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Volume 1

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New SIRIM

President & Group Chief Executive

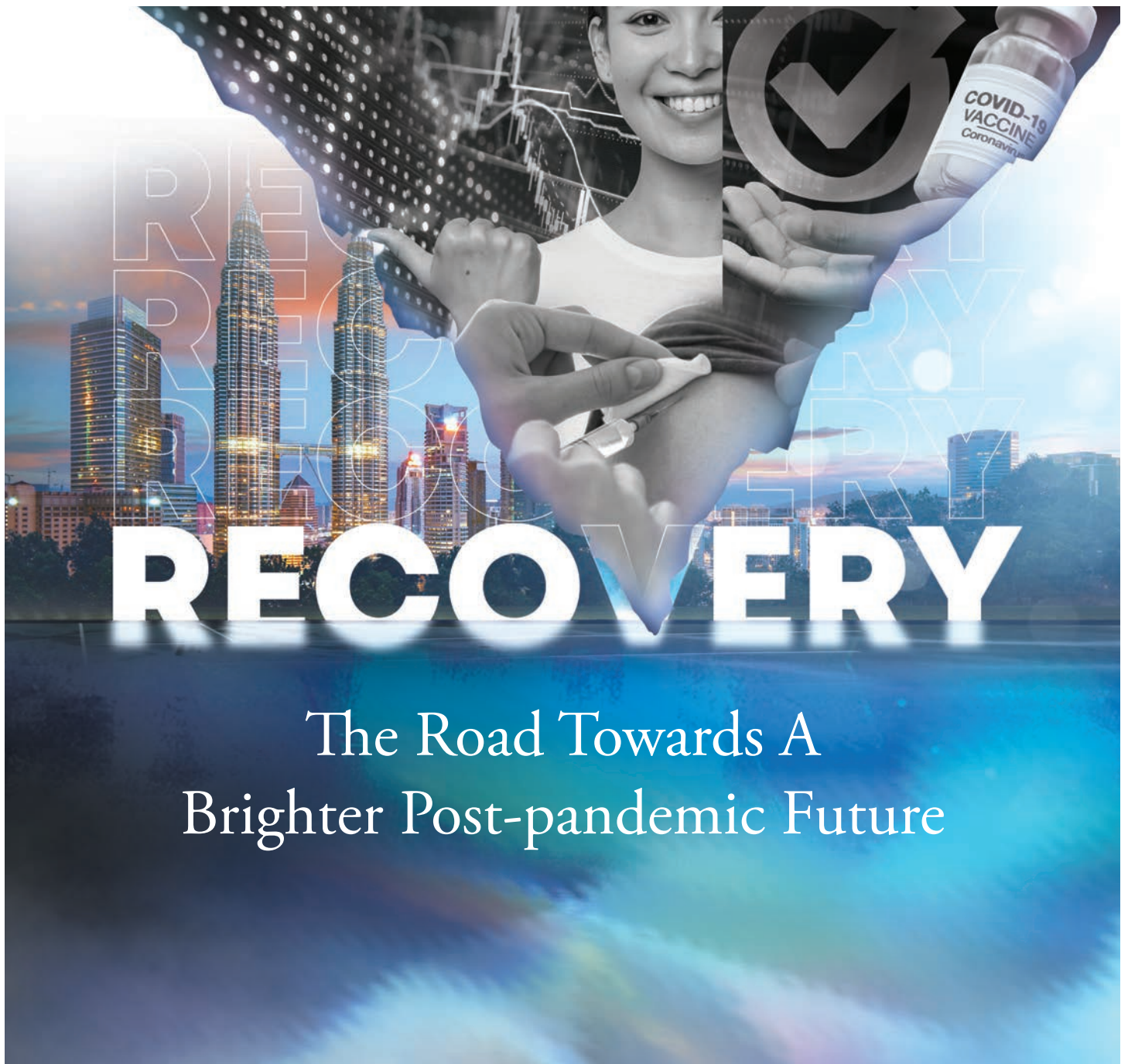
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Supporting the Rehabilitation
of the Nation's Economy

PG26

Preserving

Vaccine Efficacy



The Road Towards A
Brighter Post-pandemic Future



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Best Partner for Innovation



Rebuilding THE ECONOMY

To date, COVID-19 has infected nearly 145 million people, and over three million have lost their lives. From an economic standpoint, trillions of dollars are projected to be lost due to the negative impacts of the pandemic. These figures are a stark reminder of the massive devastation that a tiny virus can cause. Nevertheless, there is light at the end of the tunnel.



More than a year after the virus first made global headlines, we now have a better understanding of how it spreads. We are getting used to a new normal. Vaccination programmes are being rolled out. We need to intensify our efforts in the recovery of our economy.

At SIRIM, we are doing our best to assist affected businesses in withstanding this storm, in addition to safeguarding the efficacy of vaccines here in Malaysia. In this issue, we highlight numerous tools, programmes and initiatives – from standards and certifications to funding and entrepreneurial development programmes – that can help the nation to rise up and stride resolutely down the road to recovery.

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06 New SIRIM President & Group Chief Executive



07 A Tribute



08 Driving Malaysia towards Excellence



10 Regional Economic Growth for Nationwide Prosperity



14 Certification for Business Sustainability



17 Supporting the Rehabilitation of the Nation's Economy



22 Accelerating Entrepreneurial Growth



26 Preserving Vaccine Efficacy



Dr. Ahmad Sabirin Arshad,
President & Group Chief Executive of SIRIM Berhad

CONTENTS



Zulkefly Songip,
Regional Director of SIRIM Johor
Rommella Osmand,
Regional Director of SIRIM Sabah



Mohd Hamim Imam Mustain,
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NEW SIRIM RESIDENT & GROUP CHIEF EXECUTIVE DATO' DR. AHMAD SABIRIN ARSHAD



Aerospace engineering expert **Dato' Dr. Ahmad Sabirin Arshad** has been named SIRIM President & Group Chief Executive for the next two years.

SIRIM Berhad Chairman Tan Sri Ir. Dr. Ahmad Tajuddin Ali said that the appointment is to replace Datuk Ir. Dr. Ahmad Fadzil Mohamad Hani who has ended his term of service.

In welcoming Dato' Dr. Ahmad Sabirin, he said: "We are pleased to announce that we have strengthened SIRIM's management team with the appointment of Dato' Dr. Ahmad Sabirin. This marks a new chapter in the company's history as we push ahead for growth in the next decade."

Dato' Dr. Ahmad Sabirin was formerly the Chief Executive Officer of Aerospace Ventures, a subsidiary of oil and gas company UZMA Berhad. He also held various positions in Astronautic Technology (M) Sdn Bhd (ATSB), an MOF Inc. company, where he last served as Group Managing Director/CEO from 2000 to 2019.

He was among the pioneering group of engineers involved in the development of the MEASAT-1 satellite at Hughes Aircraft Company (now Boeing). He was also part of the pioneering team for the development of Malaysia's first microsatellite, TiungSAT-1, which was launched into orbit on 26 September 2000. He subsequently led the engineers in the design, development, launch and operations

of the country's second satellite, RazakSAT. He was also instrumental in leading the team that provided logistics and scientific support for the launch of Malaysia's first Angkasawan to the International Space Station in 2007.

Other notable programmes that he has led include the deployment of the National Tsunami Early Warning System (Sistem Amaran Awal Tsunami Nasional) and Environmental-Friendly Radiation Detector.

