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<b>Bil</b>	<b>Tajuk</b>	<b>Akhbar</b>
1.	STI as the agent of change	New Straits Times
2.	Halal initiatives and sustainable living	The Star
3.	MTDC rancang hantar pelajar ke Korea Selatan	Harian Metro
4.	Sita 8 berus bulu babi	Harian Metro

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PART 1: CO-CREATING THE FUTURE WE DESIRE FOR 2050

# STI AS THE AGENT OF CHANGE

Malaysia should harness its potential in Science, Technology and Innovation

SCIENCE and technology (S&T) are perhaps one of the greatest agents of change in the modern world. Just take for example how innovations resulting from S&T have changed the way we think, work and play.

People once thought it was never possible for humans to fly and called those who tried crazy. But the "crazy" ideas turned into reality in 1903, when the Wright Brothers' "Flyer" became the first powered airplane to execute controlled and sustained flight. Fast forward one century later, now everyone can fly and crossing the continents takes less than a day. Who knows, maybe in the future, crossing planets would also be made possible with space travel.

It is also thanks to science that billions of lives have been saved. The name Karl Landsteiner might not be familiar to many but I am sure each of us knows what our blood type is. This is thanks to Landsteiner, who, in 1901, discovered the A, B and O blood types. This paved the way for many lifesaving medical procedures, such as surgery, blood banks and transplants.

My wife, who is a doctor, told me that through rapid advancements in S&T, it will be possible to "print" organs from 3D printers in the future. This technology is now undergoing clinical research and is touted as the solution to the global shortage of donor organs.

What fascinates me is that technology such as this not only requires, medical researchers, but also computer programmers, engineers, chemists, biologists, physicists, mathematicians and many others. These are whom we term as Science, Technology, Engineering and Mathematics (STEM) talent.

#### STI SPARKING REVOLUTIONS

To put things in perspective, let us revisit the first three industrial revolutions. The first was triggered by the advent of production facilities powered by water and steam engines in 1784. Fast forward to 1870, when the second started with the discovery of electrical energy and led to mass production lines in factories. Breakthroughs in electronics and Information technology initiated the third revolution, which further automated production.

Every revolution changed businesses and drastically impacted lifestyle. Like its predecessors, the Fourth Industrial Revolution is characterised by a range of new technologies that are fusing the physical, digital and biological worlds, impacting all disciplines, economies and industries, and even challenging ideas



The writer with a curious boy at the Creativity & Science-4U Carnival in Taaran recently. Our aspirations and goals should drive economics, instead of financial constraints limiting our desired future.

about what it means to be human.

If you notice, the common denominator for all four industrial revolutions is S&T.

#### STEM TALENT FOR THE NEW ECONOMY

United Kingdom-based recruitment agency Robert Walters has identified three key areas — technology, e-commerce and shared services — which could see higher demand for employee recruitment and salary hikes. Additionally, the technology sector, since last year, has seen the highest employment and salary hikes (up to 30 per cent) compared with other sectors in the country. This clearly shows the importance and high demand of STEM talent in this new economy and job market.

But, does Malaysia have the necessary STEM talent to ensure Malaysia's competitiveness in the fast-paced changing world?

The Science Outlook Report by the Academy of Sciences Malaysia (ASM) highlighted that the country will need one million S&T workers by 2020. Out of the one million S&T workforce required by 2020, there needs to be 500,000 high-skilled

workers with at least a diploma or university degree.

In most advanced countries, high-skilled STEM workers make up about 30 per cent of the total workforce. In Malaysia, the targeted 500,000 high-skilled STEM workers would only make up three per cent of our expected total workforce of 15 million in 2020.

Therefore, we have a long way to go to catch up and we must consolidate efforts to bridge the gap.

#### INVESTING IN STI

What can we do to close this gap?

A little while back, I had the opportunity to learn first-hand from the Four Asian Tigers (the economies of Japan, Singapore, South Korea and Taiwan). These economies underwent rapid industrialisation and maintained exceptionally high growth rates from the 1960s to the 1990s. Today, the Four Asian Tigers have developed into advanced and high-income economies. South Korea's gross domestic product (GDP) per capita jumped from a mere US\$7,000 per capita in 1997 up to US\$27,000 (RM30,980 to RM18,520) today.

Many analysts credit the success of these countries to strong policies and other important aspects that include major government investments in education. They were also willing to invest in S&T to ensure they had a competitive edge. On this account, I agree with the chief scientist of Australia in saying that our aspirations and goals should drive economics, instead of financial constraints limiting our desired future.

The good news is that we have made some enviable progress since independence. We have good science, world class Science, Technology and Innovation (STI) talent in some disciplines, excellent potential and vast opportunities. Last year, three Malaysian scientists were recognised by Thomson Reuters as among "The World's Most Influential Scientific Minds 2015".

