

RETHINKING HIGHER EDUCATION IN MALAYSIA

STRATEGIC FORESIGHT

ADDRESSING CRITICAL
FACTORS TO 2030



CATARINA TULLY • SAMSINAR MD SIDIN

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FACTORS TO 2030**

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Table of Contents

Foreword by

Datuk Ir Dr Siti Hamisah Tapsir

Director General, Department of Higher Education,
Ministry of Education, Malaysia

Foreword by

Amil Izham Hamzah

Chief Executive Officer,
Universiti Abdul Razak (UNIRAZAK), Malaysia

Acknowledgements

Chapter 1: Strategic Foresight as A Core Leadership Skill for the 21st Century

- 5 Foresight for Leadership in the 21st Century
- 6 Strategic Foresight in The Malaysian Context
- 7 Foresight for The HE Sector
- 8 Definitions and Objectives: The ‘What’
And ‘Why’ Of Strategic Foresight
- 10 Foresight for Beginners
- 11 Benefits of Foresight
- 12 Turning Insights into Action
- 13 Case Studies: Strategic Foresight for
Leadership — Lessons Learned
- 16 Embedding Foresight in Central Government Policymaking
- 17 Taking the Plunge: Applying Strategic
Foresight in An Organisation Or Sector
- 26 Future Questions for Malaysian Higher Education
- 28 Bibliography for Chapter 1

Chapter 2: A Review of Policy and Planning in The Higher Education Sector in Malaysia Over the Past 40 Years

- 33 Introduction
- 34 Higher Education Trends in Malaysia
- 35 The Higher Education System in Malaysia, 2007 To 2025
- 42 Key Areas of Current Policy Development
- 43 Conclusion
- 44 References for Chapter 2

Chapter 3: The Role of Higher Education in Creating an Entrepreneurial Malaysia

- 49 Abstract
- 50 Introduction
- 52 The Vision of Entrepreneurship Education in Malaysia
- 55 Past Trends of Entrepreneurship in Higher Education
- 58 Factors Affecting the Future of Entrepreneurship in Malaysian Higher Education
- 59 Risks, Barriers and Challenges in Entrepreneurial Education
- 61 Recommendations: Building an Entrepreneurial University for Malaysia by 2030
- 66 Conclusion
- 66 References for Chapter 3

Chapter 4: Internationalisation: Dynamics and Tension Out to 2030

- 73 Abstract
- 73 Introduction, Context and Approach
- 76 Higher Education and Internationalisation In Malaysia In the Past 40 Years
- 81 Future Trends Out To 2030
- 83 Recommendation: A Novel Approach to Internationalization
- 84 Key Uncertainties
- 85 Implications: Policy Gaps and Areas for Focus
- 87 References for Chapter 4

Chapter 5: Malaysia HEIs For the Future: From Talent Management to Ideation Management

93	Introduction
94	What Is TM? Why Look at The Future of TM In HEIs?
95	What Has Happened in The Past?
97	The Academic Profession in Malaysia
101	National Policies Related to Academic Talents
105	Academic Talents Going Global
106	Leadership in Public Universities
108	Global Trends Out To 2030
112	Possible Implications for TM in HEIs
115	Conclusion
116	References for Chapter 5

Chapter 6: Strategies for A Sustainable Future in STEM Higher Education

123	Introduction
124	Malaysia STEM Education System Development
129	Future Trends
133	Uncertainties, Wildcards and Disruptions Out To 2030
136	STEM Higher Education Scenarios and Policy Implications
143	A Vision of Success in STEM Higher Education
149	Conclusion and Recommendations
149	References for Chapter 6

Chapter 7: Higher Education and Employment: Challenges for Sustainable Economic Growth and Human Resource Development in Malaysia

155	Abstract
156	Introduction
157	Employment and Graduate Employability in Malaysia
160	Share of Respondents Citing Skill Deficits in Fresh Graduates, Percent
163	Likely Trends Shaping the Higher Education Sector To 2030
165	The Impact of Key Trends on The Future of The Higher Education Sector
168	Drivers of Change in Graduate Employment and Employability
169	Policy Implications and Recommendations
171	References for Chapter 7

Chapter 8: Inclusive Education in Malaysia’s HE Sector: Preparing for The Future

- 181 Introduction
- 182 What Is Inclusive Education?
- 183 Initiatives to Promote Inclusive Education in Malaysia
- 187 Historical Context in Malaysia
- 191 Global Megatrends Out To 2030
- 193 2030 Future Scenarios and Their Implications
- 199 Conclusion
- 200 References for Chapter 8

Chapter 9: Facing Forward: How Foresight Can Help Malaysia Shape Its Higher Education Sector for Future Generations

- 209 Introduction
 - 209 Applying Strategic Foresight to The HE Sector
 - 211 Summary of Implications for The Higher Education Sector
 - 212 Chapter Summaries
 - 215 Emerging Themes and Associated Challenges and Opportunities
 - 219 Conceptualising The Higher Education Sector of The Future
 - 220 Recommendations: Thinking Further About HE Futures
 - 226 Conclusion: Foresight as A Core Skill for Future Generations
 - 226 References for Chapter 9
-
- 227 **About the Authors**

Foreword

It gives me great pleasure to write the foreword for this book 'Rethinking Higher Education in Malaysia'. The higher education (HE) industry is very dynamic: the landscape is changing and is currently going through the fourth industrial revolution where internet and virtual perspectives are becoming increasingly important considerations. This book is timely and addresses pertinent issues currently faced by the HE sector in Malaysia. What makes it even more interesting is that authors of each chapter use strategic foresight, a systematic approach to analyse past trends and possible future scenarios through identifying key drivers and alternatives facing the HE sector in Malaysia out to the year 2030. The Ministry of Education has developed a Higher Education Blueprint as the key guide for the future of this industry. This book serves as an added resource for improvements to be implemented for the future. My sincere gratitude for this effort and congratulations to Permodalan Nasional Berhad, Yayasan Tun Ismail Ali and Universiti Tun Abdul Razak (UNIRAZAK) on the successful publication of this book.

Reading this book, one will have a sense of the direction that needs to be taken in HE to ensure its future and will be intrigued by the analyses and outcomes. The chapters on HE policy, entrepreneurial universities, internationalisation, talent management, STEM, sustainability and human resources as well as inclusivity, have been well thought out. Readers will get a fresh outlook on the issues, new and systematic analysis of the situation, and finally recommendations and possible solutions. The rigorous synthesis of insights, ideas and evidence proposed in this book will assist policy makers and stakeholders to respond to the current impediments and emerging opportunities in HE.

It is also interesting to note the emergence of several drivers moulding HE in the future. The impact of technology, internationalisation, geopolitics and closer review of the teaching and learning process are some of the factors identified by the authors.

This book is the first of its kind in its ambition: mixed research teams with professors from many different private and public HE institutions, applying strategic foresight approaches to analyse six under-explored and critical issues in HE. The approach used is exciting, and I especially applaud the collaborative partnership between UNIRAZAK and Institut Penyelidikan Tinggi Negara, Universiti Sains Malaysia for this project. The nine chapters of this book reflect a professional, systematic view of scholars in HE, consequently contributing to the development of the future in the Higher Education industry in Malaysia. Well done Catarina Tully, Samsinar Md Sidin and the team!

Datuk Ir Dr Siti Hamisah Tapsir

Director General

Department of Higher Education

Ministry of Education, Malaysia

Foreword

I support Ipswich Town.

Who?

Ipswich Town, a previous winner of the UEFA Cup and now, sadly, plying its trade in the third tier of English football, having been relegated from the Championship in the Spring of 2019. It was during Ipswich's heart-breaking campaign of 2018/19 that I first met Professor Catarina Tully.

Cat, as we call her, was at UNIRAZAK to brainstorm with our team (UNIRAZAK, not Ipswich) on the deliverables for the Yayasan Tun Ismail Ali (YTI) Professorial Chair project. On that day, she brought with her an approach called strategic foresight.

Cat's explanation on the concept and application of strategic foresight to our team of Professors and lesser mortals piqued my curiosity and interest; I could instantly relate strategic foresight with our efforts in effecting positive changes at UNIRAZAK.

The basic idea of strategic foresight is that one firstly looks backward – of past stories of change - and by doing so, one understands that the past is often complex, non-linear and systemic. Such understanding allows one to then look forward – for potential stories to be told – where one can imagine different future scenarios and hence prepare oneself with appropriate resources, tools and responses in the implementation phase of one's plan.

For me, strategic foresight empowers us to plan for the possible and probable, and in doing so enables us to exercise considerable judgement to the changing situations. It allows us to embrace the spirit of effective activism - the flexibility in dealing with the uncertain - which, in the words of Duncan Green, "...requires a considerable degree of self-confidence and chutzpah...a level of intellectual independence...". It is the intellectual independence that I value the most.

This book, *Rethinking Higher Education in Malaysia*, edited by Cat and Professor Datin Paduka Dr Samsinar Md Sidin, and jointly published by Permodalan Nasional Berhad (PNB) and UNIRAZAK, is a stellar example of the application of strategic foresight to higher education in Malaysia. The book identifies how leaders can make informed strategic choices based on improved understanding of the current and future operating environments in an industry which has spawned many change agents nationally and across borders, and consistently so throughout centuries. Ironically, the industry that the book is looking at is one that has adopted a remarkable degree of Teflon-like hide in resisting change.

The book further highlights the key drivers of change in higher education and how leaders and stakeholders can use foresight thinking to prepare for an effective and sustainable future. The book provides clear understanding about the strategic actions where leaders, groups, organisations, communities and societies can learn to develop a culture of foresight thinking to plan and execute in the more complex and uncertain circumstances.

Our collaboration with Cat on this scholarly pursuit would not have been possible without PNB's great support. We thank PNB for having the foresight to fund this worthy cause, and for continuing to champion the acquisition and application of such knowledge in the Malaysian context, even when the payback of such endeavours is not always immediately apparent.

Now back to Ipswich Town.

I wish Marcus Evans, the owner of Ipswich Town, would have met Cat half a decade earlier. He could have learned a thing or two about strategic foresight where, perhaps armed with such knowledge, Ipswich would be playing at Anfield this weekend instead of, with all due respect, Glandford Park in Scunthorpe.

Amil Izham Hamzah

Chief Executive Officer

Universiti Tun Abdul Razak (UNIRAZAK)

Acknowledgements

Many people have contributed to this book, both directly and indirectly. Strategic foresight, done properly, is a joint, collective activity, and I apologise to anyone I've inadvertently omitted here.

Rushdi Abdul Rahim, senior vice president, the Malaysian Industry Government Group for High Technology (MIGHT), Professor Emerita Datuk Dr Mazlan Othman of the Akademi Sains Malaysia (ASM), and Professor Emeritus Tan Sri Omar Abdul Rahman, one of the founding chairmen of MIGHT, were the best introduction to the kind of quality foresight and future-facing leadership Malaysia offers, and their insights have been invaluable. I would also like to thank Professor Nik Rosnah Wan Abdullah and Professor Robin Lewis from the leading public administration global university network, the International Development and Public Policy Alliance (IDPPA), for introducing me to the excellent public service and leadership work done at UNIRAZAK.

Professor Dr Nik Rosnah Wan Abdullah, Associate Professor Dr Gazi Md Nurul Islam and Professor Dr Ravindran Ramasamy have been great book editors and reviewers, and the diligence and hard work of research associate, Siti Balqis Mohd Saldi, and research assistant, Annasihah Azman, have been essential in bringing this book together. My heartfelt thanks are also due to Professor Datin Paduka Dr Samsinar Md Sidin, vice chancellor of UNIRAZAK, and co-author of this book, and I am extremely grateful to members of my team at SOIF for their help and editorial support, in particular, Sophie Middlemiss, Peter Glenday and Caroline Passmore.

Most of all, though, I am indebted editorially to chapter authors, from UNIRAZAK and beyond, as well as the various members from the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC), ASM, MIGHT and others who have been involved with this project over the past year.

Finally, I would like to express my gratitude to the Ministry of Education for such a challenging and exciting commission, to Permodalan Nasional Berhad (PNB) for supporting university visiting professorships through the Yayasan Tun Ismail Mohamed Ali (YTI) endowment and for sponsoring the book, and to the National Higher Education Research Institute (IPPTN), Universiti Sains Malaysia, for partnering us on this project so diligently. Without these institutions, this book would not have been possible.

Catarina Tully, *October 2019*

Chapter One

Strategic Foresight as A Core Leadership Skill for The 21st Century

Catarina Tully,

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Universiti Tun Abdul Razak (UNIRAZAK), Kuala Lumpur, Malaysia,
and founder, the School of International Futures

(SOIF - www.soif.org.uk)

Foresight for leadership in the 21st century

Strategic foresight — the ability to lead into the future as well as in the present — has always been valuable to leaders across the public and private sectors, but it is needed more than ever in the face of the heightened uncertainties and increased systemic complexities of the 21st century. From a global pandemic ('Disease X') to the next disruptive technology, from hybrid security threats to devastating climate change — today's systemic, transboundary challenges interact in complex ways, leaving the future looking ever more uncertain, and more difficult to navigate. As Professor Nick Barker, holder of the Professorial Chair of Leadership at UNIRAZAK in the academic year 2017-18, underlined, entrepreneurial leaders today need to “think like a futurist”.

The act of reflecting collectively on the future is a necessity, not a luxury for organisations, sectors and nations. Increasing numbers of governments, businesses and multilateral institutions are adopting strategic foresight approaches to help them map the contours of possible tomorrows and to develop strategies to face the future with confidence. Organisations cannot simply stand still in the face of future uncertainty: they must keep moving ahead.

A leader who is equipped with strategic foresight thinks and — crucially — acts differently. (S)he can create a future-ready and alert organisation that, with a culture of strategic foresight at its heart, is better positioned to adapt as the future evolves. In Maree Conway's definition, “foresight is the capacity to think systematically about the

future to inform decision making today” (*Thinking Futures*, Australia). As Hamlet says: *The readiness is all*.

When done well, improving an organisation’s strategic foresight also helps develop its sense of common vision and purpose. Effective foresight is inclusive and participative, bringing in perspectives from every level of an organisation. Leaders bold enough to put the big questions about the future to their teams, and open a dialogue, do better at winning loyalty and long-term commitment, and are therefore better able to navigate uncertain futures.

Strategic foresight in the Malaysian context

Using foresight techniques is a vital beginning for positioning a country to best seize the opportunities of a radically changed global marketplace. Foresight is not about predicting the future, which is inherently unknowable, but rather about making informed strategic choices based on improved understanding of the current and future operating environments. We face a radically changed global marketplace, both for jobs and for the skills and education mid-21st century students will need. Malaysia’s potential in the age of the ‘Fourth Industrial Revolution’ is well-recognised. Its assets include: a high proportion of women in higher education; a high concentration of knowledge-based industries; a recent policy push on promoting growth in the high-tech sector; a rising position in ease-of-doing-business rankings; its status as the world centre of Islamic finance.¹

But it is leadership with foresight that will determine whether these assets are converted into a ‘winning formula’ for the mid-21st century. Malaysia is already embracing foresight through the work of the Academy of Sciences’ Envisioning Malaysia 2050 Foresight Initiative, the Malaysian Foresight Institute (myForesight) and the associated Malaysian Industry-Government Group for High Technology (MIGHT), among others.

¹ Women make up some 65% of those enrolled in tertiary education (source: https://umexpert.um.edu.my/file/publication/00000380_125559.pdf). Malaysia rose to 15th place in the 2019 World Bank Ease of Doing Business report.

The focus of much foresight work here has been on cultivating high-tech industries with a view to establishing Malaysia as a leading innovation hub and on managing the transformation from an economy based primarily on resources and commodities. But looking ahead, there is clearly a wider role for foresight in helping Malaysia capitalise on its assets as a society and build on its demographic mix to create a diverse, harmonious and sustainable society.

Foresight for the HE sector

The higher education (HE) sector in Malaysia is fertile ground for foresight work. Universities are, almost by definition, future-facing, outward-looking, globally-minded organisations, engaging with and exchanging ideas with the wider world. They shape global thinking and — through the students they produce — they shape the future. This project to explore the future of the sector has brought in a broad cross-section of representatives — from the Academy of Sciences and beyond — and sought to glean insight and perspectives from the leaders of the future: the student body. The aim has been to generate a more informed policy debate in an uncertain environment for the HE sector.

In support of that more informed debate, this book, commissioned by the Ministry of Education (MOE), offers a forum for university academics and researchers to use the tools and methodologies of strategic foresight to explore six policy areas facing the higher education (HE) sector in Malaysia over the next decade — in a rigorous and structured way. These areas were chosen by the MOE because they demand innovative thinking.

Each chapter is a collaborative effort, bringing together insight from UNIRAZAK with its counterparts in public universities and think-tanks. This chapter precedes the policy chapters with a general introduction to strategic foresight.

Recognising the need to engage better with the future is a vital first step in shaping the future, so establishing the Chair of Futuristic Leadership and commissioning this book are welcome initiatives from UNIRAZAK

and the Malaysian government. The appetite for strategic foresight work is an important predeterminant of impact: the leaders who seek out better insight and better processes are typically those most likely to act on the insights it produces to make their organisations future-fit.

Definitions and objectives: the ‘what’ and ‘why’ of strategic foresight

Strategic foresight has existed as a discipline for some 70 years, but it’s arguably only in the last decade that it has entered mainstream practice for governments and policymakers worldwide. It is a systems- and evidence-based approach that enables us to address complex, interrelated problems, and supports decision-making. It encourages and enables organisations to calmly, systematically unpick what can seem an overwhelming web of complexity and uncertainty, thus helping them better navigate the future.

It does this typically by looking at drivers of change (a ‘driver’ in foresight work denotes a factor in the external environment that brings change), designing several scenarios of alternative futures, and exploring potential outcomes and responses. But the exact shape of a foresight ‘intervention’ should be determined by its purpose, and its impact is always best measured by how far it shapes an organisation’s strategic choices and tactical decisions.

The field has flourished as an academic discipline, with the contributions of notable futurists such as Jim Dator of the University of Hawaii, Wendy Schultz of Infinite Futures, and Sohail Inayatullah, the UNESCO and USIM Chair in Futures Studies, who has done excellent work in Malaysia. Practitioners including Herman Kahn (an early futures practitioner at RAND in the 1960s), Pierre Wack (founding futurist at Shell in the 1970s, known as the ‘father of scenarios’), Napier Collyns (founder of the Global Business Network), and, most recently, Peter Schwartz (author of *The Art of the Long View*) have built the field and shaped it. Foresight approaches have been used in, and shaped in turn by, leading organisations in the field such as the RAND Corporation and Shell.

Particularly since the turn of the millennium, countries such as Finland, Singapore, the UK and Malaysia (see *case studies* section below) have made use of foresight to guide national policy. With decades of experience in the field, including work by the School of International Futures (SOIF) in 60 countries and SOIF research papers for the UN and OECD (see *Bibliography*), it is now increasingly possible to see and apply – with tailoring and nuance – ‘what works’ in foresight.

Evidence from the corporate world suggests real impact: the Harvard Business Review reported in 2017, “*new research . . . found that companies that operate with a true long-term mindset have consistently outperformed their industry peers since 2001 across almost every financial measure that matters.*”² René Rohrbeck from Aarhus University has found strong evidence for the positive impact of the use of corporate foresight on company performance.³ The University of Oxford’s Oxford Martin Commission for Future Generations, meanwhile, in its landmark 2013 report, *Now for the Long Term*, underlined the importance of long-term thinking to producing both governments and societies that can deliver success with sustainability.⁴

² Source: <https://hbr.org/2017/02/finally-proof-that-managing-for-the-long-term-pays-off>

³ Source: Rohrbeck and Kum, “Corporate Foresight and its Impact on Firm Performance: a Longitudinal Analysis”, *Technological Forecasting and Social Change*, Volume 129, April 2018. Accessed at: <https://www.sciencedirect.com/science/article/pii/S0040162517302287?via%3Dihub>

⁴ Source: https://www.oxfordmartin.ox.ac.uk/downloads/commission/Oxford_Martin_Now_for_the_Long_Term.pdf

For newcomers, it may be worth summarising here the key features of strategic foresight:

- i. It is **organised and systematic**. Different practitioners have different approaches, but at SOIF, which I lead, this means using a tried-and-tested four-stage 'learning journey' process as a framework or scaffold for applying foresight techniques in a way that brings practical, actionable insights for leaders and their organisations (see Figure 2). By being rigorous, comprehensive, and including less-heard voices in organisations, the SOIF process also helps counteract in-built organisational assumptions, biases and 'group think'.
- ii. Strategic foresight **takes the long view**. It also takes the broad view, looking beyond policy or sectoral boundaries. Organisations will be helped to take into account the full and comprehensive range of potential factors driving future change (in futures-speak, 'drivers'), rather than a narrow set assumed to be 'likely'.
- iii. Thirdly and crucially, **the process is flexible, and the approach can be tailored to context** (see '*Flexible foresight*' section). A strategic foresight exercise can take anything from a week to two years; it can involve 10 people or a thousand. It can be focused on immediate challenges facing an organisation — but often, an exploration of what appears to be a narrow challenge leads on to exploring wider (and more valuable) questions.

Figure 1: Foresight for beginners

Benefits of foresight

Why, in brief, do organisations embark on foresight activities? Throughout our work with government, businesses and the third sector, SOIF has consistently seen three key benefits for organisations, sectors and countries. First, they gain strategic vision, which helps them mobilise their people. Second, they are better able to manage risk, by building preparedness for alternative, possible futures. Third, they are able to create alert, future-ready organisations that can adapt as the future evolves.

Examining those three key benefits in more detail:

Benefit 1: Gain strategic vision

Truly visionary leadership demands vision and realism, and foresight is about both. Leaders are supported to develop credible future visions that inspire and engage staff and stakeholders — instead of untested and unachievable ‘blue-skies’ visions that staff and stakeholders may not find credible. They can also embrace innovation with a clear-eyed view on the future — ensuring that ambition is also framed by proper realism about uncontrollable outside variables. Strategic foresight helps organisations to set a clearer strategic direction and to make the right strategic choices.

Benefit 2: Manage risk

Foresight helps leaders to better forecast and mitigate future risk — ensuring their organisations are robust and resilient to change. Organisations reliant on traditional forecasting and risk assessment procedures often remain short-termist and reactive, ‘wrong-footed’ all too often by the unexpected and left struggling to adapt to change. Traditional methods may be future-oriented, but they are not adequate for scoping out and managing long-term, complex and interdependent trends. By contrast, strategic foresight equips organisations to respond to threats in a timely manner, to prepare effective mitigation plans and policies for undesired futures, and to keep alert for associated early warning indicators.

Benefit 3: Create a future-ready organisation

Future-oriented leaders do not just submit to strategic foresight exercises; they champion them, ensure they focus on the key questions facing the organisation, and use the insights they gain to improve the organisation's strategic coherence. They use foresight work to rigorously test proposed approaches, policy options or operational decisions against the likely stresses and opportunities of the future, helping them become better decision-makers in the here and now. They take action to embed foresight capability in the organisation's planning, decision-making and culture. They look through the windscreen at upcoming possible futures — rather than the side-view mirror of historical data and past performance.

The intent of the leader when they embark on a foresight exercise is thus important. They must undertake the work in a spirit of openness to others' inputs and be willing to change direction, if that is where the foresight insights lead.

Turning insights into action

Contrary to some perceptions, foresight is an action-oriented process. It is — done right — purposeful, targeted, and focused on impact. Looking at the long-term future is not an *alternative* to focusing on current pressures; it is a *vital complement* to day-to-day decision-making. To restate an important definition: strategic foresight offers a means of thinking through multiple, alternative futures *in order to help us make better decisions today*. Successful strategic foresight exercises never just result in profound insight or academic reports: they result in *action*.

Decisions made with an eye on various alternative futures will be far more resilient to change. Singapore attributes its resilience during the 1997 financial crisis to the capability, relationships and policies that had been built throughout various foresight exercises conducted in previous decades.

Case studies: strategic foresight for leadership — lessons learned

It may be useful to briefly reflect on leading examples of the application of foresight in the corporate and government worlds. Four case studies follow, in which the key lessons are extracted. (These case studies are based on research conducted by SOIF into the history of foresight.)

1. Shell's Scenario Planning Programme

Shell has developed and used foresight approaches for more than 50 years. Introduced in 1971, its scenarios programme was meant to assist decision-making and long-term planning by identifying and mitigating risks and uncertainties in the oil and gas market and the broader external environment. The programme helped Shell address disruptions outside typical oil company quantitative forecasting models, including geopolitical disruptions, and meant it was able to anticipate and weather the 1973 oil crisis. Today, Shell uses scenario planning in strategic decision-making and risk management. Scenarios routinely form part of its leaders' planning and are embedded in Shell's organisational culture.

Key lessons for foresight practitioners:

- Sharing foresight resources and techniques can help an organisation position itself as responsible and as a thought-leader in its field. Shell makes its scenarios available to competitors, customers and other interested parties, using online webinars, promotional videos, media and outreach campaigns to boost visibility. This helps support its claim to be interested in stimulating a wider and deeper debate about the future across the industry.⁵
- Foresight work needs to be championed, and the outcomes endorsed, at the senior level to have impact. But it should also

⁵ For example, in Shell's published 2011 futures paper, "Signals & Signposts", CEO Peter Vosel stated that Shell sees sharing its scenarios thinking as part of playing a "constructive and responsible role in the global energy and environment debate".

bring in outsider insights. The original 1970s team behind Shell scenarios brought together Ted Newland, a long-standing senior executive with capital investment authority, and Pierre Wack, an external foresight expert and radical thinker. The combination resulted in high-impact scenarios work.

- For foresight work to endure, futures ‘literacy’ needs to be disseminated throughout an organisation. Shell has made being an ‘early adopter’ of futures part of its corporate story, and staff are expected to learn and value foresight approaches. Individual business units develop detailed scenarios, building on the global scenarios produced by the central foresight team.

2. The UK’s National Foresight Programme, 2003 to date

The National Foresight Programme, otherwise known as Foresight UK, sits inside the Government Office for Science. In the 2000s, the Foresight team broadened the scope of its programme to look beyond ‘hard’ science and technological progress, exploring not just the innovations that could support economic growth (such as emerging technologies) but also the societal impacts of science and technology (in areas such as transport, obesity and flooding). It undertook large projects (typically lasting 18-24 months) that looked far ahead and in depth. Results of its work included new government policies on combating obesity, a new futures network bringing in non-government actors, and the 2006 ‘Sigma Scan’, a set of about 250 short papers identifying trends and developments that might shape the UK and the rest of the world over the next 50 years. Many of the Sigma Scan topics, well outside mainstream thinking in 2006, now dominate the policy agenda: Brexit; the retreat of globalisation; increased US isolationism.

Key lessons for foresight practitioners:

- Strategic foresight projects should not be rushed: they need to be of sufficient length and scale to explore alternative futures, and the implications for current policy, rigorously. The Foresight projects gained credibility because teams were given the time to develop complex, quantitative and cross-cutting analysis.

Time was also taken to ensure engagement and communication of findings across government and to external stakeholders. Project findings are given real-world impact and a longer 'shelf life', leading to new workstreams or initiatives, when they are properly communicated and embedded.

- The programme explicitly looked 'beyond usual groups or cultures' for horizon-scanning, thus drawing in diverse perspectives — including via a new 'Futures Analysts Network' for experts from outside government. This ensured that the 'official future' was challenged, that topics were explored from every angle and that the full range of potential public policy implications was understood.

3. CARE International project, Participatory Scenario Planning for Seasonal Climate Forecasts at Scale in Africa — 2011 to date

CARE International, a global development and humanitarian NGO, runs an Adaptation Learning Programme for Africa (ALP), which aims to increase the capacity of vulnerable African communities to adapt to climate change. The ALP developed an innovative and novel Participatory Scenario Planning (PSP) method, and used it in more than 10 African countries, including Kenya, Ghana, Niger, Ethiopia and Malawi. The participation of local communities is key to the method: PSP combines meteorological forecasts and agricultural science with traditional or local knowledge. It brings local farmers, communities and businesses together with 'traditional' decision-makers (national government agencies, ministries and NGOs) to discuss and develop scenarios. In this forum, stakeholders explore not only shorter-term scenarios such as possible seasonal local rainfall patterns but also longer-term local and national climate-change-related futures and risks, and policies. These participatory scenario planning forums raise the profile of climate futures and, by engaging a range of local stakeholders (farmers' groups, natural resource management committees, women's groups), they shape long-term thinking and adaptation to climate change in communities.

Key lessons for foresight practitioners:

- A participatory, bottom-up approach ensures that those most affected by change are active agents in the scenario-planning process and that they don't feel that decisions are made without consulting them. Communities in the CARE programme were able to voice their concerns, access information that they trusted, and help shape their own futures.
- *Collaboration* is key to trust. The forums gave local farmers and 'unheard voices' the chance to *share* their thoughts and ideas with NGOs and ministries, and this, in turn, made them more likely to respond positively to their initiatives. Involving people in decisions makes them more likely to implement them.

Embedding foresight in central government policymaking

Many countries have established foresight units and strengthened foresight capabilities to improve longer-term thinking, including Canada, Finland, Singapore and the UK. Finland's Parliamentary Committee for the Future works in dialogue with the government to explore future risks and opportunities. Wales now has a Future Generations Commissioner, advising public bodies on the long-term impact of their work. Singapore has worked hard to embed foresight as a core skill across ministries.

Key lessons for foresight practitioners:

- Foresight adds most value in policymaking when it has a senior champion at the heart of government. The UK or Singapore models suggest the prime ministerial office is often the logical 'locus' for a futures or foresight team, as it has 'enforcing powers' and can boost understanding of foresight work by convening networks and running training programmes.
- Parliaments and legislatures can play a key role in encouraging government departments to consider the longer-term impact of policies, but parliamentary committees need to have the mandate to shape policies 'upstream', i.e. early in policy development,

in order to influence outcomes. Critiquing or reporting on government policies already implemented is less valuable.

- Government bureaucracies are typically sclerotic, large and slow-moving; they lack the agility and flexibility of businesses or start-ups. ‘Institutionalising foresight’, therefore, can be particularly important in the public sector: putting in place structures and processes that will encourage longer-term thinking in the civil service, and strongly signalling top-down support for it, via ministers or heads of departments. Without the right ‘infrastructure’ and commitment, foresight programmes can be subject to the ebb and flow of political will, quickly set up and then just as quickly dismantled (as in the UK or Swedish experiences) when they don’t deliver clear and measurable outputs in a short period of time.

Taking the plunge: applying strategic foresight in an organisation or sector

Foresight is sometimes perceived as being all about the application of particular methodologies or tools to looking at the future. Some key tools and methodologies will be briefly outlined below, but ‘foresight’ simply describes a systematic approach to engaging with the future. Beneath this umbrella term, there are many different ways to design a futures exercise, and many tools that can be applied. The governing considerations will be the purpose, organisational culture, and the time and resources available: context guides content.

Applying foresight I: the learning journey of foresight

As stressed above, the methods and tools of foresight are simply mechanisms to facilitate futures thinking. What is offered here is a ‘taster’ of some key components of foresight work — the tools and techniques typically used.

The School of International Futures (SOIF) has developed a four-stage ‘learning journey’ to frame the experience of organisations going through a strategic foresight process (Figure 2).

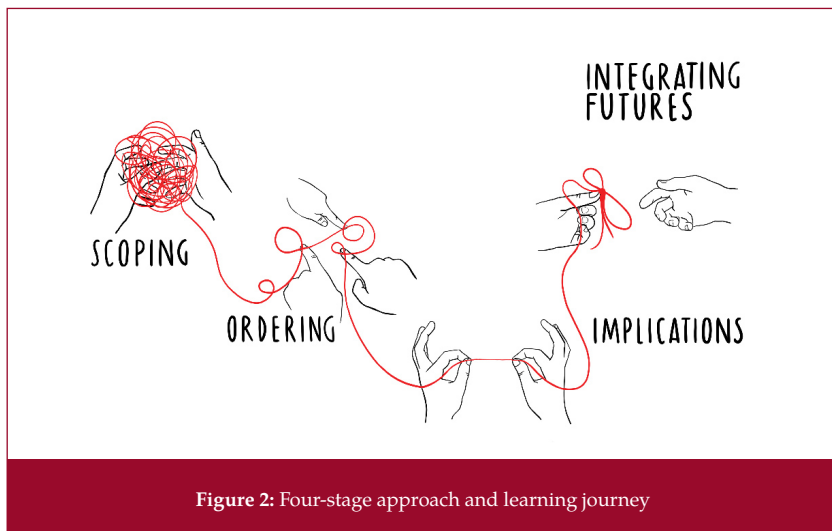


Figure 2: Four-stage approach and learning journey

This broad framework can be adapted to fit the particular organisation or sector and the specific question or questions it wants to examine. Its systematic, staged approach helps organisations to take a thorough and comprehensive approach to frame, and then to answer, complex questions. Leaders have a key role (but not a monopoly) in designing the questions.

In developing this book, the authors applied the framework to: first, explore what the issue was and what key questions needed to be answered (the ‘scoping’ stage); next, look at past and future trends, factoring in uncertainties, wildcards and shocks or disruptions between now and 2030; third, understand the implications (challenges, risks and opportunities) for HE policy; and finally (captured in the concluding chapter) look at how these insights can best be integrated into the sector and into policy.

Scoping and framing (the first stage) is critical to ensure the ‘right’ question is being posed; taking time over this part is crucial. ‘Ordering’ is about making sense of complex and intersecting trends. ‘Implications’ comes third, and is often the most urgent question on decision-makers’

minds ('what does this mean for us today?'). 'Integrating futures' means embedding foresight work in the organisation's culture. Most futures exercises spend most time working through 'ordering' and 'implications', but 'scoping' and 'integrating futures' ideally require equal amounts of time.

The following section sets out in more detail what any organisation can expect of the four-stage 'learning journey':

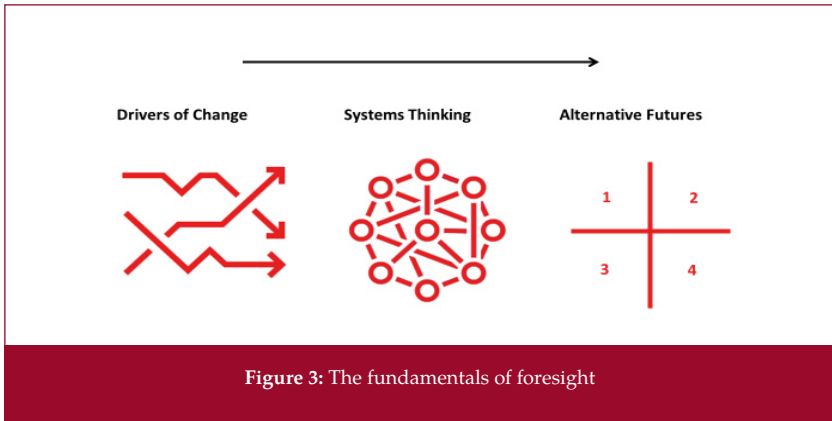
4. **Scoping** Understanding the context and people in the organisation, framing the question to be answered. Different organisations adopt foresight approaches for different reasons, and fully understanding the reasoning behind the exercise will determine the precise scope (what is done, how, and who is involved). These issues are best explored in an interactive workshop, with the leader who commissioned the work represented, but with other views on scope also taken into account. This stage can be delicate and involve a balancing of views, but getting the question 'right' is essential in order to produce a useful and use-able foresight 'product' and actionable recommendations at the end of the process.