Dato' Dr. Ahmad Sabirin received his tertiary education at the California Maritime Academy in Marine Engineering (BSc) in 1986. He then obtained a post-graduate Diploma in Education from Universiti Teknologi Malaysia (1988), MEng in Mechanical Engineering from Universiti Malaya (1990) and PhD in Mechanical Engineering - Combustion from University of Wales College of Cardiff, UK (1993).

"Dato' Dr. Ahmad Sabirin brings a wealth of experience and knowledge to this important role. His appointment reflects the aspiration of SIRIM in delivering our roles and functions as mandated by the Government and, most importantly, to drive SIRIM to deliver concerted support to our partners and facilitate sustainable growth by strengthening our capability and relevance to industries through product innovations," Tan Sri Dr. Ahmad Tajuddin said.

He also conveyed the appreciation of SIRIM's Board of Directors to Datuk Dr. Ahmad Fadzil for his hard work, commitment and dedication to SIRIM during the last four years, adding that the Board recognised his leadership through the current challenges and uncertainties presented by COVID-19.

During his tenureship, Datuk Dr. Ahmad Fadzil established the SIRIM Group 10-year Strategic Plan, SIRIM Industrial Research First and National Metrology Institute of Malaysia's Trust strategic plans for business sustainability. He led SIRIM in assisting local industries in their Industry 4.0 journey, focusing on upgrading their management knowledge on basic production techniques relating to Smart Manufacturing. Aside from that, he also led the development of the SIRIM Digitalisation Transformation Plan and SIRIM Cultural Transformation Programme, and introduced the phrase "Best Partner for Innovation" as SIRIM's new vision, which subsequently became the Group's tagline.

A TRIBUTE **DATUK IR. DR. AHMAD FADZIL MOHAMAD HANI**

THANK YOU

for your guidance and leadership in steering the Group forward



D RIVING MALAYSIA TOWARDS **Excellence**

In addition to health repercussions, the COVID-19 pandemic has brought about a sharp decline in the global economy. In Malaysia, the Ministry of International Trade and Industry (MITI), together with other related agencies, has been working tirelessly to rehabilitate the nation's economic performance.

The year 2020 wrought unprecedented changes, resulting in unforeseen economic consequences, among others. For one, Malaysia saw its gross domestic product (GDP) contracting to -17.1% in the second quarter of 2020. Although these figures have improved since, the ongoing pandemic is still throwing curveballs.

While the task of positioning the country as a formidable economic powerhouse in the region has been made more difficult due to the challenges brought about by the COVID-19 pandemic, the Ministry of International Trade and Industry (MITI) has risen to the occasion, intensifying its efforts in facilitating the resiliency of the nation via industrial development, international trade and investments amidst a demanding global environment.

This includes the negotiation of Free Trade Agreements (FTAs) with major economies. To date, the country has implemented a total of 14 FTAs (seven bilateral FTAs and seven regional FTAs) and signed 16 more, the most recent being a Regional Comprehensive Economic Partnership (RCEP) that was inked on 15 November 2020.

PROMINENT POSITION

Thanks to Malaysia's strategic location within the Asia Pacific rim and at the centre of many ASEAN countries, the country has remained as an attractive investment and trade destination through the years. Another feather to its cap is its favourable business environment complemented by the availability of excellent infrastructure, telecommunication services, financial and banking services and



supporting industries as well as a big pool of skilled talents and a trainable workforce.

Consequently, the country has been able to maintain a strong standing in the global arena. Among others, it was ranked second highest in Southeast Asia and 12th out of 169 countries for trade connectivity according to the DHL Global Connectedness Index (GCI) report in 2019.

A recent study titled “Cost of Manufacturing Operations Around the Globe” that was conducted by KPMG and The Manufacturing Institute in the US, on the other hand, placed Malaysia fourth out of 17 economies in an assessment that compared the economy’s competitiveness as a manufacturing hub. This puts the country ahead of other Asian countries that include China, Japan, Vietnam and India. The study involved 17 countries that are leading manufacturing exporters to the US, and took into consideration a total of 23 cost factors impacting the cost of operations (Cost of Doing Business or CoDB) of a business conducting manufacturing operations in the country.

OPTIMISTIC PROGRESS

The silver linings are definitely there, but the key players need to have the necessary tools to be able to reap the benefits of the country’s competitive advantage and fuel the growth of our economy despite these trying times.

To this end, MITI and its agencies are working in close synergy with other ministries and agencies that include the Ministry of Health, National Security Council, Ministry of Finance and Ministry of Domestic Trade and Consumer Affairs to mitigate the adverse effects of the pandemic and take the lead with the economic agenda. Ultimately, all the economic decisions made during this difficult period are a collective effort with the best interests of the people at heart to ensure that a balance between protecting the health and livelihoods of all Malaysians is struck and upheld.

Adapted with permission from an article of the same title that appeared in Issue #5 February 2021 of Recollective, a monthly bulletin by MITI that outlines the Ministry’s efforts and the latest Malaysian Trade, Industry and Investment news.

Accelerating Malaysia’s Economic Growth

The Ministry of International Trade and Industry (MITI) has played a prominent role in facilitating the progress of Malaysia’s economy for over six decades, transforming the nation’s economic landscape from an agriculture and commodity-driven economy into a manufacturing, technology and service-driven economy today. Among others, it makes significant contributions to the wellbeing of the people via job creation as well as developing a business ecosystem that is conducive for knowledge transfer and upskilling among local talents.

Since its establishment, MITI continues to champion three core functions:

- Growing Malaysian industries, particularly in manufacturing
- Promoting Malaysia’s international trade
- Attracting foreign and domestic investments

The Origins of MITI



APRIL 1956

The Ministry of Commerce and Industry
was instituted

APRIL 1972

The Ministry was rebranded as the
Ministry of Trade and Industry

OCTOBER 1990

The Ministry of Trade and Industry was
separated into two Ministries:

- **Ministry of International Trade and Industry (MITI)**
- **Ministry of Domestic Trade and Consumer Affairs**

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EGIONAL ECONOMIC GROWTH FOR Nationwide Prosperity

The past year has been challenging for economies worldwide. In Malaysia, SIRIM's Johor and Sabah regional offices share how they have been helping to facilitate the economic growth of the respective areas despite the current landscape.

A similar project was embarked upon with Pertubuhan Peladang Negeri Johor (PPNJ), amounting to RM500,000. The first such showcase project in Johor, it aims to become a point of reference for relevant industry players.

Another significant milestone has been the installation of solar street lighting under Majlis Daerah Mersing, making Johor the first state after Selangor to utilise this technology commercially.

SIRIM Johor is presently looking to utilise its position within the proximity of Singapore and Indonesia as leverage to expand its services in these regions. "Geographically, Johor is near Singapore and Indonesia, so the opportunity is definitely there. We've discussed with our Strategic Business Units (SBUs) such as SIRIM QAS International, SIRIM Industrial Research and SIRIM Standards Technology on how we can offer our services to these neighbouring countries," said Zulkefly.

The COVID-19 pandemic is tough on everybody, but some businesses and industries have been more adversely impacted than others. These include small and micro entrepreneurs.

As such, SIRIM, through its regional offices, continues to intensify its efforts to help these groups in particular. "This is a problem that spans nationwide, actually," shared Zulkefly Songip, the Regional Director of SIRIM Johor. "Small and medium enterprises (SMEs) make up 98.5% of Malaysia's industry, and more than 95% of these are small and micro industries with limited financial capabilities."

