

**KERATAN AKHBAR-AKHBAR TEMPATAN  
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## Not a single drop of rain in Kota Baru for 43 days

**KOTA BARU:** The Kota Baru district has not seen rain for the past 43 days.

As for Kuala Krai, it recorded its highest temperature of 37.2°C on Saturday, said a statement from the Science, Technology and Innovation Ministry.

Meanwhile, AF Jets Sdn Bhd, the cloud seeding company that has been spreading salt concentrated flares over the skies of Kelantan since last Sunday, has

reported a 70% success rate.

Rain has fallen in Pasir Mas, Machang, Gua Musang, Kuala Krai, Tumpat, Pasir Mas and Pasir Puteh, except Kota Baru.

AF Jets, which is using a Cessna C172 aircraft for the operation, is spending about RM300,000 but it is doing it for free as part of its corporate social responsibility.

Many of the lakes and wells in the state have dried up.

# Case of disruptive innovation

INNOVATION is now the buzzword of global business. The common call is "innovate or perish". Companies have to continually innovate to remain relevant in the competitive marketplace.

The popular definition of innovation is, any fresh new idea which generates value.

Whilst "value" here refers to any significant improvement in service delivery or product offerings, most such innovations are incremental improvements.

But the more potent form is what many refer to as "disruptive innovation". These are the ones which truly produce the so-called "blue ocean" business opportunities. They often make the traditional ways of doing business obsolete.

A recent example of disruptive innovation is the ride-sharing concept in taxi service.

I am referring here to Uber, that new taxi service that has provoked a worldwide love and hate response. So much so that it has

generated feverish disruption in the world taxi system.

Consumers worldwide welcome this truly disruptive innovation while those in the taxi business have been riled by the disruption to their earnings.

Such feelings of disgust by taxi operators are there for all to see. Their hate feeling is no longer a secret.

We have seen pictures of taxi operators venting their anger in Argentina, the United States, Europe and many others splashed all over the international media.

Even here at home, taxi drivers are so angry that even innocent family drivers have been mistakely for Uber drivers. They have been targeted for abuse.

Whatever it is, as has been demonstrated in many past disruptive innovations, Uber is unstoppable.

It is easy to understand why. All these years, users of the taxi service had submitted a long list of unresolved grouses. These are to

do with security, safety, arrogance, impoliteness, cheating, overcharging and many more. Of course the level of complaints differ from country to country.

In Malaysia, a recent survey has suggested that we are among countries which are at the lower end of the taxi service spectrum. Though admittedly, only a minority among the operators are the culprits, it has tarnished the entire taxi community.

The Government has initiated all kinds of programmes to change the situation for the better. Unfortunately nothing much has improved. Therefore, it was logical to expect that welcome relief from users when the Uber concept emerged.

A concept which not only helped solve the years of suffering by taxi users, but also at the same time created new job opportunities for almost everyone. That is what we call disruptive innovation.

We must understand that Uber

is by no means the only disruptive innovation that has rocked global business. There are many other past examples of such innovation which have disrupted the traditional way of doing business. The Internet surely tops the list. And many believe there will be more disruptions arising from the deployment of the Internet. But look at the telecommunications industry. It has been transformed because of the digital revolution sparked by the Internet.

Many of the so-called Millennium generation may not even know that we used to communicate by sending letters through the post. These are people born after the year 2000. For that matter, even those in the generation Y may also be in the dark about sending letters by aerogramme. Even the word aerogramme may be alien to them. And because of that, the postal business had witnessed drastic change.

Another much publicised busi-

ness which had succumbed to disruptive innovation is none other than the photography business. The demise of Kodak, that brand which for a long time was synonymous with photography, has been used in a lot of business cases for MBA programmes to demonstrate the real power of disruptive innovation.

The irony of it all is that it was Kodak which first stumbled on the digital technology in photography. Unfortunately, they failed to see the potential.

It is always the case in disruptive innovation.

It is seldom the inventor who can see the potential but an outsider.

Therefore, instead of fighting Uber, taxi operators should now look at how they can create an improved Uber!

**Prof Datuk Dr Ahmad Ibrahim**  
Fellow Academy of Sciences  
Malaysia  
UCSI University

# Saiz kecil berkuasa besar

Peranan NanoMalaysia komersialkan produk teknologi nano untuk kegunaan masyarakat

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**B**IDANG teknologi nano sudah lama disebut dalam dunia penyelidikan tetapi ramai bersetuju bahawa beberapa tokoh telah memainkan peranan penting ke arah pencetusan dan penggalakkan bidang tersebut antaranya termasuklah ahli sains terkemuka, Prof. Richard Feynman yang mula menyebut tentang perkara itu dalam kertas kerja Richard Feynman yang dibentangkannya padatahun 1959.

Feynman membentangkan kertas kerja bertajuk *Plenty of Room at the Bottom* manakala K. Eric Drexler menulis sebuah buku bertajuk, *Engines of Creation* yang juga menyentuh tentang teknologi nano.

Dalam tahun 1974 pula saintis Jepun, Norio Taniguchi, yang telah mencipta *Nanotechnology* bagi proses menggunakan alat dengan had kurang

daripada mikrometer (satu per juta meter manakala dalam tahun 1981 *Gerd Binnig* dan *Heinrich Rohrer* dari IBM (Zurich) mencipta mikroskop terowong imbasan, yang mampu merealisasikan nanoteknologi.