5. **Ordering** Creating contrasting, coherent futures using 'drivers of change' analysis (to recap: a 'driver' is a factor in the external environment that brings change). Drivers tend to be neutral and have the potential to 'drive' change in one or more directions, depending on how they manifest in the future. It is the intersection between drivers of change that produces clusters of tangled issues (complexity). Using the available evidence/insights about the future helps to sketch out different potential futures ('scenarios'). The key here is to develop alternative futures systematically instead of impressionistically — moving away from a fixed idea about the future to look at several alternative, plausible futures.

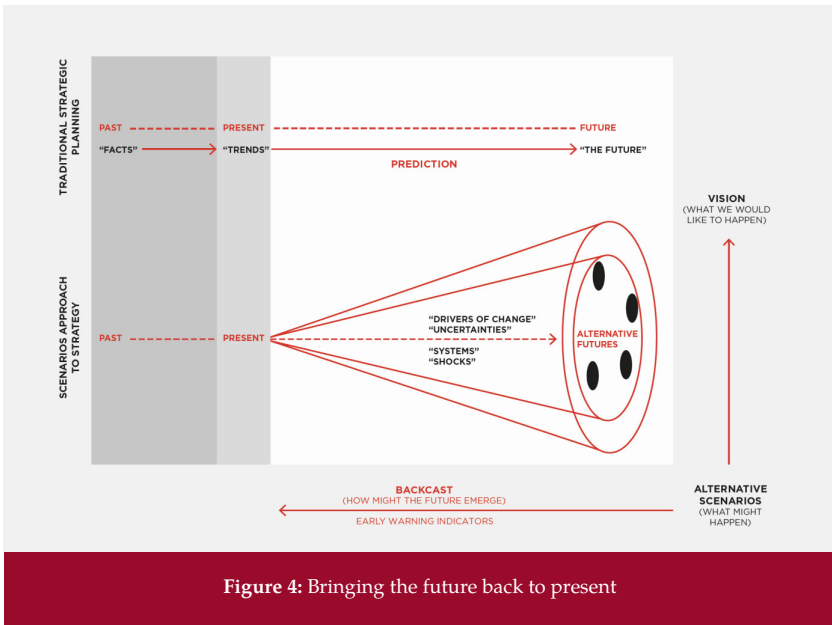
6. **Implications** Systematically working through the consequences of those various futures over time and from multiple perspectives. It is important here that participants avoid jumping to seemingly obvious conclusions about the implications of particular scenarios. A systematic approach will help the organisation work out in detail the impact on today's strategic position, policies, programmes and approach, as well as on short- and longer-term decisions.
7. **Integrating futures** Embedding insights from foresight exercises into the organisation (culture, structure, etc) and beyond (the sector, key stakeholders); agreeing what the organisation will do differently 'starting from today'.

It is worth noting that the 'ordering' stage itself has three key elements, as per Figure 3:

- i. First, analysing the **drivers of future change** — because the future cannot be predicted, the most important drivers are those of high impact (on the future) and high uncertainty (as to how they will develop).
- ii. Second, **applying systems thinking** to analyse the interactions between these drivers. Many drivers have a range of alternative outcomes, so there is value in taking time to assess how those will affect the overall 'system' in which an organisation will be operating; factoring in unexpected consequences and shocks is then feasible.
- iii. Mapping how the most important drivers may intersect to produce **alternative, plausible futures ('scenarios')**. Typically, four or five alternative, credible scenarios are developed by the group. It is then time to test out current and future policies and approaches against these alternative scenarios.



Finally, the visual below (Figure 4) outlines the relationship between the past, present and future in foresight thinking. Leaders in the HE sector seeking to think about the future may find this summary helpful. It shows how, as they look from the present to the future, organisations can develop a range of plausible future scenarios against which to test current and planned practice. The ‘fan’ shape indicates the wide range of plausible future outcomes.



Applying foresight II: flexible foresight for actionable insight

As emphasised above, strategic foresight provides *a context-dependent, flexible set of tools to answer the question(s) facing an organisation or sector*. The purpose of the exercise — understanding what senior leaders commissioning strategic foresight work want to achieve, and jointly agreeing objectives after a participative discussion — will guide all interventions. There is a range of reasons why organisations may begin thinking about the future. The prompt or ‘trigger’ is different in each case. As a result, the ‘lens’ applied is different — ensuring the process results in purposeful, actionable insight. For example:

- If an organisation has new leadership or faces significant internal or external change, matters of **organisational purpose** arise, resulting in questions such as:

“Why are we here? How can we achieve our goals in different futures?”

- During regular **strategy development or policy planning processes**, an organisation may want to explore scenarios and options, asking:

“What future developments do we need to look out for? What’s on the horizon? How can we factor these into our planning and resourcing?”

- In **risk management**, the organisation can improve its preparedness and resilience by asking:

“What happens if . . .? What risks are on the horizon? Can we war-game this scenario (i.e. work through the risks of a given scenario in detail)?”

- To **innovate** in response to disruption in the market, or new players/competitors, asking:

“What new opportunities may arise over a five or 10-year timescale? Should we be doing things differently? What new solutions or new angles could we explore?”

- To **convene stakeholders and set a joint vision** for a sector, a foresight exercise could bring together different organisations in asking:

“What might our joint futures look like? What can we collectively do to move change in the desired direction? How can we collectively strengthen our resilience or prepare a collective response?”

It is also worth stressing that the ‘problem’, issue or question initially presented by a leader of an organisation commissioning foresight work from outside experts or an inside team sometimes needs to be re-framed to help them clarify the wider question they face. Many organisations start off seeking ways to manage short-term risks but, in the strategic foresight process, begin to see that they need to take a more comprehensive and/or longer-term view.

Applying foresight III: mindset and thinking practices

Engaging with the future involves both left-brain and right-brain approaches. Strategic foresight is both an art and a science — a *craft*. Specific tools and methodologies — such as scenario planning, wind-tunnelling or criteria analysis — can all be taught, but there is also a creative element in developing visions of alternative futures, in being able to step outside the present to fully imagine what might be, and what new responses might look like.

Leaders need not be personally equally strong in creative/imaginative and critical/analytical thinking — it is rare for anyone to be so gifted — but they should see the value in both. If there is a dominant ‘type’ in the leadership group (often, the group contains more analytical/critical thinkers), leaders should actively involve individuals stronger on the other side (the creative/imaginative) and ensure that their contributions are heard. Participants should also be asked to be aware of their own thinking styles when undertaking strategic foresight exercises.

Applying foresight IV: widening the 'circle of minds'

Strategic foresight must be systematic and iterative to be effective. It must also — crucially — be undertaken collectively. Leaders in any sector who embark on a foresight 'journey' will come to realise that it is not a personal or individual process. Musing about the future alone or in small, elite groups (for example, at company board level) will not provide the right kind of rigour or insight; there is too high a tendency in these circumstances to rely on 'mental heuristics', cognitive biases, group-think, and assumptions based on past experience.

A meaningful foresight intervention must involve the organisation, sector or society as broadly as possible, engaging the periphery and confronting differing views. It is important in particular that the organisational or sectoral leaders involved commit to including the voices of those not usually listened to, such as junior staff in a hierarchy. Involving a wide 'circle of minds' in collective, participative conversations about the future evens out biases in individuals' knowledge and assumptions and counteracts institutional tendencies to favour particular types of 'answer' or themes (for example, a group crammed with economists may overlook or underrate social/ecological factors).

Including a wide 'circle of minds' in the initial foresight exercise is also important because in the longer-term it is the capacity of all staff to practise the craft of strategic foresight in their day-to-day work that will determine whether the organisation is 'future-minded' or not.

There is no denying that this participative approach may feel challenging for leaders: they may feel nervous about proactively opening up deep questions about the organisation's future among a wide range of colleagues; they may fear an 'emperor's new clothes' effect; they may worry about handling the dynamics of stepping out of the classic top-down 'decision-maker' role and into a more open space of dialogue and collaboration. Collective conversations about the future can also bring to the surface profound differences of perspective, or sublimated disagreements about direction. Internal resistance can occur when long-held beliefs are challenged.

But the leader with the confidence and vision to admit uncertainties and ask these searching questions of their own organisation, including the junior people in it, will achieve a far more valuable set of insights. When staff are engaged in strategic foresight properly, 'trusted' to see some of the uncertainties about the future and help develop policy responses, they buy in far more to the decisions (and remaining questions) about future direction. Inclusive, participative foresight helps build a sense of ownership of foresight throughout the organisation.

So the intent of the leader when they embark on a foresight exercise is important. They must be willing to raise issues in a spirit of openness to others' inputs, and be willing to change things, if that is where the foresight insights lead. The opposite — possibilities explored, only to be shut down in the cold light of day as the organisation reverts to 'business as usual' — risks staff alienation, as well as a waste of resource and time.

Applying foresight V: creating a future-oriented culture

Foresight is not just a one-off thinking exercise, something to be done once every few years, or the time-limited application of a set of methodologies. An organisation must integrate it into its culture, programming, strategic planning processes, communications and HR policies to become 'future-minded', completing the fourth stage of the learning journey ('integration'). Too often, this stage is rushed or overlooked. Leaders need to get four key factors right to ensure that foresight is properly embedded in the organisation:

- **Champions** Leaders need to show they value strategic foresight and will champion it in the face of opposition or internal resistance. Other champions from diverse backgrounds/teams can help to 'pitch' the value of futures internally.
- **Processes** Established procedures should be adapted to incorporate futures thinking and a more long-term outlook. Foresight tools should be incorporated routinely when working through quarterly/annual risk management, strategic planning or budgeting processes.

- **Communication** It can be useful to 'sell' foresight internally by going 'with the grain', for example, by speaking the language of 'risk' if that is the organisational mindset. It is also helpful to capture insights and case studies on how foresight has already had an impact on decision-making or outcomes, and to broadcast previous successes.
- **Structure** To ensure that foresight becomes a valued skill and part of 'corporate DNA', the structure of the organisation may need to change. Lighter-resource options include having a foresight expert or appointing a nominated foresight lead for each department. Setting up a whole foresight unit is more resource-intensive, but necessary and feasible for larger organisations with high exposure to global volatility, such as defence ministries or oil companies. Any separate new unit must be well-integrated structurally and culturally so as to avoid introducing internal competition or resistance to its mandate.

Future questions for Malaysian higher education

The tools and typologies outlined here give just a flavour of the ways foresight can be applied to help organisations answer the strategic questions they face. An organisation or sector that is equipped with knowledge of foresight tools and approaches, and has worked towards embedding a more future-focused culture, will be in a strong position to extend foresight thinking well beyond the scope of any initial interaction with foresight experts. Foresight thinking 'for life' is the legacy that a foresight researcher, practitioner and student-for-life aims for as the end of a foresight project approaches.

This book makes a valuable contribution to the ongoing conversation about the future of the Malaysian higher education sector by addressing some of the most pressing questions facing the sector today.

A brief synopsis of the other chapters of the book is given below:

- **Chapter Two** How governments of the past have approached strategic planning for the HE sector and what key issues current and future governments will need to take into account when doing the same
- **Chapter Three** The need for entrepreneurialism to be emphasised much more strongly in the HE sector, to enable graduates to act as job creators, not job seekers, and universities to become more entrepreneurial institutions
- **Chapter Four** The need for Malaysia to consider how its internationalisation agenda may be affected by future change, including technological innovations allowing for more distance learning, and domestic issues preventing students from ‘source countries’ continuing to choose Malaysia
- **Chapter Five** The need for universities to take a proactive approach to talent management to ensure that Malaysia retains and attracts the brightest and best people
- **Chapter Six** The need for STEM provision to better match employers’ needs
- **Chapter Seven** The need for education to impart a wider range of ‘employability’ attributes, turning out more resilient, flexible and continuous learners
- **Chapter Eight** The need for Malaysia to redouble its efforts to resolve issues of (de facto) ethnic segregation to promote equal opportunities for all.

Challenging questions emerge across the chapters for Malaysia’s HE policymakers and institutions, looking ahead to 2030 and beyond. The cross-cutting questions and issues raised are examined, and a set of recommendations for the sector and its institutions is offered, in the concluding chapter.

Bibliography

Author's own work:

Stewardship of the Future: Using strategic foresight in 21st century governance Cat Tully, UNDP GCPSE, (2015). bit.ly/undpstewardship

Strategic Foresight can make the future a Safer Space Cat Tully, The World Today, Chatham House, (2017). <https://www.chathamhouse.org/publications/twt/strategic-foresight-can-make-future-safer-place>

Using foresight methods to adapt development co-operation for the future p249 in the OECD's Development Co-operation Report 2018: Joining Forces to Leave No One Behind

Applying Foresight and Alternative Futures to the United Nations Development Assistance Framework Cat Tully, for the United Nations Development Operations Coordination Office (UN DOCO) as part of the UNDAF innovations facility (2016).

How Organisations Consider the Future, Cat Tully, for The Health Foundation (March 2019).

A History of Foresight in UK Government 1999-2019, Cat Tully, for The Health Foundation (March 2019).

Wider reading:

A Leader's Framework for Decision Making David Snowden and Mary Boone, Harvard Business Review (2007). www.hbr.org/2007/11/a-leaders-framework-for-decision-making

Why It's So Hard for Us to Visualize Uncertainty Nicole Torres. Harvard Business Review (2016). www.hbr.org/2016/11/why-its-sohard-for-us-to-visualize-uncertainty

The Art of the Long View: Planning for the Future in an Uncertain World Peter Schwartz (1991).

Thinking about the Future: Guidelines for Strategic Foresight, Peter Bishop and Andy Hines (2007).

Scenario planning. Guidance note Introduction to scenarios, particularly for those organising or participating in country, regional or thematic scenario planning work bit.ly/foresightguidance

Foresight: an introduction, Maree Conway, Thinking (2015). <http://thinkingfutures.net/wp-content/uploads/TFRefGuideForesight1.pdf>

Transformative Scenario Planning, Adam Kahane (2002).

Transforming the Future, Riel Miller (2018). <https://www.routledge.com/Transforming-the-Future-Open-Access-Anticipation-in-the-21st-Century/Miller/p/book/9781138485877>

Transformation 2050: The Alternative Future of Malaysian Universities
Sohail Inayatullah, Journal of Futures Studies (March 2018). 22(3): 1–18
<http://www.metafuture.org/product/transformation-2050-2018-pdf/>

Mapping the Futures of Malaysian Higher Education: A Meta —
Analysis of Futures Studies in the Malaysian Higher Education Scenario
Ithnin *et al*, Journal of Futures Studies (March 2018). 22(3): 1–18 <https://jfsdigital.org/wp-content/uploads/2018/03/01MappingtheFutures.pdf>

Higher Education 4.0 : Current Status and Readiness in Meeting the
Fourth Industrial Revolution Challenges Ali Selamat, UTM presentation
(2017).

Chapter Two

A Review of Policy and Planning in The Higher Education Sector in Malaysia Over The Past 40 Years

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Introduction

There are many forces shaping the future of higher education institutions. We certainly cannot assume that the next five-year strategic period in implementation of the Malaysian Education Blueprint for Higher Education or MEB (HE) will be in any way similar to the last. One broad global overview suggests four key drivers shaping the future of universities, which may be applied to the Malaysian context: globalism, multiculturalism, the internet and politicisation (Inayatullah and Gidley, 2000). The uncertainties we face as to the precise direction, and impacts, of all these major trends, and others, create the need for clear strategic planning, vision and foresight in the Malaysian higher education sector. To deal with a complex and uncertain future, it makes sense for us to try to understand that future better, and to achieve some degree of foresight. Foresight thinking is not about forecasting or predicting, however; rather, it is a futures-oriented methodology designed to identify opportunities and constraints in strategic-planning development.

The education system in Malaysia has gone through remarkable changes over recent decades. The government has developed strategies and plans to ensure that Higher Education Institutes (HEIs) are competitive in the global education market, achieve world-class status and operate as a hub for higher education in South-east Asia (Ministry of Higher Education, 2007). Lee (2005) argues that the history of higher education in Malaysia has evolved through four phases: education for elites;

education for affirmative action; education for business; and education for global competition.

The aim of this chapter is to review the key policies, plans and strategies that have shaped the development of higher education in the past and to consider the current state of the HE sector. The chapter summarises Malaysian higher education policy strategies and their implementation in higher education systems.

Malaysia needs to develop its human resources to meet the challenges of competitive global markets, and higher education is a key part of this. Malaysia's Vision 2020 promotes a paradigm shift from assuming an economy based on labour intensive production to an economy based on knowledge (Kamogawa, 2003). Under this vision, the government established the Multimedia Super Corridor (MSC), which, designated as a world test-bed for ICT development, includes smart schools, telemedicine and telehealth, and research and development clusters.

Higher education trends in Malaysia

In the past four decades, the higher education system in Malaysia, which dates to the early 20th century (Moris *et al.*, 2010), has been reshaped by the country's economic development — from agrarian to industrial to knowledge economy — and the aspirations of its government. Higher education institutions are now expected to produce a workforce with the required tenacities and competencies to drive Malaysia's economic growth and productivity (Ithnin *et al.*, 2018).

The focus of the government's First Malaysia Plan (RMK-1), 1966-70, was vocational, scientific and technical education rather than general education. Although the main objective of RMK-1 was to increase job opportunities and narrow the gap in income across the various ethnicities, the government was also aware that economic growth stemmed not only from the raw materials available but also from the intellectual capacity of the people.

The Second Malaysia Plan (RMK-2), 1971–75, aimed to create a viable and dynamic commercial and industrial community of Malay and other indigenous people. It sought to eradicate poverty by increasing job opportunities and achieving more equal wealth or income distribution across all ethnicities in Malaysia.

Following the first two national plans, the government launched several efforts to accommodate potential candidates for higher education and widen participation, and address persistent socio-economic inequalities in Malaysia's multicultural society. The transformation of higher education was initiated by the Ninth Malaysia Plan (2006-2010), which mandated the Ministry of Higher Education (MOHE) to develop a better education ecosystem for public and private higher education, polytechnic institutions and community colleges.

The main aim of the government today is to produce sufficient graduates to meet the requirements of the nation's economic growth and to position Malaysia as an education hub in South-east Asia. Although there is an increase in participation in higher education by students from lower socio-economic backgrounds, participation by groups from rural and remote areas, minority groups, and people with disabilities is still low. Inequalities between people from different schools and socio-economic backgrounds, and between people of different genders and races persist.

The higher education system in Malaysia, 2007 to 2025

The Ministry of Education has implemented several policies through different phases and formulated three education blueprints, designed to provide an overarching vision and strategy for Malaysian education, including higher education.

Higher Education Blueprints and the impact of HE policy strategies

The first blueprint for higher education proposed a National Higher Education Plan (NHEAP), which came into effect in 2007, and covered the period from 2007 to 2010. The second blueprint was the National Higher Education Strategy Plan (NHESP), which, covering the period

2011-2015, comprised more detailed national plans (Grapragasem *et al.*, 2014). The government started developing the third blueprint, the MEB (HE), which covers the 10-year period 2015 to 2025, in 2013.

The three blueprints foresaw four phases of implementation:

Phase 1 : 2007-2010 – laying the foundation

Phase 2 : 2011-2015 – strengthen and enhance

Phase 3 : 2016-2020 – excellence

Phase 4 : beyond 2020 – glory and sustainability

Laying the foundation (Phase 1) aimed to assist all higher educational institutions in producing a human capital cohort (in other words, graduates) with a first-class attitude. It was structured into five pillars that have since been used to build the foundation for future development of the higher education sector. These pillars were focused on improving sectoral governance, leadership, the academic environment, teaching and learning, and research and development. The government implemented a legal framework for universities' boards of directors, vice chancellors and senates, which included transfers of administrative powers so that the higher education institutes became self-governing.

The second pillar was successful leadership in higher education institutions. The third pillar was an environment that could attract the most qualified national staff. Teaching and learning was the fourth pillar: academic staff were expected to lead in their respective fields and focus on innovative modes of curriculum delivery. The final pillar was the improvement of research and development: efforts were intensified to increase the number of researchers, scientists and engineers (Grapragasem *et al.*, 2014).

Strengthening and enhancement (Phase 2) was designed as an action plan closely linked to the overall key objectives of the National Higher Education Strategic Plan. Its main focus was to strengthen efforts to produce human capital, enrich creativity and innovation, maximise the ecosystem of higher education, take advantage of globalisation

and transform the leadership of leading institutions of higher learning. The priority was to increase knowledge and encourage discovery and commercialisation through research, development and innovation.

Based on the plans formulated during Phase 1 and Phase 2, Malaysian higher education policy began to focus on four areas: globalisation, teaching and learning, governance and a knowledge-based society.

Phase 3 (2016 – 2020) has focused on making Malaysia a world leader for higher education and enabling it to compete in the global economy. The third blueprint identified three key themes, known as the ‘Three B’s’: **Bakat** (Talent), **Benchmarking** via global standards and **Balance**. The roadmap of the blueprint builds on five wider national aspirations set out by the government: access, quality, equity, unity and efficiency.

The objectives under these five aspirations are:

- **Access** : improve tertiary enrolment rates from 3 per cent to 53 per cent, and higher education enrolment rates from 48 per cent to 70 per cent by opening spaces for technical and vocational education and training (TVET) via private institutions and online learning;
- **Quality** : increase the graduate employability rate from 75 per cent to more than 80 per cent by 2025;
- **Equity** : ensure that all Malaysians have an opportunity to fulfil their potential regardless of background;
- **Unity** : ensure that enrolment in higher learning institutions reflects a mixture of Malaysia’s ethnicities, aim to provide students with shared values, experiences and common aspirations; and
- **Efficiency** : achieve a listing in the top 25 of 50 countries ranked by *Universitas 21 (U21)* for research, student enrolment and graduate employability.

Phase 4 (2020 and beyond) will be based on the accomplishment of the first three phases and assessment of new challenges looking out beyond 2020 (Ministry of Higher Education, 2007).

Current policy on higher education

The government has emphasised that higher education is one of the most important sectors for developing Malaysia's talent and spearheading its socio-economic growth. It has been focused on providing quality education in order to help Malaysia achieve developed-nation status by 2020.

The Ministry of Education recognises that the higher education system will need to keep evolving to keep pace with global trends. Technological advances and disruptions, increased interconnectivity and the Internet of Things (IoT), Artificial Intelligence (AI) and increased automation, are all expected to reshape the business and social landscape. Higher education systems and higher learning institutions need to prepare Malaysia's young people for this future landscape.

Ten shifts have been outlined to underpin the Malaysian Education Blueprint for 2015-2025. The first four focus on outcomes for key stakeholders in the higher education system, including students in academic and TVET pathways, the academic community, and Malaysians participating in lifelong learning. The other six focus on enablers for the higher education ecosystem, covering critical components such as funding, governance, innovation, internationalisation, online learning and delivery (Table 1).

Outcome	Enabler
<ul style="list-style-type: none"> ◦ Holistic, Entrepreneurial and Balanced Graduates ◦ Talented Excellence ◦ A Nation of Lifelong Learners ◦ Quality TVET Graduates 	<ul style="list-style-type: none"> ◦ Financial Sustainability ◦ Empowered Governance ◦ Innovative Ecosystem ◦ Global Prominence ◦ Globalised Online Learning ◦ Transformed Online Delivery

Table 1: The 10 Shifts (2015-2025)

In order to strengthen the ‘10 Shifts’, various initiatives are being introduced through the Redesigning Malaysian Higher Education System (The Star Online, 2018).

Some of these in particular are worth detailing:

- i. The Integrated Cumulative Grade Point Average (iGGPA) initiative is a comprehensive assessment system that adds value to the traditional CGPA. It assesses students across eight domains of learning outcomes including knowledge, social responsibility, communications, leadership and teamwork, problem-solving skills and entrepreneurial skills, as well as values and ethics.
- ii. The 2u2i is a work-based learning programme in which students spend two years in university to gain knowledge, and two years in industry to gain practical experience. The ministry has established national targets of having at least 15 per cent of students involved in entrepreneurship activities while studying, and at least 10 per cent of students becoming entrepreneurs upon graduation. The percentage of students involved in entrepreneurship activities increased from 20 per cent in 2012 to 75 per cent in 2017. An upward trend has also been observed in the percentage who become entrepreneurs upon graduation.

- iii. The Accreditation of Prior Experiential Learning (APEL) initiative was introduced to encourage lifelong learning and to widen higher education accessibility in Malaysia. APEL provides opportunities for Malaysians to use their work experience to gain entry to university. A person with 20 years of work experience will sit a test, and their portfolio will be assessed to determine the award of an academic qualification, up to masters-degree level. It is not necessary for them to attend traditional university classes, seminars or lectures.

Transformasi Nasional 2050 (TN50)

Transformasi Nasional 2050 (TN50) is a bottom-up initiative to shape the future of Malaysia according to the aspirations of its citizens. It crowd-sources ideas for empowerment and national visions — from Malaysian citizens. Its key targets include making Malaysia among the world's top 20 nations, measured in terms of happiness, creativity and innovation, as well as economic growth.

The government has allocated a total of RM250m for the education of the National Transformation 2050 (TN50) generation. The allocation is intended to be used between 2020 and 2050 to develop science, technology, engineering and mathematics (STEM) centres and improve computer science modules taught in higher education institutions.

Nonetheless, we need to recognise the limitations of such a vision. While the literacy rate has increased in Malaysia — from 76 per cent in 1970 to 94.6 per cent in 2015 — many of its people remain trapped in poverty and struggle to be self-sufficient. In minority indigenous communities, more than 8,000 children have never been to school, and only six out of every 100 who do go to school complete their Form Five education.

Higher education in the era of IR4

The Fourth Industrial Revolution (IR4) has given a new impetus to educational transformation. In recent years, education experts have recognised the profound impact that technological innovations in ICT are having on education. The challenge is keeping up with technological advancements and embracing the new era. Employers' expectations of employees have moved towards tech-savvy communication skills, which, in turn, requires tertiary institutions to update courses and curricula. Higher education should, among its other functions, prepare future generations to face IR4.

In 2017, the Ministry of Higher Education (MOHE) embarked on a comprehensive effort to create awareness and understanding among academia, administrators, institutional leaders and students about the impact, opportunities and challenges of IR4. There is still uncertainty about how to develop the right skills among Malaysia's students, although in general terms the government recognises that higher education institutions must produce graduates with flexible-thinking skills and the ability to adjust to a changing future environment.

Digital technology has the potential to make education significantly more personalised, and there are opportunities for Malaysian higher education institutions to develop a more flexible curriculum, more modular learning and move to 21st century pedagogical methods such as heutagogy (self-based learning), paragogy (peer-oriented learning) and cybergogy (virtual-based learning).

It also has the potential to make education more continuous and 'fluid'. Learning is no longer seen as being limited to schooling and university years; the emphasis is now more on life-long learning. In the future, we will very likely witness on-demand learning (where we learn whatever, whenever and however we want) replacing curriculum-based education. Already, education has gone from a reliance on physical textbooks to digital content, with an increase of computer literacy and connectivity. Soon, we may witness holographic teachers as well as augmented and virtual-reality classrooms.

Key areas of current policy development

Globalisation and internationalisation policy

Education is fast growing as an industry and as an export commodity that can be traded, bringing financial returns to Malaysia. MOHE has set up a National Accreditation Board, which is responsible for examining and monitoring the administration and quality of the courses at all institutions of higher education. Internationalisation (making Malaysia an education hub) is one of the government's goals. Malaysia is a popular destination for local and international students because of the quality of its academic programmes, and Malaysian accreditation is widely accepted in Asia, New Zealand, Japan, Australia, and in the UK and other European countries. With an increased student enrolment of up to 70 per cent over the past 10 years, Malaysian HEIs have been ranked strongly among their Asian peers.

The market forces of globalisation and internationalisation have affected the discourse on the future of the Malaysian higher education sector. In the current higher education context, it is inevitable that market forces do dictate, to a large extent, the growth and development of private institutions of higher education. This highlights the need for educational reforms to ensure that these institutions serve public purposes and produce a highly skilled and knowledgeable workforce.

In order to keep abreast of globalisation trends in higher education, the future of the Malaysian universities must be pro-actively managed. It is important for the government to envisage where we have come from and where we are heading next and in so doing, incorporate the unknowns into decision-making (Inayatullah, 2013; Inayatullah & Milojevic, 2016).

Technical and Vocational Education and Training (TVET) policy

Technical and Vocational Education and Training (TVET) has been identified in the MEB (HE) 2015-2025 as one of the key initiatives for the nation's future (Ithnin *et al.*, 2017).

TVET provides knowledge and skills for employment. It is recognised as a crucial vehicle for social equity, inclusion, economic prosperity and sustainable development. However, several issues have been identified in terms of the mismatch between industry and academia, and graduates' lack of employability. Looking ahead, it will be necessary to enhance the quality and delivery of TVET programmes to improve employability, strengthen the governance of TVET for better management, and harmonise rating systems across private and public TVET institutions.

Science, technology, engineering and mathematics (STEM) policy

Knowledge of and skills in science and technology help bring about economic growth. Malaysia has made capital investments to spearhead economic growth since the 1990s, and long seen science-and-technology education as the key to achieving developed-nation status.

In order to reduce inequalities, the New Economic Policy (NEP) was launched in 1971 with the aim of developing the economy, reducing the income disparity between the different ethnicities and increasing student intake in the faculties of science, engineering, medicine, dentistry, economics and law. The field of science and technology has continued to be given priority in the subsequent Malaysia plans.

Conclusion

This chapter has provided an overview both of historic approaches to education policy in Malaysia, and of the policy strategies in place today to help the country address issues and challenges in designing a sustainable and globally competitive HE system.

Malaysia aspires to emerge as a centre of excellence for higher education in South-east Asia, and it is now incumbent upon the higher education sector to help champion efforts towards this future.

Among the challenges, the most important, explored further in the rest of this book, include: promoting entrepreneurship among institutions

and students; making Malaysia's graduates ready for the Fourth Industrial Revolution and its aftermath; considering how delivery of education might and should change with changes in technologies.

The Malaysian higher education sector will need to ensure that graduates emerge with skills that they can deploy in the workplace and that they are equipped to be entrepreneurs and agents of change, helping the economy grow, and helping Malaysia achieve those other TN50 targets — becoming one of the happiest, most creative and innovative countries on earth.

References

Grapragasem S., AN Mansor (2014). Current Trends in Malaysian Higher Education and the Effect on Education Policy and Practice: An Overview. *International Journal of Higher Education* 3 (1), 85-93

Inayatullah, S., & Milojevic, I. (2016). Leadership and governance in higher education 2025: can Malaysian universities meet the challenge? *Foresight*, 18(4), 434-440.

Inayatullah, S., Milojevic, I., Sanusi, Z. A., & Ithnin, F. (2013). *Transforming the Futures of Higher Education in Malaysia*, AKEPT, Ministry of Higher Education Malaysia.

Inayatullah, S., and J. Gidley (2000). Introduction: Forces Facing University Futures. In *The University in Transformation: Global Perspectives on the Futures of the University*, eds. S. Inayatullah and J. Gidley, 1–16. Westport, CT: Bergin & Garvey

Ithnin, F., Mohd Nor, M. J., & Yusoff, M. R. (2017). Futures Scenarios for Universiti Teknikal Malaysia Melaka (UTeM). *Journal of Futures Studies*, June 2017, 21(4):1-14

Ithnin, F., Sahib, S., Eng, CK., Sidek, S., Harun, RSS. (2018). Mapping the Futures of Malaysian Higher Education: A Meta-Analysis of Futures Studies in the Malaysian Higher Education Scenario. *Journal of Futures Studies*, March 2018, 22(3): 1–18

Kamogawa, A. (2003). Higher Education Reform: Challenges towards a Knowledge Society in Malaysia. *African and Asian Studies* 2 (4): 546

Lee, M. (2005). Global trends, national policies and institutional responses: restructuring higher education in Malaysia. *Educational Research for Policy and Practice*. 3: 31-46. <http://dx.doi.org/10.1007/s10671-004-6034-y>

Ministry of Higher Education. (2007). National Higher Education Action Plan 2007-2010: Triggering higher education transformation.

Moris, Z., Malaysia, U. S. & Malaysia, P. U. S. (2010). 50 Years of Higher Education Development in Malaysia, 1957-2007, National Higher Education Research Institute.

MyForesight (2013). Enabling the future: Re-energizing Malaysia education from cradle to career. Retrieved June 9, 2013, from www.myforesight.my.

Norzaini Azman, Morshidi Sirat & Mohd. Azahari Karim (2010). Building future scenarios for Malaysian universities, *Journal of Asian Public Policy*, 3:1, 86-99 <http://dx.doi.org/10.1080/17516231003634112>

Norliza MZ, Aspah V., Mohmud NA, Abdullah N, Ebrahimi M. (2017). Challenges and Evolution of Higher Education in Malaysia, *International Journal of Islamic and Civilizational Studies*. vol.4, no. 1 – 1, pp. 78–87.

Singh, J., Schapper, J. & Mayson, S. (2010). The impact of economic policy on reshaping higher education in Malaysia. *Research and development in higher education: Reshaping higher education*, 33, 585-595.

The Star Online (2018). Redesigning Malaysia's Higher Education System. <https://www.thestar.com.my/news/education/2018/05/06/redesigning-malaysias-higher-education-system>

Chapter Three

The Role of Higher Education in Creating an Entrepreneurial Malaysia

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Abstract

Since the foundation of the first university in the country, Universiti Malaya, in October 1962, higher education in Malaysia has seen rapid and dynamic change. There are now 20 public universities, 47 private universities and 34 private university colleges (Ministry of Higher Education, 2018). The strong emphasis is on the role of universities in human capital development; the main role of higher education institutions has been, and remains, to produce human resources for nation building (Abas, 2019). Today, however, the workplace is facing new challenges: graduates must be equipped with the skills, knowledge, attitudes and behaviours for the high-technological era.

Recently, Malaysia has introduced a national policy framework for the Fourth Industrial Revolution (4IR) to promote innovation, creativity and competitiveness. Universities in the country are expected to redesign the educational system to deliver a more 'entrepreneurial' education with the aim of positioning Malaysia better amid the dynamism and new challenges of today's international higher education system. Entrepreneurship is seen as the way to create human capital for the future, people able to provide creative and innovative solutions for nation building. In the 'entrepreneurship education' model, graduates are expected to be job creators rather than job seekers.