Among others, SIRIM Johor has witnessed a significant success in the implementation of eco-friendly technologies in Johor and its surrounding regions, namely Malacca and Negeri Sembilan. "Last year, we achieved a first in Malaysia with the application of solar thermal energy technology for the poultry sector. This was secured and installed for MB Poultry Sdn Bhd, and amounted to RM1.2 million, making it the largest of its kind in Malaysia," said Zulkefly.



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In fact, in recent years, SIRIM QAS International has been providing fire door testing services to Singapore, in addition to identifying calibration and other testing services as the next step forward. "Logistically we are unable to set up a business in Singapore as the cost is quite high, so we will be collaborating with a company there," he explained.

They are also looking at penetrating the Indonesia market with the provision of calibration services, particularly in Pulau Batam and Karimun, which is close by and has a thriving shipping industry.

STRATEGIC PARTNERSHIPS

Zulkefly highlighted the importance of collaborating with other agencies. "We work with other funding agencies like Perbadanan Islam Johor (PIJ), South East Johore Development Authority (KEJORA), Rubber Industry Smallholders Development Authority (RISDA), Department of Orang Asli Development (JAKOA), National Co-operative Movement of Malaysia (ANGKASA) and other relevant agencies at state level. It is important for us to increase our collaborative efforts with them so that we are able to help industries more easily and effectively."

Consequently, SIRIM Johor plans to intensify these efforts. This will allow them to fully utilise government incentives via SIRIM's technical expertise in order to overcome the negative impacts of the pandemic. In 2021 alone, it has commenced collaborating with federal agencies like Kumpulan Prasarana Rakyat Johor (KPRJ), KEJORA and Jabatan Hal Ehwat Orang Asli, to name a few.

"By doing so, we also hope that the respective agencies will be able to understand our roles and offerings better, making it easier for us to embark on partnerships in the future, whereby we can help in the operations and delivery of their duties and services," explained Zulkefly.

An example he cited is the Entrepreneur Development Programme by PIJ, targeting entrepreneurs in the B40 category. After presenting the proposal in

March, PIJ has agreed to provide funding amounting to RM300,000.

Other endeavours include the Program Pembangunan Usahawan Asnaf, another community programme that aims to provide relevant training for entrepreneurs; and a development programme under KEJORA targeting the kelulut and mengkuang industries to help increase the productivity of their production. "For the latter, we have come up with a technology, where the hives of the kelulut bees are made from ceramic!" he enthused.

Enhancing Entrepreneurial Capabilities

The Entrepreneur Development Programme under Perbadanan Islam Johor (PIJ) targets Muslim B40 entrepreneurs in the food and beverage sector in particular. It focuses on facilitating the Halal readiness of these communities by helping them fulfil the requirements laid out by Makanan Selamat Tanggungjawab Industri (MeSTI) and Good Manufacturing Practices (GMP), and subsequently comply with Halal standards. This can help to increase their sales and eventually expand their market internationally. To date, SIRIM Johor and PIJ have agreed to nurture 15 entrepreneurs for Halal certification by the end of the year.



Zulkefly Songip, Regional Director of SIRIM Johor

According to him, to help the SMEs get out of the current rut, "We also have to work closely with the SME players, especially the small and micro industries, to assist them in tackling the issues they are facing. It is, therefore, pertinent that our efforts are recognised by the funding agencies so they can provide us with the necessary budget."

Nevertheless, he concludes that SIRIM Johor has been making some headway in this respect. "It's a good start for us; subsequently, the relevant agencies will know about the impact that we can create and be able to invest in the technological upgrading of the industries with SIRIM. This, in turn, will allow us to serve the SMEs better."

Prominent Regional Presence

In a bid to reach out to and play a more relevant role among industry players throughout Malaysia, SIRIM set up several regional offices a few years ago. Among others, these regional offices have numerous primary functions. These are:

- *to become the marketing arm of SIRIM, leading the marketing and promotional activities for SIRIM's products and services in the respective states*
- *to increase SIRIM's visibility at state/regional level, ensuring that it is recognised as an established technology and quality organisation that aims to enhance industry competitiveness*
- *to act as a one-stop information centre and liaison between government and industry, providing clients with easy access to SIRIM's services*

CHALLENGING CIRCUMSTANCES

As one of the least developed states in Malaysia, Sabah has many challenges to overcome, including its infrastructure and terrain. "We need to have good roads, stable internet connectivity and a steady supply of clean water and electricity. Furthermore, Sabah relies heavily on sea and air freight to bring in raw materials. Inbound distribution costs can also be high due to the state's hilly topography. Because of all this, the cost of doing business in Sabah is higher compared to other Malaysian states," revealed Rommella Osmand, the Regional Director of SIRIM Sabah.

The state's situation has been further aggravated with the onset of COVID-19. Economically, Sabah's tourism industry has always been one of the top

three contributors to its gross domestic product (GDP). However, the pandemic put the brakes on international tourism activities. "The state now realises that, to achieve economic growth, it cannot depend solely on a sector that is totally vulnerable to external factors," she said.

In addressing the challenges faced in Sabah, Rommella acknowledges that SIRIM's top priority is in assisting the SMEs in reducing their costs. According to her, those in the food and beverage sector, especially, have been hit hard by the pandemic. "Fortunately, both the state and federal governments are offering various incentives to help these smaller companies to weather the storm. We are planning to work with the relevant agencies and ministries, such as Majlis Amanah Rakyat (MARA) and the Ministry of Rural Development, to offer programmes that are tailored for these groups in areas involving capacity building, reskilling and entrepreneur development," she said.

A HELPING HAND

Despite the present difficult circumstances, SIRIM Sabah managed to record numerous achievements in recent times. For one, via its collaboration with the Ministry of Industrial Development (MID) Sabah and Department of Agriculture (DOA), 42 SMEs have been assisted under the SIRIM-Fraunhofer programme.

"Through this programme, a total value of RM5,515,700 was allocated to improve the manufacturing processes of the SMEs through technology intervention while RM1 million was provided to upgrade the packaging of the products," explained Rommella.

Between 2016 and 2020, 98 projects were implemented in Sabah to increase the competitive edge of the participating SMEs. This was primarily done via the mechanisation of their processes, which led to improved output and lower production costs. Focus has also been placed on branding, product packaging design, labelling and market access to ensure that the products manufactured by SMEs adhere to the necessary certification and testing requirements, and are able to penetrate different markets easily.

TOWARDS A BRIGHTER FUTURE

In addition to working hard to attract Foreign Direct Investment (FDI), Sabah is currently also focused on industrialisation, encouraging local SMEs to be self-sufficient and modernise their processes in order to increase productivity and efficiency.

Furthermore, SIRIM Sabah is also looking at assisting



Through this programme, a total value of RM5,515,700 was allocated to improve the manufacturing processes of the SMEs through technology intervention while RM1 million was provided to upgrade the packaging of the products.



the government's efforts in improving the agriculture sector. "With the Movement Control Order (MCO) in place during the pandemic, cargo movement in and out of the state has been affected. We aim to continue our close rapport with state agencies like MID Sabah and engage further with the Ministry of Agriculture and Food Industry (MAFI), among others. We have proven capabilities and expertise in smart manufacturing and smart agriculture, utilising sensors and Internet of Things (IoT) to ensure high farm yield, increased productivity in manufacturing and higher profitability while safeguarding the environment," explained Rommella.

