

# RISE

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## *Robotics Technology:* Driving Innovation, Transforming Future

**ReNeU's 1<sup>st</sup>  
Anniversary**  
Galvanising Research Excellence

**UiTM's Global Effort  
in Training Young Aspiring  
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# RISE

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## ABOUT THE MAGAZINE

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RISE Magazine is published by Office of the Deputy Vice-Chancellor (Research & Innovation) with the aim of highlighting the research and innovation on of experts from multidisciplinary fields in UiTM. It serves as a platform for researcher to showcase their high quality and impactful findings, activities and innovative solution through publication. Contribution of these ideas come from academicians, researchers, graduates and universities professionals who will enhance the visibility of research and strive to elevate Universiti Teknologi MARA to global standards. This is an effort to promote research as a culture that should be embraced by everyone.

## ABOUT UiTM

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Universiti Teknologi MARA (UiTM) is a public university based primarily in Shah Alam, Malaysia. It has grown into the largest institution of higher education in Malaysia as measured by physical infrastructure, faculty and staff, and student enrollment. UiTM is the largest public university in Malaysia with numerous campuses throughout all 13 states in Malaysia. There is a mixture of research, coursework and programmes offered to the students. Office of the Deputy Vice-Chancellor (Research & Innovation) or known as TNCPI (*Timbalan Naib Canselor (Penyelidikan & Inovasi)*) serves a *Pusat Tanggungjawab (PTJ)* that navigates the research and innovation of university in achieving UiTM agenda. TNCPI office strives to mobilise the faculties, and campuses to move together and promotes cooperation among researchers in bringin UiTM as a leading global university of science, technology, and innovation by 2025.



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# FOREWORD

## VICE-CHANCELLOR



To excel globally, research must be weighed in as a key factor to navigate the university's direction in making an impact. This is especially when focusing on translational research where society can benefit greatly from its findings.

Congratulations to the Office of the Deputy Vice-Chancellor (Research and Innovation) on the publication of this magazine, aptly called RISE. I am pleased to see that the COVID-19 pandemic has not dampened UiTM researchers' pursuit of their dreams. The contents of these pages allow active research and innovation activities be shared with our stakeholders, local and international collaborators.

As UiTM aspires to be a world-renowned university by 2025, I believe that our current research practises are on track. For example, the featured article in the magazine highlights the key success of robotic technology ventured by our researcher, Associate Professor Dr Hanafiah Yussof, who formed a start-up company to advance robotic technology in Malaysia. His contribution to the robotics industry, the Robot Rehabilitation System for Autism Therapy, is an example of innovation that can transform the future.

In our pursuit of changing the future, we at UiTM are cognisant of the current and future direction of research to facilitate research from different disciplines. We have researchers using drones for pineapple plantations, exploring hybrid rockets with Equatorial Space System (ESS), and researching sanitation, collection, and sewage/wastewater treatment systems with Indah Water Konsortium (IWK) Sdn Bhd, to name a few of the work we have been actively involved in.

Hence, we will continue to contribute and make progress associated with processes and knowledge pivotal for impactful research, especially in developing knowledge-based technology that benefit society.

Ultimately, I am confident that the publication of this magazine will further strengthen the visibility of UiTM research and innovation.

Thank you.

**PROFESSOR Ts. DR HAJAH ROZIAH MOHD JANOR**

Vice-Chancellor

Universiti Teknologi MARA

# FOREWORD

DEPUTY VICE-CHANCELLOR (RESEARCH & INNOVATION)



I would like to congratulate the editorial team on the release of RISE, a research magazine highlighting our research and innovation efforts and accomplishments. The magazine exemplifies our office's synergistic and collaborative efforts, as well as those of our researchers and article contributors, to advance the visibility agenda.

As the office in charge of research and innovation, we are constantly hoping that every research result and invention will benefit the community through translational research. Assoc. Prof. Dr Hanafiah Yussof's Robot Rehabilitation System for Autism Therapy, for example, has aided the autism community in improving communication. Even more proud that this endeavour resulted in the formation of a start-up company.

Despite the COVID-19 pandemic, UiTM researchers continued to conduct relevant research activities despite the uncertainty. The scale of the events varies from a small effort to install solar panels at a rural school and organise virtual conferences to the use of drones and precision agriculture technology on pineapple plantations. Notably, a Bioextreem solution capable of inhibiting 99.99 percent of bacteria and viruses was also developed.

With these accomplishments, we will continue to support research efforts, particularly those aimed at developing knowledge-based technology with a social benefit in mind.

Finally, I believe that this magazine can serve as a platform for the visibility agenda by incorporating a wide range of science and research perspective, fostering more potential collaboration between UiTM researchers and local and international institutions and industries.