This chapter looks at how entrepreneurship education has evolved in Malaysia and become a focus of education policy, particularly in higher

education. It then turns to the extent to which Malaysia, a developing country, has to take its entrepreneurship education to a whole new level to realise its vision of creating a million new jobs and a truly entrepreneurial nation by 2030.

Keywords: entrepreneurship; entrepreneurial university; higher education

Introduction

Theories of entrepreneurship

Innovation and creativity form important elements in the global higher education system. Universities are also expected to be innovative in their strategic planning. The Ministry of Education in Malaysia is now recommending public universities generate income, which can only be done through innovative funding strategies. Public universities now have an autonomous status that will require them to be entrepreneurial in how they operate, adopting approaches that will improve their own governance systems, teaching and learning, and research.

Entrepreneurship means different things to different people so definitions will be useful for this chapter. Generally, many agree that:

- Entrepreneurship refers to the creation of **an entrepreneur**, a person who is willing to undertake certain risks in order to take advantage of an invention
- **An entrepreneur** is able to identify and exploit a new business opportunity
- **An entrepreneur** has the capacity and willingness to develop, organise and manage a business venture and its risks in order to make a profit
- The most obvious example of **entrepreneurship** is the starting of new businesses.

Studies have shown that there is no single definition of entrepreneurship (Brown, 2000; Henry *et al.*, 2005). There are different schools of thought, each with its own definition. However, they share certain characteristics. Scholars agree that an entrepreneur is someone who has the instinct to see change as an opportunity for value creation. They also agree that entrepreneurs are visionary, able to conceptualise and implement business plans. According to Low and McMillan (1988), entrepreneurship is the creation of new enterprises; Bruyat and Julien (2000) see it as a change process, which results in the creation of new values. Vivarelli (2010) defines entrepreneurship as the process by which new enterprises are founded and become viable. Schumpeter (1911) sees an entrepreneur as an individual who introduces new products and new services, or creates new forms of organisation, or exploits new raw materials.

The term 'entrepreneurship education' has been defined in many ways in different parts of the world, but the focus is on the concept of enterprise and entrepreneurship (Erkkila, 2000). Entrepreneurship education is considered an important strategy in the development of a 'mindset' that will enable graduates to survive in a competitive and challenging workplace, including business start-ups (Luckeus, 2015). Entrepreneurship education commonly refers to the process of teaching and learning that develops graduates with the desired outlook, but it goes beyond that. It is a highly flexible educational system in which what people learn cuts across disciplines and is strengthened by elements of entrepreneurship, resulting in more holistic and balanced graduates (Figure 1).

Flexibility is central to a successful education system in the era of the Fourth Industrial Revolution, a system also known as simply 'Education 4.0' (Ministry of Higher Education Malaysia, 2018). The graduates in such a model are knowledgeable and highly skilful but, more importantly, possess novel attributes and competencies, human values, generic skills and entrepreneurial attributes (Sanchez, 200, Fisher *et al.* 2008). As mentioned by Ahmad (2013), entrepreneurship education is crucial in developing successful entrepreneurs, and the entrepreneurs an education system produces can reduce or eradicate unemployment.

Graduates and Staff: Balanced & Holistic		
<p>Human values (spiritual values)</p> <p>Honest, sincere, considerate, a person of integrity, well-mannered, responsible, accountable, punctual, loyal</p>	<p>Generic skills (self-values)</p> <p>Communication, team working, life-long learning/ education, ethical and professional, strategic and critical thinking, knowledge interpersonal skills strategic skills</p>	<p>Entrepreneurial attributes (competitive values)</p> <p>Leadership, innovative, creative, skilful, competitive, brave, perseverance, risk taking, visionary, intelligent, proactive, ambiguity-tolerance</p>

Figure 1: The values and attributes of graduates from an entrepreneurial university

The vision of entrepreneurship education in Malaysia

Recently, Malaysian Prime Minister Tun Dr Mahathir Mohamad launched the National Entrepreneurship Policy, which aims to turn Malaysia into a truly entrepreneurial nation in order to create one million jobs by 2030 (Bernama, 2019). This major policy initiative serves as a platform not only to assist unemployed graduates but also to develop a system that produces graduates with a drive to create jobs. (National Entrepreneurship Framework, 2019). The 2030 goal is for all Malaysian universities to become entrepreneurial universities. Hence, Malaysia’s universities should be engaging in various efforts to enhance entrepreneurship education by building dedicated infrastructure (Morris, Kuratko and Cornwell 2013). MacGregor (2015) outlined that any entrepreneurial university should have six key elements: good leadership and governance; capacity incentives; entrepreneurial teaching and learning; a culture of entrepreneurship; stakeholder/ industrial partnerships; internationalisation.

The features of an entrepreneurial university can, alternatively, be described as follows:

- i. The university promotes **entrepreneurial thinking and leadership (transformational leadership)**.

Entrepreneurial leaders or transformational leaders are people who prepare themselves for very turbulent environments. They display entrepreneurial behaviours of flexibility and strategic thinking and are adaptable in times of uncertainty and complexity. The entrepreneurial-university experience should support the development of these traits. If university leaders themselves are transformational, they can position entrepreneurship as a major part of the university's strategy.

- ii. The university strives for **diversification of its funding base** through endowments and specialised services and also from internal resources.

University farms and university business arms are among initiatives typically used to create income for the entrepreneurial university. Existing strategies for income generation, however, need some improvement. Academics need to rigorously consider the effective use of their expertise for income generation. This will include the organisation of seminars, conferences and short courses. Academics will be involved in securing grants for research and for the development of innovations. Sources of research funding also include public-private sector and industrial collaboration, where the university acts as the solution provider for problems in industry or as a consultancy.

- iii. The university practises **integrative teaching and innovative learning**, involving live case-studies, and students develop their own ideas with the support of local businesses and business mentors who **inspire entrepreneurial actions** through multidisciplinary programmes/approaches.

Integrative teaching and innovative learning support the concept of Education 4.0, which reflects a 21st-century curriculum covering the physical, digital and biological technologies and using tech as a medium of learning. The whole idea of entrepreneurship education is to support the development of entrepreneurial competencies, based on the principle of learning-by-doing. A flexible education system means that students can complete their degrees in a variety of ways, according to learning preferences; they may be allowed to 'mix and match' programmes from different universities or complete their degree in a timeframe of their choosing.

- iv. The entrepreneurial university applies its entrepreneurial capabilities for **national and regional development** by focusing on solving complex world challenges such as poverty through networking and smart partnerships. In doing so, it becomes more relevant.

The university must be responsive to the needs of various internal and external stakeholders. By creating strong ties with external stakeholders, it can act as the driving force for entrepreneurship in the wider regional, social and community environment, and build a network for supporting regional development. The university can also use its strong, varied stakeholder networks to initiate collaborations for knowledge exchange with industry, society and the public sector.

- v. The university actively participates in putting **social entrepreneurship** into practice in creating values for society.

Social entrepreneurship helps a university remain relevant. Through innovative projects, including strengthening small and medium enterprises, the university creates value for society. It can act as an engine powering new sources of income for the community.

The characteristics of an entrepreneurial university point to the definition of educational entrepreneurship as a system that, based on transformational leadership, develops people with the capability to strengthen the governance system and create wealth for the good of communities and regions. It is important to stress that the definition covers all students. Those graduating in subjects not traditionally allied to business or wealth creation should also be seen as potential entrepreneurs — an entrepreneurial education will equip them to bring the qualities of entrepreneurship to a range of fields, be it medicine, law, science or government administration.

Past trends of entrepreneurship in higher education

According to Othman *et al* (2012), the concept of entrepreneurship education began to surface in discussions in the 1980s. It was only seriously introduced in Malaysia, however, around the year 2000, when entrepreneurial training began to be available in the form of co-curriculum education programmes, and students were encouraged to sell foods, crafts and services in a carnival.

In 2010, the Malaysian government introduced the entrepreneurship development policy to encourage and promote entrepreneurship among students in higher education institutions (Ministry of Higher Education, 2010). The aim of this policy was to produce human capital that would have entrepreneurial attributes and entrepreneurial values and act as a catalyst for the transformation of the national economy, making Malaysia a high-income nation by 2025. There were six major ‘thrusts’ to the policy:

- To establish an entrepreneurial centre in the public or private university
- To provide a holistic and well-organised entrepreneurship-education programme
- To strengthen entrepreneurship programmes
- To create an effective measurement mechanism
- To provide a conducive environment and ecosystem for entrepreneurial development

- To strengthen the competence of entrepreneurship instructors or educators.

Not long afterwards, the government introduced its strategic plan on entrepreneurship development in higher education (2013-2015). A continuation of the entrepreneurship development policy, this aimed to enhance and improve the six objectives by outlining another 15 key strategies to strengthen the implementation of entrepreneurship education. It included enhancing social entrepreneurship and developing an instrument for measuring the effectiveness and impact of entrepreneurship programmes through key performance indicators.

Recognising the importance of entrepreneurship education, the government launched a comprehensive review of Malaysia's education system and developed the Malaysia Education Blueprint 2015-2025 (Ministry of Education Malaysia, 2013). This blueprint identified '10 Shifts' necessary for continued excellence in the higher education system and for the development of holistic, entrepreneurial and balanced graduates. The shifts included initiatives introduced in three 'waves'. The first wave (2013-2015) immersed entrepreneurship in the curriculum, with an emphasis on practical applications of knowledge through laboratory and project-based work, and a new 'job creator framework' for launching student businesses. The second wave (from 2016 until 2020) sees all education institutions enhance their entrepreneurship programmes, adding more practical components and incentives for entrepreneurial learning to accelerate improvements in the system. The third wave (from 2021 until 2025) includes the establishment of international laboratories and centres of excellence.

To accompany the National Higher Education Blueprint, the Ministry of Higher Education (MOHE) introduced the new Entrepreneurship Action Plans for 2016-2020. These consist of two strategies: Strategy A, curriculum development; Strategy B, strengthening the learning support system. **Strategy A** focuses on how entrepreneurship is embedded across programmes, and **Strategy B** focuses on how universities should support students' entrepreneurship activities.

The job creator framework is one of the most important outcomes in the new strategic action plan (Table 1). The framework includes indicators to show that graduates have been given sufficient entrepreneurial education and training to transform them from job seekers to job creators.

Entrepreneurship support programmes (Year 4)	Inculcation of attributes during the early part of the study programme	Programmes for strengthening the entrepreneurship education (Year 2 & Year 3)
Acculturation of entrepreneurship (Year 1)	Wide opportunities for entrepreneurship learning	Entrepreneurship support programmes (Year 4)

Table 1: The job creator framework

In the ‘job creator’ concept, graduates form new companies/enterprises. For graduates joining existing enterprises, those termed ‘job creators’ are expected not just to fill existing jobs but also to create new ones for others by developing new opportunities or products in their organisations.

The majority of public universities have now made entrepreneurship courses compulsory, to adhere to the policy stipulated by the Ministry of Education (Yusoff, Zainol, & Ibrahim, 2014). Entrepreneurship has become a compulsory subject for all first-year undergraduates in public and private institutions of higher education in Malaysia, though its quantity, methods and forms are varied (Ahmad & Buchanan, 2015).

Factors affecting the future of entrepreneurship in Malaysian higher education

The main driving force for the transformation of higher education is competition and the world ranking of universities, which is in itself affected by environmental and geographical factors, globalisation, internationalisation, technological progress, political interventions and economic stability.

Global competition, however, is far from the only factor creating pressure for change. As stated earlier, Malaysian universities are expected to be autonomous so they can excel in academic research. Government operational budgets for universities will be cut, and they will need to generate their own income. It is believed that *waqf* (endowment in perpetuity) serves as a framework for the creation of wealth for re-investment into entrepreneurial activities (Iman & Mohammad, 2017). *Waqf* has become an important socio-economic instrument in Islam (Yaacob, 2014), and Mahamood and Rahman (2015) believe it has benefited various educational institutions, including universities. At least five universities in Malaysia have their own *waqf*-based academic professional programmes and *waqf*-based activities, for example, welfare services (ibid).

There are other expectations, too: Malaysian universities must be mindful of their country's needs for competent and skilful technologists to compete in the highly industrialised environment, both locally and internationally. The university must also play a significant role in improving the quality of life of communities.

These changes in expectations require structural changes — to governance systems and to courses and the way they are delivered. Curriculum design must reflect Malaysia's needs in the Fourth Industrial Revolution. And it must evolve quickly: current curricula may be preparing students for jobs which, in 10 years' time, may be obsolete.

Curriculum design, particularly in teaching and learning in higher education, must also consider plans to create a culture of innovation in Malaysia through Innovative Human Capital (IHC) development (Hasliza *et al.* 2013). The aim of IHC plans is to support and revitalise the innovation-led economy, by building a society that embraces creativity and invention. There is a great deal of emphasis on ‘discovery’ in the field of science and technology, but graduates are expected to be innovative in all areas, regardless of disciplines or roles in the workforce. Entrepreneurship education needs to enhance the creation of ‘functional’, that is, more employable, graduates.

Universities will also need to ensure that they deliver entrepreneurship education in an effective way. Cheng *et al.* (2009) have found that entrepreneurship education in Malaysia does not match students’ skill expectations and skill acquisition. The teaching methods and the assessment methods of entrepreneurship education are said to be difficult to understand and need further improvement (*ibid.*). Shamsudin *et al.* (2017) have highlighted that the quality of lectures and the student support system can also fall short. A carefully designed curriculum taught by experienced lecturers or academics should be developed to ensure that students’ expectations are met.

Risks, barriers and challenges in entrepreneurial education

The critical success factor for entrepreneurship education is the diversity of delivery systems, and the dynamic processes of teaching and learning. There are various forms of tailoring entrepreneurship education to student abilities and circumstances, such as student-centered learning (SCL), 2U2i academic programmes (two years in industry and two years at university or 3U + 1i), project-oriented based learning (POBL), problem-based learning (PBL), community-based teaching and learning, ‘massive open online courses’ or MOOC, experiential learning and case-studies and student businesses run on campuses.

The combination of all these pedagogical approaches makes a high-quality entrepreneurship education — one that teaches through

problem solving, authentic experiences, real-world interaction, value creation, teamwork, new experiences and exposure to risks, including the risk of failure. The concept of 'let the learners learn' reflects the dynamism of the learning process. The more traditional face-to-face and chalk-and-board models for university education are reduced or modified (Boekaerts, 2010) in the entrepreneurial university. The ability of the graduates to interact with the outside world forms a major indicator of the success of entrepreneurship education. Interaction also means the universities increase collaboration with industry via knowledge and technology transfer.

In an entrepreneurial university, lecturers and teachers are known as 'entrepreneurial educators' or 'facilitators', and delivery systems include the involvement of industries and highly experienced practitioners in particular disciplines. Academics are known to industry, and consultancy is a revenue stream. Contract research, short courses and involvement in projects in industry all generate income for the autonomous university.

Measuring the achievements of an entrepreneurial university is relatively difficult. However, indicators could range from the local to the global impacts, and the effect on both internal stakeholders (students/graduates, staff) and external stakeholders (local businesses and other organisations and whole communities). Companies 'spun out' of R&D departments, intellectual property rights (IPR) and income generation are likely to be much more measurable than 'softer' benefits such as inculcating graduate entrepreneurship, boosting economic development or supporting regional transformation.

By 2030, entrepreneurial practices and initiatives may have resulted in the development of visionary transformational leaders, who will make a difference to how the university is run. Measurement of success could thus include the approaches and qualities the leaders have acquired. The ultimate impact of entrepreneurial initiatives will be the reputation, competitiveness and distinctiveness of the university.

Past achievements, of course, are not enough. Sustainability is important, too, and questions will remain. Will the right financial support be in place, and, if so, from where? Will there be a risk of a lack of adequate support? The university should provide the necessary facilities and the right people to bring it to the next level.

Recommendations: building an entrepreneurial university for Malaysia by 2030

Foundations: four phases

Ensuring the success of entrepreneurship education by 2030 and the excellence of universities, depends, first and foremost, on a culture of entrepreneurship. The whole system of the university will have to embrace the transformation, regardless of discipline, positions or roles. Universities will need to be very flexible in facing the multiple uncertainties and complexities in the higher education environment. The basic principle of entrepreneurialism must be applied in research and innovation, leadership, governance and community services.

Encouraging entrepreneurialism by 2030 could be hugely important in adding value to the administration and management of universities, bringing effective, creative and innovative strategies to bear in reducing costs and bureaucracy, and enhancing efficiency.

The culture of research and innovation in an entrepreneurial university may differ from that of a conventional university. Entrepreneurial universities particularly focus on 'translational' research, research that will have direct applicability to industry and the wider community. The majority of the research activities is applied, with key indicators of success centred on wealth creation and improving the quality of life in the community.

Entrepreneurship education will be enhanced by university chairs of entrepreneurship, sponsored by industries and entrepreneurs, with the aim of establishing centres of excellence in entrepreneurship in Malaysia. Competition between universities will be the norm in the age of entrepreneurship education.

Entrepreneurship education in every university should also be designed to encourage and support bottom-up initiatives. The university will need to make providing incentives a priority, with a reward system for staff who show excellence in entrepreneurship initiatives and programmes. Incentives should include not only monetary rewards but also recognition from senior management.

To ensure the smooth implementation of the entrepreneurship agenda, the entrepreneurial university will need a good governance system, with strong leaders responsive to environmental changes in the pursuit of a more entrepreneurial culture.

In the development of an entrepreneurial culture, four phases will be essential for a university:

- i. The **first phase** will be to generate creative ideas, with a strong will to change at the institutional level. This phase relies strongly on the commitment of the senior leadership team, which will be the main driver for future changes.
- ii. In the **second phase**, the university will develop clear principles and policies that allow achievements to be measured. Based on these principles and policies, it will clearly define how teaching and learning, research and innovation, and community and industry services are affected.
- iii. The **third phase** is where entrepreneurship culture and knowledge culture cut across disciplines, resulting in implementation programmes. The programmes must be seen to be innovative and based on positive outcomes. The academic programmes delivered in the entrepreneurial university will also need to be multidisciplinary, or hybrid in nature to allow entrepreneurial teaching and learning.
- iv. Finally, the **fourth phase** is the creation of an institutional identity as an entrepreneurial university, which is acknowledged and

accepted by the stakeholders and industry. The university must have a different outlook and reflect its entrepreneurial approach in both the mindset of its student and the facilities on campus.

These phases would clearly position the university as entrepreneurial in terms of its brand and reputation. The process of institutional cultural change does not happen overnight, however. It will come in small increments and depend on the existing culture, which, if hostile to change, will create impediments. One way to speed up the transition is to ensure collaboration and active participation (through consultation and feedback).

Results: signs of cultural change

What, then, will success look like at the end of the change process? The development of the right, entrepreneurial culture could be observed through several indicators:

- Effective and efficient management systems for making decisions at all levels, to speed up the implementation of programmes and projects
- A dynamic, creative and innovative support system (consisting of both people and 'hardware' and infrastructure) to enhance all other initiatives
- Diversified sources of income to ensure financial sustainability
- Programmes embedding strong elements of entrepreneurship across all disciplines; the inculcation of entrepreneurial attributes across students and staff
- Chairs on entrepreneurship that help strengthen and add value to all entrepreneurial initiatives
- The ability to attract and retain entrepreneurial staff
- Healthy competition within and outside the university, based on reputation
- The involvement of industry and other stakeholders in creating a strong brand and positive reputation for the university

- A system that rewards people for supporting the entrepreneurship agenda and making it possible.

A model for the entrepreneurial university

All stakeholders have a contribution to make in developing the five key characteristics of an entrepreneurial university — leadership, funding, integrative teaching and learning, regional development and social entrepreneurship. We therefore propose a model based on shared leadership (Figure 2).

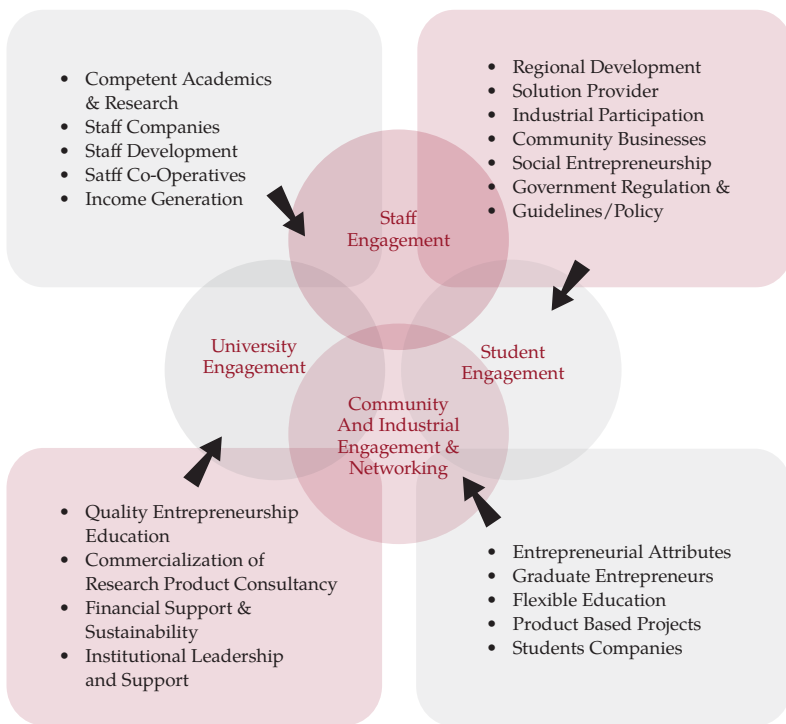


Figure 2: Proposed model for an entrepreneurial university ecosystem

In this model, all university communities and other stakeholders focus on the entrepreneurial agenda and ensuring it succeeds. The culture and environment encourage healthily competitive entrepreneurial activities (teaching and learning, research and innovation, and community services), and all university citizens are involved in these activities. There are high levels of commitment based on the vision and mission of the university — across the university. Highly interrelated strategies indicate a strong team working towards the same goal — excellence. There is also a strong level of engagement with industry and the wider community; industry plays an important role in assessing the quality of entrepreneurship education and graduate employability, and in the financial sustainability of the university.

Characteristics of the citizens of an entrepreneurial university

As previously stated, the entrepreneurial university has implications for the attributes and mindset of its members. Its ecosystem requires:

- **Students/graduates** who are highly enterprising, rich in human values, generic skills and entrepreneurial attributes, able to own a company, involved in non-academic activities and in networking inside and outside the university, and highly adaptable to change.
- **Academic staff** who are entrepreneurial educators and innovative researchers, who demonstrate transformational leadership qualities and are able to face challenges, who are team-players involved in university business activities and staff co-operatives, who have strong consultancy skills and are able to generate income based on their expertise.
- **Non-academic staff** who display transformational and proactive qualities, who are members of a strong and stable governance system and an effective, innovative administration, who are team-players and involved in community service but also commercially-minded, focused, where appropriate, on cost-saving strategies.

- **Leaders** who are visionary, competent and knowledgeable, strategic thinkers, entrepreneurial, appreciative of junior staff's contributions and empowering and respected role models. They are also risk takers willing to accept high levels of accountability and able to spot and seize opportunities.

Conclusion

Creating an entrepreneurial and innovative university is about evolution rather than revolution: it should be seen as stretching and expanding efforts that already exist. It means re-conceptualising the work of higher education and the function of the university — and the university playing an important role in developing enterprising graduates and promoting entrepreneurialism.

The setting-up of enterprises and business start-ups forms a significant part of entrepreneurial university activities in the 2030 future envisaged in this article, but it is by no means the totality of the change. New knowledge and innovations need to be embedded in the academic curriculum and throughout university systems.

Making the higher education sector in Malaysia entrepreneurial by 2030 would deliver more effective university management systems, diversified sources of income, technical innovations, positive social impacts, and economic growth. All of these elements could be realised through the collaboration of students, staff, external organisations and communities.

References

- Abas, A. (2019). Dr M: Malaysia needs to become a nation of entrepreneurs, retrieved from <https://www.nst.com.my/news/nation/2019/09/520775/dr-m-malaysia-needs-become-nation-entrepreneurs>
- Adnan, R. M., Yusoff, W. F. W., & Ghazali, N. (2018). The Role of Social Entrepreneurship in Malaysia: A Preliminary Analysis. *Advanced Science Letters*, 24(5), 3264-3269

Ahmad, S., Z. & Buchanan, R., F. (2015). Entrepreneurship education in Malaysian universities, *Tertiary Education and Management*, 21:4, 349-366

Ahmad, S., Z. (2013). The need for inclusion of entrepreneurship education in Malaysia lower and higher learning institutions, *Education + Training*, Vol. 55 Issue: 2, pp.191-203

Bernama (2019). Malaysia: a true entrepreneurial nation by 2030, retrieved from <http://www.bernama.com/en/news.php?id=1744961>

Blenker, P., Korsgaard, S., Neergaard, H. & Thrane, C. (2011). The questions we care about: paradigms and progression in entrepreneurship education. *Industry and Higher Education*, 25, 417-427.

Boekaerts, M. (2010). The crucial role of motivation and emotion in classroom learning. In: Dumont, H., Istance, D. & Benavides, F. (eds.) *The Nature of Learning*. Paris: OECD Publishing.

Brown, C. (2000). *Entrepreneurship education Training Guide*, Kansas City, M.O. Kaufmann Centre for Entrepreneurship Leadership.

Bruyat, C. and Julien, P.A., (2000). Defining the field of research in entrepreneurship. *Journal of Business Venturing* 16(2): 165-180.

Erkkila, K. (2000). *Entrepreneurial Education: mapping the debates in the United States, the United Kingdom and Finland*. Abingdon, Taylor and Francis.

Fisher, S., Graham, M. & Compeau, M. (2008). Starting from scratch: Understanding the learning outcomes of undergraduate entrepreneurship education In: Harrison, R.T., & Leitch, C. (eds). *Entrepreneurial Learning: Conceptual Frameworks and Application*. New York, NY:Routledge

Florida, R. (2002). *The rise of the creative class: and how it's transforming work, leisure, community and everyday life*. New York Perseus Book Group.

Hamilton, R. and Harper, D. (1994). The entrepreneurship in theory and practice. *Journal of Economic Studies*, 21 (6), 3 – 18.

Hasliza, A.H., Noor Hazlina, A. & Ramayah, T. (2013). Innovative human capital as a core strategy towards an innovative-led economy: Malaysian perspective In: *Intellectual capital strategy management for knowledge based organisation*. Chap 14; 239 – 247. DOI: 10.4018/978-1-4666-3655-2

Henry , C. Hill, F. and Leitch, C. (2005). Entrepreneurship education and training: can entrepreneurship be taught? Part I, Education + Training, Vol. 47 Issue: 2, pp.98-111, doi: 10.1108/00400910510586524

Iman, A. H., M. and Mohammad, M., T., S. (2017). Waqf as a framework for entrepreneurship, *Humanomics*, Vol. 33 Issue: 4, pp.419-440

Kyro, P. (2005). Entrepreneurial learning in a cross-cultural context challenges previous learning paradigms in: Kyro, P & Carrier, C. (eds). *The dynamics of learning entrepreneurship in a cross-cultural university context*. Hameenline. University of Tampere.

Lackeus, M. (2014). An emotion-based approach to assessing entrepreneurial education. *International Journal of Management Education*. 12(3), 374 – 396.

Lackeus, M. (2015). Entrepreneurship education: What, Why, When, How. *Entrepreneurship360 Background Paper*, OECD, p7

Low, B.M. and Macmillan, I.C (1988). Entrepreneurship: Past research and Future challenges. *Journal of Management*, 14(2), 139 – 161.

Lundstro`m, A. and Stevenson, L. (2001). *Patterns and Trends in Entrepreneurship: SME Policy and Practice in Ten Economies*, Swedish Foundation for Small Business Research

MacGregor, K. (2015). Six key elements of an entrepreneurial university <http://www.universityworldnews.com/article.php?story=20151106141848199>, retrieved 13 June 2017

Mahamood, S., M. and Rahman, A. A. (2015). Financing universities through waqf, pious endowment: is it possible?, *Humanomics*, Vol. 31 Iss 4 pp. 430 - 453

Ministry of Education Malaysia (2013). *Malaysia Education Blueprint 2013 – 2025 (Preschool to post-Secondary Education)*, Retrieved from https://www.padu.edu.my/wp-content/uploads/2018/01/3._Malaysia_Education_Blueprint_2013-2025.pdf

Ministry of Higher Education (2010). *Entrepreneurial Development Policy of Higher Education Institution*

Ministry of Higher Education Malaysia (2018). *Framing Malaysian Higher Education 4.0: Future-Proof Talents*, Retrieved from https://umcms.um.edu.my/sites/adeq/pdf/Framing_malaysian_HE4.0.pdf

Moberg, K., Stenberg, E. & Vestergaard, L. (2012). *Impact of entrepreneurship education in Denmark-2012*. Odense, Denmark: The Danish Foundation for Entrepreneurship — Young Enterprise.

Morris, M. H., D. Kuratko, and J. R. Cornwall (2013). *Entrepreneurship Programs and the Modern University*. Cheltenham, UK: Edward Elgar.

National Centre for Entrepreneurship Education (NCEE) (2013). *The Entrepreneurial University: From concept to action*. Entrepreneurial University Leaders Programme, United Kingdom.

National Entrepreneurship framework (2019). Retrieved from <http://www.med.gov.my/portal/document/files/Booklet%20NEF-MED.pdf>

Othman, N., Hashim, N., Ab Wahid, H. (2012). Readiness towards entrepreneurship education: Students and Malaysian universities, *Education + Training*, Vol. 54 Issue: 8/9, pp.697-708

Sanchez, J.C. (2011). University training for entrepreneurial competencies: its impact on intention of venture creation. *International Entrepreneurship and Management Journal*. 7, 239 – 254.

Schumpeter, J.A., (2008). *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle*, translated from the German by Redvers Opie, New Brunswick (U.S.A) and London (U.K.): Transaction Publishers

Shamsudin, S. F. F. B., Al Mamun, A., Nawi, N. B. C., Nasir, N. A. B. M., & Zakaria, M. N. B. (2017). Factors affecting entrepreneurial intention among the Malaysian university students. *The Journal of Developing Areas*, 51(4), 423-431.

Thompson, J.L. (1999). A strategic perspective of entrepreneurship, *International Journal of Entrepreneurial Behaviour & Research*, Vol. 5 Issue: 6, pp.279-296.

Vivarelli, M. (2013). Is entrepreneurship necessarily good? Microeconomic evidence from developed and developing countries. *Industrial and Corporate Change* 22(6): 1453–1495

Yaacob, H., & Yaacob, H. (2013). Waqf history and legislation in Malaysia: A contemporary perspective. *Journal of Islamic and Human Advanced Research*, 3(6), 387-402.

Yu Cheng, M., Sei Chan, W., & Mahmood, A. (2009). The effectiveness of entrepreneurship education in Malaysia. *Education+ Training*, 51(7), 555-566.

Yusoff, M., Zainol, F., & Ibrahim, M. (2014). Entrepreneurship education in Malaysia's public institutions of higher learning: A review of the current practices. *International Education Studies*, 8, 17–28.

Chapter Four

Internationalisation: Dynamics and Tension Out to 2030

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Abstract

The internationalisation of higher education in Malaysia is seen as an important contributor to the development of human capital. It is posited that the competitiveness of local students in the national and international marketplace would be enhanced if they were exposed to international learning and working environments. There is a policy and implementation convergence between the Ministry of Education and the higher education institutions, as reflected in the ministry's strategic intent and the institutional strategy for internationalisation.

Looking ahead to the future, and seeing the internationalisation of higher education in relation to the UN Sustainable Development Goals (SDGs), the current forms of internationalisation need to be reassessed and new forms introduced. The new forms must represent serious attempts to create a balance between the monetary and non-monetary aspects of internationalisation via explicit strategic intent and initiatives at the inter-ministerial level. This chapter proposes that the non-monetary aspect should be emphasised in the new forms, and that the internationalisation of higher education should include addressing the plight of refugees and other displaced people.

Introduction, context and approach

Much of the existing literature on the internationalisation process and outcomes in higher education adopts a standard working definition that reflects a period before truly trans-border delivery of education became

an option. Knight (1997), for example, defined internationalisation as the “process of integrating an international and intercultural dimension into the teaching, research and service functions of the institution”. This was the definition of the internationalisation of higher education until the mid-1990s, when researchers were faced with many new types of education providers, and several new modes of delivery, which entirely transcend national borders and national governance.

The emerging complexity of provision and delivery (Morshidi and Middlehurst, 2017, in Hill and Fernandez-Chung, 2017) has resulted in a more intense form of internationalisation, now referred to as borderless or transnational education (Ziguras and McBurnie, 2015). Recognising this shift, Knight (2015, p. 2) has updated his definition to one that is more expansive and inclusive:

“Internationalization at the national, sector and institutional levels is defined as the process of integrating an international, intercultural, or global dimension into the purpose, functions or delivery of post-secondary education.”

Notably, this new definition considers the growing number and diversity of education providers and modes of delivery as education crosses borders — either virtually or physically.

Discussion of higher education and internationalisation in this chapter focuses on examining the benefits of the interaction between nationalities in higher education. In terms of approach, countries typically consider internationalisation partly from the monetary perspective, i.e., as an aspect of trade in services (education) and their own human-capital development objectives. But the monetary objective of Malaysia’s internationalisation strategy risks becoming untenable in the medium to longer term as geopolitical problems in its traditional markets persist.

Malaysia’s immigration policies, which are considered hostile to international students, are another major disadvantage for the country. Increasingly, China and Japan are cutting into Malaysia’s share of important markets such as Bangladesh, Pakistan and India by

introducing a more student-friendly visa regime. Indeed, there is a need to be realistic about the monetary returns from internationalisation activities between now and 2030.

Should the monetary benefits of internationalisation become untenable, it may be logical for higher education institutions to focus instead on the non-monetary benefits, such as global citizenship, increased inter-regional/inter-cultural understanding through short-term mobility and academic exchanges or through long-term mobility for the purpose of gaining academic and professional qualifications.

When faced with a very competitive international student market, a more pragmatic approach for countries is to seek a balance between monetary and non-monetary objectives when recruiting international students, or planning programmes such as study abroad, internship or academic exchanges. The measures of internationalisation then would be inter-cultural competencies, inter-regional understanding and global citizenship.

In the context of the current neoliberal approach, where the market is supreme and government facilitates the market in accruing profit and surplus, engaging with the global and the international have been seen as rewarding. Trade in higher education services through the recruitment of international students is an important contribution to both the national economy and the financial sustainability or health of private higher education providers. Increasingly, public universities are also exporting services by recruiting international students (Morshidi, Abdul Razak and Koo, 2011; Tham, 2013). Proponents of a more liberalised trade regime would argue for the dismantling or reduction of barriers to the steady inflow of international students, thus driving forward the export of education. Additionally, the internationalisation of higher education is also seen as an important contribution to the development of human capital. It is argued that the competitiveness of local students in the national and international marketplace is enhanced through exposure to the international learning and working environment.