With manufacturers around the world scrambling to make up for losses experienced during lockdowns, the market today is more competitive than ever. As such, post-pandemic, all key players will have to work harder, not only to catch up but also to be profitable. "To ensure that Sabah's SMEs are able to enter the market at a level playing field, they need to be able to embrace innovation and prove that they, too, can produce high quality goods by undergoing the necessary tests, calibration and certifications, and complying with Malaysian and international standards, as well as having the capacity to supply according to demand. We will help more SMEs to



Synergy for Success

SIRIM Sabah plans to work closely with the relevant state and federal agencies to implement the following programmes:

- *Product Quality Improvement Programme for small and micro enterprises in Wilayah Persekutuan Labuan*
- *Innovative Packaging Design Solutions for small and micro enterprises in Sabah – a collaboration with the Department of Industrial Development and Research (DiDR), Jabatan Hal Ehwal Wanita Sabah (JHEWA), Ko-Nelayan and Department of Agriculture*
- *Capacity Building & Training for youth and those in the B40 category*
- *Technology Uptake for SMEs in the manufacturing sector*
- *Smart Farming Technology for the urban poor*

achieve these targets and subsequently boost the state's economic performance," continued Rommella.

On their part, local manufacturers also need to realise that efficiency and quality improvement are essential to bring the cost down, reduce waste and help sustain businesses in the long term. Consequently, one of SIRIM's main roles in Sabah is to assist industries via technology and quality improvement. To do so, SIRIM has organised numerous engagement programmes with industry players and actively participates in exhibitions throughout the state to create awareness of its services.

Rommella is optimistic that things will take a turn for the better soon. According to her, restrictions due to the pandemic have prevented technical officers from SIRIM's headquarters to attend to clients in Sabah, thus causing some project milestones to be revised. "However, we are hopeful that the current rollout of the vaccination programme in the country will abate the situation, and when the majority of Malaysians have been vaccinated, things will go back to normal," she said.



Rommella Osmand, Regional Director of SIRIM Sabah

CERTIFICATION FOR **Business Sustainability**

In order to be sustainable, businesses need to be ready for any disruptions to the economy. The Business Continuity Management System and Information Technology Service Management System certifications can help to facilitate this.



The COVID-19 pandemic has revealed that businesses are exposed to numerous vulnerabilities in the face of disruptions. To achieve sustainability, organisations need to have a proper planning in place to ensure the continuity of their business while seizing the opportunities that arise with current trends.

According to Mohd Hamim Imam Mustain, Senior General Manager of the Management System Certification Department at SIRIM QAS International Sdn. Bhd. (SIRIM QAS), business continuity can be defined as the capability of an organisation to continue delivering products and services within acceptable time frames at a predefined capacity during a disruption.

“Just look at the pandemic. Throughout this time, the physical movement of people have been restricted; this has impacted economic activities worldwide. It is therefore essential for a responsible organisation to have a well-thought-out plan on how to respond and recover,” he said.

How the organisation responds to the situation will determine if it will sink, float or even fly high. Those



It is therefore essential for a responsible organisation to have a well-thought-out plan on how to respond and recover.



who fail to respond appropriately will inevitably sink. Conversely, those that respond adequately are able to stay afloat while those able to locate and seize the opportunities that arise will be able to fly high.

An obvious trend that emerged from the pandemic is a higher dependency on online platforms. With various standard operating procedures (SOPs), including physical distancing SOPs, put in place, digitalisation and information technology (IT) have been playing an increasingly significant role among businesses. As consumers become used to faster and more convenient services, their demand of and dependency on the various IT services will also grow.

Mohd Hamim shares one way that SIRIM QAS responded to the challenges of the pandemic: "One of our roles is to perform audits; we will normally visit the site and meet with the respective personnel. However, when the Movement Control Order (MCO) was introduced, we were not able to travel or meet up physically. Thus, we switched to remote audit services. Thereafter, we found out that several clients prefer remote audits. Today, even though many of the restrictions have been eased and some travelling is allowed, we continue to offer remote and/or hybrid options in addition to on-site audits."

PREPARING FOR THE UNKNOWN

The ISO 22301:2019 Security and Resilience – Business Continuity Management Systems – Requirements and ISO 20000-1:2018 Information Technology – Service Management System Requirements are essential tools in mitigating negative effects brought on by the pandemic. The former helps businesses to prepare for unforeseen circumstances, while the latter allows organisations to demonstrate their capabilities in providing IT services.

The ISO 22301:2019 certification scheme is for any organisation with a plan in place to ensure that its business does not come to a standstill should a disruption occur. As such, organisations that wish to comply with it will have to implement, maintain and improve its plan in place ahead of time to facilitate the following:

- **Protect** the business against disruption
- **Reduce** the likelihood of disruption occurring
- **Prepare** for disruption
- **Respond** to disruption
- **Recover** from disruption

By complying with the standard, an organisation is able to deploy a business continuity management system (BCMS) in a more structured manner.

The ISO 20000-1:2018, on the other hand, enables organisations that provide IT services to manage their IT service lifecycle while meeting the requirements of users, customers and the organisation itself.

"Specifically, this standard specifies the requirements for IT organisations to establish, implement, maintain and continually improve their tools; these are mandatory if one wants to achieve compliance," elaborated Mohd Hamim.

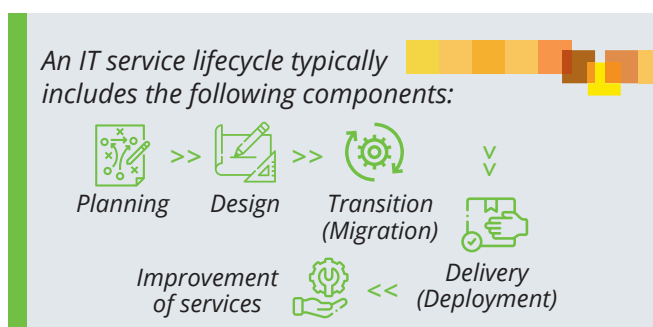
Both certifications play an important role, particularly in current times and beyond. For one, the competition is fiercer than ever today with many organisations struggling to make ends meet amidst the restrictions meted out due to the pandemic. This is where the certifications can help organisations to distinguish themselves from other players, while also giving them more credibility. This is especially crucial for start-ups that may not have a wide clientele base as of yet. The certifications offer third-party recognition that will give them a leg-up in the marketplace.

By providing the framework for organisations to plan ahead, the ISO 22301:2019 on business continuity management helps organisations to avoid having to scramble to find a suitable response should a disaster occur. This will inevitably strengthen the resilience of the organisations and help them to keep improving.

With the demand for IT services and number of IT players on the rise, the ISO 20000-1:2018 for IT service providers gives organisations a chance to gain a competitive edge in a saturated marketplace. "Throughout this pandemic, many activities have not been able to be conducted physically. For example, when malls were closed, people turned to online shopping. Over time, the complexity and capabilities of the online platform has to grow in tandem with customers' demands. As such, the ability to manage IT projects becomes even more critical. This standard stipulates the criteria needed to optimise the IT organisation's growth," Mohd Hamim explained.



Specifically, this standard specifies the requirements for IT organisations to establish, implement, maintain and continually improve their tools; these are mandatory if one wants to achieve compliance.



