3 shift factors for industry towards Industry4*WRD* are people, process and technology. For the people factor, it's to critically develop, upgrade and retain required talent and skills. The second shift factor is to focus on improving both manufacturing and business processes by creating a favourable environment and facilitating public-private partnerships. The third shift factor, technology, is to foster a seamless and accelerated adoption of Industry 4.0 technologies with the aim to improve our competitiveness in the global scenario.

The strategic enablers that determine the strategies, policies and action plans are:

1. Funding – funding and outcome-based incentives.
2. Infrastructure – enabling ecosystems & efficient digital infrastructure.
3. Regulations – regulatory framework & industry adoption.
4. Skill & Talent – up-skilling existing and producing future talents.
5. Technology – access to smart technologies.

OPPORTUNITIES

There will be plenty of opportunities for SMEs under the Industry4*WRD* initiative. These are:

1. Funding – incentive packages and development funds.
2. Catalogue and collaboration platform for service providers.
3. Awareness programme.
4. A regulatory sandbox and guidelines.
5. Industry 4.0 Readiness Assessment tool.
6. Manufacturing industry data depository.
7. Industry 4.0 talent competency & technology mentoring programme.
8. Expert certification programme.
9. Training.
10. Public-private partnerships and collaborative programmes.
11. Smart manufacturing research.
12. An inventory of Industry 4.0 related standards.

CHALLENGES

Local industries need time to adopt Industry 4.0 technologies into their manufacturing process. SMEs in particular, still need to understand and to trust the new technologies as well as learn how the adoption of Industry

4.0 can improve their competitiveness and profitability. The challenges SMEs face are [4]:

1. Lack of awareness on the impact and need for Industry 4.0 technologies.
2. Low digital adoption among SMEs.
3. Shortage of required talent, skills and knowledge for Industry 4.0.
4. Change in customer behaviour.
5. Misperception and inadequate understanding of costs vs benefits and ability to conduct industry 4.0 business case analysis.
6. Lack of local success stories of applying Industry 4.0 technologies.

CONCLUSION

Malaysia is moving towards the development of an end-to-end Industry 4.0 ecosystem. With Industry4*WRD*, Malaysia aims to achieve four key goals: GDP contribution, national productivity, high-skilled employment and innovation capabilities. Local industries are in critical need to upskill and reskill the current and future workforce. SMEs contributed RM435.1 billion (37.1% of Malaysian GDP) in 2017 to the nation's economy [5].

The government will focus on SMEs to increase productivity. Next, funding needs to be in place as soon as possible for the industry to kickstart the adoption and to complement private sector investment. Innovation has to be encouraged and supported to create cost-effective Industry 4.0 related technologies for SMEs. Lastly, there must be good digital infrastructure, especially cost-effective high-speed internet, to support the National Industry 4.0 Policy initiative. ■

REFERENCES

[1] Wikipedia, “Industry 4.0”, https://en.wikipedia.org/wiki/Industry_4.0.

[2] Hong Kong Trade Development Council, “Integration of Made in China 2025 and Internet Plus Strategies”, http://economists-pick-research.hktdc.com/business-news/article/Regulatory-Alert-China/Integration-of-Made-in-China-2025-and-Internet-Plus-Strategies/bacn/en/1/1X000000/1X0A54WS.htm.

[3] Singapore Economic Development Board, “The Singapore Smart Industry Readiness Index”, https://www.edb.gov.sg/en/news-and-resources/news/advanced-manufacturing-release.html.

[4] Ministry of International Trade & Industry, "Industry 4WRD: National Policy on Industry 4.0", October 2018.

[5] Syahirah Syed Jaafar, "SME contribution to Malaysia's economy rose to 37% in 2017", http://www.theedgemarkets.com/article/sme-contribution-malaysias-economy-rose-37-2017.

Author's Biodata

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