Global universities have set up branch campuses in regional education hubs to take advantage of both the monetary and non-monetary benefits of internationalisation. Anti-globalism and moves towards nationalism, however, are potential disruptors to the steady inflows of international students that currently contribute to the internationalisation agenda. And there are potential national security risks in hosting large numbers of students from countries that are experiencing geopolitical upheavals.

In the case of Malaysia, high targets have been set for international-student recruitment, based on the monetary goals, through the launch of the National Higher Education Strategic Plan Beyond 2020 (NHESP) in 2007, the rolling out of the Malaysia Internationalisation Policy in 2011, and the launch of the Malaysia Education Blueprint (Higher Education) in 2015. At the same time, a majority of Malaysian universities have been strengthening internationalisation to improve graduate employability. Notably, Malaysian public-research universities and some private universities are implementing internationalisation strategies primarily geared towards achieving favourable placings in the global university rankings.

What, then, are the possible futures for internationalisation in Malaysia's HE sector? How do we position Malaysia as a centre for the promotion of inter-regional/inter-cultural understanding and global citizenship based on the internationalisation of higher education? How could Malaysia seek to benefit from both the monetary and non-monetary aspects of the internationalisation of higher education, without undermining national security in the process?

Higher education and internationalisation in Malaysia in the past 40 years

The internationalisation of higher education in Malaysia, as defined by Knight in 2015, is a very recent phenomenon. Generally, however, internationalisation from a broader perspective (studying abroad for a qualification) has a long history in Malaysia. It began after Malaya's independence in 1957 and the subsequent formation of Malaysia in 1963. Immediately after Malaya's independence, 'internationalisation'

could be understood as studying abroad for the purpose of capacity-building in the newly independent nation. University Malaya in Kuala Lumpur, as Malaya's sole university, could not train enough people for a nascent government administrative machinery. Even after the formation of Malaysia in 1963, and the establishment of several public universities, capacity in local universities was still insufficient to meet the demand for further and higher education (Azizah Kassim, 2013; Tham, 2013).

Waves of study-abroad programmes were linked to partnerships between Malaysian higher education institutions and higher education providers from overseas in the late 1960s. These partnerships were sustained over the years. Of some significance is the link between Institut Teknologi MARA (ITM) and Ohio University in the US. The relationship started in 1968, with Ohio University establishing business and commerce programmes with ITM (now UiTM). Ohio University professors would teach at ITM, and ITM sent its lecturers, staff and students to Athens (Ohio) to start full residency programmes at Ohio University. In 2009 and 2010, the faculty of communication and media studies at UiTM sent two groups of students on an internship programme at Ohio University (Ohio University, 2018). After that, MARA played a very active role in promoting study abroad through dedicated institutions such as University Kuala Lumpur (UniKL), and it established collaborative programmes with more universities, in, for example, South Korea.

Beginning in the 1980s, private higher education institutions in Malaysia were aggressive in promoting study abroad via various twinning programmes with universities in English-speaking countries such as the UK and Australia. This allowed for split-time studies in Malaysia and at partner universities abroad. In the late 1990s, however, the Ministry of Higher Education (MOHE) changed the course of these twinning programmes. The MOHE required private higher education institutions in Malaysia aspiring to full-university status to offer full-blown, home-grown academic programmes and qualifications. This eliminated the twinning degree programmes with foreign higher education institutions at the undergraduate level, although many

institutions continued to collaborate with institutions in Japan, South Korea and Europe under summer-school or university-industry internship programmes.

The trend for Malaysians to study abroad for a qualification began to decline between the late 1980s and early 1990s. Much of this was due to Malaysia's balance-of-payments problem and the high cost of studying abroad, especially in the UK. Education and training of technical and professional workers required by industry and the government was undertaken locally or in less expensive emerging centres of education in East and South-east Asia. Thus, the years 1991-2000 saw the need to increase capacity locally to meet increasing demand for places in local institutions of higher learning. With quality of education provision a major concern for the government, the Private Higher Educational Institution Act (PHEI Act) 1996 was introduced. This provided the regulatory regime for the provision of quality private higher education in Malaysia.

It has been found that the extent of internationalisation was very low among higher education institutions in Malaysia before 2007 (Karim & Maarof, 2012; Ghasemy et. al, 2018). This was despite the introduction of a regulatory regime for the provision of higher education by the private sector in 1996 and other related reforms. The percentage of full-time foreign students in higher education institutions was generally low; the number of foreign students on attachments was also low. Furthermore, the foreign students came from a limited number of countries. The same pattern was noted for staff (faculty), with the number of expatriate faculty small and from only a few countries of origin.

It appeared that even though higher education institutions included internationalisation as part of their vision and mission statements, most did not have a written policy on it (IPPTN, 2007). Between the mid and late 1990s, Malaysia was just beginning to establish itself as a centre for affordable quality education. There was relatively little internationalisation, resulting from an unsystematic approach (IPPTN, 2007).

The National Higher Education Strategic Plan Beyond 2020 recognised the potential contribution of international-student recruitment in Malaysia's transition to an innovation- and knowledge-based economy, and, in 2011, a new policy outlining an aspiration to become an international education hub was launched. Malaysian involvement in the export of education, defined as a "transaction across borders involving the provision of education services in exchange for financial consideration" (New Zealand Ministry of Education, 2001, p.11) was pursued with such a strategic intent.

Since the early 1990s, internationalisation at the national, sector and institutional levels has not been conceptualised merely in terms of its monetary benefits (Knight, 2015). It is beginning to be understood in terms of its impact on global and regional understanding, and intercultural and inter-regional competencies.

The outward mobility of Malaysians on either short or longer-term study abroad is integral to the concept of internationalisation; so, too, is the inflow of foreign students to Malaysia. Individual universities have stretched their internationalisation efforts through centres and units and through programmes such as AIMS (ASEAN International Mobility for Students), initiated as a collaboration between the governments of Malaysia, Indonesia and Thailand and SEAMEO-RICHED (South-east Asian Ministers of Education Organisation, Regional Centre for Higher Education and Development) in 2009 (Farina, 2015). AIMS was primarily under the aegis of the ASEAN University Network (AUN) for collaborative arrangements with members of the Association of South-east Asian Nations (ASEAN) and with international partners such as Japan, Korea, China and EU. The monetary aspect of internationalisation, however, is still at the forefront of policy development and implementation. Since the launch of the NHESP, the education sector has been identified as one of 12 potential National Key Economic Areas (NKEAs). The target was to increase the contribution of private education 1.5 times to 2 per cent of GDP in 2015 and attract 150,000 international students by 2015 (IPPTN, 2012). This target was the basis for the 'Malaysia as an education hub' objective of 2011.

Year	Event
1963	Formation of Malaysia; capacity of local universities is insufficient to meet the demand for further and higher education among Malaysians
Late 1960	Wave of study-abroad programmes, linked to partnerships between Malaysian higher education institutions and higher education providers overseas
1968	Academic collaborative link between Institut Teknologi MARA (ITM) and Ohio University in the US
1970	Trend for Malaysians to study abroad for a qualification
1980s	Private higher education institutions in Malaysia aggressively pursue study abroad via various twinning programmes with universities in English-speaking countries
Late 1980 and early 1990	The trend for Malaysians to study abroad begins to decline due to Malaysia's balance-of-payments problem and the high cost of studying abroad
Late 1990	<ul style="list-style-type: none"> • MOHE requires private higher education institutions aspiring to full-university status to have full blown home-grown academic programmes and qualifications • Local capacity needs to increase to meet rising demand for places in local institutions of higher learning
1996	<ul style="list-style-type: none"> • The Private Higher Educational Institution Act (PHEI Act) is passed by parliament • The government introduces a regulatory regime for the provision of higher education by the private sector and other related reforms
2007	The National Higher Education Strategic Plan Beyond 2020 recognises the potential of international-student recruitment to contribute to the national economy
2011	<ul style="list-style-type: none"> • The government launches its policy to make Malaysia an education hub and its internationalisation strategy

Figure 1: Significant developments in the internationalisation of higher education

Future trends out to 2030

Strategies for the future of higher education need to be informed by thorough assessment of the trends and major forces shaping the environment in which institutes will operate. The foresight approach allows us to identify current forces, emerging issues and uncertainties and plausible future scenarios and their implications. Looking ahead, it helps us to consider alternative futures, design a preferred future, and articulate recommendations on strategies for internationalisation policy.

Malaysia has set itself the international-student recruitment target of 250,000 by 2025. If the annual growth rate of student enrolment is 6 per cent per annum between 2025 and 2030, by 2030 there should be as many as 300,000 international students enrolled in Malaysia's education institutions. As of December 2017, based on data from Education Malaysia Global Services (EMGS), the statistics on international-student enrolment are: 103,198 (in private higher education institutions), 33,095 (in public universities), 24,503 (international schools), 8,528 (language centres), and 744 (skill centres). A noticeable drop is recorded in the non-tertiary sector — from 29,541 to 24,503 (international schools) and 10,653 to 8,528 (language centres).

The objectives underlying the government's targets are primarily monetary: each international student is projected to contribute directly to the national economy to the tune of no less than RM45k per student per year. In addition, there are substantial indirect spending impacts on the economy, which are not captured in the national statistics.

Is an upward trend in terms of the inflows of international students sustainable until 2030? Can we assume the historical rate of higher education enrolment (from 2003 to 2017) will continue in the future (2020-2030)? Based on preliminary data for private HEIs to June 2018 from the EMGS, we are already experiencing a downward trend in international-student enrolment.

Trends and drivers of change

At the highest level, future trends for the internationalisation of higher education in Malaysia are dependent on (a) developments in Malaysia and (b) the demand for higher education in Malaysia's target countries. We need to consider both the local situation in Malaysia and developments in target countries in terms of geopolitics, demography and socio-economic transformation. A suitable proxy for the demand in higher education is the number of students enrolled in higher education. Forecasting the demand for higher education can be done by matching the higher education age population cohort in a country with its enrolment rate in higher education, i.e., the demand for HE can be estimated using the population cohort of those who are likely to enrol in higher education (IPPTN, 2012). But such forecasts are necessarily uncertain.

With regard to international-student demand for HE and Malaysian HE supply, it is found that the former is stabilising, and the latter is increasing over the period 2011-2020. In terms of student statistics (enrolment), Malaysia HE is forecast to have sufficient capacity to absorb increasing numbers of international students (IIPPTN 2012).

However, multiple uncertainties remain. These include:

a. Factors affecting demand in target countries

There is already a tendency for countries to expand and modernise local capacity rather than send students abroad. Meanwhile, some traditional target countries for Malaysia are experiencing geopolitical problems and social upheavals. To continue to depend on these countries as a major source of international students in the future will be highly risky.

b. Factors affecting Malaysian provision for international students

Malaysia needs to consider issues pertaining to “renovating internationalisation for the 21st century” (see Hudzik, Streitwieser and Marmolejo, June 8, 2018). In order to meet

the target for 2025 and beyond and reap both monetary and non-monetary benefits, there is a need to ‘re-imagine’ internationalisation and connect it more effectively to issues that are apparently distant (Hudzik, Streitwieser and Marmolejo, June 8, 2018).

Recommendation: a novel approach to internationalisation

Hudzik, Streitwieser and Marmolejo (June 8, 2018) argue population displacement has now become a form of mobility that requires a solution. Following their arguments, internationalisation from the non-monetary perspective, such as the objective of developing cross-cultural understanding, which has always been a core component of mobility programmes, should include refugees and their needs.

If Malaysia is to project an image of a nation that believes in education as a diplomatic tool then it must reflect both the monetary and non-monetary aspects of the internationalisation of higher education. Towards 2030, it is the authors’ recommendation that the country de-emphasises the monetary aspect (income from international students) and adopts a wider and more values-based view of the role of higher education — making the offer of a Malaysian education to a wide range of international students arriving as refugees. The monetary aspect of the internationalisation of higher education would remain critical through to 2030, particularly among public higher education institutes with cost-recovery concerns, but the non-monetary aspect could become more prominent, in line with the SDGs.

There would, of course, be financial implications if Malaysia were to follow this unconventional path. The internationalisation of higher education in Malaysia is highly dependent on the inflows of international students based on their contribution to national income. But as a high proportion of international students in Malaysia come from the developing world, in particular countries experiencing conflict, a monetary-focused internationalisation policy is not good for the country’s image, especially when it is championing South-South co-operation. By focusing more on the non-monetary benefits, Malaysia

would be able to claim it is subscribing to the most important objective of the internationalisation of higher education, the creation of global citizens with a greater sense of commitment towards inter-regional understanding and a high level of inter-cultural competencies.

Key uncertainties

The key internal factor that has always affected the flows of international students to Malaysia is immigration policy, the responsibility of the Ministry of Internal Affairs, which oversees national security, and its Immigration Department, which oversees students' visas. While many public universities and some private higher education institutions have demonstrated excellence through global university and national rankings, they have not been able to increase international students' enrolment substantially, due to domestic bureaucratic requirements. In addition, international students are often concerned about job prospects when they graduate and the opportunity to remain in Malaysia to further their studies. Declining enrolment of international students is partly attributable to delays in the processing of visas and limited employment prospects in Malaysia. The Ministry and its agencies need to have a balanced view of the risks and benefits of the inflows of international students. Under the previous government, the Ministry of Education, Education Malaysia Global Services (EMGS) and Malaysia's higher education institutions were not successful in convincing the Ministry of Internal Affairs and the Immigration Department that all steps and procedures were in place to ensure international students coming to Malaysia were bona fide students who would not endanger national security. Under the present government, to date there has been no clear policy statement on the position of Malaysia regarding the inflow of international students.

These internal constraints may affect Malaysia's position in the market for international students. In terms of the attractiveness of HEIs, including international branch campuses, to international students, Malaysia has ranked 12th most preferred destination in the world (UNESCO 2014). In terms of overall competitiveness with higher education and training as an important component, the World Economic Forum 2015/2016

Competitiveness Ranking placed Malaysia 18th. But these achievements in isolation do not guarantee substantial inflows of international students over the longer-term.

External factors also present Malaysia with a more challenging scenario regarding international-student recruitment. The key factors in the period to 2030 will include:

- Recruitment issues in Malaysia's traditional markets such as the Middle East; the turmoil in the Middle East has resulted in the displacement of people on a large scale
- Geopolitics, increasing nationalism and trade wars
- Perceptions that international students — for example, those from South Asia, Africa and, to some extent, South-east Asia — are at risk of unfavourable treatment from enforcement agencies (such as immigration and policing) in Malaysia.

Implications: policy gaps and areas for focus

In the final analysis, Malaysia's internationalisation policy is, of course, set at the government and HEI levels. A key question, therefore, will be their perception of the risks and benefits of the internationalisation of higher education (including the benefits of granting more students visas, offering more places to less economically-privileged students, expanding the offer of 'remote' courses enabled by technology, and so on).

Increasingly in the future, it is hoped that initiatives, developments and related policies on internationalisation would be generated based on empirical evidence rather than on perception. Cross-border higher education may be increasingly offered via the internet but there are serious limitations of such mode of delivery. The non-monetary benefits of enriching experience and cross-cultural exchange still depend, at least partly, on time spent living abroad.

The emphasis on the economic dimension in national policy-making since 2007 could be viewed as a clear strategic intent to steer major stakeholders in higher education towards transforming the sector as a catalyst of economic growth. In this agenda, international-student recruitment since 2007 is playing a pivotal role.

It is the authors' view that, looking to the future and in the context of the UN's Sustainable Development Goals, the current emphasis of Malaysia's internationalisation policy needs to be reassessed, and, potentially, new forms of internationalisation introduced. The question of internationalisation needs to be addressed more widely — beyond national-policy concerns such as economic growth and national security.

In particular, Malaysia could introduce a policy response that would position it as a unique provider in the international arena by connecting it more effectively to 'distant' issues such as the flight of refugees. The 65.6 million forcibly displaced people and the 22.5 million refugees who have had to flee their home countries pose a great challenge for higher education internationalisation (Hudzik, Streitwieser and Marmolejo, June 8, 2018). By 2030 it is estimated that mobility figures would have risen from roughly two million students two decades ago to 12-15 million. Additionally, there are some 13 million cross-border, online students today (Hudzik, Streitwieser and Marmolejo, 08 June 2018).

Could internationalisation in the future not involve the physical movement of refugees to Malaysian shores? In such a scenario, new forms of mobility using advanced technology for refugees is indeed a wildcard for Malaysia's higher education futures.

While the monetary aspects of the novel approach to internationalisation outlined in this chapter could be challenging, the non-monetary aspects would represent a paradigm shift and position Malaysia as a distinctive HE provider at the international level. To undertake such an initiative, Malaysia would need, in the first instance, to be a signatory to UNESCO's Asia-Pacific Regional Convention on the Recognition of Qualifications in Higher Education 2011. Ratification of the Convention

demonstrates a country's commitment to the improved mobility of students and academics in Asia and the Pacific, while also strengthening collaboration and solidarity across the region (UNESCO Bangkok, July 16, 2018).

References

Azizah Kassim (2013). Public universities. Development and Internationalization. In Tham, S. Y. (ed) (2013) *Internationalizing Higher Education in Malaysia. Understanding, Practices and Challenges*. Institute of Southeast Asian Studies, Singapore. 41-65.

Farina, Y. (2015). *Internationalisation of higher education: Insights from Malaysian higher education Institutions*. Pulau Pinang: Penerbit Universiti Sains Malaysia.

Ghasemy, M., Hussin, S., Megat Daud, M. A. K., Md Nor, M., Ghavifekr, S., & Kenayathulla, H. B. (2018). *Issues in Malaysian Higher Education: A Quantitative Representation of the Top Five Priorities, Values, Challenges, and Solutions From the Viewpoints of Academic Leaders*. SAGE Open. <https://doi.org/10.1177/2158244018755839>

Hill, C and Fernandez-Chung R M (ed) (2017). *Higher education in the Asian century. The European legacy and the future of transnational education in the ASEAN region*. Routledge, London and New York.

Hudzik, J. K., Streitwieser, B. and Marmolejo, F. (08 June 2018). *Renovating internationalisation for the 21st century*. University World News. Available at: <https://www.universityworldnews.com/post.php?story=20180606110124870>

IPPTN (2007). *Internationalisation and International Linkages. Final Report to Ministry of Higher Education Malaysia*. IPPTN, Penang.

IPPTN (2012). *Higher Education as a Catalyst to Economic Growth. Final Report to Ministry of Higher Education Malaysia*. IPPTN, Penang.

Karim, F., and Maarof, N. (2012). Towards understanding the internationalization of higher education and its challenges. In T. S. Yean (Ed.), *Internationalizing higher education in Malaysia: Understanding, practices, and challenges* (pp. 18-40). Singapore: Institute of Southeast Asian Studies.

Knight, J. (2003). Updated internationalization definition. *Int Higher Educ* 33: 2-3

Knight, J. (2003). Internationalization of higher education practices and priorities. IAU Survey. Refer (http://www.unesco.org/iau/internationalization_zpdfInternationalisation-en.pdf)

Knight, J. (2015). International universities: misunderstandings and emerging models? *J Stud Int Educ* 19 (2):107-121

Morshidi, S., and Middlehurst, R (2017). Malaysia, TNE and politics, In Hill, C., and Fernandez-Chung, R. M. (ed) (2017). *Higher education in the Asian century. The European legacy and the future of transnational education in the ASEAN region*. Routledge, London and New York., pp. 6-20.

Morshidi, S. Abdul Razak, Yew Lie Koo (2011). Trade in Services and Its Policy Implications: The Case of Cross-Border/ Transnational Higher Education in Malaysia. *Jour of Studies in International Education* 15(3): 241-260.

Tham, S. Y. (2013). Private higher education institutions. Development and Internationalization. In Tham, S. Y. (ed) (2013) *Internationalizing Higher Education in Malaysia. Understanding, Practices and Challenges*. Institute of Southeast Asian Studies, Singapore. 66-86.

Tham, S. Y. (ed) (2013). *Internationalizing Higher Education in Malaysia. Understanding, Practices and Challenges*. Institute of Southeast Asian Studies, Singapore.

UNESCO Bangkok (July 16, 2018). The First Session of the Committee of the Asia-Pacific Regional Convention on the Recognition of Qualifications in Higher Education. Available at: <https://bangkok>.

unesco.org/content/first-session-committee-asia-pacific-regional-convention-recognition-qualifications-higher

Ziguras, C., and McBurnie, G. (2015). Governing cross-border higher education. Routledge, London and New York.

Chapter Five

Malaysia HEIs for The Future: From Talent Management to Ideation Management

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Introduction

What will the world look like in 2030? Answers usually refer to the Fourth Industrial Revolution (4IR), technological advances, the growing adoption of artificial intelligence (AI), demographic shifts and the rise of open talent, which are all said to be causing (or driving) change in the world in profound ways, and at rapid speed. Arguably, the next 10-20 years will be a time of massive transition for everyone, everywhere. The drivers of change require us to be prepared and to weather the unpredictable changes ahead in order to thrive economically. Despite widespread volatility and complexity, and uncertainty about the future, there are certain overarching 'megatrends' or forces of change that are likely to have a significant impact globally. We need to understand, anticipate and prepare for these. For higher education institutions (HEIs), particularly universities, there are many forces (such as shifting demographics, technological advances, globalisation and talent mobility, migration flows and digitalisation) that will significantly alter how HEIs will fulfil their role in the future. There is therefore an urgent need to future-proof strategies.

This chapter sets the scene for Malaysian HEIs, in particular, the public universities, by considering the scope of talent management, the issues to be addressed and the implications of those issues. The aim is to stimulate thinking about the future of talent management (TM) in universities, using foresight techniques. In the context of talent management, the key questions are, "What are the major forces of change? What will the

implications be for the leadership of universities? What kind of talent should we look for to lead Malaysia's public universities? How will talent be managed and retained?"

What is TM? Why look at the future of TM in HEIs?

TM is described as the systematic attraction, identification, development, engagement/retention and deployment of talents (Scullion *et al.* 2010; Gallardo-Gallardo *et al.* 2015; Thanussen 2016). Broadly, it refers to how organisations attract, select, develop and manage employees in an integrated and strategic way (Scullion and Collings, 2011).

TM is multi-faceted and generally divided into four major categories: HR processes (such as hiring or recruiting, on-boarding, payroll, performance management and retention); skill and leadership training and development; long-term talent strategy; organisational design and effectiveness. In essence, TM is simply a matter of anticipating the need for human capital and setting out a plan through processes that enable talented staff to achieve their full potential over the course of their employment. It is a long-term process that entails talent hiring, talent development, talent retention, and includes key processes such as performance management, succession planning, learning and development. All these features should be included in a strategic framework that enables universities to build a competitive advantage in the marketplace.

Preparing HEIs for the complex global future and ensuring their relevance will depend heavily on the visionary, bold and diverse professional community who lead them, including vice-chancellors, professors, academics and researchers. In the Malaysian context, to accomplish the National Higher Education Strategic Plan the government realises the need to develop top and middle-level management. It is vital for individuals at these levels to be talented not just in accepting and managing change but also in communicating and sharing a vision that is bold, focused and transparent, to create a common sense of direction and purpose.

Despite AI, computers and other replacements for workers, human talent will be the key factor linking innovation and competitiveness, brainstorming new ideas and driving organisations to succeed. With an increase in technology use, human talent, in fact, becomes even more valuable. (<https://www.kornferry.com/institute/2030-the-very-human-future-of-work>, accessed April, 21, 2019).

Are Malaysia's HEIs ready to embrace the future and create a workplace that new talent will choose? Many HEIs continue to view the future as a linear progression from the past. This must change.

What has happened in the past?

There is a truism that "a university is its faculty (academics) and the excellence of a university is the excellence of its faculty" (Smith, 1978, p.1). This truism aptly underlines the essential role of academics as the core resource for higher education institutions, and further illustrates the need to attract, retain, manage and develop academics to ensure the excellence of institutions.

Higher education in Malaysia began with the establishment of the University of Malaya in Singapore in 1949, through the merger of the King Edward VII College of Medicine and Raffles College. By 1952, the University of Malaya, the only university in the country, had 120 trained academic staff, many of them serving on committees and advisory boards, carrying out research on local subjects ranging from the rural economy to tuberculosis, nutrition and ethnic relations (Khoo, 2005). In this pool of academic talents, the country, arguably for the first time, had a "great body of knowledge, experience and wisdom to draw on" (Khoo, 2005, p.54), and this became a sound basis for legislation and development, for Malaya and later Malaysia.

By 1962, the two autonomous campuses of the University of Malaya in Singapore and Kuala Lumpur had become fully-fledged universities, with the former known as the University of Singapore and the latter the University of Malaya. The University of Malaya then had 13 professors, 12 readers and senior lecturers, 61 lecturers and 17 assistant lecturers,

with 35 vacancies (Khoo, 2005). It is interesting to note that even in the early years, students and members of staff were working for their postgraduate and doctoral degrees to fill the vacancies. Tutorship schemes to train Malayan graduates for academic positions were also established in 1962.

The tradition of developing academic talents continues to be a major feature of universities in Malaysia. As public universities grew in number in the late 1960s/early 1970s and early 1980s, they sponsored academic staff to study abroad as well as locally, mainly under the Bumiputera¹ Academic Training Scheme (SLAB), set up so young Bumiputera could obtain a postgraduate degree abroad. The Higher Education Institutions Academic Training Scheme (SLAI) was later introduced for in-service and pre-service to non-Bumiputera academic staff to complement SLAB. The initiative to develop academic talents in public universities was centralised at the Ministry of Higher Education (MOHE) in 2005.

¹ Bumiputera literally means “the son of the soil”, the indigenous.

The academic profession in Malaysia

Currently, public higher education provision in Malaysia is made up of 20 universities, while the private higher education institutions include 53 universities, 10 international branch campuses, 38 university colleges and 350 colleges (Department of Higher Education, 2018). In 2017, there were 538,555 students enrolled across the 20 public universities and 666,617 in private higher education institutions (Ministry of Higher Education [MOHE], 2018).

There were (in 2017), 31,740 academic staff in the public universities, 22,693 in private universities, 3,730 in international branch campuses, 6,147 in private university colleges and 16,073 in private colleges (MOHE, 2018). While the number of academic staff in public universities has increased gradually from 2008, the number of academics in private institutions has varied more over time (see Figure 1).

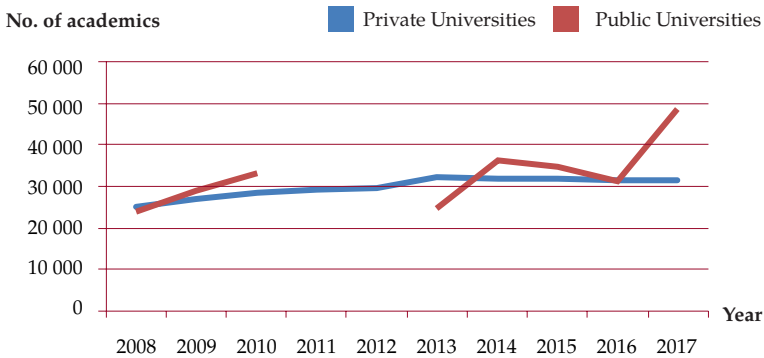


Figure 1: No. of academics at public universities and private higher education institutions, 2008–2017

Source: MOHE (2009-2018)

Note: statistics for the private sector for 2011 and 2012 are not available

The fluctuation in the number of staff in private institutions could be due to fluctuation in student numbers. As academic staff in private institutions are — unlike their counterparts in public institutions — on fixed and short-term contracts, their employers have the freedom to adjust their numbers, according to student intake. Between 2013 and 2017, the fluctuation in the number of academic staff mirrored the fluctuation in student enrolment (see Figure 2).

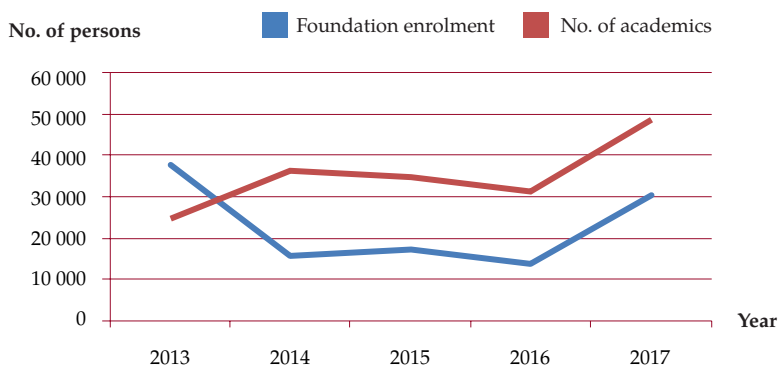


Figure 2: No. of academics and foundation enrolment at private higher education institutions, 2013–2017

Source: MOHE (2014–2018)

Examining the qualifications of these ‘talents’ (i.e. the academic staff) illuminates both their characteristics and their institutions’ characteristics. In the public universities, in 2008, a majority of academics (55 per cent) held qualifications at the master’s-degree level (see Figure 3). By 2017, 49 per cent of academic staff in public universities had doctoral degrees. This shift from master’s-level to doctoral qualifications in public universities can be attributed to a policy initiative in the National Higher Education Strategic Plan 2007-2020 (PSPTN), which will be discussed in the following section.

No. of academics

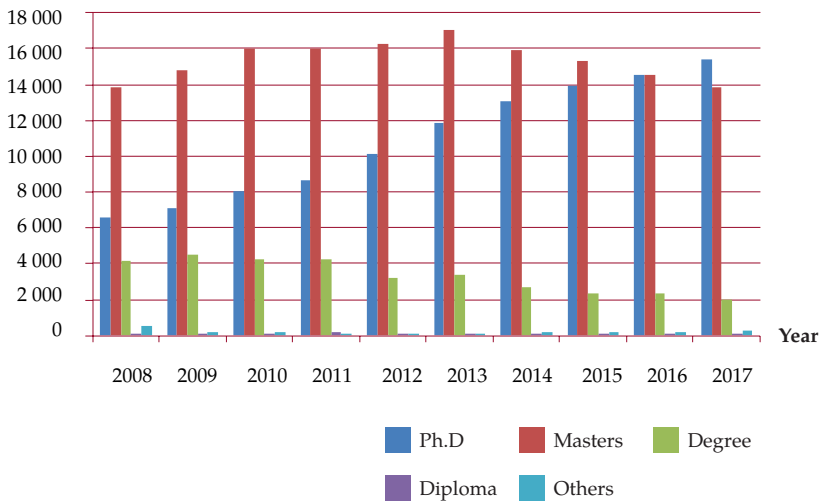


Figure 3: No. of academics at public universities by qualifications, 2008-2017

Source: MOHE (2009-2018)

In private institutions, a large majority of academic staff are not educated beyond bachelor’s or master’s-degree level (see Figure 4).

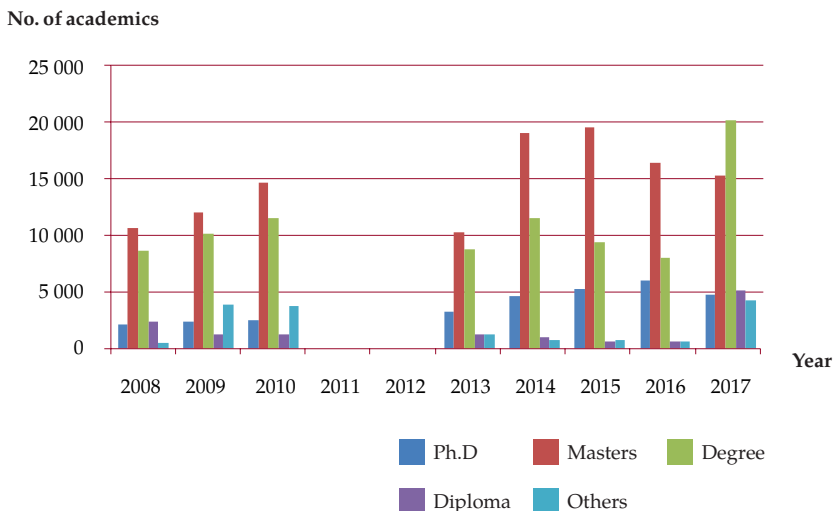


Figure 4: No. of academics at private universities by qualification, 2008–2017

Source: MOHE (2009-2018)

Note: statistics for the private sector for 2011 and 2012 are not available

The qualification level of an academic member of staff determines the level at which they can teach. For instance, an academic staff member with no more than a bachelor’s degree can only teach foundation, pre-university, certificate or diploma programmes. A master’s degree is the minimum for teaching an undergraduate bachelor’s programme. Given that colleges form the majority of private higher education institutions, academic staff with a bachelor’s or a master’s are the majority of the academic population.

National policies related to academic talents

As discussed briefly earlier, the Malaysian government and public universities have a long tradition of developing academic talents. This tradition was advocated even before Malaya gained its independence, to meet the need for talent in the universities and to develop the young nation at that time. From the early years of independence, academic talent development was further supported by the member states of the Commonwealth of Nations. Among notable initiatives were the Commonwealth Scholarship Programme, which, beginning in 1960, applied to Malaysians studying in the UK and Ireland, and the Colombo Plan for Co-operative Economic Development in South and South-east Asia, established in 1951. Although both initiatives were meant for Malaysians in general, many of their recipients went on to work in universities and contributed to the academic profession (see Wan & Doria, 2018). In public universities, *Skim Latihan Akademik Bumiputra* (SLAB) and *Skim Latihan Akademik IPTA* (SLAI) have been the major programmes used to recruit and develop academic talents according to the needs of institutions.

The liberalisation of higher education took place in the mid-1990s through the Private Higher Education Institutions Act (1996). This legislation allows private higher education institutions to exist in Malaysia. Private institutions have widened job opportunities for academics and increased the demand for postgraduate qualifications to equip them for the roles created. In their first decade or so, private institutions poached staff from public universities (Muhamad, Chan, Suhaimi, & Suzyrman, 2006). As the capacity of private institutions has increased, the academic profession as a whole has expanded in size and improved in terms of level of qualification.

As private institutions are mandated by law to be set up as business entities, employer-employee relations are governed by the general rules and regulations under the Labour Law. In contrast, public universities — federal statutory bodies — have the same human resource framework as the civil service, regulated by the Public Service Department. Although academic staff in public universities have job security and the option

to choose pensionable retirement, the civil service framework imposes certain constraints, particularly on the remuneration scheme. Public universities don't have the freedom to use tools such as incentives and penalties to ensure high levels of performance and effectiveness. Even though public universities have now been given autonomy by the MOHE/MOE, the civil service framework of the Public Service Department remains, and there is limited scope for them to steer and develop academic talent according to their own needs and aspirations.

