IR 4.0: The Way Forward

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Industry Revolution 4.0 and Internet of Things (IOT) have become subject of much interest in recent years. Both are expected to gain momentum locally and internationally when they become part of the core initiative of various government.

With the advent of the 4th global industrial revolution (IR), the government has recognised the importance of integrating the IR 4.0 initiative into the national agenda as a means to keep pace with the latest advancements. This article outlines some of the issues that the author feels requires further explanation. For example, what exactly is IR 4.0? And, is it really necessary to adopt IR 4.0 when some traditional businesses are not even into IR 3.0? Also, what are the likely implications of IR 4.0 on the country's economy? Finally, some recommendations are forwarded to ensure that the Malaysian economy is able to capitalise on the benefits of IR 4.0.

So, what is IR 4.0? Ever since the first Industrial Revolution (IR) occurred, during which steam power propelled industrial advancement, development came to be viewed in terms of separate stages of industrial development that was primarily motivated by the discovery of a new power source. Thus, just as the first Industrial Revolution (IR 1.0) was initiated by the creation of the steam engine, the second and third IRs were set in motion by the invention of electric power and information technology (IT), respectively. IR 4.0, in the same way, is economic and infrastructural advancement brought about by the automation of human activities through software.

IR 4.0 involves the use of software (apps) as a medium for automating business activity. It stimulates manufacturing productivity by enhancing the connectivity between humans and machines. In other words, apps are a means of synchronizing the physical and digital world to stimulate and innovate industrial efficiency. It digitises, automates and interconnects all the processes, not only within a company, but along the entire value chain. These inter-firm and customer data-linkages leads to the creation of holistic production network that generates and learns from 'big data' on manufacturing.

IR 4.0 allows for the deployment of IOT in a way that adds meaningful value through synergistic and innovative gains in manufacturing processes. Thus, it allows manufacturers to use data derived from physical assets within the production process, (machines etc) to provide insights based on data. These data-driven insights into efficiency and innovation are the key for the Malaysian industrial sector to remain globally competitive.

IR 4.0 will make machine more intelligent where it gives manufacturers insights they never had before. Automation process is used in factory for the production in the manufacturing sector. The used of automation in factory are called smart factory.

Is it necessary to adopt IR 4.0? Some traditional businesses are not even into IR 3.0. Like it or not, IR 4.0 is a change that is sweeping the global landscape. This is the current trend of development and advancement, and not adapting to these changes can only mean one thing, that we get left behind.

This does not mean that every single business entity must embrace IR 4.0. Even though, we are in IR 4.0, there might be small companies exist who do not embrace to current change. That might not be a problem since it involves a small supply of products or services for local demand.

Is IR 4.0 relevant to sectors other than manufacturing? It is my understanding that IR 4.0 can benefit other sectors such as the agriculture and services (education, tourism, logistic). Examples of activities that reflect IR 4.0 include the development of smart universities, hospitals, factory, airports, sea ports, the digitalization of accounting service, digitalization of legal service and digitalization of human resource management services. More specific examples include fully automated production process in factory, the process of loading or unloading containers at ports, robot waiters in restaurants, remotely managing the power of buildings from smart phones or other devices.

Does it involve significant costs? Any structural change will involve some costs. The initial set up of IR 4.0 will incur some costs because of the deployment of an infrastructural framework that facilitates IR 4.0, as well as transformative costs to adapt the industry to utilise IOT. However, in the long run it is reasonable to expect the efficiency and innovation gains to significantly outweigh the deployment and transformation costs.

Will IR 4.0 benefit businesses of all sizes? In general, I would say yes. IR 4.0 will directly affect medium and large corporations by lowering their production costs because of complete or partial changes in production and operation activities. Such lower production costs are likely to trickle down to micro and small enterprises translating into lower production costs and prices.

What are the macroeconomic implications of IR 4.0 on Malaysia? Efficiency gains confer cost benefits, which translates into more competitive pricing of Malaysian products (and exports). More competitively priced exports have the potential to boost export volume, and stimulate the Malaysian economy. In other words, IR 4.0 improves the competitiveness of Malaysian exports, thereby raising its Gross Domestic Product (GDP). A higher GDP translates into more income which may further boost the industrial sector and potentially employment.

When at least large corporations can lower cost of production as well as operation cost due to IR4.0, price of goods and services to be sold might be lower. As a result, it has the potential to make Malaysian products more competitive. This happen if Malaysia adapt to changes fast and benefiting from first/early mover advantage.

On the other hand, it may be argued that increased automation implies that employment opportunities may be reduced for highly manual jobs involving repetitive tasks. There is a potential that some will be out of job due to this wave as robots are taking human role for some activities. However, this is not expected to occur across all jobs, some large scale factories are already automated. The real benefit of IR 4.0 lies in access to and learning from big data. These are likely to create new dimensions of employment, too.

What are my recommendations to ensure that the Malaysian economy can benefit from IR 4.0? Firstly, studies must be conducted in order to identify which sectors have the most potential to benefit from IR 4.0. These sectors must be given more priority, when shifting to IR 4.0. This way, the transformative and deployment costs of IR 4.0 can be mitigated early on. This approach is also a good way of determining which activities are more suitable for automation, and the sectors that are not.

Secondly, creating awareness of IR 4.0 and stakeholders engagement is necessary. Many are still not fully aware of the importance and benefits of IR 4.0. We need to prepare our workforce in areas such as additive manufacturing, so that the transition to the new system is a smooth one, with minimal resistance.

Thirdly, there is a need to minimise the cost of transition to IR 4.0. Incentives should be provided to companies that are willing to transform. This not only has the benefit of reducing the cost of transformation, but also has the advantage of increasing the rate of transition to IR 4.0.

There is also a need to minimise the social costs of shifting to 4.0. For example, to address possible unemployment issues arising from automation, the government must provide training programs and/ or provide alternative forms of employment.

Finally, it is imperative that the necessary infrastructure is ready and available to meet the requirements for transition to IR 4.0. For example, internet services have to be further improved nationwide in terms of coverage and speed. This is necessary to fully capitalise on IOT and big data. Without the necessary infrastructure, the benefits of IR 4.0 will not manifest.

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