Thank you.

**PROFESSOR Ts. DR MOHD NAZIP SURATMAN**

Deputy Vice-Chancellor (Research & Innovation)

Universiti Teknologi MARA

# MESSAGE

## FROM THE CHIEF EDITOR



Alhamdulillah.

It gives me great pleasure to see this issue published. We received a massive and impactful submission to feature our UiTM community's research stories. Despite the difficult circumstances, UiTM researchers are proactive in carrying out research activities and events within their respective capacities.

Allow me to express my heartfelt gratitude to all of the authors of the articles in this magazine. The publication of this issue would have been far more difficult to achieve without their contributions. Here, we feature Assoc. Prof. Dr Hanafiah Yussof of the College of Engineering's beautiful journey into robotic technology. I believe that robotics has always been on the national agenda for its true mission in helping people. We chose to focus on robotics to honour a UiTM researcher who has dedicated his academic

career to assisting society through technological advancements. To all researchers out there, we hope that his inspiring journey will rekindle our enthusiasm for research.

The inaugural issue of the RISE magazine also features research achievements and the multidisciplinary research areas in UiTM which support national priorities. Research Nexus UiTM (ReNeU) celebrates its first anniversary in 2021, marking a major milestone in its journey. Faculty of Pharmacy is making a global impact towards producing young aspiring neuroscientists. The exploration of Lembah Benua has highlighted the wonderful forest as a potential research station. The potential of fine art logistic industry is also of utmost importance towards making Malaysia as a top art market hub. These are some of the exciting research stories and I invite you to discover more in this issue.

We sincerely hope to bring you more research news from the UiTM family in the coming issues. Have fun reading!

**DR MOHD MUZAMIR MAHAT**

Head of Research Communication & Visibility Unit (UKPV)  
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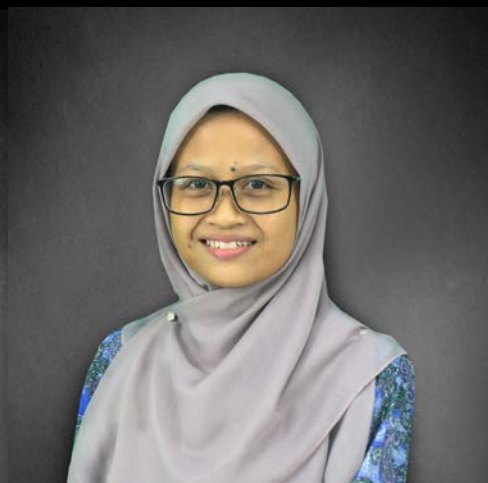
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# CONTENTS

NOVEMBER 2021

## FEATURE STORIES

Robotics Technology: Driving Innovation, Transforming Future	1
Hutan Simpan Lembah Benua Exploration 2021	7
Drone and Precision Agriculture Technology for Pineapple Plantation	9
A Project to Provide Solar-Powered Lighting Project to Rural Schools in Perak	10
Virtual Green Safe Cities Seminar (GRESA 2021)	12
Ads – UNNIZOL Hand Sanitizer	13
Good Bacteria That Lower Cholesterol: Myth or Truth?	15
MatE2U: Community Outreach by the Maternofetal and Embryo Research Group (MatE)	16
Nextgreen Global- UiTM Research Collaboration	17
IWK-UiTM Research Collaboration	18
Gait Recognition System for Mass Surveillance	19
Achievements	21
NANO-ElecTronic (NET) Research Group	22
Addressing Public Health Concerns Through University-industry Collaboration	24
Adaptive Strategies for Microbial Performance Through Optimization Approach	25
The Effectiveness of the ICQS Bukit Kayu Hitam and CIQ Sadao's 24-hour Operation	26
Green Event Research @ Borneo Jazz Festival	27
Ads – Dr Azri's Perfume	29

“

Collaboration between NEXTGREEN Global and UiTM will strengthen UiTM cooperation with public listed company in zero waste technology and renewable energy for sustainable development



”



17

Nextgreen Global- UiTM Research Collaboration

38

UiTM'S Global Effort in Training Young Aspiring Neuroscientists





# 42

High Energy Material Research Laboratory (HEMREL)



ReNeU's 1 <sup>st</sup> Anniversary – Galvanising Research Excellence	31
Potential of Fine Art Logistic Industry	33
Erasmus+ KA2: The Complexities of the Creation of a Validation Protocol for the Making4.0 Curriculum Between the Malaysian and European Education Systems	35
Clove, Habbatus Sauda, Neem and COVID-19	36
UiTM's Global Effort in Training Young Aspiring Neuroscientists	38
Ads - Paina (Pineapple Chili Sauce)	40
High Energy Material Research Laboratory (HEMREL)	42
Disruptions in Supply Chains and a Lesson from the COVID-19 Pandemic: A Retail Perspective	43
New Road-Side Speed Display Signs in Reducing Speeding Problem in Malaysia	45
The Data is Talking to You. Are You Listening?	46
Ads - UnaCoffee	48
Ads – RM Polypack Sdn Bhd	49