Pelan Strategik Pengajian Tinggi Negara (National Higher Education Strategic Plan, shortened to PSPTN) was launched in 2007, and was the first major policy document to spell out the strategic direction for higher education in Malaysia. It consisted of seven thrusts, and the second of these, improving the quality of teaching and learning, had the academic profession at its core. Among the targets of this second thrust was for Malaysia to produce 20,000 people with a PhD by 2010 and 100,000 by 2020. PSPTN was accompanied by 23 Critical Agenda Programmes (CAPs). The Academia CAP had three main goals: to retain quality academic staff; to strengthen academic staff with autonomy, integrity and professionalism; to strengthen the academic ecosystem. The tangible outcomes envisioned under PSPTN and its action plans included an increased number of academic staff, publications through partnership and collaboration, academic awards and the appointment of academics as experts/advisers in and outside the country.

Interestingly, PSPTN had also set the target of increasing the number of doctorate holders among academic staff to 60 per cent by 2010. This goal was extended to 75 per cent for public research universities by 2015 but maintained at 60 per cent for the public comprehensive and focused universities. To meet the target, and to increase the number of doctorate holders among the general public, the MyBrain15 programme was launched. This sponsored Malaysians to pursue doctorate and master's programmes at Malaysian universities. However, by 2010, no public universities had reached the target of 60 per cent, and by 2017, only two research universities and two comprehensive/focused universities had met the 75 per cent and 60 per cent targets (see Table 1). Worryingly,

in almost half of universities, the proportion of academic staff with doctorates is less than 50 per cent — despite the significant amount of resources devoted to this endeavour through SLAB and SLAI, as well as MyBrain15.

Research Universities	2008	2010	2017
	Percentage (%)		
UM	40.54	53.02	69.43
USM	53.65	55.78	67.22
UKM	34.53	41.28	64.68
UPM	45.25	64.63	79.12
UTM	36.01	44.27	76.42
Non-Research Universities	2008	2010	2017
	Percentage (%)		
UUM	19.17	23.52	61.35
UIAM	35.01	41.27	52.27
UniMAS	24.70	24.94	39.70
UMS	34.86	33.92	35.71
UPSI	21.95	29.69	57.80
UiTM	9.73	10.24	22.65
UniSZA	8.54	11.47	37.94
UMT	25.24	32.025	70.88
USIM	16.94	22.56	53.30
UTHM	11.04	16.50	59.35
UTeM	8.06	12.60	42.68
UMP	11.06	21.58	48.19
UniMAP	11.07	18.23	30.44
UMK	14.89	17.91	38.46
UPNM	0.78	7.51	37.01

Table 1: Percentage of lecturers holding a Ph.D at public universities; 2008, 2010, 2017

Source: MOHE (2009, 2011, 2018)

When the MOHE merged with the MOE in 2013, the PSPTN was repackaged in line with the Malaysia Education Blueprint 2013-2025 (MEB), which was already in place by then. The Malaysia Education Blueprint (Higher Education) 2015-2025 or MEB (HE) was launched to provide strategic direction for higher education.

The MEB (HE) has similar system aspirations to the MEB — access, equity, quality, unity and efficiency — and similar student aspirations, including leadership skills, language proficiency, thinking skills and knowledge. As a way to meet these aspirations, 10 Shifts are identified in various aspects of higher education in the MEB (HE).

Shift no. 2 — talent excellence — is dedicated to academic talents. The vision set out here is that:

Higher learning institutions will be able to attract, develop, and retain excellent talent through specialised pathways for educators, researchers, leaders, and practitioners. The academic community will also benefit from a conductive, supportive, and meritocratic environment with better continuous professional development programmes that enable them to meet changing responsibilities and expectations. Malaysia's talent will be respected, referred, and relevant, both locally and internationally (MOHE, 2015).

The kinds of talents envisioned in this document include inspiring educators, accomplished researchers, entrepreneurial personalities and transformational thought leaders. The initiatives outlined include positioning institutions according to their areas of institutional excellence, enabling them to develop multi-track career pathways — a strategy that encompasses integrated programmes to develop students' academic, technical and employability skills — and providing best-practice guidelines using the new academia talent framework.

To further operationalise the multi-track career pathways, the University Transformation Programme: Strengthening Academic Career Pathways and Leadership Development (Orange Book) was introduced. This book proposes a four-track career pathway and spells

out the guiding principles and ways to implement the initiative across different institutions.

Academic talents going global

In addition to its focus on Malaysian academic talents, the MEB (HE) outlines the need to search for talent beyond local and national boundaries. In the earlier PSPTN, the thrust for intensifying internationalisation also spelt out the goal of increasing the quota of international academic staff in public universities — from the allowed five per cent to 15 per cent by 2020. (There is a restriction on international academic staff in public universities, but not in private higher education institutions.)

Following the PSPTN, there was a gradual increase in the number of international academics in public universities, from five per cent in 2008 to about eight per cent in 2013 (see Figure 5). However, the proportion began to decline after its 2013 peak, and by 2017, was less than five per cent.

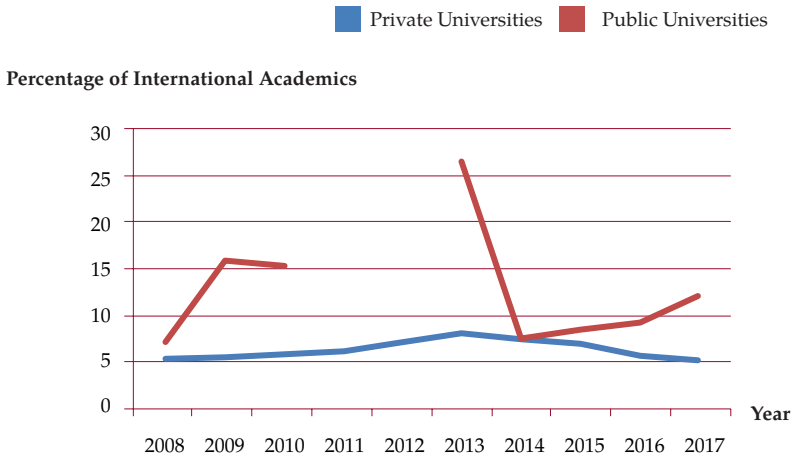


Figure 5: No. of percentage of international academics at public and private universities, 2008–2017

Source: MOHE (2009-2018)

Note: statistics for the private sector for 2011 and 2012 are not available

One of the major factors that contributed to the decline was the economic situation, which resulted in significant reduction of public funds allocated for public universities. Between 2014 and 2016, the Malaysian economy was volatile, and the value of the Malaysian Ringgit fell. As international academic staff are paid in the local currency, the conversion was to their disadvantage. Furthermore, the annual allocation for public universities between 2015 and 2018 had been on a significant downward trend. The budget announcement for 2016 saw total funding for public universities reduced by 15 per cent. It was further decreased due to the recalibration of the budget in early 2016. In the following year, operating expenditure for public universities decreased by another 19 per cent. Given that local Malaysian academic staff are hired on a permanent basis, and international staff can only be hired on a one-to-three-year contract, there are few incentives for international academic staff to re-locate to a public university in Malaysia at a time of economic uncertainty.

In private institutions, the number of international academic staff fluctuates — as does the number of local staff. There was a drastic increase between 2008 and 2009 — from around seven per cent to about 16 per cent following the PSPTN (see Figure 5). In 2013, it was recorded that more than 25 per cent of academic staff in private institutions were foreigners. However, the percentage dropped dramatically to around seven per cent in 2014 and, between 2014 and 2017, gradually increased, reaching slightly above 11 per cent in 2017.

The gradual increment between 2014 and 2017 might reflect movement of international academic staff from the public universities. As their contracts were not renewed, overseas staff in public universities might have then gained employment in the private institutions.

Leadership in public universities

The vice-chancellor is the leader of a higher education institution. As a leader, (s)he should be an eminent academic and an excellent administrator who is inspirational, visionary, respected for their scholarship and progressive in their approach. (S)he is important in

maintaining the quality and relevance of universities and in acting as a conduit between the executive and the academics, to ensure that the university is always in search of people with values, personality and integrity, alongside the essentials of academic excellence and administrative experience.

The selection and appointment of vice-chancellors has been one of the controversial issues of governance for many universities in the region. In Malaysia, expectations are high. This is evidenced in various newspaper reports on vice-chancellors of the public universities (Malaysiakini 8 Nov 2005; NST 22 Apr 2006; Star Online NATION, 1 Nov 2017). How vice-chancellors of public universities are selected and appointed, the process and procedures adopted for their appointments, and the relationship between the government and universities are interesting issues. Under the University of Malaya Act 1961, the public universities had a relatively high degree of autonomy, and the appointment of the vice-chancellor was made by the chancellor on the recommendation of the council. However, the current Universities and University Colleges Act (1971) saw a major change, with the shift from a relatively autonomous to a state-controlled system. The Ministry of Education assumed full control over all the public universities in terms of financing, recruitment of staff and promotions, curricula and students' enrolment. Contrary to international best practice, appointments are kept strictly confidential until contracts are signed, and there is little transparency in the process (Lee 2004). Sirat, Ahmad and Azman (2012) concur that "there is no proper system in place to appoint the most able, talented, authoritative and respected scholar to lead Malaysia's public universities" and that the leadership crisis is at a critical stage and demands nothing less than total reform (Sirat et. al 2012: 511).

The Ministry of Education plays a significant role in the appointment of vice-chancellors of the public universities. Yet, as argued by Sirat et. al (2012), the Malaysian public universities, like other universities around the world, are grappling with globalisation and its consequences. The need to adapt, and global engagement, are becoming ever more vital. Other challenges include adapting to changes in the way that knowledge is — or can be — imparted.

The overall trend in the appointment of international academic staff in public and private institutions in Malaysia raises several questions for the future of higher education in the country:

- Does the volatile trend in the recruitment and retention of international academic talents undermine the sustainability of Malaysia as an international talent hub?
- In an increasingly globalised world, can Malaysian universities continue to rely on local academic talents?
- Given the importance of financial resources to attract, retain and develop talent, in what ways and to what extent can academic talent management be flexibly developed across Malaysian universities to withstand the volatility of the economic situation?

Global trends out to 2030

To prepare and future-proof Malaysia's HEIs, understanding why and how the world is changing is the first step. The next step is to determine where the HEIs fit in the environment, where the pools of talents are, and the role that prospective talent will play. While it is impossible to know what tomorrow holds, we can gain some idea of the direction the world is heading (i.e. ascertain key trends and megatrends whose direction seems fairly clear). A review of the literature (Alvaro de Vesconcelos (ed) 2012; Toffler Associates 2019; Vielmetter and Sell, 2014, UN DESA's policy brief, 2017; Deloitte 2015; World Economic Forum; McKinsey; UN, World Bank 2015) shows that several megatrends could radically change the way we work and the way organisations — including universities — operate. On the one hand, these megatrends bring the prospect of prosperity and higher standards of living; on the other hand, they mean risks and complex challenges that will require knowledge, skills and a re-imagination of the human capital required.

Among the many megatrends identified, several can be directly related to the future of HEIs looking out to 2030. These include:

- shifting demographics
- advances in technology
- globalisation and talent mobility
- globalisation migration flow

Shifting demographics

Demographic and socio-economic shifts include the changing workplace, flexible and remote working, the growing middle class, the rapidly ageing population in developed regions, rapid population growth in emerging countries, the rise of women's power in societies, and urbanisation.

By 2030 there will be 8.5 billion people on earth (UN, 2015 Revision of the World Population Prospects). The proportion of those aged 15-64, who are likely to be in the labour force, will decline, and the number of people aged 65 and above will rise substantially. At the same time, a new generation is beginning to enter the workforce. Currently, the millennial generation, born between 1977 and 1997 (also known as Gen-Y), make up of half of the workforce. They're being followed by Gen Z, and after them come the Alphas (a term for anyone born after 2010 who is completely immersed in technology), entering the workforce c. 2030.

On the home front, it is projected that in 2030 Malaysia's population will increase to 36.8 million people, with a median age of 34.1. <http://www.worldometers.info/world-population/malaysia-population/>. The average life expectancy in Malaysia is 79.9 years, but even as Malaysia grows, it is likely to continue to remain a young nation. In terms of ethnic composition, Bumiputera show the highest percentage increase, of 4.8 percentage points, from 67.3 per cent in 2010 to 72.1 per cent in 2040.

Advances in technology

Technological advances affect society's expectations and the way organisations interact with their customers, the nature of work and the demand for skills and how work is organised, as people increasingly interact with machines and robots.

Information technology (IT) could force us to change job descriptions, rethink careers and workplaces and spaces, emphasise certain skills over others, and redesign how organisations in the HE sector set goals and reward employees.

In the digital era, robotics, AI and automation may radically change the nature of work, with huge impacts on the global workforce, and a greater focus on innovation and creativity. According to Deloitte Global Human Capital Trends Survey 2018 on human skills, cognitive abilities and social skills are predicted to be in high demand in the future. This will affect what skills ‘talents’ in the HE sector are expected to (a) possess and (b) seek to cultivate in their students.

Globalisation and talent mobility

As Friedman (1999) argues, globalisation is not a trend: it is an international system, whose logic, pressures and incentives can, and do, affect every country. Economic openness is not just confined to trade flows and financial flows but also to flows of services, technology, information and ideas across national boundaries (Nayya, 2006; 2007; World Commission on Social Dimension of Globalisation, 2004).

Talent mobility has increased with globalisation, and has considerable influence at national and international levels. ‘Pull’ factors such as higher salaries, the possibility of increasing knowledge and interacting with peers of international standing, set against ‘push’ factors in home countries (such as poor remuneration, lack of recognition, absence of professional paths to progression, obstacles for business creation and innovation) all lead to talent outflows and brain drain (Solimano 2006), and will be as relevant in the HE sector as in other industries.

Globalisation and migration flows

Global migration flows are another factor with significant impacts. In 2011, the UNHCR reported that 96,691 asylum seekers and refugees were registered in Malaysia, almost all of them economic migrants seeking jobs. This figure has risen to almost six million (KL City Hall, 2018). Understandably, Malaysia is concerned about the security of

the country if unrestricted migration is permitted. However, many developed countries, in particular the US, the UK, Canada and Australia have recognised the advantages of highly-skilled migration and (at various times) adjusted their immigration policies to attract highly-skilled migrants.

Challenges and opportunities

Besides the megatrends, we also need to consider the seemingly less likely drivers of change that could significantly shape the potential future scenarios we face. There are **wildcards** or **black swan events** — a term used for unpredictable multipliers and catastrophic events such as disasters — to think about.

Weak signals can indicate that particular trends may become more dominant in the future. Some examples of potential shocks are:

Erosion of trust: There may be a global decrease in trust in institutions, among communities and nations and across demographics.

Digital disruption: over-reliance on technology could result in loss of capabilities and capacity.

Unnatural disasters: accidents and climate-driven and man-made disasters could result in resource scarcity.

Virtual workforce: HEIs are increasingly tapping into a global talent pool, and to some extent managing virtual workforces that do not report to offices and do not have set hours. In the future, individuals may increasingly expect to work when, where and how they want. How will this affect the sector?

Disruptions: One of the potential disruptions identified (McKinsey 2018: 59) is the speed of adoption of automation and AI. Corollary issues will be the flexibility/resistance of internal structures and operations, and levels of automation adoption. These disruptors will require, and privilege, high levels of organisational adaptability and

workforce transformation and innovation: those organisations that build technology capabilities will thrive in such a future, while others (including in the HE sector) will fall behind (McKinsey 2018).

Possible implications for TM in HEIs

These megatrends and wildcards have implications for talent management. HEIs will almost certainly need to rethink the way they hire, engage, develop and lead their workforce over the coming decade and beyond.

Demographic shifts: Most workforces will consist of at least four distinct generations: Generation X (born between 1965 and 1976); millennials (born between 1977-1997), Generation Z (born in the mid-90s) and Alphas (born c. 2010). These four generations have different preferences and values. Millennials, Generation Z and Alphas will integrate technology as part of their everyday lives. Hence, they will expect employers to provide them with high-speed communications and continually develop and upgrade technology. The key will be to understand changing needs, and prepare to serve them in order to attract and retain the best talent from every generation.

Advances in technologies: Technology and innovation will be a new and important area for competitive advantage, and HEIs can expect new competitors to emerge. The right talent and leadership will need to be in place to ensure that the right changes are made at the right time — including becoming more agile and embracing transformative technologies.

In the digital era, it is said that talent and ideas will become the key factors, rather than capital. Networked organisations will have greater success. For HEIs that means that leadership will be about orchestrating the ecosystem of work — an ecosystem that is connected and interdependent but dispersed.

Globalisation and talent mobility: At an aggregate level, the emigration of talent can have a huge impact. In source countries, most of which are developing economies such as Malaysia, the emigration of medical

doctors, scientists, technology experts and entrepreneurs causes 'brain drain' and can reduce the human capital base and retard development. The receiving countries, i.e., the developed countries, in contrast, benefit from an inflow of talent or 'brain circulation' that enlarges their human resources.

Globalisation and migration flows: With globalisation, higher education can be expected to continue to become more international. As universities become more global, they also become more competitive, hunting faculty talent on an international field. Many HEIs spend large amounts of capital to lure top talent. HR practitioners need to appeal to the global pool of talent by incorporating international opportunities and considering academic mobility.

There are ongoing efforts in many countries to make immigration policies more favourable to attracting high-skilled labour. Malaysia, too, might need to reconsider its immigration policies with regards to skilled labour.

These implications cut deep in terms of the leadership of Malaysia's HEIs for the future. Changing demographics demand a new brand of leadership that brings a sense of urgency to set the tone for the future. According to Vielmetter and Sell (2014), the reign of the dominant, typically male, leader who gives directions and sets the pace for the organisation is over. The new leader is 'altrocentric' -- focused more on relationships and listening to others. Hence, management practices and models that offer the 'affiliated style' of leadership, more common in Asia than in most of the West, could become more influential.

Leaders of the future in Malaysia's HEIs will need to be innovative, agile thinkers who are able to deal with complexity and ambiguity. They will need to consider and prepare for multiple scenarios, see the 'big picture', manage diverse employees, work with high cultural sensitivity and understand international markets. Leaders of the future in the HEI sector will also need to cope with the demands of an increasingly intergenerational workforce with diverse attitudes and requirements (Vielmetter and Sell 2014).

In recognising the various threats, challenges and opportunities ahead, it may be useful to consider the position that Malaysia's HEIs are in now and to identify what areas to focus on to cultivate the kind of talent needed. We can examine current HEIs using SWOT analysis.



Figure 6: SWOT analysis of HEIs

Focussing on the strengths of HEIs could help the sector develop its foresight capability and build a culture of innovation and agility. Another potential change would be to focus on an innovation drive by developing external partnerships and more meaningful collaborations across HEIs and industry, fostering more motivated academics.

Conclusion

In light of the uncertainties, megatrends, wildcards and shifts outlined throughout this chapter, it is clear that we can expect to see dramatic impacts on the need for talent management in the HEI sector out to 2030 and beyond. Consider the present landscape for HEIs and notice common themes: limited available resources; compensation concerns; stiff competition in hiring talent. With rollbacks in government funding tightening headcounts and limiting hiring opportunities, how can HEIs adapt to attract and retain the best talent? They will need to improve and focus their TM processes.

Discussions on TM often stress attracting and recruiting talent. Yet there is often little emphasis on long-term talent development. The key to building a successful long-term TM strategy is much more than just designing training programmes or matching people with job descriptions. A well-trained workforce equipped with skills required to adopt automation and AI technologies will ensure that the talents of the workforce are harnessed and that HEIs remain adaptable, globally, in the face of new challenges. The challenge is also for the government to design HE policy to ensure there is sensitivity to the needs of the new breed of leaders who offer thought leadership and foster and encourage new ideas. The future leadership of HEIs will play a critical role in attracting and harnessing talented staff who can develop a culture of creativity and innovation and thus power Malaysia's future growth.

To attract and retain good talents HEIs will need to:

- a. serve the needs of the multigenerational workforce and meet the expectations of the young;
- b. embrace and leverage transformative technologies;

- c. forge connections with industries and practitioners around the globe;
- d. adopt inclusive and innovative leadership models that welcome ideas — from all cultures;
- e. attract talent from overseas to offset ‘brain drain’ and enlarge the human resource base of high- skilled people in Malaysia.

HEIs with leaders who understand potential futures and plan ahead to optimise their talent pools will be those most able to succeed.

References

Alvaro de Vasconcelos (ed.) (2012). *European Strategy and policy Analysis (ESPAS)* Institute for Security Studies, European Union, Paris

Department of Higher Education. (2018). List of private institutions with university status. Retrieved July 8, 2019, from <https://drive.google.com/drive/folders/1Jfr5dvczs58tEP3SsZck-nmC59ON-qnZ>

World Bank (2015). *Global Monitoring Report 2015/2016: Development Goals in an Era of Demographic Change (GMR)*,

Friedman, T. (2000). *The Lexus and the Olive Tree: Understanding Globalization*,

Gallardo-Gallardo, E. Nijs, S, Dries, N. and Gallo, P. (2015). “Towards an understanding of talent management as a phenomenon-driven field using bibliometric and content analysis”, *Human Resource Management Review* , Vol. 25 No. 3, pp. 264-279.

Inayatullah, S., and J. Gidley. (2000). Introduction: Forces Facing University Futures. In *The University in Transformation: Global Perspectives on the Futures of the University*, eds. S. Inayatullah and J. Gidley, 1–16. Westport, CT: Bergin & Garve

Kelly, U., McLellan, D and McNicoll (2009). *The impact of Universities on the UK Economy*, Universities UK.

Khoo, K. K. (2005). 100 years the Universiti of Malaya. Kuala Lumpur, Malaysia: Universiti of Malaya Press.

Lee, M.N (2004). Malaysian Universities: Toward Equality, Accessibility, and Quality in Altbach, and Umakoshi (eds) Asian Universities: Historical Perspectives and Contemporary Challenges, Baltimore: Johns Hopkins University Press, pp221-248.

McCrindle, M. and Beard, M. (2006). In Defence of Gen Y, Marketing, www.mccrindle.com.au/resources.htm

McKinsey Quarterly, (2016). Managing talent in a digital age.

Ministry of Education, Malaysia. (2015). Malaysia Education Blueprint 2015-2025 (higher education). Putrajaya, Malaysia: Author.

Ministry of Higher Education, Malaysia. (2009). Higher education statistics 2008. Putrajaya, Malaysia: Author.

Ministry of Higher Education, Malaysia. (2010). Higher education statistics 2009. Putrajaya, Malaysia: Author.

Ministry of Higher Education, Malaysia. (2011). Higher education statistics 2010. Putrajaya, Malaysia: Author.

Ministry of Higher Education, Malaysia. (2012). Higher education statistics 2011. Putrajaya, Malaysia: Author.

Ministry of Higher Education, Malaysia. (2013). Higher education statistics 2012. Putrajaya, Malaysia: Author.

Ministry of Higher Education, Malaysia. (2014). Higher education statistics 2013. Putrajaya, Malaysia: Author.

Ministry of Higher Education, Malaysia. (2015). Higher education statistics 2014. Putrajaya, Malaysia: Author.

Ministry of Higher Education, Malaysia. (2016). Higher education statistics 2015. Putrajaya, Malaysia: Author.

Ministry of Higher Education Malaysia. (2017). Higher education statistics 2016. Putrajaya, Malaysia: Author.

Ministry of Higher Education, Malaysia. (2018). Higher education statistics 2017. Putrajaya, Malaysia: Author.

Muhammad, J., Chan, H. C., Suhaimi, S., & Suzyrman, S. (2006). Enhancing quality of faculty in private higher education institutions in Malaysia. Penang, Malaysia: the National Higher Education Research Institute (IPPTN).

Nayyar, D. (2006). Globalisation, history and development: a tale of two centuries, *Cambridge Journal of Economics*, Volume 30, Issue 1, January 2006, Pages 137–159, <https://doi.org/10.1093/cje/bei090>

Nayyar (2007). Globalisation: What Does It Mean for Higher Education? *Deepak Economic and Political Weekly*, Vol. 42, No. 50 (Dec. 15 - 21, 2007), pp. 30-35

Nijs, S. , Gallardo-Gallardo, E. , Dries, N. and Sels, L. (2013). “A multidisciplinary review into the definition, operationalization, and measurement of talent”, *Journal of World Business* , Vol. 49 No. 2, pp. 180-191.

Richard Dobbs, James Manyika , Jonathan Woetzel (2016). *No Ordinary Disruption: The Four Global Forces Breaking All the Trends* , New York: Public Affairs

McKinsey Global Institute *Skill Shift: Automation and the future of the workforce*, www.mckinsey.com/mgi, <https://www.weforum.org/agenda/2015/10/how-are-global-demographics-changing/>

OECD (2011). *Education at a Glance 2011*, Private Higher Educational Institutions Act, Laws of Malaysia, Act 555 (1996).

Scullion, H. , Collings, D.G. and Caligiuri, P. (2010). “Global talent Management”, *Journal of World Business* , Vol. 45 No. 2, pp. 105-108.

Shattock, M. (2008). Managing Mass Higher Education in a Period of Austerity. Keynote speech given at the 6th Annual CELT Symposium on Teaching and Learning, June 5. Retrieved July 19, 2009, from the World Wide Web: www.nuigalway.ie/celt/webcasts/MichaelShattock/MShattock.html.

Sirat, M., Ahmad, A. and Azman, N. (2012). The University Leadership in Crisis: The Need for Effective Leadership Positioning in Malaysia, High Education Policy, vol 5 Issue 4 pp511-529.

Solimano, A. (2006). The International mobility of talent and its impact on global development: an overview, United Nations, Santiago, pp1-35.

Smith, D. K. (1978). Faculty vitality and the management of university personnel policies. *New Directions for Institutional Research*, 20, 1–16.

Thunnissen, M. (2016). "Talent management: For what, how and how well? An empirical exploration of talent management in practice", *Employee Relations*, Vol. 38 Issue: 1, pp.57-72, <https://doi.org/10.1108/ER-08-2015-0159>.

Toffler Associates (2019). *Disruption 2030: Risks and Opportunities for DHS S&T in the Coming Decade*. <https://www.tofflerassociates.com/department-of-homeland-security-science-and-technology-report>

US Census Bureau (2016). *An Aging World: International Population Reports*.

Vielmetter, G. and Sell, Y. (2014). *Leadership 2030: The Six Megatrends you need to understand to lead your company into the future*, American Management Association, US.

Wan, C. D., & Doria, A. (2018). Internationalisation of higher education: The case of Malaysia. Paper presented at the third stakeholders' meeting on indicators for internationalization of higher education in Asia and the Pacific, Bangkok.

Newspapers:

Malaysiakini 8 Nov 2005;

NST Online 22 April, 2006 Rafiah Salim Rafiah Ready for “National Service”

Star Online NATION Wednesday, 1 Nov 2017 Abdul Rahim is appointed UM’s new VC

Chapter Six

Strategies for A Sustainable Future in STEM Higher Education

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Introduction

Higher education providers in Malaysia are experiencing acute challenges in meeting demands for Science, Technology, Engineering and Mathematics (STEM) graduates. Globalisation and advances in technology have caused a dramatic change in the workforce landscape, and this change requires a corresponding shift in the science and technology professional environment. However, there are obstacles at every intersection of the Malaysian STEM pipeline, and these obstacles impede economic development. Higher academic institutions face many constraints when building their capacity to respond to the local STEM sectors' demands for capable workers. Outdated systemic processes mean the education pipeline is failing to produce STEM graduates of sufficient quality in sufficient numbers and at sufficient speed. The problem is exacerbated by 'leakages' — of students and workers who leave to pursue alternatives to STEM paths.

The central problem is at the crucial intersection of the STEM education pipeline and the STEM talent pipeline, and the role of bridging the gap between education and employment rests mainly on the shoulders of STEM higher-education providers. In 2017, the ratio of STEM skilled to non-STEM workers was 46: 54 (Mohd Shahali, Ismail, & Halim, 2017), a far cry from the 60:40 goal set by the government in 1967. There are STEM graduates who are unemployed and underemployed — and STEM jobs that are unfilled. Prior studies have contributed to many initiatives to mitigate these problems, but wide information gaps mean

finding sustainable solutions has been difficult. The longer we take to fill these gaps, the bigger the impact on the economy. We will continue to have little clarity on how to proceed until we have a mechanism that pulls parties together to co-operate.

In this chapter, we apply strategic foresight methodology to the problem: horizon scanning, driver mapping, axes of uncertainty and scenarios have been used to explore the different ways in which the future of STEM higher education in Malaysia could unfold out to 2030. The primary aim is to illuminate a responsive and adaptive mechanism for STEM higher education in Malaysia. The chapter seeks to explore how higher institutions could create and deliver value in STEM education that would contribute to the acceleration in human capital production, and the development of a sustainable local STEM talent pipeline. It is hoped that the recommendations will encourage stakeholders to move beyond their respective silos and pockets of excellence, and close information gaps.

Malaysia STEM education system development

STEM is an acronym for science, technology, engineering and mathematics, and in the educational context, it is defined as a broad study or practice in the major four disciplines (Jayarajah, Saat, Rauf, & Amnah, 2014). To effectively implement STEM within the curriculum, both STEM competence, the requisite knowledge, skills, attitude and values associated with the four core STEM subjects, and the potential approaches to teaching STEM must be considered (Boon Ng, 2019). In 2011, Malaysia's Ministry of Education initiated reforms that, early on, identified STEM as a priority. The STEM initiatives, based on the Science and Technology Human Capital Roadmap: Towards 2020, were then set out by the Ministry of Science, Technology and Innovation to increase the number of experts by producing students with scientific knowledge, practical skills and sustainable values, and, in turn, spur the country's economic development (Kementerian Pendidikan Tinggi, 2012). The plan was to invest heavily in strengthening the front end of the pipeline, with the development of programmes at school level, from 2015 to 2020.

For decades, numerous efforts have been made at both Malaysia's primary and secondary school levels to ensure that STEM-related materials are available through a variety of media, such as the teaching and learning process, and science and mathematics projects (ex. Boon Ng, 2019; Ariffin, Sidek, & Mutalib, 2018; Bahrum, Wahid, & Ibrahim, 2017; Husin, Arsad, Othman, Halim, Rasul, Osman, & Iksan, 2016; Goh & Ali, 2014; Meng, Idris, & Eu, 2014). Despite these efforts, many common challenges persist. The Academy of Sciences Malaysia (2018) reports that at the front end of the pipeline, school-aged children perceive science subjects as difficult. More emphasis, their study found, was given to theoretical knowledge, and less to practical content. Nearly half (47 per cent) of 16,115 secondary school STEM teachers surveyed stated that they had never attended any STEM-related training. These findings are consistent with an earlier study by Ramli and Talib (2017) uncovering weaknesses in STEM teachers. Learning STEM subjects was deemed in that study as uninteresting, and infrastructure was also reported as inconducive to STEM learning. Although there is little evidence to assert that all schools are sharing an equally poor experience in the learning and teaching of STEM subjects, there is always a risk of student learning being compromised when there is inconsistency in the quality of delivery.

The problem now extends further down the pipeline — to tertiary education. The challenge from the beginning has been building a high throughput STEM pipeline. There has never been a big enough number of STEM school students being channelled into higher institutions. Chin (2019) states that only 44 per cent were in the STEM stream last year, compared with 48 per cent in 2012. According to the Academy of Sciences Malaysia (2018), the total enrolment at higher institutions in 2017 for science, mathematics, computer, engineering, manufacturing and construction subjects was 334,742, compared with 570,858, for arts and humanities, education, social sciences, business and law. The proportion of students admitted to STEM programmes for 2017 was 32 per cent, lower than the 2016 total of 40 per cent. This drop of 8 percentage points further accentuates our inability to meet the year 2020 target enrolment of one million science and technology tertiary

students. Correspondingly, STEM graduates represented 42 per cent out of the total number of graduates in 2013, and just 30.8 percent in 2016.

This trail of evidence illustrates the difficulties experienced by higher education institutions in striving to produce the critical volume of graduates required for economic growth. The lack in job-fit is also a complex issue to be addressed. However, available evidence on this mismatch seems to be heavily one-sided, citing deficiency on the graduates' part to fulfil the requirements to land STEM jobs (Academy of Sciences Malaysia, 2018).

A convergence of realities is required in forming a complete picture about the reasons behind the numbers of unemployed or underemployed local STEM graduates. The shift in training and development costs from the employers to the workers occurred even before industries entered the information age. The term 'job-ready' has to be dynamically interpreted to reflect a constant change in needs and expectations. We cannot afford to become fixated on the stereotypical definition of being 'job ready' when the current age requires a workforce that is multidimensional. Are there also cases of capable STEM graduates turning down job offers if they feel that the pay and benefits are not commensurate with the work itself, or work arrangements, or the cost of living? These are not issues of the 'knowledge or skills mismatch'. It seems there is a paradoxical situation of unemployment, underemployment and unfilled STEM jobs.

This study begins by proposing five stages for the STEM initiatives, to be rolled out against the planned strategies in Waves 2 and 3 of the Malaysia Higher Education Blueprint or MEB (HE) (2015-2025).

Wave 2		Wave 3	
2016	2020	2021	2025
Stage 1: Transforming the Ministry of Education			
<ul style="list-style-type: none"> Implement phased restructuring of ministry organisation, including succession planning and new talent management framework; and Review and revamp core functions and processes <ul style="list-style-type: none"> - Complete transition to focused regulator and policymaker role of ministry in higher education (HE) 		<ul style="list-style-type: none"> Complete transition to focused regulator and policymaker role of ministry in higher education (HE) 	
Stage 2: Harmonising public and private institutions			
<ul style="list-style-type: none"> Explore seat-buying mechanism from private higher learning institutions (HLIs) in specific courses; Streamline regulations and policies for private HLIs; facilitate PPPs and mobility programmes led by HLIs 		<ul style="list-style-type: none"> Achieve harmonisation in HE system across private and public HEs on regulations, standards, and expectations 	
Stage 3: Enhancing the delivery approach for the MEB (HE)			
<ul style="list-style-type: none"> HLIs to launch tailored University Transformation Programmes; Codify 2nd set of 'playbooks'; and Adopt Delivery Unit approach to drive delivery of MEB (HE) 		<ul style="list-style-type: none"> HLIs to deliver results from University Transformation Programmes, with several HLIs achieving regional or global prominence 	

<p>Stage 4: Streamlining and aligning HLI performance management and quality assurance</p>	
<ul style="list-style-type: none"> • Improve and integrate institutional rating systems for HLIs; and • Enhance MQA processes and quality assurance framework 	<ul style="list-style-type: none"> • Ensure ongoing improvement and refinement to quality assurance and institutional ratings systems and framework
<p>Stage 5: Restructuring critical frontline services</p>	
<ul style="list-style-type: none"> • Evaluate and implement enhancements to SAMD, for example, corporatisation, and central info portal; d • Strengthen ministry strategic communications and conduct ongoing stakeholder consultation 	<ul style="list-style-type: none"> • Ensure ongoing improvement and refinement of Malaysian and international student experiences; and • Enhance stakeholder engagement as a distinctive ministry core function

Table 1: Proposed stages for STEM-initiative implementation in Wave 2 and Wave 3 of MEB (HE)

Future trends

A 10-20 years' time horizon was used to analyse trends shaping STEM higher education. Key social, political, economic, environmental and technological drivers of change, relevant to building a sustainable STEM pipeline were then identified.