Benefits of Certifications

Perspective	Certification	
	ISO 22301:2019	ISO 20000-1:2018
Organisational	<ul style="list-style-type: none"> → Supports strategic objectives → Contributes to United Nations Sustainable Development Goals (SDGs) → Creates competitive edge → Protects and enhances reputation & credibility → Contributes to organisational resilience 	<ul style="list-style-type: none"> → Supports strategic objectives → Protects and enhances reputation & credibility → Helps the organisation to consistently meet customer & regulatory requirements
Internal	<ul style="list-style-type: none"> → Improves capabilities to remain effective → Demonstrates proactive control of risks effectively & efficiently → Addresses operational vulnerabilities 	<ul style="list-style-type: none"> → Improves visibility throughout the service lifecycle → Addresses operational vulnerabilities
Interested Parties	<ul style="list-style-type: none"> → Provides confidence in organisation's capabilities → Considers shareholder expectations 	<ul style="list-style-type: none"> → Provides confidence in organisation's capabilities → Reduces multiple assessments/ audits by customers
Financial	<ul style="list-style-type: none"> → Reduces direct & indirect costs of disruptions → Reduces legal & financial exposure 	<ul style="list-style-type: none"> → Reduces direct & indirect costs of disruptions

SYSTEMATIC PROCEDURE

Depending on the current status of the individual organisations, there are several steps that an organisation has to go through to obtain either of the ISO certifications. In general, the organisation will need to have its Manual and Procedures ready, and submit a completed application form for certification. The system set out in the Manual and Procedures will be implemented, typically for at least three months, to obtain the necessary data before the Internal Audit and Management Review is conducted.

At this point, SIRIM QAS will step in with the first stage of audit, which is to determine the adequacy of the documentation, before proceeding with Stage 2, namely to evaluate the implementation and effectiveness of the system. This will subsequently lead to the organisation officially obtaining the relevant certification.

However, that is not the end of the process. Constant surveillance and improvements will continue to allow the organisation to get re-certified once the current certification expires.

"The ISO 22301:2019 and ISO 20000-1:2018 certifications are invaluable tools that can help the growth and sustainability of organisations. However, once you obtain the relevant certifications, you should definitely maintain it. Don't waste your initial time and effort. You just need to continue complying and improving. This will benefit your business and your customers," Mohd Hamim advised.

Mohd Hamim Imam Mustain, Senior General Manager of the Management System Certification Department at SIRIM QAS International Sdn. Bhd.



SUPPORTING THE REHABILITATION OF THE Nation's Economy

Standards have always played an instrumental role in the development of economies. Importantly, they provide a benchmark that allows individuals, organisations and industries to improve, enhance and progress.

The International Organization for Standardization (ISO), in its publication *Economic Benefits of Standardisation*, highlighted three main economic benefits that organisations can gain from using standards. These are:

→ Streamlining internal operations

Standards can be used to streamline the internal processes of an organisation, for example, by reducing the time needed to perform specific activities, decreasing waste, reducing procurement costs and increasing productivity.

→ Innovating and scaling up operations

Some case studies showed that standards served as a basis for innovating business processes, allowing organisations to expand their suppliers' network or to introduce and manage new product lines effectively. Additionally, standards can also help mitigate risks of introducing new products in national markets.

→ Creating or entering new markets

Standards are used as a basis for developing new products, penetrating new markets, supporting market uptake of products and even creating markets.

The world was nearly brought to a standstill when the COVID-19 pandemic hit in 2020. While it has been over a year since then, the economy in general is still vulnerable. This is where standards and training could be valuable tools to facilitate economic recovery.

Other benefits of standards in trade include facilitating transactions by providing information about products and services in the marketplace, offering consumers greater health and safety protection, facilitating the interoperability of products and systems, extending and enlarging the product market, making possible the mass production of products and components, helping determine the efficiency and effectiveness of manufacturing companies and the economy, and acting as an important vehicle for the development and diffusion of best practice technologies.

Raja Yahya Raja Ariffin, the Chief Executive Officer of SIRIM STS Sdn Bhd (SIRIM STS), states that standards are able to make a major contribution in promoting economic growth. "It is undeniable that standards impact communities and economies across the globe. Just look at businesses. Standards can help organisations lower their costs, improve efficiencies, mitigate risks, uphold consistency and uniformity, promote consumer confidence and eliminate trade barriers, to mention a few."

Quality management system standards in particular can help to identify business risks and opportunities, prevent problems from recurring, boost marketing and sales efforts, improve employee performance and control over the business, enhance reporting and communication, as well as allowing for better quality and reliable products and services.

Quality Management System



Positive Impact

Standards can help organisations by:

→ **Reducing Costs**

Lowering costs by minimising errors and redundancies and increasing productivity

→ **Efficiency**

Improving quality, safety and lead-time of products and services

→ **Mitigating Risks**

Identifying and mitigating risks within the business and supply chain

→ **Consistency**

Lowering research and development costs and improving speed to market by building on previously standardised technologies or systems

→ **Customer Confidence**

Promoting acceptance of products or services into the marketplace by increasing customer confidence in their safety and quality

→ **Uniformity**

Providing uniformity of units of measurement, enabling accuracy and confidence in commercial transactions locally and globally

→ **Eliminating Trade Borders**

Helping products, services and staff move across trade borders, reducing technical barriers to international trade

→ **Universal Vendor Requirements**

Improving supply chain management by establishing common requirements for all vendors to comply with



It is undeniable that standards impact communities and economies across the globe. Just look at businesses. Standards can help organisations lower their costs, improve efficiencies, mitigate risks, uphold consistency and uniformity, promote consumer confidence and eliminate trade barriers, to mention a few.



FACILITATING ECONOMIC RECOVERY

Historically, after the World Wars, standards spurred the growth of industries and, consequently, the world economy. Today, it continues to be relevant. In fact, reaping the benefits of standards is especially crucial in current times due to the economic downturn that resulted from the COVID-19 pandemic.

"It is important for individuals, institutions, organisations, industry players, governments and people from all walks of life to use and refer to standards!" declared Raja Yahya.



Citing Halal standards as an example, he shared, "If food is produced and processed without following Halal standards, it will add to people's confusion and misery, as well as the burden of medical institutions and governments that already have so much to take care of with the ongoing pandemic."

With the majority of the world population turning to remote/offsite modes of purchasing their necessities due to varying lockdown stages, proper Customer Service Management standards for the delivery of goods and services have also become essential.

"And of course, the pandemic would become even more chaotic if companies producing personal protective equipment (PPE) do not have proper standards to refer to," he added.

Lucrative Opportunities

The global Halal food market is on the thresholds of major developments that hold the promise of rapid and sustained growth, offering huge opportunities for both the domestic and international Halal food trade.

There are many upstream and downstream organisations that stand to benefit from implementing Halal standards. These include:

- manufacturers/producers
- distributors/traders
- sub-contract manufacturers
- repacking
- food premises
- abattoirs

A STARRING ROLE

Since its establishment in 1965, SIRIM, which got its start as Malaysia's National Standards Body, has become synonymous with standards and standards development. Today, with over 50 years of experience and expertise in this area under its belt, SIRIM has expanded its repertoire to include the development of industry and in-house standards, known as SIRIM Industry Standards. In fact, SIRIM STS is currently the sole industry standards developer in the country with this expertise.

"SIRIM's capabilities have evolved through the years. We have gained a lot of experience and expertise during the many decades of being involved in the development of standards. While the development of Malaysian Standards (MS) typically covers subject matters or products that are already matured with

the availability of foreign or international standards as a basic reference, the development of industry standards can be more challenging. Many of the industry standards are indigenous without the availability of existing references. Because of that, the development process for industry standards tends to be more complex as it requires extensive research and drafting," explained Raja Yahya.