Tomorrow Part 2: Shaping a Malaysia of tomorrow through foresight

The writer is science, technology and innovation minister and Tuaran member of parliament

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# Halal initiatives and sustainable living

Sustainable production and consumption are consistent with Quranic verses and prophetic traditions.

By MUHAMMAD HISYAM MOHAMAD

THE term "halal" is normally associated with food prepared according to *syariah* or Islamic law. It signifies something is lawful or permissible by *syariah*, food-related or not.

However, there is evidence that shows a shift in public perception on the actual meaning of the term – that "halalness" permeates all matters of daily life.

This can be observed through progress in the halal industry, where industrial players have diversified their offerings across categories, responding to consumer demand not only for halal food but also products and services of other sectors such as finance, lifestyle, healthcare and hospitality.

In Malaysia, the halal concept has a significant impact on the economic well-being of the nation, having been turned into economic initiatives that ultimately become a national agenda.

The establishment of the Halal Industry Development Corporation, the creation of the Halal Hub Division of the Department of Islamic Development Malaysia (Jakim), the publication of various halal standards by the Department of Standards Malaysia and the introduction of the 2008-2020 Halal Industry Master Plan among others reflect the gravity of the

Government's concern on the matter. These initiatives are aimed at making the halal concept a key driver to a new source of economic growth.

According to KFH Research, the value of the global halal economy in 2012 was approximately US\$3.2 trillion (RM14.17 trillion) and the figure is expected to double to US\$6.4 trillion (RM28.34 trillion) in 2018.

In comparison, the figure is slightly higher than the combined Gross Domestic Product of both Germany and Britain, which were the world's fourth and fifth largest economies respectively in 2016.

In light of the prospects the halal economy has to offer – which range from GDP growth, business and trade activities to employment opportunities – many countries are strategising their marketing blueprints to seize available potential and create dominance in the global halal marketplace.

Recent global halal development shows that not only are Muslim countries interested in tapping into halal market share, but non-Muslim nations as well as Muslim-minority countries are jumping on the bandwagon. This state of affairs can be observed across the globe from Thailand to Britain, Spain, Italy, Brazil and even Japan.

Muslim consumers are quite sensitive to the issue of "halalness" of

products and services. The intensity of this sensitivity increases when it comes to food-related matters.

Nevertheless, with an ample supply of products and services from Muslim and non-Muslim companies that comply with their faith-based needs, the problem is no longer a major concern among Muslim consumers.

In fact, they have more choices than ever before.

The progress achieved by the halal economy thus far is indeed commendable as it has benefited halal stakeholders, especially manufacturers and consumers. The former gains business benefits while the latter fulfils their needs.

In the capitalist system, this argument holds true, since man is considered a rational being. His rationalism is to bring in the most out of his economic conduct. As a producer, he will strive for maximisation of profits and as a consumer, he will try to maximise his utility from his consumption activities (Nik Mustapha, 2012).

Since religion has no place in capitalism and decisions made by economic agents are mostly centred on the notion of materialism and individualism, humans consequently have to trade rationalism off with a number of externalities and environmental costs.

Therefore, to operate halal initia-

tives on a capitalistic platform is to repeat the mistake of the capitalist system, which neglects the importance of sustainability/sustainable living. In other words, profit and utility maximisation should not be the priority of man.

Sustainable living begins with sustainable production and sustainable consumption.

The Oslo Symposium on Sustainable Consumption held from Jan 19 – Jan 20, 1994 defines sustainable production and sustainable consumption as "the use of services and related products which respond to basic needs and bring a better quality of life while minimising the use of natural resources and toxic materials as well as emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardise the needs of future generations".

There is nothing un-Islamic about that definition. In fact, all the items spelled out in the definition are consistent with Quranic verses and prophetic traditions that were revealed more than 14 centuries ago.

Being the fundamental sources of rules and laws, the Quran and the Sunnah have provisions on how best to handle resources that cover both the scopes of production and consumption, the prohibition of wasteful behaviour, the instruction to care for other beings in our eco-

system, the emphasis on quality of deliverables and the outcome of both material and spiritual quests.

The concept of halal is not just confined to food, but covers diverse industry segments. As business and industries get more complex, the halal value proposition becomes all the more compelling to all stakeholders as it exists within the supply chain of intersecting industry sectors.

In Surah Al-Baqarah, verse 208, Allah says to the effect: "O you who have believed, enter into Islam completely (and perfectly) and do not follow the footsteps of Satan. Indeed, he is to you a clear enemy."

There is nothing wrong in gaining economic benefits from the halal industry.

Much more importantly, it should not take place at the cost of the integrity of the halal concept as prescribed by the Quran and the Sunnah. As the fountainhead of the halal concept is the Quran and Sunnah, all principles and values laid down by Islam should be adhered to by all stakeholders involved in the halal economy.

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