Megatrends and disruptive trends can be expected to have a profound influence on STEM higher education over the next 10 to 20 years, changing the future direction of providers, as well as the scale and scope of future provision to meet evolving demands.

We will need to have a sound understanding of these megatrends, trends and drivers of change in order to envision the future, anticipate and, subsequently, address changes in Malaysia's STEM higher education landscape.

The multigenerational workforce

CEOs are now more aware of the possible threats to growth as a result of talent shortages, and skills gaps in the labour market (Wójcik, 2018; Cheah, Lang, Snowden, & Watts, 2014). Millennials are already making up two-thirds of the current US workforce, and the same proportion is expected in 2025 (Fry, 2018). Overall, by 2030, there is expected to be an intergenerational workforce of Generation X, Millennials, and Generation Z, with inherently different preferences, attitudes and orientation. Incentives and policies must consider these distinct differences. Organisations will need to devise new methods to attract, develop and retain a pool of multigenerational workers. The STEM pipeline, in particular, has experienced a decline in throughput of students and talented workers, not only in Malaysia, but also in advanced economies such as the US. As such, the pressure to attract, develop and retain a competitive STEM labour pool is mounting. Neglecting to address intergenerational issues could pose a significant risk to STEM sectors and the nation's economic wellbeing.

Regulatory landscape

In order for businesses to flourish and societies to thrive, we can no longer design and enforce regulations in the way we have done in the past. Regulations are created and enforced to protect citizens, or consumers, while keeping markets fair. In the wake of the digital economy and different business models, businesses are scaling and transforming at a rapid pace, and the regulatory system needs to keep pace and reflect this.

A system that remains fragmented with overlapping regulatory authorities, or continues to tighten regulations due to growing threats and complexities, could create a difficult environment for innovation. The STEM sector needs mechanisms suited for supporting emerging innovative creations at the speed of their lifecycles.

Demographic shifts

The world population is continuously growing, and, in many countries, the population is ageing. According to the United Nations (2019), there will be 8.5 billion people by 2030, with the elderly (those over 65 years old) being the fastest growing demographic, at one billion. By 2050, those aged 60 and above are expected to account for 21 per cent of the global population, compared with 10 per cent in 2000, and 8 per cent in 1950. In addition, any increment in population in future years is expected to add to the middle classes in society.

Malaysia is expected to face an ageing population in 2030. One of the measures taken to address this change was to increase the retirement age from 55 to 60 years. This measure not only helps older people sustain their livelihoods but also forms a new segment of talent, with a high degree of knowledge, wide experience, and, often, a strong work ethic.

Technology has already made available tools that could increase workers' capacity to perform for longer by making work less physically demanding and work patterns more flexible. Career spans seem likely to extend — so does the interest in continuous or lifelong learning.

Not all countries, however, are on the same trajectory. In Japan, for example, the population is simultaneously shrinking and ageing. The dynamic occurrences of declines and growths are contributing to transformations across the globe, such as shifts in economic power and changes in societal norms.

A demographic shift specific to STEM may also take place. Choudaha & van Rest (2018) state that, by 2030, 75 per cent of global STEM graduates will be in Brazil, China, Indonesia, India, Russia and South Africa, compared with just 8 per cent in the US and 4 per cent in Europe, partly because of increasing student mobility and the growing numbers of tertiary providers in the BRIICS.

Quantum science and technology

There has been steady development in the field of quantum mechanics, which has vastly changed the technological landscape. In the next two decades, we may be able to achieve quantum computational supremacy, increasing the ability to work with quantum mechanics, and using quantum devices for problem solving. The anticipated sixth-generation communication networks would increase human and machine interconnectivity, with the ability to harness a tremendous amount of data due to an increased strength in processing and learning capabilities. This is a disruptive trend that could cause a paradigm shift in the STEM sector and change the future of what and how we learn STEM subjects.

The changing nature of work

Technological advances can adversely affect the availability of jobs — but they can also create new ones as automation increases the demand for new skills and ‘liberates’ people for higher-value work. By 2024, 50 per cent of occupations in the US are expected to be affected by automation (Kook, 2018). And in 2017 it was estimated that automation would displace or considerably change the nature of between 11 per cent and 54 per cent of current jobs in Malaysia by 2020 (Khazanah Research Institute, 2017). In advanced economies, automation creates both low- and high-skilled jobs while middle-skilled jobs are made redundant.

Since 2001, Malaysia has been experiencing declines in the share of middle-skilled jobs while simultaneously seeing an increase in employment for low-skilled jobs. If this trend continues, it could spell doom for the economy. Automation could also lead to greater job polarisation in Malaysia, and an even more uneven unemployment landscape. Malaysia's current slow pace of adoption of automation needs to be swiftly addressed before the adverse impact of technology disruptions is felt.

The key to a sustainable future in employability lies in the capacity to continuously learn, reskill and upskill. Evolving STEM careers demand knowledge and skills sets requirements to be redefined continually, opportunities to deviate from traditional pathways, and traditional values attributed to academic qualifications and professional credentials to be challenged according to industry developments and perceptions.

Changes in the external environment could result in the redesign of organisational structures, and subsequently transform various aspects of jobs as well as the workplace. Lifelong learning seems likely to become a necessity in keeping up with the times. We could see new multidimensional STEM learner segments emerge, along with innovative approaches to knowledge delivery and methods of learning, and demand for innovative products and services. Taking proactive measures to anticipate these kinds of changes may require STEM education providers to develop pragmatic solutions that are not necessarily attuned to current practices. The pressure will further intensify if STEM higher education providers are confronted with constraints in capacity or capability, competing stakeholder agendas, or government heavy handedness.

The Fourth Industrial Revolution

The focus of new technologies in this transformative age is to complement and augment human abilities. For this purpose, artificial intelligence has been used in generating applications such as automation, machine learning and smart solutions. In the next 20 years, artificial intelligence (AI) systems are likely to be able to function beyond their

current specialised capability and behave in a humanlike way, with the ability to perform several functions simultaneously. Industries in which AI is currently under-used are likely to be able to reap the benefits due to increased accessibility and affordability. Governments may begin using AI applications widely to improve public services and to enhance people's quality of life. We could also see the creation of a large ecosystem or digital network in the near future, powered by increased transactions of cryptocurrencies and digital connections. The accelerating speed in technological development in advanced societies and industries, however, is expected to further widen the divide between the privileged and the underserved, especially where there are issues in sustaining the number of high-skilled workers.

The advent of the Fourth Industrial Revolution or 4IR or Industrial Revolution 4.0 has already created local uncertainty, according to the Malaysian Industry-Government Group for High Technology (2018). The government, business enterprises, and education institutions are said to be in the midst of finding ways to manage the effects of the transition. Hasseb (2018) explains that as technology fundamentally changes organisations, our human values will also be affected. The technological requirements that underpin Industrial Revolution 4.0 are based on science, technology, engineering and mathematics, and building a society capable in these fields is essential for the future. STEM education is the means to achieve a paradigm shift that will get Malaysia to the point of becoming a developed nation; it is through innovation that the country will be able to compete in the international arena.

Uncertainties, wildcards and disruptions out to 2030

Following horizon scanning, each driver was mapped on an importance and certainty matrix. Drivers with high importance and high uncertainty are considered critical uncertainties. Several axes of uncertainty were then constructed for each critical uncertainty, using descriptions of alternative ways of how each might play out.

Two critical uncertainties were then selected in order to shape a scenario matrix for STEM higher education in Malaysia (Fig. 1). The first was evolving learning needs and preferences, a change driver that creates uncertainties resulting from generational differences in values and attitudes, and employers' expectations, the changing nature of work, types of STEM jobs to be filled or created in the local market, and training requirements based on the progressive stages of a career-development cycle. The axis put forward for this driver was the range between 'traditional provisions' in STEM education and 'innovative provisions'.

The second driver selected, shift in regulatory approaches, brought about a critical uncertainty in how much regulators would respond to emerging business models. It falls on an axis stretching from (at one end) regulatory approaches operating within legacy frameworks to (at the other end) regulatory approaches operating within new-world-order frameworks. The development or use of innovative solutions could run counter to restrictive policies and tighter regulation in response to changes in the environment, and fragmented and overlapping regulatory systems, which then lead to trade friction. If the regulatory environment the providers are operating in hinders their capacity to adapt, STEM higher education could be in dire straits come 2030, causing an even greater paradox at the intersection of STEM education and STEM talent pipelines.

As well as critical uncertainties, we could expect at some unknown points in time to be struck by disruptive drivers. These are drivers that would significantly affect our environments, creating conditions of sudden instability or inconsistencies. They could even force us into immediate transitions, and alter our future. Technological innovation is a key trend in the development of STEM higher education; emerging technologies are disrupting conventional business models and the ways learners are consuming, sharing and co-creating knowledge. STEM higher education solutions need to align on the spectrum of offerings to fulfil learner and employer requirements for job-fit, market readiness and worker effectiveness, and, over time, meet changing learner needs and preferences in acquiring or enhancing knowledge and skills.

What remains more uncertain is the future extent of differences in demands for different types of solutions based on generational preferences, changes in the nature of work, and the extent to which new jobs will be created due to advances in technology. Do regulatory structures and processes have the capacity to adapt to emerging technology? If higher education institutions use technology in building business models responsive to societal and economic changes, would the existing regulatory approaches be able to support these fast-paced and multiple technological transformations? How do regulators strike a balance between providing protection to providers and learners, keeping fair competitive markets, and fostering innovative solutions that add value to STEM higher education?

Disruptive drivers with a low chance of occurrence are marked as wildcards and not built into the trend projection for this study. One wildcard is the deep involvement of influential multinational corporations in the development of STEM higher education in Malaysia. Until significant traction in throughput is achieved in the student pipeline, there might be little reason for corporations to invest as active and supportive members of the STEM higher education community. Corporations that position themselves as an extension to higher education providers could, however, in future play an influential role in the development of STEM higher education in a variety of ways, including significant philanthropic contributions, strong collaboration in commercial research and the promotion of scientific breakthroughs, investment in labs, high-end technology and equipment, as well as job and internship placements.

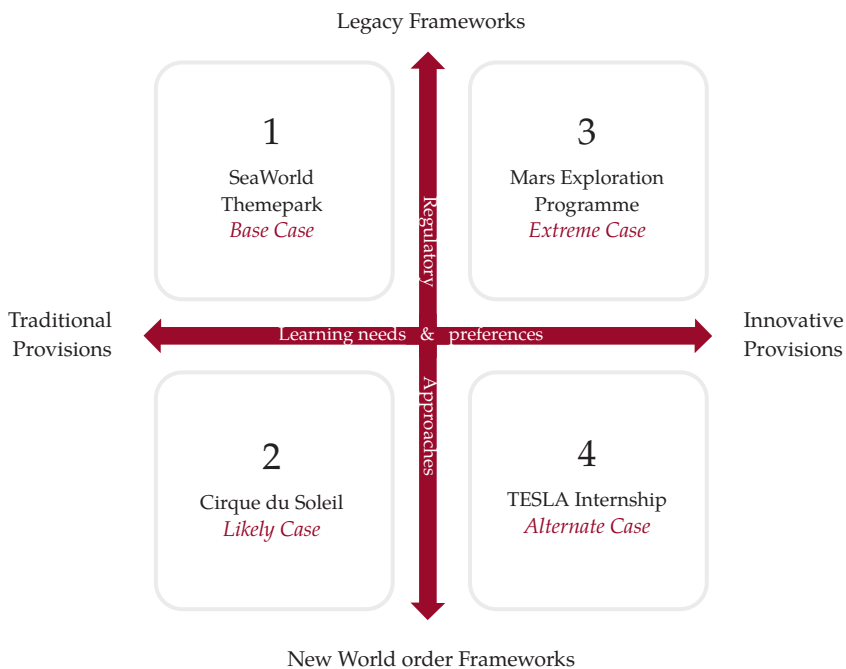


Figure 1: Scenarios of STEM Higher Education out to 2030

STEM Higher Education Scenarios and Policy Implications

Scenarios are alternative pictures of plausible futures designed to help organisations make strategic choices. The implications of each of the four STEM scenarios developed (see graphic above) are discussed in this section. To ensure policy resilience to different potential future environments (as represented in the scenarios), risks are identified as well as opportunities in each potential scenario.

Scenario 1: SeaWorld Themepark (Base Case)

In the year 2030, higher institutions offer conventional STEM academic programmes that are actively supported by government and regulators. Programmes are mainly for undergraduate and postgraduate

qualifications, delivered to mass groups of students. Higher institutions are structured mainly to serve undergraduate STEM students, the traditional learners of school leavers. They also serve continual learners, working adults, who, after several years in employment, return to pursue graduate degrees for personal and career enhancement, or advancement. At this point in time, most of the STEM students are of Generation Z. The younger ones are experiencing the exploration stage in the career lifecycle, and the older learners, the establishment stage.

Students in general are provided with enhanced learning support and student services, a traditional campus environment for collaborative learning and knowledge co-creation, pedagogy promoting active learning, as well as work-skills building. Generation Z learners who are '*communaholic*' require the traditional campus environment for gaining a sense of belonging to their community. They are natural entrepreneurs who are pragmatic, and aspire to make the world a better place. Active learning, which also includes problem-based community projects, is the best method to engage students for STEM learning. Generation Z is the first generation of true digital natives and spend an extended amount of time digitally connected. Campus communities must be digitally wired, and connected to external communities to expand opportunities for social interactions. This generation commits to immersive learning experience, therefore, a lack in the provision of quality technological applications would curb their critical thinking in the formative process of learning to create real-world STEM solutions.

Academic qualification is still considered a prerequisite for jobs in the STEM field. As nature of work changes, learners have an increased need for upskilling, knowledge development and desire for personal enhancement. Returning students, especially, would lose out since technology investment is not placed high on the education provider's agenda. Graduate level curriculum is not able to provide maximum value to learners as it is deficient in providing industry connectivity for enhanced learning experience, technology enhanced STEM facilities and applications, and expertise in emerging STEM areas, as required by working students since technology application is part and parcel of STEM jobs. Government promotes universities as a strategic national

sector and enforces university-friendly regulations, and supports a wide range of institutional STEM initiatives and activities. Government remains the largest provider of funds for public institutions and research universities to conduct scientific research in nationally prioritised areas, with little private sector involvement. Opportunities to compete for other varied schemes for STEM research and capital development are open to all participants that meet regulatory quality ratings.

Undergraduate programmes act as the main revenue generator in the business model, but institutions are also heavily dependent on postgraduate programmes and fees from foreign students. Dependency on government for funding restricts providers' need for heavy capital expenditure in technology-related infrastructure. The pool of local subject-matter experts is small. Even with reduced investment, technology is readily integrated into the higher-institution operating model for a more streamlined operations and administrative system. The application of artificial intelligence, cloud technology, the Internet of Things, automation and digitisation in academic delivery and operation services is commendable. The competitiveness of local STEM higher institutions is based on international rankings, with STEM research universities dominating the local landscape.

The consequences of delaying decisions on transformative actions in the realm of STEM higher education would be immediately apparent in the following year. We could expect an increased number of unfilled STEM jobs and unemployed STEM graduates if information gaps between stakeholders continue to exist and current policies are deficient. Six years down the road if such conditions persist, the country's GDP would still be dependent on contributions from low-skilled jobs, the nation's development would be stunted, and the relevance of STEM tertiary education to STEM sectors would become questionable. STEM higher education could fail to develop and become worryingly undermined by the year 2030.

Scenario 2: Cirque du Soleil (Likely Case)

In 2030, higher institutions exist in a highly deregulated environment that encourages friendly competition, enticing foreign competitors to the market. Fees are uncapped and digitised STEM degrees offered at lower rates. Funding and support come from a wide range of sources, including industries. Mass delivered programmes are offered mainly for undergraduate students. Continual learners have more options to choose from professional training and education focusing on STEM careers are also offered by external providers. Students in general require high work-integrated learning and technical training as part of their well-rounded student experience.

Graduates enter the workforce job-ready. As the nature of work changes, demand for upskilling, knowledge development and personal enhancement significantly increases. The support for experiential learning and for a STEM curriculum with a focus on work skills works well for Generation Z undergraduate and graduate-level learners. Generation Y returning students would be well into their career establishment stage and therefore value this focus on intensive work skills and knowledge for work. Z's preference for social construction of knowledge with the larger community is not sufficiently supported in the curricula. Returning learners pursue lifelong learning externally if importance on cognitive development for practical life solutions is underplayed and connections to the larger community beyond industry are constricted. Research is not an obligatory component under regulations but remains vital for its returns on intellectual property. In order words, the path from scientific discoveries to commercialisation is paved. Being highly entrepreneurial, Generation Z learners thrive in this environment, which fosters innovation and participation in scientific inquiry. Providers compete based on STEM niche areas evidenced by a focus in teaching, or research, which in turn increases the diversity in the supply market of new and existing providers. Providers vie for industry collaborations in teaching or research, as well as for curricula development, and aim solely to produce market-ready graduates. Traditional business models exist alongside digital ones, and are commercially oriented without compromising academic

values. The paradoxical challenges at the student and talent pipelines' intersection are duly addressed.

Undergraduate programmes are the main revenue generator in the business model. Attracting foreign students becomes challenging as local STEM providers compete against established institutions in China and India. As providers exist in full market competition, STEM higher institutional costs are transferred to students. High fee structure indicates quality in provision and brand reputation. Generation Z students are conservative spenders. They search for value for money over brand reputation or for their own self-image. One way to capture Generation Z in the highly competitive market is to offer alternative delivery modes of academic programmes for options at lower fees and for flexible learning. Generation Y working-adult returning students, on the other hand, would pay for quality.

Students value in-depth and specialised knowledge, and work skills, and find high fees commensurate with the learning they receive. Technology is integrated into traditional broad-based STEM research and teaching for a more streamlined system. Applications of artificial intelligence, cloud technology, the Internet of Things, automation and digitisation to enhance academic delivery and operation services become areas of specialisation for respective providers. Both Generations Y and Z are digital natives, and for them, learning happens in the environment they are most familiar with. Local STEM higher institutions compete via international rankings, and dominating the local landscape are the STEM research universities. With a market-oriented approach, providers are benefitting from new revenue streams. Industry links provide a pathway for students and academics to pursue R&D. Non-core services are outsourced to reduce costs and increase efficiency.

Scenario 3: TESLA Internship (Alternate Case)

In 2030, the government completely deregulates the STEM higher institutions sector, with institutions spinning off into new markets, offering extended services, and additionally competing with a different range of local and foreign STEM educational services providers.

Providers could only afford a small share each in the highly fragmented market. Fees are uncapped and enrolment is open. Continuous demands exist for varied types of learning needs and aspirations. Technology highly disrupts the workplace, and, at the same time, shapes learners' attitudes and preferences. Artificial intelligence is mainstream, and automation is displacing jobs while also creating new ones. Work experience is more important than academic qualifications as a prerequisite for jobs in the STEM field. Continuous learners make up the majority, and would mainly pursue micro certifications in STEM courses. Learners want personalised education, where having control over their learning is highly valued. While on-the-job training is no longer a popular practice at the workplace, just-in-time learning is increasingly gaining traction.

Generation Z learners are happy to pursue their academic certifications in segments over a period of time as they are eager to start work or establish their enterprises. Because of Z's proactive nature, this generation defines lifelong learning not as an extension to their tertiary education, but as continuous active learning that they can immediately apply to global issues. Due to technology disruption, digital business models are realising their fullest potential. Learning online is commonplace. Digital platforms and new STEM higher education models allow for learning on demand, individualised learning platforms using artificial intelligence, and a blockchain mechanism that authorises and validates courses and work experiences. Generation Z learners do not value having to conform to traditions; as digital natives, they feel completely at ease in making technology the medium for pursuing academic qualifications, learning skills, updating knowledge, as well as co-creating with communities at unscheduled periods or via predefined educational pathways. Generation Y learners put high value on unique experiences. Learning becomes part of building a life story, marked with milestones. This business model allows Ys to curate their path to specialised knowledge and skills and to expertise in creating unconventional solutions. This generation is more convinced that science and technology can solve the world's biggest problems, compared with Generation Z, and their commitment to succeed

indicates that they would benefit most from this completely liberalised approach in STEM higher education.

STEM higher institutions decide for themselves to specialise either in research or in teaching, with public higher education being more likely to focus in research. Research practice is operated in a revenue-generating business model, and is similarly demand-driven. STEM academics are free agents servicing across providers, fluidly moving from academic institutions into industry, and vice versa. Long-standing STEM higher institutions risk being threatened by new market entrants if they compete in course teaching. It is especially so if they experience a higher inertia during transformation and are tied to the costs of maintaining a large physical campus. Learners find the costs of switching providers low, and therefore value providers that precisely meet their expectations based on their needs and preferences.

Scenario 4: Mars Exploration Programme (Extreme Case)

This approach puts working capacity at the core in provisions, increasing employment and advancing employability. STEM higher education providers become integrated with technical and vocational education and training (TVET) providers. Funding for public higher institutions is mainly from the government. The integrated STEM-TVET tertiary education sector regulates in a learner-friendly environment where enrolment is open and fees are capped. Learners have control and flexibility over programme type and learning schedule. Technology disruption has created a digital platform as a medium to link STEM and TVET networks and communities. Education delivery is generally conducted online, and courses taken by continuous learners are this sector's main revenue generator. Artificial intelligence becomes mainstream, and helps to streamline the operations and administration based on a standardised quality framework. Automation displaces jobs while creating new ones. STEM research is mainly conducted externally, or by selected higher institutions or a STEM consortium. Academic qualification is no longer a prerequisite for a job. The idea is to have STEM learners become increasingly productive workers — more quickly. Providers are expected to have the capacity to perform

in a short time when developing and offering innovative programmes that fit industry requirements.

The number of STEM higher education learners at any one time is large, and learner segments widely include Generation X workers. Generation X benefits greatly from short term, skill focused programmes as they are at the maintenance stage of the career development cycle, if not already at the decline stage. This approach on upskilling and updating knowledge due to rapid changes in jobs and performance expectations makes Generation X workers highly suitable to pursue higher levels of STEM higher education. Return on investment is highest for this learner segment not only because they are at their career maturing stage, but also because of their hard working, competitive, performance-driven traits, which rightly jive with the learning approach employed.

A vision of success in STEM higher education

“Our future will be shaped by the assumptions we make about who we are and what we can be” — Rosabeth Moss Kanter

A sustainable future for STEM higher education in Malaysia lies in successful systemic change in the STEM pipeline. The four scenarios can be used to generate questions to help us understand how external forces would influence the resilience of strategies currently implemented, and those planned for Waves 2 and 3 of the STEM Initiative.

A 2013 study by Chew, Idris, Leong, & Daud explains that students are expected to master the knowledge of science and 21st-century skills when identifying, applying and integrating STEM concepts in solving complex problems and generating innovation. In order to support the integration and the transfer of knowledge and skills for innovation, and in order to address issues at the intersection between the tertiary pathway and the talent pipeline, an innovation-based systemic programme of reform is required. Strategies in creating and delivering value in STEM higher education first and foremost require setting a climate for readiness, that is, a climate in which providers have the willingness and the ability to innovate. The value added by any new

strategy, or systemic reform, will be measured in terms of outcomes contributing to the acceleration in human capital production and the development of a sustainable local STEM talent pipeline.

To achieve a goal set over half a century ago, a split screen presentation in Table 2 illustrates a summary of the four future scenarios that can be applied when evaluating each of the stakeholders' current and planned strategies, which have been aligned to the National Education Blueprint STEM Initiative. The split screen is mapped against the stages of implementing STEM initiatives in higher education (Table 1).

National STEM Initiative	Future Scenario: 1-SeaWorld Themepark (Base case)	Innovation-based Systemic Reform
STAGE 1 Focused regulator & policymaker role of Ministry in HE	Traditional regulatory regimes	STAGE 1 Increased autonomy for HIL, with industry & professional body integrated policies
STAGE 2 Harmonised across public & private institutions	Conventional full degrees	STAGE 2 Industry recognised qualifications as job prerequisite & for career advancement
STAGE 3 Enhanced delivery approach for the HE	Traditional campus, blended approach, pastoral care & digital assistance	STAGE 3 Varied delivery medium & increased flexibility
STAGE 4 HLI performance management & quality assurance streamlined & aligned	Academic degree is a prerequisite for STEM jobs, & advanced degree is for personal development or as a career ladder	STAGE 4 Learners' capability & expectations meet industry & emerging demands
STAGE 5 Critical frontline services restructured	Gen Z school leavers & Gens Z & Y continual learners in career establishment stage, Gen Y continual learners in late career maintenance stage for advancement	STAGE 5 Types of learners, learners' needs & preferences addressed

Table 2.1: Strategising STEM Higher Education using Split Screen Approach

National STEM Initiative	Future Scenario: 2-Cirque du Soleil <i>(Likely case)</i>	Innovation-based Systemic Reform
STAGE 1 Focused regulator & policymaker role of Ministry in HE	Outcome-based regulation	STAGE 1 Increased autonomy for HIL, with industry & professional body integrated policies
STAGE 2 Harmonised across public & private institutions	Full degrees integrating work skills	STAGE 2 Industry recognised qualifications as job prerequisite & for career advancement
STAGE 3 Enhanced delivery approach for the HE	Traditional campus, blended approach & workplace, digital assistance, & work community support	STAGE 3 Varied delivery medium & increased flexibility
STAGE 4 HLI performance management & quality assurance streamlined & aligned	Technical skills become a competitive advantage & are highly sought in addition to academic qualifications	STAGE 4 Learners' capability & expectations meet industry & emerging demands
STAGE 5 Critical frontline services restructured	Majority Gen Z school leavers; Gens Z & Y continual learners for postgraduate degrees during establishment stage; Gens Y & X during career maintenance stage	STAGE 5 Types of learners, learners' needs & preferences addressed

Table 2.2: Strategising STEM Higher Education using Split Screen Approach

National STEM Initiative	Future Scenario: 3-Tesla Internship <i>(Alternate case)</i>	Innovation-based Systemic Reform
STAGE 1 Focused regulator & policymaker role of Ministry in HE	Regulatory sandboxes	STAGE 1 Increased autonomy for HIL, with industry & professional body integrated policies
STAGE 2 Harmonised across public & private institutions	Micro certifications by HILs & educational service providers	STAGE 2 Industry recognised qualifications as job prerequisite & for career advancement
STAGE 3 Enhanced delivery approach for the HE	Digital platforms, AI applications, digital networks, digital assistance, & customer service	STAGE 3 Varied delivery medium & increased flexibility
STAGE 4 HLI performance management & quality assurance streamlined & aligned	Technical knowledge becomes prerequisite for STEM jobs	STAGE 4 Learners' capability & expectations meet industry & emerging demands
STAGE 5 Critical frontline services restructured	Continuous multigenerational learners for personalised courses in advancing knowledge or skills offered by mixed providers	STAGE 5 Types of learners, learners' needs & preferences addressed

Table 2.3: Strategising STEM Higher Education using Split Screen Approach

National STEM Initiative	Future Scenario: 4-Mars Exploration Programme <i>(Extreme case)</i>	Innovation-based Systemic Reform
STAGE 1 Focused regulator & policymaker role of Ministry in HE	Collaborative regulation	STAGE 1 Increased autonomy for HIL, with industry & professional body integrated policies
STAGE 2 Harmonised across public & private institutions	courses stacking up to full degrees by STEM & TVET HILs	STAGE 2 Industry recognised qualifications as job prerequisite & for career advancement
STAGE 3 Enhanced delivery approach for the HE	Digital platforms, digital assistance, & communities of interest & of practice	STAGE 3 Varied delivery medium & increased flexibility
STAGE 4 HLI performance management & quality assurance streamlined & aligned	Continuous multigenerational learners for courses stacking up to full degrees or skills certification	STAGE 4 Learners' capability & expectations meet industry & emerging demands
STAGE 5 Critical frontline services restructured	Continuous multigenerational learners for courses stacking up to full degrees or skills certification	STAGE 5 Types of learners, learners' needs & preferences addressed

Table 2.4: Strategising STEM Higher Education using Split Screen Approach

Conclusion and recommendations

In this chapter, scenarios of different future environments for STEM education in Malaysia have been drawn from a synthesis of insights, evidence and ideas in order to form a strategic tool for stakeholders to test policy options and plans. Stakeholders' respective strategies, whether being implemented now or in the planning stage, have then been mapped against these scenarios to measure their robustness and their strategic importance. The split screen matrix (Table 2) was developed to facilitate this exercise.

Looking ahead to next steps, convening a diverse group of informed stakeholders from the STEM education, public policy and employment sectors to test different policy options against these scenarios would be highly valuable in generating a dialogue. Such a dialogue would bring to the surface multiple viewpoints on the implications of uncertainties and priorities, and a range of potential systemic risks that the stakeholder group could explore.

By applying strategic foresight, this chapter offers a fresh take on thinking about the STEM pipeline in Malaysia. We have offered a decision support tool (Table 2) to help ensure policies and strategies are continually adapting to the changing needs and requirements of both students and employers. This strategic tool also offers a good starting point when seeking to design a mechanism or a set of mechanisms capable of addressing the current systemic problems and removing the current barriers along the STEM pipeline.

References

Academy of Sciences Malaysia. (2018). Science Outlook Report 2017. (Research and Policy Recommendations Document). Retrieved from <https://issuu.com/asmpub/docs/so2017>

Ariffin, S. A., Sidek, S. F., & Mutalib, M. F. H. (2018). Preliminary descriptive insights into student generated activities for STEM subjects through mobile learning in a Malaysian university context. *International Journal of Academic Research in Business and Social Sciences*, 8(2), 523-534.

Bahrum, S., Wahid, N., & Ibrahim, N. (2017). STEM integration module in teaching and learning with Visual Arts education: A needs of analysis. *International Journal of Academic Research in Business and Social Sciences*, 7(2), 582-590.

Boon Ng, S. (2019, February). Current and critical issues in curriculum, learning and assessment: Exploring STEM competences for the 21st century. (Programme Document IBE/2019/WP/CD/30). Retrieved from the United Nations Educational, Scientific, and Cultural Organization (UNESCO) website: <https://unesdoc.unesco.org/ark:/48223/pf0000368485>

Cheah, P.; Lang, A.; Snowden, S. & Watts, S. (2014). PwC 17th Annual Global CEO Survey, Retrieved from <http://www.pwc.com/gx/en/ceo-survey/index.jhtml?WT.ac=vt-ceosurvey>.

Chew, C. M., Idris, N., Leong, K. E. & Daud, M. F. (2013). Secondary school assessment practices in science, technology, engineering and mathematics (STEM) related subjects. *Journal of Mathematics Education*, 6(2), 58-69.

Chin, C. (2019, March 17). Interest in Science continues to drop. The STAR Online, Retrieved from <https://www.thestar.com.my/news/education/2019/03/17/interest-in-science-continues-to-drop>

Choudaha, R., & van Rest, E. (2018). Envisioning Pathways to 2030: Megatrends Shaping the Future of Global Higher Education and International Student Mobility. Online Submission, Retrieved from <https://www.studyportals.com/wp-content/uploads/2018/01/Report-Envisioning-Pathways-to-2030-Studyportals-2018.pdf>

Francis, T., & Hoefel, F. (2018). True Gen': Generation Z and its implications for companies. McKinsey & Company.

Fry, R. (2018, April 11). Millennials are the largest generation in the U.S. labor force. Pew Research Centre, Retrieved from <https://www.pewresearch.org/fact-tank/2018/04/11/millennials-largest-generation-us-labor-force/>

Goh, H., & Ali, M. B. B. (2014). Robotics as a tool to STEM learning. *International Journal of Innovation Education and Research*, 2(10), 66-78.

Haseeb, A. S. (2018, January 10). Higher education in the era of IR 4.0. *The News Straits Times*, Retrieved from <https://www.nst.com.my/education/2018/01/323591/higher-education-era-ir-40>

Husin, W. N. F. W., Arsad, N. M., Othman, O., Halim, L., Rasul, M. S., Osman, K., & Iksan, Z. (2016, June). Fostering students' 21st century skills through Project Oriented Problem Based Learning (POPBL) in integrated STEM education program. In *Asia-Pacific Forum on Science Learning and Teaching*, 17(1), 1-18. The Education University of Hong Kong, Department of Science and Environmental Studies.

Jayarajah, K., Saat, R. M., Rauf, A., & Amnah, R. (2014). A review of Science, Technology, Engineering & Mathematics (STEM) education research from 1999-2013: A Malaysian perspective. *Eurasia Journal of Mathematics, Science & Technology Education*, 10(3).

Kanter, R. M. (2007). *America the Principled: 6 Opportunities for Becoming a Can-Do Nation Once Again*, p.177, Crown Business.

Kementerian Pendidikan Tinggi. (2012). Ideas and ideals of STEM education. Retrieved from http://stem.umt.edu.my/wp-content/uploads/sites/90/2016/07/Ideas-and-Ideals-on-STEM-v5_DATO-ASMA-Keynote.pdf.

Khazanah Research Institute. (2017). *An Uneven Future? An Exploration of the Future of Work in Malaysia*. Kuala Lumpur: Khazanah Research Institute. License: Creative Commons Attribution CC BY 3.0.

Kook, A. (2018, April 12). Half of all jobs can today be automated – and within 50 years all of them can be. *MarketWatch*, Retrieved from <https://www.marketwatch.com/story/half-of-all-jobs-can-today-be-automated-and-within-50-years-all-of-them-can-be-2018-04-11>

Kramer, M., Tallant, K., Goldberger, A. & Lund, F. (2015). *The Global STEM Paradox*. The New York Academy of Sciences, Retrieved from https://www.nyas.org/media/15805/global_stem_paradox.pdf

Malaysian Industry-Government Group for High Technology (Might). (2018). Embracing Industry 4.0 - A Malaysian Strategic Technology Outlook. Retrieved from <https://www.slideshare.net/mazlan1/embracing-industry-40-a-malaysian-strategic-technology-outlook>

Meng, C. C., Idris, N., & Eu, L. K. (2014). Secondary students' perceptions of assessments in Science, Technology, Engineering, and Mathematics (STEM). *Eurasia Journal of Mathematics, Science & Technology Education*, 10(3).

Ministry of Education Malaysia (MOE) (2016) Implementation Guide for Science, Technology, Engineering, and Mathematics (STEM) in Teaching and Learning. Putrajaya: MOE.