"Industry standards are important as they define the minimum requirements needed for an organisation to uphold quality. As the standards development arm of SIRIM STS, our Standards Research and Development Section (SRDS) is able to assist organisations and business entities to develop their own standard that caters for the specific needs of their business.

"SIRIM Industry Standards cover a huge range of activities, including outlining the way in which a business or production is to be conducted, governing what is deemed as acceptable practices in the workplace and ensuring the quality of production, materials and outsource services," he added.

As with any other standard, SIRIM Industry Standards contribute significantly in helping organisations and industries grow, as well as boosting the nation's economy, whether directly or indirectly. Among others, they help organisations to improve their performance and efficiency by providing a solution to address the issues they face. The standards also help set the organisation apart from competitors, drive down costs, boost productivity and improve profits.

To date, 45 SIRIM Industry Standards have been published. SIRIM's latest standards include a series of standards on Industry 4.0 and three PPE-related standards. The former encompasses the SIRIM 36:2020 (Industry 4.0 Organisations – Maturity Level), SIRIM 37:2021 (Industry 4.0 – Criteria – Guidelines for Adoption by Organisations) and SIRIM 38:2020

45 SIRIM
Industry Standards
have been published



have gained popularity are those that focus on digital and online marketing and communication platforms like Microsoft Teams and Zoom.

“The pandemic has necessitated changes in the workplace, with organisations and businesses adopting remote working and online platforms. In turn, training and reskilling the workforce are essential to facilitate the recovery of our economy. In this scenario, digitalisation and computer literacy are needed so that operations will continue seamlessly whether the employees are at the premises or not. As such, they need to be well-versed in skills like online communication and marketing,” shared Raja Yahya.

Additionally, SIRIM STS hopes to offer training programmes related to Industry 4.0 and Smart Manufacturing on remote or virtual platforms to circumvent any Movement Control Order (MCO) restrictions.

According to Raja Yahya, “Industry players should definitely conform to standards as it is the only way that they can provide assurance of the quality of their products and services, and subsequently promote acceptance of them.” He also advised organisations to look into relevant training programmes as a stepping stone towards better business sustainability.

Visit www.sirimsts.my to find out how standards and training can benefit your business.



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Enhancing Business Competitiveness

SIRIM STS Sdn Bhd is a comprehensive one-stop resource centre for services related to the development of SIRIM Industry Standards in particular. It aspires to assist organisations in upholding quality, technology and best practices in their daily operations towards inculcating a business culture of excellence.

With established facilities and vast expertise, SIRIM STS is able to help organisations adopt internationally recognised standards to improve processes, enhance product/service quality, increase competitiveness and access new markets.

*Raja Yahya Raja Ariffin,
Chief Executive Officer of SIRIM STS Sdn Bhd
(SIRIM STS)*



ACCELERATING Entrepreneurial Growth

Many businesses, particularly small and medium enterprises (SMEs) as well as micro enterprises have been and continue to be deeply affected by the effects of the COVID-19 pandemic. The Packaging and Security Design Centre (PSDC) at SIRIM has a range of programmes and initiatives to help entrepreneurs along, especially during these difficult times.

The COVID-19 outbreak is an unprecedented tragedy that has affected millions of people all across the world. The economy has not been spared. In Malaysia, businesses have been significantly disrupted due to the implementation of the Movement Control Order (MCO) that still continues in varying stages today. This has been further exacerbated with manpower shortage issues due to some staff members getting infected or having to undergo self-quarantine.

In particular, small and medium enterprises (SMEs) as well as micro enterprises were badly affected. With limitations in terms of supply chain disruptions and lack of employees, many were forced to operate at partial capacity or cease operations completely.

As one of SIRIM's Strategic Business Units, the Packaging and Security Design Centre (PSDC) has been committed to serving its clients amidst the challenging environment. With the global economy experiencing a slowdown ever since the pandemic began, PSDC has been playing a key role in supporting the government agenda to enhance the socioeconomic growth of Malaysia's B40 population and entrepreneurs in a bid to stimulate the nation's economy.

Powering the Success of Entrepreneurs

The Packaging and Security Design Centre (PSDC) focuses on numerous commercial roles through its three business lines. These are:

- **Security Design** – providing security solutions for brand protection and safeguarding products or documents against counterfeiting, forgery and tampering
- **Packaging Design** – enhancing product transformation through branding, labelling and innovative packaging
- **Entrepreneur Development** – nurturing entrepreneurship via customised training and entrepreneur development programmes

One of its staple offerings is the Entrepreneur Development Programme with customisable modules to cater for the diverse needs of the entrepreneurs. An example is the SIRIM-ECER Entrepreneur Development Programme that focuses on those at the East Coast Economic Region (ECER), namely Kelantan, Terengganu, Pahang and Johor.

"We offer customised and structured modules that include training, workshops and consultancy services on quality management, marketing, advisory and facilitation for Makanan Selamat Tanggungjawab Industri (MeSTI) and Malaysia's Halal certification schemes, product transformation through enhanced

packaging, market outreach programmes and impact assessments,” shared Rafidah Mokhdar, the Chief Executive Officer of PSDC.

Makanan Selamat Tanggungjawab Industri (MeSTI), or “Food Safety is the Responsibility of the Industry”, is a food safety programme undertaken by the Ministry of Health (MOH). The objective of MeSTI is to put in place a system for the maintenance of food hygiene and process control which includes food safety assurance and food traceability.

From the time the programme was introduced in 2013 until December 2020, a total of 481 entrepreneurs have been nurtured and an overall increase of 38% in total sales and 27% in job creation has been recorded.

PACKAGING PROMINENCE

Like most industries, the food and beverage (F&B) sector in Malaysia has had its fair share of



We offer customised and structured modules that include training, workshops and consultancy services on quality management, marketing, advisory and facilitation for Makanan Selamat Tanggungjawab Industri (MeSTI) and Malaysia’s Halal certification schemes, product transformation through enhanced packaging, market outreach programmes and impact assessments.



ups and downs throughout the COVID-19 crisis. During the initial shock of the first phase of MCO, consumer demand shifted drastically. As people were not allowed to dine out, consumers moved to grocery purchases. Panic buying and stockpiling in particular caused the demand for food packaging to rise. At a later stage, consumers adapted to the situation and became more inclined to making their purchases online. This led to a strong acceleration of e-commerce shipments and home delivery services.

Subsequently, packaging choices will also be affected with consumers preferring designs and substrates that address hygiene and safety concerns more.

“F&B players must therefore keep abreast and be alert about new trends and changes in consumer behaviours in order to identify new opportunities. The ability to adapt and offer products that best meet the needs of e-commerce and consumer sentiments on safety and health concerns as well as convenience of packaging is vital for the F&B sector to grow further,” said Rafidah.

As part of its core business expertise, PSDC offers several packaging design-related services to the F&B industry. These include customised training on packaging, specifically the Biz Transformation Programme; the development of packaging, namely Innopack Programme (Innovative Packaging); and Green-Blue Packaging.

The first offers customised entrepreneurship training programmes with the aim of enhancing participants’ understanding of the importance of brands, labelling and innovative packaging, an entrepreneurial mindset and marketing.

Innopack Programme, on the other hand, encompasses product branding, enhancement and transformation through the development of the product’s packaging. PSDC’s services under this banner include product packaging design, brand and trademark registration, nutrition testing and analysis,

labelling, advisory and consulting, and printing of the product packaging.