# 07

Hutan Simpan Lembah Benum Exploration 2021



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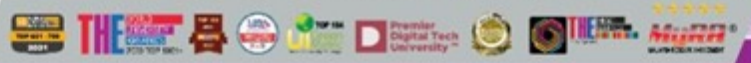
Faculty of Medicine  
Institute of Pathology, Laboratory & Forensic Medicine (I-PPerForM)  
and the Malaysian FH research team

on the successful publication in the flagship journal

**THE LANCET**

(Impact Factor: 79.321)

**Global perspective of familial hypercholesterolaemia:  
a cross-sectional study from the  
EAS Familial Hypercholesterolaemia  
Studies Collaboration (FHSC)**



## Achievements

# Congratulations

**Professor Dr Wong Tin Wui**

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Smart Manufacturing Research Institute (SMRI)

Recipient of

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# Congratulations

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\*Source: PLoS Biol 18(10): e3000918. <https://doi.org/10.1371/journal.pbio.3000918>

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My Subject	Organic Chemistry	Sweet-Fruity-Floral	Unisex	NOT200703741K
My Love	Ayla	Sweet-Vanilla-Chocolate	Unisex	NOT210900275K
Crush	Najla	Flowery-Musky	For Her	NOT200703738K

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Dr Azri's Perfume



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# UiTM Research Strength Supporting National Priorities



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	02	Smart Manufacturing		02	Big Data & Data Analytics		02	Sick Care
	03	Plant and Process		03	Cyber Security		03	Rehabilitative Care
	04	Construction & Infrastructure		04	Robotics & AI		04	Genomics
		05		Smart Sensors	05		Non-Communicable Disease	
<b>Logistics and Transportation</b>	01	Transportation	<b>Energy &amp; Environment</b>	01	Water Security		<b>Social Creativity &amp; Innovation</b>	01
	02	Logistics & Halal-hub		02	Renewable Energy	02		Islamic Finance Fintech
	03	EV-AV,		03	Environment & Climate Change	03		Socio Innovation
	04	UAV, Aviation		04	Solar Technology	04		B40-Talent
		05		Biodiversity	05	Entrepreneurship & Artrepreneur		
		06		Food Security	06	Socio-Economic		

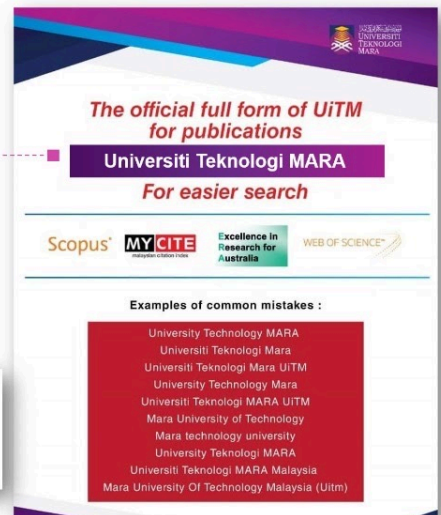
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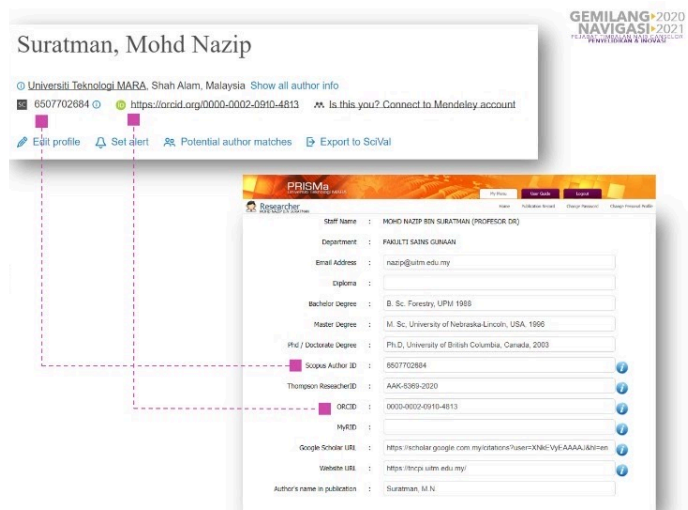
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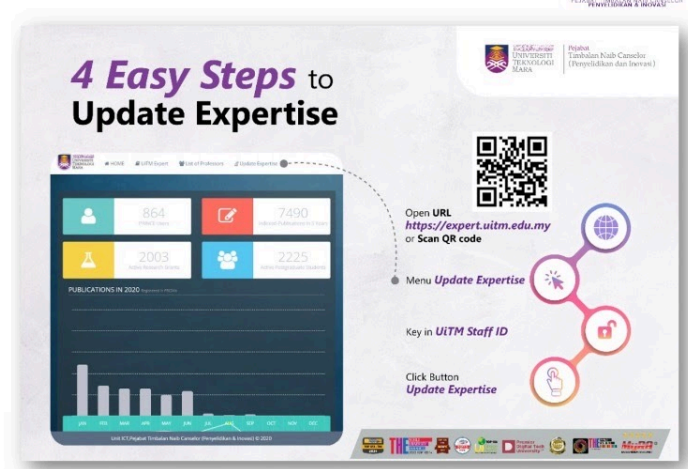
## 1 Use the Correct Affiliation