Ministry of Education Malaysia (2016). Malaysia Education Blueprint 2013 – 2025, Retrieved from <https://www.moe.gov.my/muat-turun/penerbitan-dan-jurnal/dasar/1207-malaysia-education-blueprint-2013-2025/file>

Mohd Shahali, E. H., Ismail, & Halim, L. (2017). STEM Education in Malaysia: Policy, Trajectories and Initiatives. *Asian Research Policy*, 8(2), Retrieved from http://www.arpjournal.org/usr/browse/list_issues_detail.do?seq=27

Ramli, N. F., & Talib, O. (2017). Can education institution implement STEM? From Malaysian teachers' view. *International Journal of Academic Research in Business and Social Sciences*, 7(3), 721-732.

United Nations. (2019). Revision of World Population Prospects. Retrieved from <https://population.un.org/wpp/>

Wójcik, P. (2018). Shortage of talents – A challenge for modern organizations. *International Journal of Synergy and Research*, 6, 123.

World Economic Forum. (2019, February 25). 7 charts on the future of automation. Retrieved from <https://www.weforum.org/agenda/2019/02/the-outlook-for-automation-and-manufacturing-jobs-in-seven-charts>

Chapter Seven

Higher Education and Employment: Challenges for Sustainable Economic Growth and Human Resource Development in Malaysia

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Abstract

The employability and employment of Malaysia's graduates are becoming important topics in both higher education institutions and industry. The main objective of this chapter is to investigate the most important drivers of change for graduate recruitment in Malaysia and consider future graduate employment prospects. Specifically, the investigation will explore how Malaysia's higher education institutions, through different strategies, can increase the employability of graduates and reduce unemployment out to 2030. The authors have used foresight approaches to understand current and past trends and to develop viable future strategies for making higher education in Malaysia better equipped to promote the employability of graduates.

The investigation highlights globalisation, teaching and learning, governance, a knowledge-based society and language proficiency as key factors affecting future graduate employment and employability. The biggest challenge for the higher education sector is that new graduates often fall short of employer expectations. The gap between graduate supply and labour-market demand, and limited co-operation between industries and universities are also seen as major obstacles to graduate employment and, by extension, economic growth. There has been significant expansion of the higher education sector, which now produces tens of thousands of graduates each year, but some contraction of the job market due to advances in technology. The availability of well-educated, highly skilled talent in the workforce is, of course, vitally

important as Malaysia moves towards becoming a knowledge-based economy and seeks to achieve developed-country status.

Keywords: employability; graduate employment; higher education; foresight

Introduction

The lack of employment opportunities for graduates in Malaysia has been a critical issue. Malaysia is now producing more than 250,000 new graduates annually. One fifth of the total (50,000) of new graduates are floating in the job market (Grapragasem *et al.*, 2014). About 30,000 graduates were not employed within six months of their graduations in 2010 (Azmi *et al.*, 2018). Youth unemployment in the country reached a record level of 13.2 per cent in 2019, according to the Economic Outlook Report issued by the finance ministry of Malaysia, more than four times higher than the national unemployment rate of 3.1 per cent. Youth educated to tertiary level are making up a larger share (23 per cent) of unemployed youth (Dian Hikmah & Mohd Zaidi, 2016). There is significant expansion of the higher education sector, but the job market is shrinking because of automation and new technology.

Employability of graduates and skills deficiency are key factors for youth unemployment in Malaysia. The skills required do not match those of new job seekers. The Ministry of Higher Education Graduate Tracer study shows that graduates from low-income households are far more likely to remain unemployed (Grapragasem *et al.*, 2014). This will affect the social mobility of this particular group and potentially reduce their earning power.

Past studies have highlighted the following as reasons for graduate unemployment and poor employability in Malaysia:

- a mismatch between academia and industry expectations;
- a lack of new skills for jobs;
- a gap between the expectations of new generations and industry needs;

- the number of students and the limited availability of jobs;
- the readiness of industry to employ new graduates.

The government has emphasised the importance of higher education in achieving sustainable economic growth. In the past 20 years, the expansion of higher education has produced a high number of graduates in a variety of disciplines. But Malaysian graduates are clearly not always adequately equipped with the skills that employers expect.

This study will answer the following questions:

- a. What are the factors affecting graduate employability and unemployment?
- b. Why are graduates not ready for jobs in industry?
- c. How do economic and demographic shifts influence graduate unemployment?
- d. Is higher education (HE) policy creating a mismatch between universities and industries?
- e. Is the HE system ready to meet the needs of the young generation and industries out to 2030?

The main objective is to investigate the most important 'drivers' of change affecting graduate employment. Specifically, the study will explore how Malaysia's higher education institutions could increase the employability of graduates and reduce graduate unemployment.

Employment and graduate employability in Malaysia

Employment is defined as the potential to secure a job at a workplace. Employability is a term that is often used as a measurement by employers of graduates' marketability (Rahmat, Ahmad, Idris & Zainal, 2011). Employability relates to the ability to be in employment and to display the qualities needed by the employer for the organisation's future requirements (Belt, *et al.*, 2010; Harvey, 2001). Lim (2008) defines employability as graduates' labour-market outcomes: number of days unemployed or the probability of being unemployed. On

average, graduates in Malaysia are experiencing a total of 138 days of unemployment, which is the equivalent of 4.6 months after the graduation.

The term 'employability skills' also refers to the readiness of new graduates to contribute to their organisations in terms of skills, knowledge and attitude, as well as pragmatic industry understanding (Shafie & Nayan, 2010; Mason *et al.*, 2006). Over the past 20 years, the definition of employability has moved towards a more complex understanding of graduate suitability for work, and a number of inter-related skills and competencies that help individuals to both secure jobs and perform well in them. Several authors have clearly demonstrated that employers place the highest value on generic or 'soft' skills and the lowest value on academic performance (Finch, *et al.*, 2013; Abayadeera & Watty, 2016; Low, *et al.*, 2016). The concept of 'employability skills' has thus become the focus of both employers and employees in Malaysia.

Employers' expectations from graduates at the recruitment stage

Several studies have clearly demonstrated that unemployed Malaysian graduates are held back by their skills, which fall short of employer requirements, their poor command of the English language, their poor problem-solving skills and their lack of professional etiquette. Employers expect graduates to have technical and discipline competencies from their degrees, and they require them to demonstrate a range of broader skills and attributes, including team-working, communication, leadership, critical thinking, problem solving and managerial abilities. Employers also value critical thinking, as this is required for innovation and anticipating and leading change (Harvey *et al.*, 1997; Little 2001 in Lees 2002).

However, there is an evident gap between the 'producers' of graduates (higher educational institutions) and the consumers (employers). This gap affects graduate employment and employability. Zafir, Ishak and Abd Hair (2015) find that local graduates' biggest shortcomings are in communication skills and managing interpersonal relationships. The Malaysia Education Blueprint 2015-2025 (Higher Education) noted that while more than 70% of universities believe they have adequately

prepared students for the workplace, only 40% of employers and graduates believe students are adequately prepared.

Other studies have reported that university students have lacked soft skills such as problem solving and communication skills (Hanapi & Nordin, 2014; Hamid *et al.*, 2014; Noor Suhailie, 2013), as well as 'hard skills' such as technical knowledge and applying knowledge, and that they lack English communication skills (Lim, Teck, Ching & Chui, 2016). Wye, Lim and Lee (2012) found the importance attached to skills such as critical analysis, planning, problem solving, oral communication, decision making and negotiating differs between employers and graduates.

There are several factors that lead to graduate unemployment. The most important are:

- the rapid growth of the graduate workforce;
- lack of effective relationships between educational institutions and industries;
- lack of preparation for work during the period of study;
- the rapid increase of the population and the rapid decrease of the mortality rate;
- economic recession;
- the quality of education and educational development;
- the capability of graduates; and
- graduates' skills and personalities.

The skills mismatch

In 2005, about 30,000 graduates worked in a field that did not match their higher educational qualifications (Hanapi & Nordin, 2014). One study on university curricula and workplace literacy found that unemployment among graduates was linked to poor digital-age literacy and ineffective communication (MOHE, 2007). Kee-Cheok & Lee (2016) have demonstrated that poor marketability and labour-market adaptability among graduates can be attributed to the state of national education and of technical and vocational education and training (TVET).

Pillai (2009) argues that the only way to prepare graduates is to ask the higher education sector to engage more closely with industry, and thus reduce the gap between the classroom and the workplace. The teaching of soft skills needs to be embedded in the curriculum, in learning outcomes and in teaching strategies (Adnan, Daud, Alias, & Razali, 2012). Although the workforce is increasingly becoming more educated (Lim, 2016), most new jobs in Malaysia remain low- and mid-skilled. The Malaysian economy continues to face the challenge of attracting high quality investments that would create high-paid, high-skilled jobs for the local workforce.

Employers cite significant skills deficits among new recruits. A study found that 90 per cent of companies believe that university graduates should have more industrial training, and that 81 per cent believe that lack of communication skills is the main problem for Malaysian graduates (World Bank, 2014) (Figure 1).

Share of Respondents citing skill deficits in fresh graduates, percent

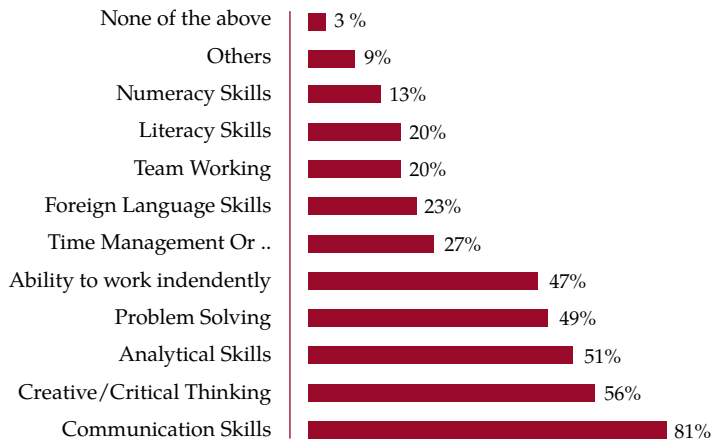


Figure 1: Lack of soft skills among new graduates from local universities

Source : School Management Division (APDM Data as of 31st January 2018),
Quick Facts – Malaysia Educational Statistics 2018

Lack of training and lack of industry involvement in human-capital development also hinder graduate employability. A study found that 53 per cent of firms have never engaged career centres in their recruitment efforts (Dian Hikmah & Mohd Zaidi, 2016). Public training provision exists, such as the Graduate Employability Programme, implemented in 2009 and available to all public higher learning institutions. However, a lack of institutional co-ordination for public training provision has resulted in substantial overlap in mandates and responsibilities.

Kahiro (2008) reports that gaps exist in the skills level in almost all working fields where candidates do not meet the requirements of the industry. Graduates may not combine technical knowledge and soft skills. Secondly, they may find it very difficult to communicate in English when faced with international employers: the official language of Malaysia is Bahasa Malaysia, and almost no subjects in primary and secondary schools, and public universities, are taught in English. The challenge remains of how to support students and equip them with the proficiency in English to be global citizens.

Higher education and employability in Malaysia in the past 40 years

The main focus of education during the early years of independence (pre-1970s) was to create skilled and knowledgeable authorities in the agricultural sector in order to increase farm productivity. To eradicate poverty and destitution, Malaysia needed a better-prepared and better-gifted workforce, capable of increasing efficiency and raising the incomes of all Malaysians (Ahmat, 1980). Higher education became the principal means of creating and delivering this better-prepared and talented workforce. More particularly, advanced education was seen as a significant vehicle to enhance financial prospects for the Bumiputeras, who had thus far lagged behind other ethnic groups (Selvaratnam, 1985, Sirat, 2010, Lee, 2004).

The main mandates of the Ministry of Higher Education (MOHE) in Malaysia are to improve standards in order to produce graduates who meet the need for a skilled workforce and to make Malaysia a regional and international centre of educational excellence. One of the

objectives of the MOHE is to produce competent graduates who can meet the needs of national and international employers. The ministry has set a target of achieving a 75% employment rate for students in their respective fields within six months of graduation.

The number of higher education institutions has increased, and the total number of graduates (including graduates from TVET colleges) has increased — from 249,612 in 2012 to 283,627 in 2016. The number of public-university graduates increased from 121,799 to 124,223, while the number of private-university graduates increased from 85,669 to 97,333 (MOHE). However, the rapid expansion of higher education has not been reflected in reductions in the level of graduate unemployment, and under-employment. In fact, the unemployment rate of new graduates has gone up — from 30 per cent in 2013 to 34 per cent in 2016 — as the economy and labour market have failed to keep pace with the rapid growth of the higher education sector.

The government has set the science-to-arts student ratio at 60:40 in order to fulfil the future demands of a developing nation. However, this target is yet to be achieved. It was estimated that Malaysia needed a workforce of 493,830 researchers, scientists and engineers by 2020 to support current government initiatives in the Economic Transformation Programme, Government Transformation Programme and the New Economic Model (Grapragasem *et al.* 2014; MyForesight, 2013). The goal of the MEB (HE) is to increase the employability rate to 80% by 2025, but the additional number of graduates currently faces challenges in the job market, especially those in technical and vocational education and training (TVET).

The National Higher Education Strategic Plan

The Malaysian government has formulated the Malaysian Education Blueprint for Higher Education MEB (HE): 2015-2025, the National Higher Education Plan (NHEAP) 2007–2010; and the National Higher Education Strategic Plan (NHESP) beyond 2020 (Grapragasem *et al.*, 2014). The National Higher Education Strategic Plan consists of both the MEB (HE) and the Graduate Employability Blueprint GE 2012-2017.

The MEB (HE) (2015-2025) consolidates the ministry's aspiration to create a world-class higher education system that enables Malaysia to compete in the global economy. Its main focus is to inspire an entrepreneurial mindset throughout Malaysia's higher education system and create a system that produces graduates with a drive to create jobs. The blueprint (2015-2025) outlines '10 Shifts' to "spur continued excellence in the higher education system": holistic entrepreneurial and balanced graduates; talent excellence; a national culture of lifelong learning; quality technical and vocational education; financial sustainability; empowered governance; an innovation ecosystem; global prominence; globalised online learning; transformed higher education delivery.

Likely trends shaping the higher education sector to 2030

The purpose of the Graduate Employment Blueprint is to produce highly employable graduates. Its main focus is the attributes and skills required by industries, self-development initiatives for learning and the concept of lifelong learning, and employment opportunities suited to graduates' qualifications and functional competencies. It is expected that these things will remain relevant out to 2030.

The MEB (HE) (2015-2025) dates to April 2015. Its 'roadmap' identifies three waves of activity to ensure system capacity, capability and readiness. The MOHE recognises that the system will need to keep evolving to reflect global trends — for example, disruptive technologies such as advanced robotics, the Internet of Things and Artificial Intelligence. Preparing Malaysia's young people for changes in the social and business landscape likely to take effect by 2030 requires urgent changes in the way the higher education system and higher learning institutions (HLIs) operate.

Graduate employment in the future: looking out to 2030

The overall key trends in the development of Malaysian higher education between now and 2030 have been characterised as globalisation, teaching and learning, governance and the knowledge-based society (Grapragasem *et al.*, 2014).

Globalisation implies the opening of local and national perspectives to a broader outlook of an interconnected and interdependent world with free transfer of capital, goods and services across national frontiers (Business Dictionary.com, 2013). Globalisation is seen as the root cause of changes taking place in higher education. According to Knight (2002), in today's era of globalisation, knowledge is increasingly a commodity that moves between countries. The growth of the knowledge-based economy has led not only to competition among employers worldwide for the best brains but also among the institutions that train the best brains. The effect of globalisation on higher education is expected to continue to have an impact on the economy.

Teaching and learning was one of the areas included in National Higher Education Strategic Plan (NHEAP) 2007–2010. In order to ensure a stable and strong institution, dynamic and relevant curricula and pedagogy are needed. A well-designed higher education curriculum should include creativity, innovation, leadership and entrepreneurship. It should equip students with appropriate skills to enable them to compete in the challenging global market. Teaching and learning need an effective delivery system. Information and communication technology (ICT) has become one of the main means of imparting knowledge and gathering information in higher education; learning increasingly takes place through electronic media. It is expected that innovative teaching and learning will shape the HE sector between now and 2030.

Governance: Higher education in Malaysia has grown dramatically since independence in 1957, to meet the demand for a high-quality and skilled workforce. In order to produce sufficient graduates to meet the manpower requirements of the nation's economic growth and to make Malaysia an education hub, especially in South-east Asia, the Ministry of Education (MOE) has formulated two education plans, the NHESP beyond 2020 and the NHEAP 2007–2010. The government, through the MOE, has democratised higher education and encouraged the setting up of private colleges and universities in line with its vision to provide access for all qualified students to tertiary education. This trend is expected to continue out to 2030.

Knowledge-based society: The fundamental objective of the education system is to ensure that all Malaysian students are equipped with the knowledge and skills to be successful in life. Malaysia has moved towards a knowledge-based society through the introduction of various initiatives and approaches in the MEB (HE) 2015-2025, the NHEAP 2007-2010, and the NHESP beyond 2020.

The impact of key trends on the future of the higher education sector

The following sections discuss how trends in higher education policy and strategies may affect graduate employability in Malaysia to 2030 and beyond.

The impact of globalisation on employability

Malaysia currently has 20 public universities, 24 polytechnics, 37 public community colleges, 33 private universities, five foreign-university campuses and about 500 private colleges. This dramatic development is transforming Malaysia into a regional hub for education in South-east Asia. Higher education contributes much to national GDP, and the Malaysian government has given considerable attention to developing the sector. The establishment of local and foreign colleges and universities in Malaysia has also contributed to the development of human capital, especially skilled workers.

Malaysia is aware of the need to collaborate with other countries in order to be competitive in the global market. The restructuring of its education policy has given foreign stakeholders the opportunity to conduct twinning programmes with local colleges and universities, as well as to open campuses in Malaysia. Since 2000, for example, the British University of Nottingham has had a campus in Semenyih, Hulu Langat District, Selangor, run as a private business.

The government also realises the importance of branding Malaysian education. According to Susan (2008), the Malaysian education brand draws on deep cultural, religious and political resonances to promote its product, one that emphasises lifestyle, culture and quality of education.

Susan further elaborates that Malaysia demonstrates a high level of fluidity in globalising the higher education market. This requires its HEIs to be more competitive, attentive to strategies on opening new markets and developing more attractive and distinctive brands.

The impact of teaching and learning on employability

Teaching and learning was one of the strategies included in the National Higher Education Strategic Plan (NHEAP) 2007–2010. A well-designed higher education curriculum should equip students with the appropriate skills, partly through innovative pedagogy and the use of electronic media.

ICT has actually changed students' learning behaviour, helping to move from content-centered curricula to competency-based curricula, and from teacher-centered to student-centered forms of delivery (Oliver, 2002). The advancement in ICT has also changed the delivery style of teaching and learning. The conventional method of imparting knowledge through face-to-face interaction is slowly taking a step backward, even though it is still used in public and private colleges and universities. Virtual classrooms, e-learning and blended learning are slowly gaining momentum and are expected to be mainstream by 2030.

Due to the rapid expansion of the higher education system, quality assurance has become an effective mechanism for the professional recognition of HEIs in Malaysia. The establishment of the Malaysian Qualifications Agency (MQA) is vital to ensure that HEIs provide relevant quality education to students and fulfil the government's aspiration to turn Malaysia into an 'education hub'.

The Impact of governance on employability

The government, through the MOE, has democratised higher education, in line with its vision of increasing access to tertiary education. It also recognises the importance of giving greater autonomy and accountability to public HEIs. Some of the changes that are in progress include implementing the legal framework to transfer administrative powers to universities and to replace the University Council with

university boards of directors. Autonomy and greater accountability are meant to help improve standards and achieve excellence.

Knowledge-based society and employability

The excellence of an HEI is determined by its staff. Several initiatives have been identified to improve the calibre of academic staff — for example, more stringent criteria for professorships. Lecturers have improved in quality and increased in number. Enhancing human capital is vital to uphold the integrity of higher education in Malaysia and improve the employment prospects of graduates.

English-language competency and employability

The language of instruction has been linked with issues of unemployment among graduates from public universities, particularly those with Malay ethnic backgrounds (David, 2004). Graduates from private universities, which mostly cater for non-Malays (i.e. Chinese), are preferred by private companies, largely because of their greater competency in English. Malay, or Bahasa Malaysia, is the national language and is widely used in the Malaysian education system as the medium of instruction, especially in national schools and public universities.

As the country moves from a production-based economy to an innovative and knowledge-based one, the government has allowed English to be used for teaching, especially in private HEIs (Tan, 2002). This change is an essential part of the country's response to globalisation and internationalisation. Moreover, to meet the government's goals of making Malaysia an education hub and attracting foreign investment and foreign students, English has to be the medium of instruction in private HEIs.

English is sometimes referred to as the language of progress and development, and the use of ICT in higher education institutions (HEIs) for research and assignments requires students to have a good grasp of English. Moreover, English has become a language of communication among students, especially in private HEIs. The government's goals can

only be realised if the English language is widely used in teaching and learning, and in communication and R&D, in public and private HEIs.

Drivers of change in graduate employment and employability

Several important factors can be identified as the main drivers of change in graduate employment and employability in Malaysia in the decades ahead:

- i. **Rapid changes in the economy**, which create pressures on employers to identify and recruit graduates with new competencies and skills.
- ii. **Rapid technological shifts**. Technology brings both challenges and opportunities. The greatest opportunity is to reach many learners — millions globally — and accelerate learning as never before. ICT equips individuals with competencies and skills that are needed in the labour market as job profiles and skills needs change. Technological advances also offer possibilities for accelerated learning and improvements in education systems through mobile technologies, learning management systems, learning analytics and educational apps.
- iii. **Shifting economic and social demands**. Automation and digitisation of industry, agriculture and the knowledge economy are rapidly changing. According to a study from Oxford University (David, 2015), “47% of occupations are at risk of being automated in the next few decades”. As many jobs change and others become obsolete, it will be essential for higher education to change to meet new knowledge and skills demands. At the same time, of course, graduates consistently need to upgrade their skills, and companies need to increase their human capital.
- iv. **Rising costs of tuition and of learning resources**. The rising costs of tuition and of learning resources is the key development in the higher education sector. In Asia, rising tuition fees have led to fears of higher education increasingly becoming unaffordable

to the poor, lower middle classes and minority groups. This cost pressure also affects those learners who require retraining and more education to update their skills and knowledge.

- v. **Global mobility.** Students, academics and university brands will continue to become more international. Student global mobility was 1 million in 1980, 4.3 million in 2010 and has been predicted to increase to 5.8 million by 2020. Malaysia is expected to welcome 200,000 international students in 2020, and to be the sixth most-preferred study destination globally. Advances in ICT have also contributed significantly to global mobility, with the option to study online.
- vi. **Academic excellence.** The government has identified two important aspects in the development of R&D: (1) building the critical mass of researchers, scientists and engineers; (2) inculcating the right culture to ensure passion, dedication and commitment to research (Ministry of Higher Education, 2007). However, the ability of the educational authorities to monitor and enforce standards has been out-paced by the rapid growth of the education industry. Inconsistencies remain in standards across the public and private educational sectors.

Policy implications and recommendations

Over the past 10 years alone, the Malaysian HE system has made significant gains in student enrolment, risen in global recognition on key dimensions such as research, publications, patents and institutional quality, as well as become a top destination for international students. These achievements are a testament to the drive and innovation of Malaysian academics, the support of the private sector, and government investment. However, higher education in Malaysia needs to provide *education for employment*, in order to aid the transition of graduates to the job market.

In this chapter, the contents of curricula, assessment schemes and students' poor soft skills (language skills, communication skills, and so

on) have all been identified as areas for improvement. The gap between graduate supply and labour-market demand, and the limited co-operation between industries and universities are also major challenges as the overall number of graduates in Malaysia grows.

Looking ahead to 2030 and beyond, we can draw the following conclusions and make the following recommendations for the HE sector:

- Most of the higher learning institutions need to review and revise their **teaching-learning approaches** to make sure graduates have employability skills.
- There is a need to create **more opportunities for learners to gain early exposure to various workplace environments during their studies, and to provide ongoing career guidance as graduates join the workforce.** The push for greater collaboration between HEIs and industry in internships, curriculum design and career talks is a move in the right direction. However, the success of such collaborative activities depends on adequate planning, preparation, implementation, evaluation and review processes.
- **More emphasis should be given to practical experience** in training modules and curricula adopted by universities. More internships should be arranged and made compulsory for any student to graduate.
- **Soft skills** such as ICT and communication skills should be embedded in curricula; student exchange schemes would also enhance the employability of graduates.
- **English-language proficiency** should be a core focus in preparing students for the workplace.

Meanwhile, employers will need to review their offer to graduates. Over the coming decades, graduates will be more open to opportunities outside Malaysia. They will also be influenced by global workplace trends such as a shift towards the needs of the employee in terms of

work-life balance. There is no guarantee that graduates with the right combination of technical knowledge and competencies and soft skills will choose Malaysian employers.

References

Abayadeera, N., & Watty, K. (2016). Generic Skills in Accounting Education in a Developing Country: Exploratory Evidence from Sri Lanka . *Asian Review of Accounting*, 1-30.

Abdul Hamid, M. S., Islam, R., & Noor Hazilah, A. M. (2014). Malaysian graduates' employability skills enhancement: An application of the importance of performance analysis. *Journal of Global Business Advancement*, 7(3): 181–197.

Ali, N. L. (2013). A changing paradigm in language planning: English-medium instruction policy at the tertiary level in Malaysia. *Current Issues in Language Planning*, 73-92.

Ahmat, S. (1980). Nation building and the university in developing countries: the case of Malaysia. *Higher Education*, 9, 721-741.

Archer, W. and Davison J. (2008). Graduate employability: What do employers think and want? In Kevin Lowden, Stuart Hall, Dr Dely Elliot and Jon Lewin *Employers' perceptions of the employability skills of new graduates*. Edge Foundation 2011 4 Millbank, London SW1P 3JA www.edge.co.uk Edge Foundation University of Glasgow SCRE Centre and Edge Foundation 2011 ISBN 978-0-9565604-3-8 [www.gla.ac.uk/faculties/education/scre/Edge/SCRE Centre 2011](http://www.gla.ac.uk/faculties/education/scre/Edge/SCRE%20Centre%202011)

Aring, Monika. (2015). ASEAN Economic Community 2015 enhancing competitiveness and employability through skill development. ILO Working Papers 994872733402676, International Labour Organization.

Azmi, I. A. G., Hashim, R. C., & Yusoff, Y. M. (2018). The Employability Skills of Malaysian University Students. *International Journal of Modern Trends in Social Sciences*, 1(3), 01–14.

Belt, V., Drake, P., & Chapman, K. (2010). *Employability Skills: A Research and Policy Briefing*. Briefing Paper Series, UK Commission for Employment and Skills. Accessed February 22, 2018, from <http://www.educationandemployers.org/wp-content/uploads/2014/06/employability-skills-policy-briefingukces.pdf>

Chan, S. H., & Abdullah, A. N. (2015). Bilingualism in Malaysia: Language Education Policy and Local Needs . *Pertanika Journal of Social Sciences & Humanities*, 55-70.

Cheong, K. C., & Lee, K. H. (2016). Malaysia's Education Crisis – Can TVET Help? *Malaysian Journal of Economic Studies*, 115-134.

Cheong, K. C., Hill, C., Fernandez-Chung, R., & Leong, Y. C. (2015). Employing the 'unemployable': employer perceptions of Malaysian graduates. *Studies in Higher Education*, 1-18.

Chiew C.S. (2013, March 14). Helping unemployed graduates in Malaysia. Retrieved June 8, 2013, from www.straitstimes.com.

David, M. K. (2004). Language policy in Malaysia — Empowerment or disenfranchisement? In S. Mansoor, S. Meraj, & A. Tahir (Eds.), *Language policy, planning, & practice: A South Asian perspective* (pp. 79–90). Karachi: Aga Khan University & Oxford University Press.

David H. Autor (2015). Why Are There Still So Many Jobs? The History and Future of Workplace Automation. *Journal of Economic Perspectives—Volume 29, Number 3, PP 3–30*

Fernandez-Chung, R. M., & Ching, L. Y. (2018). *TNE Graduate Employment Study: An Analysis of Graduate Employment Trends in Malaysia — A Three-Phase Study*. British Council.

Finch, D. F., Hamilton, L. K., Riley, B. & Zehner, M. (2013). An exploratory study of factors affecting undergraduate employability. *Education + Training*, 55(7): 681-700.

Gill, S. K. (2004). Medium-of-instruction policy in higher education in Malaysia: Nationalism versus internationalization. In J. W. Tollefson &

A. B. M. Tsui (Eds.), *Medium of instruction policies – which agenda? Whose agenda?* (pp. 135–152). Mahwah, NJ: Lawrence Erlbaum.

Gill, S. K. (2005). Language policy in Malaysia: Reversing direction. *Language Policy*, 4, 241–260.

Grapragasem S, A Krishnan, AN Mansor (2014). Current Trends in Malaysian Higher Education and the Effect on Education Policy and Practice: An Overview. *International Journal of Higher Education* 3 (1), 85-93

Hanapi, Z., & Nordin, M.S. (2014). Unemployment Among Malaysia graduates: Graduates' attributes, Lecturers' Competency and Quality of Education. *Procedia — Social and Behavioral Sciences*, 112, 1056 – 1063. Ismail

Ismail, R., Yussof, I., & Lai W. S. (2011). Employer perceptions on graduates in Malaysian services sector. *International Business Management*, 5(3), 184-193.

Jagannathan, S., & Geronimo, D. (2013). *Skills for competitiveness, jobs, and employability in developing Asia-Pacific*. Manila: Asian Development Bank.

Kahiroh Mohd Salleh et, al (2008). *Employability Skills Among Students and Lecturers: Comparison with Industry*. Universiti Tun Hussein Onn Malaysia, Johor.

Lee, M. N. (2004). Global trends, national policies and institutional responses: restructuring higher education in Malaysia. *Educational Research for Policy and Practice*, 3, 31-46.

Lim P. J. (2016). *Malaysia's Labour Market and Job Creation under the Economic Transformation Plan (ETP) 2011 to 2015*

Low, M., Botes, V., Dela Rue, D., & Allen, J. (2016). Accounting employers' expectations - The ideal accounting graduates. *e-Journal of Business Education & Scholarship of Teaching*, 10(1): 36-57.

Lowden, K., Hall, S., Elliot, D., & Lewin, J. (2011). Employers' perceptions of the employability skills of new graduates. London: Edge Foundation.

Malaysia Economic Monitor: Boosting Trade Competitiveness. (2014). Bangkok: World Bank.

Malaysian Education Blueprint 2015-2025 (2013) Putrajaya: Ministry of Education Malaysia.

Mansor, A. N. (2014). Current Trends in Malaysian Higher Education and the Effect of Education Policy and Practice: An Overview. *International Journal of Higher Education*, 85-93.

Mason, G.W., Williams, G. and Crammer, S. (2006). Employability skills initiatives in higher education: what effects do they have on graduate labour outcomes? (2006), 5 November 2014, http://www.hefce.ac.uk/pubs/rereports/2003/rd13_03/default.asp

Md Saad, M. S., & Majid, I. A. (2014). Employers' perceptions of important employability skills required from Malaysian engineering and information and communication technology (ICT) graduates. *Global Journal of Engineering Education* , 110-115.

Mohd Ibrahim, D. H., & Mahyuddin, M. Z. (2017). Youth Unemployment in Malaysia: Developments and Policy Considerations. Kuala Lumpur: Bank Negara Malaysia.

Ministry of Higher Education. (2007). National Higher Education Action Plan 2007-2010: Triggering higher education transformation.

Ministry of Education Malaysia (MoE). (2015). Malaysia Education Blueprint 2015–2025 (higher education). Putrajaya, Malaysia

Ministry of Education Malaysia (2017). Institutions. Retrieved March 19, 2019 from: <http://www.mohe.gov.my/en/institutions>

Morshidi, S., & Kaur, S. (2007). Defining Global University. Updates on Global Higher Education, National Institute of Higher Education Research, 19.

MyForesight (2013). Enabling the future: Re-energizing Malaysia education from cradle to career. Retrieved June 9, 2013, from *www.myforesight.my*.

OECD (2013). Education at a Glance 2013: OECD Indicators, OECD Publishing. <http://dx.doi.org/10.1787/eag-2013-en>

Oliver. R., (2002). The role of ICT in higher education for the 21st century: ICT as a change agent for education.

HE21 conference. Retrieved June 9, 2013, from *www.citeseerx.ist.psu.edu*.

Nasruddin, E., Bustami, R., & Inayatullah, S., (2012). Transformative Foresight: Universiti Sains Malaysia Leads The Way. *Futures*, 44, 346-45.

Othman, S. A. (2017, July 29). Youth Unemployment and Joblessness. Retrieved from Focus Malaysia: <http://www.focusmalaysia.my/Columns/youth-unemployment-and-joblessness>

Pillai, S. (2009). Enhancing graduate employability through university-industry partnership. University of Kelaniya, Sri Lanka.

Ramlee Mustapha et, al (2008). K Ekonomi and Globalisation — Are our Students Ready?. *Jurnal Personalia Pelajar*.(11), 1-23.

Rangel, E., Sueyoshi, A., & Samsudin, R. S. (2016). Graduate Job Markets, Higher Education Policy and Employment in Japan, Malaysia and Mexico. *CiNii Journal-Utsunomiya University Faculty of International Studies*, 57-70.

Saad M., M.S., Robani, A., Jano, Z. and Ab. Majid, I. (2013). Employers' perception on engineering, information and communication technology (ICT) students' employability skills. *Global J. of Engng. Educ.*, 15, 1, 42-47

Samah, N. A., Omar, W., Latif, A. A., & Mohammad, S. (2018). Re-examine Malaysian HEIs graduates' employability: comparing perspectives from graduates and employees. *The Turkish Online Journal of Design, Art and Communication — TOJDAC* , 1666-1685 .

Subramonian, H. (2008). Competencies Gap Between Education and Employability Stakes Team. *Journal of Hospitality & Tourism*, 5(1), 45-60.

Selvaratnam, V. (1989). Change amidst continuity: University development in Malaysia. In P. G. Altbach & V. Selvaratnam (Eds.), *From independence to autonomy: The development of Asian universities* (pp. 187-205). Dordrecht, Netherlands: Kluwer Academic.

Shafie, L.A. & Nayan, S. (2010). Employability Awareness Among Malaysian Undergraduates. *International Journal of Business and Management*, 5(8), 119-123.

Sirat, M. B. (2010). Strategic planning directions of Malaysia's higher education: University autonomy in the midst of political uncertainties. *Higher Education*, 59, 461-473.

Suarta, M. I., Suwintana, I. K., Fajar Pranadi Sudana, I. P., & Dessy Hariyanti, N. K. (2018). Employability Skills For Entry Level Workers: A Content Analysis Of Job Advertisements In Indonesia. *Journal of Technical Education and Training (JTET)*, 49-61.

Ministry of Higher Education (2012). *The National Graduate Employability Blueprint 2012-2017*. Selangor: Ministry of Higher Education Malaysia.