Finally, Green-Blue Packaging refers to a paper-based and innovative packaging that combines eco-innovation and environmentally friendly packaging. Developed from food-grade paper materials and utilising soy ink for printing, it serves as an alternative to polystyrene or plastic-based packaging for food. Green-Blue Packaging can be customised to different types, sizes and designs, including single compartment, triple compartment, bowl, noodle box and cup designs, to accommodate customers' requirements.

Moving forward, PSDC is looking at embarking on Smart Packaging. Although still at the beginning stages of development, Smart Packaging opens up a world of possibilities. In essence, Smart Packaging encompasses elements of Active Packaging and Intelligent Packaging. The former refers to packaging that interacts with the contents, thus improving the shelf life or quality of the contents during storage. The latter, meanwhile, offers an additional benefit that goes beyond the packaging, allowing it to "communicate" with the outside world.

"Although the technology for smart packaging is already available in many areas, the mass application of this technology is still low due to high production costs. The various technologies and materials will require higher investments in the production process. As such, it will be a challenge to balance the demands of technological requirements with consumer readiness to pay for the product," said Rafidah. "Nevertheless, we are hopeful that this initiative will fill a gap in Malaysia. The potential and added value offered by Smart Packaging will be immensely beneficial for consumers, and profitable for manufacturers and retailers alike."

To cater to current consumer sentiments, an attractive and on-trend packaging design is a must. However, mere appearances should not be the primary factor in determining the design of the Smart Packaging. There is a need to focus on the benefits that the business and consumers can reap from it. Other aspects to be considered include convenience and ability to protect the product. With all these in place, a "smart" packaging will be well received by all.

BRAND PROTECTION

Counterfeit issues are rampant in today's climate. In fact, the counterfeit product market is valued at more than a trillion dollars and has the ability to cause significant economic damages. This does not only lead to financial loss among the brand owners

but, more importantly, it also increases risks to consumer health and safety. Consequently, with shifting consumer trends as well as a growing concern over food safety, it is now more necessary than ever to have more effective solutions in stemming the proliferation of counterfeit products.

This is where PSDC's expertise in security packaging can help. "We offer integrated solutions to prevent counterfeiting, combining technologies from security design and printing techniques and security materials such as ink and substrates with track and trace technology to facilitate product information, verification and authentication for the benefit of both the consumer and brand owner," said Rafidah.

GOING VIRTUAL

One of the new trends that emerged due to the pandemic was a mass migration online. For one, many businesses have opted to work remotely from home, while social distancing requirements have prompted organisations to adopt video conferencing

Security features and printing techniques include:


- Security designs such as holograms, watermarking, guilloche patterns, numismatic text, etc.
- Colour-changing inks and invisible inks
- Tamper-evident security substrates
- Integrated track & trace technology and tracking system

as a main mode of communicating with employees, business associates and other stakeholders.

"All these have led to a digital push that necessitated industry players to kick off and optimise their digital capabilities," said Rafidah. "Consequently, we have quickly responded to the new normal and





We offer integrated solutions to prevent counterfeiting, combining technologies from security design and printing techniques and security materials such as ink and substrates with track and trace technology to facilitate product information, verification and authentication for the benefit of both the consumer and brand owner. 

transitioned to providing services online, while at the same time understanding our customers' needs and readiness towards digitalisation," she continued.

Among the services provided via online platforms are design reviews, workshops, training and advisory; enhanced modules and the introduction of online or e-commerce for marketing purposes; as well as educating and assisting entrepreneurs on how they can utilise various existing e-commerce platforms such as social media, Shopee and Lazada as leverage.

In line with current consumer trends that favour online purchasing and home delivery, PSDC has taken the initiative to introduce online/e-commerce modules in its Biz Transformation training and Entrepreneur Development programmes since the early stages of the pandemic. These modules provide participants with a solid understanding of e-commerce and how they can market their products online.

According to Rafidah, "Malaysians today are spending more time online and are more willing to make online purchases. This can be attributed to changes in behaviours such as having to work from home or exploring new hobbies while at home, which, in turn, have presented new opportunities in e-commerce.

"The value-added content and facilitation in the e-commerce marketplace provided by PSDC help to create awareness and enhance understanding among the entrepreneurs, especially in the F&B sector. By venturing into e-commerce and utilising social media to market their products, together with upgraded and innovative packaging, entrepreneurs will find it easier to expand their markets, increase their sales and be more competitive in their businesses."

Nevertheless, even while the pandemic accelerated digitalisation adoption in general, she cautioned that SMEs and micro enterprises are still at risk of being left behind. "Digital challenges continue to be a major hurdle for them. These include lack of relevant knowledge and strategy, resources and funding; as well as an uncertain return on investment to allow for the full and seamless implementation of digitalisation in their operations," she said.

Many of the SMEs and micro enterprises also faced difficulties with online connectivity and in communicating with their customers and suppliers. "They have to grapple with low bandwidth or unstable connectivity, for example. This is where government policies and interventions can play a crucial role in shaping the future of the country's digital economy," she concluded.

Visit <https://www.sirim.my/services/packaging-security-design> to find out more about PSDC and how it can help SMEs and micro entrepreneurs to get through these trying times and embrace new norms in the economic landscape.

Rafidah Mokhdar,
Chief Executive Officer
of Packaging and
Security Design
Centre (PSDC)



PRESERVING Vaccine Efficacy

The COVID-19 vaccines that are gradually being rolled out globally bring much needed hope to an exhausted world. Malaysia welcomed its first batch in February this year.

Due to the urgent need for the vaccines, the issues of production, distribution, storage and personnel training are a priority. SIRIM possesses varied capabilities that are able to help in addressing these concerns.

For one, as many of the vaccines have to travel long distances around the world to reach their intended recipients, it is imperative that their safety and efficacy are safeguarded at every step of the way.

Building the Body's Resistance

COVID-19 vaccines help our bodies to develop immunity to the virus. Similar to how other vaccines typically work, the COVID-19 vaccines "teach" the T-lymphocytes (T-cells) and B-lymphocytes (B-cells) in the body's immune system to recognise the specific viral antigen (spike protein), which will lead to the production of antibodies that will then trap the viral antigen and kill the virus.

COVID-19 vaccines can be broadly divided into two categories. The first uses COVID-19 viruses that have either been killed or weakened to the point that they will not make you sick, or may only contain a part of the virus. The second, known as messenger RNA (mRNA) vaccines, "teach" the body's cells to make protein, which will trigger an immune response to protect against infection.



The rollout of COVID-19 vaccines in recent months has led to sighs of relief across the world. Nevertheless, much needs to be done to ensure the efficacy of the vaccines is upheld, from production to logistics and storage before they reach the recipients.

EVERY DROP COUNTS

Countries that currently have the capabilities to produce COVID-19 vaccines include the US, UK, Germany, Belgium, Russia, India and China. To impede the spread of the ongoing pandemic, it is important that vaccine wastage is kept to a minimum so that as many people as possible are able to benefit from the vaccines. Proper temperature control is a key factor in ensuring that the efficacy of the vaccines is not compromised, no matter how far they might have to travel.


Did you know?


According to the World Health Organization (WHO), over 50% of vaccines across the globe are wasted each year due to temperature control and logistics issues, to name a few.

"The temperature sensitivity of vaccines is important. All vaccines are sensitive to extreme heat and extreme cold, and therefore require both proper storage and management to avoid any loss of potency," said Nurulaini Md Ali, Metrologist, National Metrology Institute of Malaysia (NMIM).