Teknologi nano ialah teknologi abad ke-21 yang dijangka memberi impak yang ketara kepada kehidupan manusia.

Malaysia tidak ketinggalan dan terlibat dalam bidang penyelidikan teknologi nano yang dijalankan dipelbagai institusi penyelidikan tempatan dan universiti.

Malah teknologi nano dikatakan mula disebut di negara ini sejak Rancangan Malaysia Kelapan (RMK-8) tetapi mulai serius tahun 2006.

Penyelidikan tersebut telah bermula sekurang-kurangnya sedekad yang lepas, melibatkan universiti yang mula mengkaji beberapa kepentingan dan kegunaan teknologi tersebut. Sebagai langkah permulaan, kajian tersebut boleh

Istilah "nano" berasal daripada perkataan Yunani yang membawa maksud "kerdil" dan merupakan unit ukuran yang bersamaan dengan "satu per bilion" (10<sup>-9</sup>) meter.

APA ITU NANO?

Teknologi nano didefinisikan sebagai manipulasi bahan pada skala nano, atom atau molekul (Inanometer hingga 100 nanometer) untuk menghasilkan produk-produk.

dianggap sesuatu yang baik.

Masalahnya adalah apabila penyelidikan yang tidak menjuruskan kepada penghasilan komersial, maka timbul kesangsian bagaimana ia akan memberi pulangan.

Sebab itu, apabila banyak penyelidikan berkaitan teknologi nano ketika ia sedang melonjak isu yang timbul adalah bagaimana hendak mengkomersialkannya. Namun bagaimana hendak dijajarkan di universiti yang bukan menjadi tanggungjawab mereka.

Isu menjadi lebih serius sekiranya tidak ada pihak menyedari hasil penyelidikan universiti dan institusi pengajian tinggi, apatah lagi untuk membawanya ke pasaran.

Seperkara lagi, penyelidikan itu dijalankan dengan terselaras yang boleh mengakibatkan ada hasil yang dikeluarkan lebih kurang sama dengan yang lain.

Menyedari akan kepentingan bidang teknologi nano itu, universiti bukan sahaja telah dilengkapi dengan kemudahan penyelidikan teknologi nano, malah lima kemudahan telah dikira sebagai pusat kecemerlangan nano.

Lima pusat tersebut terletak Universiti Malaysia Perlis (UniMAP), MIMOS Berhad, Universiti Teknologi Malaysia (UTM), Universiti Teknologi Petronas (UTP) dan Universiti Kebangsaan Malaysia (UKM).

Kerajaan telah mengenal pasti pembangunan teknologi nano sebagai salah satu sumber model ekonomi baharu dan bahawa kelewatan melibatkan diri akan mengakibatkan kita ketinggalan.

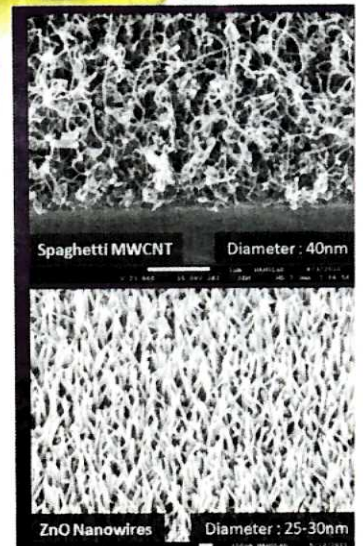
Bagi menunjukkan betapa kecilnya nano satu nanometer boleh digambarkan seperti sehelai rambut manusia yang dibelah sebanyak 100,000 kali.



Selain pengiktirafan lima pusat tersebut kerajaan telah mengambil inisiatif menubuhkan syarikat NanoMalaysia Berhad (NanoMalaysia) pada 2011 dalam usaha mengkomersialkan produk yang dihasilkan daripada teknologi tersebut.

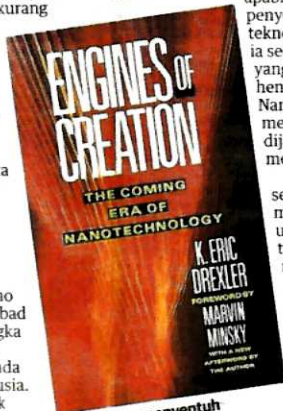
NanoMalaysia dinaungi oleh Perdana Menteri dan usaha penubuhannya dicadangkan semasa mesyuarat Majlis Inovasi Kebangsaan (NIC) pada tahun tersebut.

Menghurai lebih lanjut mengenai peranan dan tanggungjawab NanoMalaysia, Ketua Pegawai Eksekutifnya **Dr. Rezal Khairi Ahmad** berkata, fungsi utama NanoMalaysia Berhad adalah jelas iaitu mengenal pasti produk teknologi nano tempatan dan membawanya ke pasaran.



SPAGHETTI MWCNT Diameter : 40nm  
ZnO Nanowires Diameter : 25-30nm

PENYELIDIKAN mengenai nano melibatkan saiz kecil.



BUKU yang menyentuh mengenai teknologi nano.



DR. REZAL KHAIRI AHMAD