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## 3 Update Expertise Information





# Disruptions in Supply Chains and a Lesson from the COVID-19 Pandemic: A Retail Perspective

by Prof. Dr Jaafar Pyeman & Prof. Dr Veera Pandiyan Kaliani Sundram



**T**he importance of supply chains has never seemed so vital before the age of COVID-19. We are now too familiar with emptying shelves of toilet paper along with severe shortages of face masks and hand sanitisers. Supply chains are what ensure our access to essentially every product and service necessary for daily life. We may imagine a supply chain to be limited to warehousing and transportation, but it incorporates the entire manufacturing process. However, our society has recently been facing the unique challenges of the COVID-19 viral outbreak, which has had negative impacts on business supply chains globally. We should not regard the pandemic as equal to natural disasters like floods or earthquakes because such catastrophes are limited in location. A flooding event on the opposite side of the country is not likely to severely impact us, except for some supply chain issues. On the other hand, a pandemic has no boundaries and is not restricted to a single region. The effort against COVID-19 calls for solidarity and cooperation between all governments, organisations and people worldwide.

## How can a pandemic disrupt supply chains?

Disruptions rooted in pandemic conditions can manifest in several ways. A pandemic can trigger scarcity in the supply of labour and other resources. For instance, a factory can be forced to stop production because of having too many ill employees. This can also happen when no supplies are delivered due to national lockdowns and disruptions in global trade routes. Additionally, pandemic conditions can spark short-term surges of demand for specific products, such as masks and hand sanitisers. Basic grocery supplies can also be subject to peak demand when the public goes panic shopping. Then there is the phenomenon of the Bullwhip Effect, otherwise known as Forrester's Effect. This describes a situation where surges in demand tend to intensify conditions further up in the supply chain. A slight increase in consumer demand might trigger a massive escalation in production by manufacturers and suppliers. This results in the supply chain transporting a massively disproportionate stock, which does not reflect the natural changes in a product's demand and supply.



### **How to mitigate the disruption?**

There is a political angle to any pandemic, similar to other disasters or crises. In these conditions, making a quick decision is more vital than deliberating on the most correct choice. Many countries have suffered due to delays and procrastination in taking immediate mitigation steps. Furthermore, recent events have highlighted our lack of investment into pandemic-related infrastructure for the public. These include digital infrastructure, laboratories and healthcare infrastructure, and distance learning technologies. This is one area where the business supply chain can fill a gap and offer valuable alternatives. A dangerous shortage of ventilator parts in Italy was alleviated by an organisation that supplied the needed equipment within 24 hours through 3D printing. This can inspire other firms to join the effort in manufacturing medical gear. Cosmetic companies including L'oréal and Coty took the initiative to repurpose their existing production equipment, usually reserved for perfumes and hair oils, to help manufacture hand sanitiser instead. These contributions offer alternative supplies for life-saving resources and ensure that employees have continued income and factories can continue operations even during a commercially challenging period for luxury products.

The various obstacles caused by the COVID-19 pandemic have highlighted many shortcomings within supply chain systems and call for stronger cooperation between global governments, aid organisations, academics, and industries to manage worldwide economic and health-related conditions. Managers across countries are advised to reassess their supply networks in the context of this pandemic and proceed to make changes that enhance the flexibility and vigour of their supply chains. Now is the time to ensure that our supply chains can still function as they have, but with greater resilience and better capacity to cope with risks that will surface in the future. We hope that the failures and challenges resulting from the current pandemic will better prepare us to face the next calamity as a global society.



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***Addressing Public Health Concerns Through University-Industry  
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*The Data is Talking to You. Are You Listening?*



# RISE

*Catalysing Global Research Excellence*

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