This is even more concerning for some of the vaccines, which are produced from delicate DNA and RNA fragments. "These can degrade quickly on their own, even at refrigerated temperatures. This is why freezing them is important to keep them stable," she added.



The temperature sensitivity of vaccines is important. All vaccines are sensitive to extreme heat and extreme cold, and therefore require both proper storage and management to avoid any loss of potency. 

The challenge is that the freezers need to be capable of these ultra-low temperatures. We have to ensure the accuracy and uniformity of the freezers at the needed storage temperatures. 

Abdul Ghani Abdul Rahman, the Chief Executive Officer of SIRIM Standards Technology Sdn Bhd (SST), concurs, citing incidents in the UK and Japan where numerous COVID-19 vaccine doses were ruined due to freezer issues. "Different types and brands of vaccines have different storage temperature requirements. For example, the Pfizer vaccine requires a storage temperature of as low as -70 °C to -80 °C," he said.

At this temperature, the vaccine can be stored for up to six months. When it is ready to be used, it may be stored in a normal freezer at between 2 °C and 8 °C. However, at this temperature, it will need to be used within five days.

"The challenge is that the freezers need to be capable of these ultra-low temperatures. We have to ensure the accuracy and uniformity of the freezers at the needed storage temperatures," he added.

This becomes an even bigger challenge when we consider the long journey that many of the vaccines are making.

In fact, according to Dr. Nurul Izza Nordin, Senior Researcher at SIRIM's Industrial Biotechnology Research Centre (IBRC), the worry is not so much if the vaccine is viable but that it might get damaged during transportation. "If we're looking at the Pfizer vaccine that needs to be stored in -70 °C conditions, for example, how can we ensure the temperature is maintained when we transport it throughout the world? Hence, the integrity and stability of the vaccine are critical. It is important to be vigilant throughout the entire transportation and storage processes to ensure that the temperature is properly controlled."

"Transporting vaccines across countries and continents requires a system of refrigeration that can work at every step of the journey. A single transport leg or storage port that is not temperature-controlled will break the 'cold chain' and possibly decrease the potency of the vaccine to the point that it is rendered ineffective!" shared Abdul Ghani.

It is therefore vital for the various storage facilities to be able to accommodate the necessary temperatures. Reliable testing and calibration of cold rooms and other cold storage facilities will determine the validity of the temperatures depicted. After a certain amount of time, the vaccine itself will also have to be tested to ensure that it is still efficacious.

Another concern with wastage is when the vaccines are not used during the allotted time frame, particularly those that require ultra-low freezing temperatures. "These will need to be thawed for usage, but if the potential recipient misses their appointment, the vaccine would go to waste as they won't be able to store it back in the freezer," said Dr. Nurul Izza.

She goes on to share the analogy of food being frozen, thawed and refrozen, exclaiming that the food will get damaged at a point. Similarly, repeatedly freezing and thawing the vaccine might damage it.



SAFEGUARDING VACCINES

In 2019, the Pharmaceutical Department under Malaysia's Ministry of Health published a guideline on maintaining freezers used for vaccine storage. According to the guideline, calibration and verification are compulsory to monitor the freezer's efficiency. SST presently offers measurement and calibration services for temperatures ranging until $-80\text{ }^{\circ}\text{C}$.

"Our measurement and calibration facilities are ISO/IEC 17025 accredited. Furnished with the latest temperature calibration equipment and helmed by a competent team, we are able to perform calibration and verification both in-house as well as on-site," explained Abdul Ghani.

According to him, during the calibration of freezers, temperature uniformity mapping is important to ascertain that the temperature distribution throughout the entire freezer is even.

Additionally, the relevant parties have to understand the storage temperature requirements of the different types of vaccines that they purchase. "This will save costs for freezer specifications as well as for calibration and verification purposes. For example, if the vaccine requires a storage temperature of $-20\text{ }^{\circ}\text{C}$, a freezer that offers a temperature range of down to $-30\text{ }^{\circ}\text{C}$ is adequate," he advised.

In terms of vaccine testing, SIRIM's IBRC offers pre-clinical tests. This is typically done on new vaccines before they are used for clinical studies on humans. "It may include the evaluation of the safety and efficacy of the vaccine, with the tests being done using in vitro or cell-based and immuno-assay methods, or animal models," explained Dr. Ahmad Hazri Ab Rashid, the General Manager of IBRC.

IBRC also conducts chemical and biological evaluations on the components of the vaccines, microbiology testing on products that are packed and sterilised, and characterisation tests to determine the contents and efficacy of the vaccine.



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As the country's national measurement laboratory that upholds measurement traceability, NMIM aims to support or collaborate on activities related to the immunisation/vaccination programmes here, such as staff training for temperature monitoring or storage guidelines.

Among others, NMIM provides technical support for the traceability of measurement standard in temperature, in addition to offering training and consultation related to the calibration of temperature devices, freezer verifications and proficiency testing for accredited laboratories in the country. The training includes hands-on activities in NMIM's laboratories and may cover temperatures ranging from $-196\text{ }^{\circ}\text{C}$ to $1000\text{ }^{\circ}\text{C}$.

"The pandemic is a global issue. We see other national metrological institutes, such as the one in the US, working closely with their respective health departments to develop temperature monitoring and storage guidelines. We look forward to exchanging expertise via collaborations," said Nurulaini.



MADE IN MALAYSIA

The race to produce COVID-19 vaccines has become a global affair, and Malaysia is looking into jumping on the bandwagon as well. However, as vaccine manufacturing is new here, there are many factors and processes that it needs to consider and undergo. One of the country's preliminary steps will be to come up with a roadmap for the next five to 10 years. As there are different types of vaccines that each requires different production processes, careful study will have to be made.

Dr. Ahmad Hazri is eager for IBRC to be an active participant in this process. "At IBRC, we have the expertise in bioprocess engineering. We would like to join in the vaccine development ecosystem across the value chain. We can participate in the development of the new vaccine via the application of new technologies in molecular biology and protein engineering, for example.

"Once the vaccine is developed in the laboratory, we can also assist in the preclinical, clinical and manufacturing processes, as well as in developing the processes for vaccine production," he said.


As the nation gears up to move in the direction of vaccine production, our metrology capabilities need to be reinforced to be able to support this. "This is the time for approaching medical metrology in the country seriously, as it is an area in which we are currently lacking," observed Nurulaini.

NMIM has been resolutely gaining knowledge and expertise from its counterparts in other countries. Among others, the national metrology institute in China has shared with NMIM on how they collaborate with their medical authorities in the development of standards for infrared thermometers. Besides that,

presently two NMIM personnel are furthering their studies in the field of medical metrology at the Korea Research Institute of Standards and Science (KRISS), which is the national measurement standards laboratory in Korea.

"Medical people are experts in their field, but the equipment they use that are related to measurement are vital tools that can help them to save lives. This is where medical metrology will be of importance," she said.



At IBRC, we have the expertise in bioprocess engineering. We would like to join in the vaccine development ecosystem across the value chain. We can participate in the development of the new vaccine via the application of new technologies in molecular biology and protein engineering, for example. 



From left: Nurulaini Md Ali, Metrologist, National Metrology Institute of Malaysia (NMIM); Dr. Ahmad Hazri Ab Rashid, General Manager, Industrial Biotechnology Research Centre (IBRC); Dr. Nurul Izza Nordin, Senior Researcher, IBRC; Abdul Ghani Abdul Rahman, Chief Executive Officer, SIRIM Standards Technology Sdn Bhd (SST)



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