Dian Hikmah MI, Mahyuddin MZ (2016). Youth Unemployment in Malaysia: Developments and Policy Considerations. *Outlook and Policy 2017*, Bank Negara, Malaysia http://www.bnm.gov.my/files/publication/ar/en/2016/cp04_003_box.pdf

Tan, A. M. (2002). *Malaysian private higher education*. London: Asean Academic Press.

Zaaba, Z., Anthony Aning, I. N., & Ramadan, F. I. (2014). English as a Medium of Instruction in the Public Higher Education Institution: A Case Study of Language in Education Policy in Malaysia. *Selected Topics In Education And Educational Technology*, 188-196.

Zain, N. M., Aspah, V., Mohmud, N. A., Abdullah, N., & Ebrahimi, M. (2017). Challenges and Evolution of Higher Education in Malaysia. *International Journal of Islamic and Civilizational Studies*, 78-87.

Wye, C-K., Lim, Y-M & Lee, T-H. (2012). Perceived Job Readiness of Business Students at The Institutes of Higher Learning in Malaysia, *International Journal of Advances in Management and Economics*, 1(6), 149-156.

Zafir, M.M., Ishak, Y., Abd Hair, A. (2015). Antara Realiti Dan Harapan – Kajian Empirikal Persepsi Majikan Terhadap Prestasi Graduan Tempatan. *Geografia Online, Malaysian Journal of Society and Space*, 11(10), 27 - 36.

Chapter Eight

Inclusive Education in Malaysia's HE Sector: Preparing for The Future

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Introduction

We are facing great social, economic and environmental challenges, driven, at least partly, by globalisation and by technological developments. The needs and requirements of the workforce are changing. The corollary is that higher education must change. Megatrends are transforming the world and they have implications for the way higher education should be planned. As previous chapters, for example, Chapter Three and Chapter Four, have shown, we need workers with the technical skills and knowledge for the new age (4IR or the Fourth Industrial Revolution) and with the softer skills, for example, good communication skills, to help build a stronger society — and we need more of them.

Policy makers and the leaders of HE institutions are more likely to be able to improve access and ensure students are acquiring the right skills if they develop future-proofed strategies. Education needs to do more than prepare young people for the world of work; it needs to equip them to become responsible and engaged citizens.

This chapter will focus on educational inclusivity in Malaysia's multicultural society and consider the issues to be addressed and their implications. In a multicultural nation like Malaysia, inclusive education is crucial for the growth and development of people. Inclusive education strengthens integration and reduces inequalities among communities and promotes harmony and peace.

The aim is to stimulate thinking about the future of the higher education sector, using foresight techniques. In the context of inclusive education, the key questions are:

- What are the major forces of change?
- What will the implications for the education sector be?
- What are the future challenges for inclusive education?
- How can we advance policies and practices that ensure inclusion in education?
- What are the factors that could foster inclusive education?

What is inclusive education?

Inclusion is about involving everyone, celebrating diversity and building a strong society (Inclusion International, 2015). The term ‘inclusive education’ lacks some conceptual clarity and focus, though — despite receiving considerable attention (Collins, Azmat, Rentschler, 2018). Shyman (2015) defines it as occurring when “all individuals, regardless of exceptionality, are entitled to the opportunity to be included in regular classroom environments while receiving the supports necessary to facilitate accessibility to both environment and information”.

Merajul, Ujjwal and Debabrata (2018) posited that the ultimate goal of inclusive education is a school where all are participating and treated equally. Inclusive education, according to the authors, has implications for curriculum development, teacher training, local capacity building and community involvement to help mobilise resources.

UNESCO (UN Educational, Scientific and Cultural Organisation) describes inclusive education systems as those that remove “the barriers limiting the participation and achievement of all learners, respect diverse needs, abilities and characteristics” and “eliminate all forms of discrimination in the learning environment”. Inclusivity in HE is increasingly recognised as a worldwide fundamental agenda for promoting “individuals’ educational careers, not only for their own benefit but also for the positive impact that integration has on society

as a whole” (Fuller et.al. 2004; Matthew 2009; Redpath et. al. 2013). The third Malaysia Education Blueprint (2013-2025), meanwhile, narrows the definition of inclusive education to those with special needs, particularly students with “visual impairment, hearing impairment, speech difficulties, physical disabilities, multiple disabilities and learning disabilities such as autism, Down’s syndrome, ADHD (attention deficit hyperactivity disorder) and dyslexia”.

In the educational context, ‘inclusive’ can be perceived as integrative: the Malaysian Education Blueprint maps out the closure of special-needs facilities so that their students can be integrated into the general student body. The special-needs integration concept has begun to make its way into many Malaysian trust schools (government schools jointly managed with private partners). It is hoped that combining streams will promote empathy and acceptance among children of all races, which will promote racial integration and, additionally, raise the self-esteem of those with special needs.

Initiatives to promote inclusive education in Malaysia

Academics and scholars in Malaysia have started to discuss inclusive education in forums, seminars and conferences, and related Malaysian ministries such as the Ministry of Education and the Ministry of Women, Family and Community Development and public and private higher education institutes (HEIs) have come together to highlight the issue through the International Conference of Pedagogy and Inclusive Education (ICPIE 2019), held in Kuala Lumpur in September 2019. The conference agreed that inclusive education in the HE sector was necessary to ensure the flow of education opportunities to all groups of people. (Figure 1 and Figure 2)

Type of Schools	2015	2016	2017
National	2,039,229	2,044,299	2,071,890
National Type (C)	542,406	527,453	518,543
National Type (T)	83,343	81,483	81,488
Special Education	1,178	1,185	1,215
Special Model (K9)	2,148	2,187	2,074
Government Aided			
Religious School (GARS)	15,738	16,453	17,184
Special Model	822	798	818
Sports	33	28	31
Bimbingan Jalanan Kasih	76	76	75
Total	2,684,973	2,673,962	2,693,318

Figure 1: Number of enrolments for primary schools according to types of schools (public) based on 2018 Malaysian School Management Division data

- Notes :
1. Excluding pre-school enrolment
 2. Special Model (K9) — Primary school with secondary level Form 1 to 3
 3. Special Model – Secondary school with primary level from Year 4 to 6
 4. Including enrolment of Year 4 to Year 6 students in Special Model and Sports School
 5. Enrolment in Year to Year 6 includes pupils in SEIP

Source: School Management Division (APDM Data as of 31st January 2018), Quick Facts — Malaysia Educational Statistics 2018

Type of Schools	2015	2016	2017
Regular	2 1,914,924	1,884,012	1,819,865
Fully Residential	39,079	36,956	38,351
Religious	38,694	38,221	38,448
Technical	4,803	3,371	3,957
Vocational College	62,786	52,033	54,150
Special Education	886	1,062	1,164
Special Model	10,703	10,551	10,117
Sports	1,479	1,492	1,552
Arts	818	897	887
Government Aided			
Religious School	69,924	69,244	69,089
Bimbingan Jalinan Kasih	36	39	24
Special Model	1,166	1,155	1,083
Form Six College	0	0	3,111
Total	2,145,298	2,099,033	2,041,798

Figure 2: Number of enrolments for Secondary schools according to types of schools (public) based on 2018 Malaysian School Management Division data

Notes : 1. Excluding pre-school enrolment in secondary schools

Source: School Management Division (APDM Data as of 31st January 2018), Quick Facts — Malaysia Educational Statistics 2018

Inclusive education matters in Malaysia's multicultural landscape. In a survey conducted in 2016 (The Edge 2016), 'How to fix Malaysia', 11.45 per cent of respondents ranked racial or religious tensions as their third biggest concern. Respondents were asked which options for resolving these tensions they preferred and they 'voted' like this:

- Teach cultural and religious diversity in schools: 68.24 %
- Criminalise all forms of hate speech and discrimination: 67.32%
- Promote unity through arts, culture and sports: 62.33 %
- Promote local, mixed-language films, music and television shows: 37.10 %
- Abolish vernacular schools, strengthen national schools: 24.54 %

On the international scene, UNESCO has established initiatives against discrimination in education (1960) and other international human rights treaties that prohibit exclusion from, or limitation to, educational opportunities on the basis of socially-ascribed or perceived differences such as sex, ethnic/social origin, language, religion, nationality, economic background and ability. Education for All (EFA) is a global movement led by UNESCO, which aims to provide quality basic education for all children, youths and adults. At the UNESCO International Forum on Inclusion and Equity in Education in Cali, Columbia, in September 2019, 40 countries signed up to the 'Cali commitment to equity and inclusion in education', which "recognizes the necessity and urgency of providing equitable and inclusive quality education for all learners, from the early years through compulsory schooling, TVET (technical and vocational education and training), higher education and lifelong learning".

Many governments are adapting their policies to reflect the emphasis on inclusion and cross-sector collaboration in the UN Sustainable Development Goals (SDGs). For education, this means, among other things: curricula that are broad and inclusive; learning environments that ensure high levels of motivation and engagement for everyone, based on principles such as equity, inclusion and diversity.

In the UK, a report on Inclusive Learning and Teaching in Higher Education was published in 2010 exploring how 15 HE institutional teams tackled the inclusivity challenge, from defining inclusive learning and teaching to engaging staff and students to measuring impact. The shared experiences of each institution were presented in the report, with the intention of helping UK policymakers in curriculum design, curriculum delivery and the management of inclusive learning and teaching in higher education. (Thomas and May, 2010).

Historical context in Malaysia

To further understand how inclusive education is posing a challenge for Malaysia, let's first understand the roots of its multicultural landscape. Malaysia has a population of approximately 32.8 million, comprising 62 per cent Malays (also known as the Bumiputera, literally, 'sons of the soil'), 20.6 per cent Chinese, 5.7 per cent Indian, 0.8 per cent 'other', including a very small minority of aborigines, and 10.3 per cent non-Malaysian citizens (CIA World Factbook). The Malays are mainly Muslims. The Chinese, many of whom speak Mandarin and some of whom speak Cantonese and Hokkien, practise various faiths, including Buddhism, Taoism, Christianity and Islam. The Indians speak Tamil and most practise Hinduism, although some Punjabis are Sikhs. Then there are other ethnicities such as the aboriginal natives in peninsular Malaysia and the Borneo tribes in Sarawak and Sabah. They follow Christianity or Islam, or ancestral animistic religion.

During British colonial rule, ethnic groups were structurally segregated. The Chinese and Indians were brought in from China and India to work in the tin mines and rubber plantations respectively. Different groups lived in different places, with the Chinese in the cities, the Indians near rubber plantations and the Malays in farms (Hoffstaedter, 2009). Before independence from the British in August 1957, the forefathers of Malaysia granted citizenship rights to the residing immigrants (particularly to the Chinese and Indians already settled in Malaya), and this 'social contract' was carried over to the constitution when Malaysia was officially formed on September 16, 1963. However, Article 153 of the constitution controversially granted the Malays a special position

as the *Bumiputera* and privileges such as ownership of land. It was designed to safeguard the Malays, mostly poorer farmers and labourers at the time of independence, and sets out ways to do this, for example, establishing quotas for entry into the civil service and universities.

As in many other multicultural societies around the world, the coexistence of various cultures and races in Malaysia can be both a blessing and a source of disharmony. The unequal distribution of wealth led to racial tensions that culminated in a racial riot on May 13, 1969. The aftermath of the 1969 racial riot resulted in various policies and reforms to unite the multi-ethnic residents and address economic imbalance, such as the 1970 National Economic Policy (NEP), the 1990 National Development Policy (NDP), the 2001 New Vision Policy (NVP), and the National Education Policy. These policies all aimed, among other things, to eradicate the huge socio-economic disparity between the three main ethnic groups (Jamil and Razak, 2010). According to Noraini and Chan-Hoong Leong (2013), Malaysia's model of multiculturalism is based on policies to manage inter-group tensions and prevent violence and make society fairer.

Malaysia is often dubbed one of the good models of a multicultural society. The country is "among the most successful countries in the post-colonial management of ethnic pluralism through state-institutionalised multiculturalism" (Goh, 2007). Looking ahead to 2030 and beyond, the main drivers of unity will continue to be inclusive governmental policies and the positive and tolerant attitude of various ethnic groups in all aspects of life, including education.

National policies related to inclusivity in Malaysia's HE sector

Access to better education for all has become a strategic long-term goal of the government to enable Malaysians from all ethnicities to climb the social ladder. To ensure equity in public-university admission, a quota system in the ratio of 55:45 per cent for Bumiputera and non-Bumiputera students was introduced by the National Operations Council (NOC) after the racial riots of 1969 (Lee, 2012). Scholarships were awarded particularly to the Bumiputera, in order to improve their

ability to go to university. In 2002, this ethnic quota system was stopped, and admission to university was changed to make it meritocratic (Mohd Nahar, 2016). The number of enrolments for public HEs in Malaysia can be observed in Figure 3.

Local Student		International Student		Total
510,789	94.84 %	27,766	5.16 %	538,555

Under Graduate		Post Graduate		Others		Total
425,110	78.94 %	93,683	17.40 %	19,762	3.67 %	538,555

Figure 3: Enrolments in Public HEIs in Malaysia as of 2018

- Notes :
1. Undergraduate includes Postgraduate Diploma, Degree, Diploma, Matriculation, Professional, Pre Diploma, Certificate & Pre Session
 2. Postgraduate includes Masters and Ph.D
 3. Others includes Matriculation, Professional, Certificate and Pre-Session

Source: Planning, Research and Policy Coordination Division, Ministry of higher education

Source : School Management Division (APDM Data as of 31st January 2018), Quick Facts – Malaysia Educational Statistics 2018

While many students in private HEIs receive scholarships from both government bodies and corporate entities, the majority — across both private and public institutions — rely on student loans from the National Higher Education Fund Corporation, abbreviated as PTPTN. Some seek financial aid from religious-body funds and NGOs

Malaysian Enrolments Breakdown by institution type

1 Sep 2018 - 20 Oct 2018

Total Malaysian Enrolments = 137,067

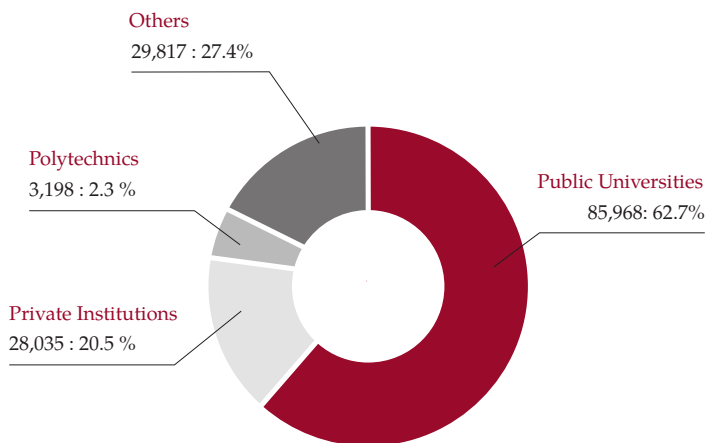


Figure 4: Number of enrolments for all HEIs (public and private) in Malaysia

Note: Enrolment numbers in “Others” includes courses created by independent course creators and international universities.

Source: OpenLearning - Amplitude Analytics and Back-End Database

National Philosophy of Education and educational reforms

Founded in 1988, the National Philosophy of Education (NPE) outlines principles, ideas, practices, policies and goals, and provides guidance on matters related to education, as defined below:

“Education in Malaysia is an on-going effort towards further developing the potential of individuals in a holistic and integrated manner, so as to produce individuals who are intellectually, spiritually, emotionally and physically, socially balanced and harmonic, based on a firm belief in and devotion to God. Such an effort is designed to produce Malaysian citizens who are knowledgeable and competent, who pass high moral standards and who are responsible and capable of achieving a high level of personal well-being as well as being able to contribute to the harmony and betterment of the family, the society and the nation at large.”

The seeds of inclusive education and the NPE can be seen in the 1956 Razak Report, which, named after the then education minister Tun Abdul Razak, proposed reforms to increase enrolment, integrate children from all races, introduce a common national curriculum and establish Malay as the main (but not sole) language of instruction. Later, the 1985 education reform paved the way for the NPE, whose focus was the development of students with good manners, morals and ethics while taking into consideration the interests of the different ethnic and religious groups (Wan Mohd Zahid 2019). The goal was to create responsible Malaysian citizens who prized racial unity and the harmonious integration of ethnicities highly, and so boost sense of shared national identity and values.

Global megatrends out to 2030

What will the world be like in 2030? Using PESTLE analysis — a framework to scan the political, economic, social, technological, legal and environmental factors affecting an organisation or sector — we have identified five megatrends or long-term shifts relevant to inclusivity in the Malaysian HE sector:

a. The digital revolution and technology shift

This will bring about immense possibilities and uncertainties for the employment market and the relevance of higher education degrees. Rapid advances in technology may widen inequalities and exacerbate social fragmentation. Young talents will need skills to help them cope and survive in IR4; and courses and curricula will need to be redesigned appropriately. The use of Artificial Intelligence (AI) and machine learning will be common and change the way technology is integrated into education.

b. Demographic shifts

The world's current population is 7.4 billion. By 2030, this will have grown to 8.5 billion, with most of the increase coming from Africa or countries that already have large populations such as China (UN, 2015 Revision of the World Population Prospects). Meanwhile, many developed countries face an increase in the number of economically inactive people as life expectancy increases and the population ages. Creation of new jobs is essential for the world economy.

c. Change in public attitudes towards HE education and expenditure

Educational attainment among the working classes is still lower than among the middle classes, and inequalities in access to employment remain. Increases in the cost of living mean school leavers are opting for simple or odd jobs to help sustain themselves and their families. In Malaysia, many HEIs in both the public and private sector are complaining of a decline in the number of enrolments. HEIs will be forced to change their modus operandi and curriculum design and be more aware of prospective students' circumstances.

d. Transparency and privacy

The amount of information collected on every person, product and organisation will grow exponentially, and the pressure to share that information with customers and consumers will increase. The tools to analyse information will be well-developed

and will make some decision-making easier. For instance, it will be easier to choose products with the lowest carbon footprints and fewest toxic ingredients. But all these tools have serious implications for privacy. Cybersecurity and data protection will be important for those wishing to unlock the value of data for educational purposes.

e. Climate crisis and growing populism

Many highly populated coastal areas will be in trouble, as sea levels rise due to the melting of Arctic Ice. The natural world will see catastrophic declines in populations of many species and major losses of ecosystems such as coral. Droughts and floods will hit global bread-basket regions, with implications for world farming and the planting of crops. Many cities will be constantly in a state of water shortage. Shifts in water availability will lead to the displacement of people and increase migration, which, in turn, will lead to tighter border controls and increased nationalism. While citizens in countries such as Canada, New Zealand, Turkey, Algeria and Sudan have pushed back against autocracy in recent years, populists have been elected or consolidated power in countries as varied as the US, Brazil, and Hungary. This spread of nationalist ideology means that access to education may be more restricted for non-natives or non-citizens and, therefore, less inclusive.

2030 future scenarios and their implications

The megatrends can be used to develop plausible pen pictures for 2030 and beyond and, in turn, be used to help develop plans for the future. These pen pictures are simple scenarios bringing to life what happens as result of a shift in the environment for higher education. They imagine the future as 'now' and are therefore written mainly in the present tense.

It should be noted that some of the implications cited below include and build on proposals in the MEB (HE) (2015-2025) discussed in earlier chapters, for example Chapters Two and Three.

Scenario 1: The digital revolution and technology shift

AI and the Internet of Things place pressure on traditional jobs as automation and robotics replace roles and functions previously carried out by humans. The explosion of data-driven technologies makes buildings, the grid, roadways, and water systems substantially more efficient. The effects will include the rise of smart cities with bigger buildings and better technologies (AI and IoT) to manage them. As population density in cities increases, we need to 'ship in' more food or rapidly expand urban agriculture.

The HE sector needs to change curriculum design and make education more accessible and relevant for the increased number of working and middle classes.

Implications: Conventional programmes are converted into blended learning models, or the university-industry approach (2u2i or 3u1i, two years in university and one in industry or three years in study and one in work) as another alternative to TVET. The use of machine learning, bite-size learning, or 'spotify' learning, and the merger of course content with industrial-skills training revolutionise education and pedagogy. HEs are forced to stay relevant, offer affordable courses and programmes, be more creative in their recruitment and teaching and learning approach, and offer flexible courses for students unwilling or unable to leave their jobs for full-time study. Enrolment trends in 2030 show a rapid decline in conventional programmes. Flexible, bite-size, pay-as-you-use courses are becoming increasingly popular with the working classes, economically marginalised migrants and those with disabilities, promoting inclusivity.

Scenario 2: Demographic shifts

As the Fourth Industrial Revolution gathers pace, younger generations have to offer particular skills that cannot be replaced by any of the enabling IR4 technologies. Those who lack these skills have fewer job opportunities and less buying power, and the gap between the super-rich and the poor is growing, with the middle class slowly disappearing

as the economy 'hollows out'. Inequalities in education seem to be deepening: Malaysia HE institutions find they are driven more by what future key industry players need and less by what may be good for the country in a broader sense (such as better ethnic integration). With mass migration due to climate change and political instability, the percentage of all new wealth accruing at the very top of the pyramid will continue to be a major, and destabilising, issue. The current middle class are becoming the working class, the bottom of the chain, and the recruitment base for students is being eroded. Employers, meanwhile, are looking to other countries to fill job vacancies and maximise profits.

Implications: HEIs need to prove that their programmes are industry-relevant. They also need to ensure students learn new skills, suited to IR4, and encourage entrepreneurship (see Chapter Three) to help them create new jobs for themselves and others. HEIs start focusing on creating new programmes that are relevant to the country's needs and, in return, help solve various social challenges, as Malaysian citizens worry about job insecurity and competition from highly qualified people from abroad. In scenario 2, HEIs that offer opportunities to integrate learning and work in industry reap the benefits as adults return to education to upskill and hone entrepreneurial skills. In turn, the economy and society benefit as new jobs, and new businesses, are created. HEIs see changes in the student population as migration increases and more women, who welcome the flexible-study approach, apply for courses. An emphasis on lifelong learning and delays to retirement as the population ages, meanwhile, result in significant increases in the cohort of mature students. All this leads to greater diversity and inclusion — and has a positive impact on institutions' missions, objectives, cultures and structures. Alternatively, HEIs fail to adapt, diversity in education declines, and the social fabric comes under strain. The financial sustainability of institutions comes under increased threat as courses and teaching fail to reflect how 'we live now' and attract the broadest constituency of students.

Scenario 3: Change in public attitudes towards HE education and expenditure

As the job market becomes more competitive at the higher end, universities and HEIs and higher learning institutes (HLIs) are losing their appeal. Many highly qualified graduates and postgraduates in Malaysia are finding it very hard to find roles that suit their talents. As a result, many parents and potential learners are becoming more reluctant to invest in tertiary education. Permanent jobs are scarce, short-term contracts are common, and both older and younger generations are feeling financially insecure. Younger generations increasingly rely on older generations for accommodation (because they cannot afford housing) and sustainability.

The HE sector is in a state of flux due to falls in enrolment. The public institutions have contracted due to a massive slash in budgets and funding, which affected the operation and functionality of the public HEIs globally. The private sector became an alternative (for some), but it, too, is now struggling with under-graduate and post-graduate numbers. Both public and private institutions are 'touting' for students.

Implications: As citizens start to fail to see the relevance of HE, institutions will need to change their policies on staffing, recruitment and admission, student visa and work permit policies, and quality assurance. The key will be to offer good, flexible courses that promise a return in terms of 'life chances' — i.e. by equipping people for meaningful work. As with scenario 1, new approaches to learning — that blend study with practical experience and online and offline teaching — will need to be considered. The ability to earn 'credits' for degrees while you work or have your work 'portfolio' qualify you for a degree will help make HE more inclusive — and so preserve its appeal. In this scenario, alternative entry routes such as Accreditation of Prior Experiential Learning (APEL), which enables individuals who lack formal academic qualifications to pursue studies at higher education institutions, are important. HEIs are also under pressure to offer postgraduate programmes or modes of study that are more flexible and learner-centered to attract international students.

Scenario 4: Transparency and privacy

Data analytics is a lucrative activity for those who know how to leverage it, but data privacy is a business-critical issue for many organisations, enforced by multiple regulations. Many countries have revised their Privacy and Data Protection Acts to overcome potential risks of data-security breaches. These privacy security requirements dramatically affect an organisation's strategy, purpose and methods for processing personal data. And breaches of these requirements have financial, reputational and regulatory implications. Cybercrime, hacking and data leaks can paralyse social, health and financial institutions. The inclusive university must protect students' sensitive personal data and, given the competition for students, it must protect its own data assets — for example, course content and curricula.

Implications: HE institutions need to invest in secured-databases and 'back up' personal data. Staff must be trained in the importance of data security and be alert to hackers and cybercriminal activity. The leaking of course content constitutes intellectual property theft. Student safety can be compromised by the leaking of personal, identifying data. Both data volume and data 'sensitivity' dictate the level of risk. Offering cyber security courses is not enough; HE institutions need staff capable of protecting the data in virtual management systems and understanding the relevant technologies. In scenario 4, datafication has the potential to make education more inclusive by providing a deeper and broader picture of institutions and of enrolment by social and ethnic group. 'Gaps' in enrolment can then be closed by targeted recruitment and outreach work. Data quality and data insecurity and privacy fears, however, threaten to jettison the benefits of the datafication of education. The least developed countries are at risk of suffering new technological, economic and social divides with the development of AI. The development of capabilities to improve data collection and systematisation is vitally important. Intelligent learning is an opportunity for HEIs to increase the importance of data in educational system management, but it depends on having the right infrastructure.

Scenario 5: Climate crisis and growing populism

Climate change and growing populism scenarios have implications for inclusive education in Malaysia, partly because they affect migration and attitudes to it. Climate change also has implications for use of HE resources. Is the way a campus is run 'fit for the future'?

Climate scientists' projections for 2030 are worrying. The direct impact of climate change can be seen in the degradation of natural resources, infrastructure and environment, and human health. The potential impacts of climate change in the Malaysian context include sea-level rise, reduced crop yields, greater diseases among forest species and biodiversity loss, erosion of shorelines, extreme flooding, coral reef bleaching, increased incidences of disease, tidal inundation of coastal areas, decreased water availability, loss of biodiversity, and more droughts. Selangor, Malaysia's richest state and home to almost six million people, is expected to experience more frequent water shortages in the near future. Climate change is causing extreme variations in rainfall, and the dams have recently become drier.

In this scenario, lack of clean water and sanitation are affecting various operations and households, and campuses and higher education institutes are badly hit, leading to increased risks of disease. Meanwhile, the rise of authoritarian leaders and populist politics around the world is continuing to cause concern. 'Internal enemies' (i.e. factions opposed to the party in power) are being demonised, so, too, are migrants. In Malaysia, where racial discrimination has long been a cause of concern, cracks are starting to re-appear. Inclusive education is needed more than ever — but some in the wider environment are hostile to it.

Implications: The need for a physical campus for HE is decreasing. In 2030, people's preference to work remotely and virtually can result in a total change in learning methods and styles. The HEI has the opportunity to be both more sustainable and more inclusive — i.e. reach more people — as digital technology is made available to everyone, at high speed and low cost.

Reviewing the mandatory university courses (known as Compulsory HE Courses or 'Mata Pelajaran Umum') to make them more integrative will help promote unity and harmony, tolerance and respect among students. If HEIs and HLIs can broaden their net and engage a wider range of people — through technological tools and course redesign — they will, in turn, increase diversity in the high-skilled and higher paid workforce. In 2030, demographic profiling of learners using AI can be used to design HE policy and curricula that are more inclusive to all groups, and more personalised and customised. Learning tailored for all helps level the playing field in the jobs markets and ensure the displaced and the disabled are not unfairly disadvantaged.

Conclusion

In 2015, world leaders agreed an agenda of 17 Sustainable Development Goals (SDGs) for 2030. Goal number four is to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all”. The next Malaysian Education Blueprint (2025-2050) should include initiatives geared towards this aim.

Inclusivity in HE out to 2030 is not simply about offering access to marginalised groups and the broadest range of people possible, but also about using appropriate and enabling technologies to ensure flexible curricula and innovative teaching that widens reach and increases capacity. Most importantly, perhaps, it is about fair competition in the jobs market and helping all graduates make themselves more marketable to employers and more able to survive the impact of IR4.

Current policies may need to be reviewed in order to ensure higher education in Malaysia is open to all, and non-discriminatory. Any unintended effect in the previous policy should be re-examined. It is important to be receptive towards the advancement of technology and information and telecommunications systems that are making the world smaller and enabling individuals to connect further, faster, deeper and cheaper than ever before.

It is hoped that, in the scenarios and the implications, this chapter provides a valuable resource that will challenge and enable institutions

to further develop their work to ensure learning and teaching in higher education are inclusive, with positive outcomes for students, staff, institutions, the economy and society.

References

Academy of Sciences of Malaysia (2017). *Envisioning Malaysia 2050: A Foresight Narrative*. A strategic foresight initiative for Malaysia's desired future.

Amin.S. & Roziah. A (2019). 'Pendidikan Nilai dalam Konteks Falsafah Pendidikan Kebangsaan: Refleksi Pelaksanaan di Sekolah-Sekolah Malaysia' in *Pentafsiran Baharu Falsafah Pendidikan Kebangsaan dan Pelaksanaannya Pasca 2020*. Gombak: IIUM Press

Centre of Public Policy (2016). *Vernacular Education in Malaysia*. Retrieved from <http://cpps.org.my/wp-content/uploads/2017/10/Vernacular-Education-in-Malaysia-Factsheet.pdf>

Cheong, Kee-Cheok., Hill, C. and Leong, Yin-Chin (2016). Malaysia's Educational Policies and the Law of Unintended Consequences in *Journal of International and Comparative Education*. Vol.5, Issue 2. ISSN 2232-1802. doi: 10.1445/jice.2016.5.2.73

Chinnasamy, Sara & Mohamed Azmi, Norminaliza. (2018). Malaysian 14th General Election: Young Voters & Rising Political Participation. *International Research Journal of Social Sciences*. 125-138. 10.32861/jssr.spi4.125.138.

Chua Sue Ann (2016). 'Malaysians' top concerns are corruption, poor governance' in *The Edge Financial Daily*. Retrievable from <https://www.theedgemarkets.com/article/malaysians%E2%80%99-top-concerns-are-corruption-poor-governance>

Collins, A, Azmat, F. & Rentschler, Ruth (2018). 'Bringing everyone on the same journey': revisiting inclusion in higher education. Published in *Journal Studies in Higher Education*. Volume 44, 2019 - Issue 8. Retrived from <https://srhe.tandfonline.com/doi/full/10.1080/03075079.2018.1450852?scroll=top&needAccess=true#.XYw-QSgzaM8>

Dzulkifli A. R. (2019). 'Falsafah Pendidikan Kebangsaan sebagai Wahana Global dan Antarabangsa.' in *Pentafsiran Baharu Falsafah Pendidikan Kebangsaan dan Pelaksanaannya Pasca 2020*. Gombak: IIUM Press

Dzulkifli, A.R. & Rosnani , H. (eds) (2019). *Pentafsiran Baharu Falsafah Pendidikan Kebangsaan dan Pelaksanaannya Pasca 2020*. Gombak: IIUM Press

Embong, A. M., Jusoh, J. S., Hussein, J., & Mohammad, R. (2016). Tracing the Malays in the Malay Land. *Procedia-Social and Behavioral Sciences*, 219, 235-240. Global dan Antarabangsa.' in *Pentafsiran Baharu Falsafah Pendidikan*

Fuller, M., M. Healey, A. Bradley, and T. Hall. (2004). "Barriers to Learning: A Systematic Study of the Experience of Disabled Students in One University." *Studies in Higher Education* 29 (3): 303–18. doi:10.1080/03075070410001682592

Goh, D. P. (2008). From colonial pluralism to postcolonial multiculturalism: Race, state formation and the question of cultural diversity in Malaysia and Singapore. *Sociology compass*, 2(1), 232-252.

Hassan, A. (2004). One hundred years of language planning in Malaysia: Looking ahead to the future. Retrieved from <http://www.languageinindia.com/nov2004/abdulla1.html>

Hoffstaedter, G. (2009). Islam hadhari: A Malaysian Islamic multiculturalism or another blank banner? *Contemporary Islam*, 3(2), 121-141.

Jamil, H. & Razak, N. A. (2010). Ethnicity and education policy in Malaysia: Managing and mediating the ethnic diversity. *Journal of US - China Public Administration*, 7.

Khader, F. R. (2012). The Malaysian experience in developing national identity, multicultural tolerance and understanding through teaching curricula: Lessons learned and possible applications in the Jordanian context. *International Journal of Humanities and Social Science*, 2(1), 270-288.

Lee, H.-A. (2012). Affirmative action in Malaysia: Education and employment outcomes since the 1990s. *Journal of Contemporary Asia*, 42, 230-254.

Lee, Hwok-Aun (2017). Fault Lines and Common Grounds in Malaysia's ethnic relations and policies in ISEAS Perspective. No 63. ISSN 2335 6677.

Malaysia Education Blueprint 2015-2025 (Higher Education) Retrievable from https://www.um.edu.my/docs/default-source/about-um_document/media-centre/um-magazine/4-executive-summary-pppm-2015-2025.pdf

Malaysia Statistic Department (2018). Population Quick Info. Retrieved from <http://pqi.stats.gov.my/result.php?token=1ffce4aedb39858c035f57d401c4563c> (accessed 15 February 2019)

Matthews, N. (2009). "Teaching the 'Invisible' Disabled Students in the Classroom: Disclosure, Inclusion and the Social Model of Disability." *Teaching in Higher Education* 14 (3): 229–39. doi: 10.1080/13562510902898809

Merajul Hasan, Ujjwal Kumar Halder & Debabrata Debnath³ (2018). Inclusive Education and Education for All. [Volume 5 Issue 3 July – Sept 2018] e ISSN 2348 –1269, print ISSN 2349-5138. Cosmos Impact Factor 4.236. Available from: https://www.researchgate.net/publication/327755398_Inclusive_Education_and_Education_for_All.

Mohd Arshad, Mohd Nahar. (2016). Return To Education By Ethnicity: A Case Of Malaysia. *International Journal of Economics and Management*.

Mohd Nahar Mohd Arshad (2016). Return to Education By Ethnicity: A Case Of Malaysia. Published in *Int. Journal of Economics and Management* 10(1): 141 – 154 (2016)

Navaratnam, R. (2018). Inclusiveness secret to our success, in <https://www.thesundaily.my/local/govt-adopts-inclusive-approach-in-contributing-to-non-profit-educational-institutions-lim-FI390142>

Noor, N. M., & Leong, C. H. (2013). Multiculturalism in Malaysia and Singapore: contesting models. *International Journal of Intercultural Relations*, 37(6), 714-726.

Pentafsiran Baharu Falsafah Pendidikan Kebangsaan dan Pelaksanaannya Pasca 2020. Gombak: IIUM Press Kebangsaan dan Pelaksanaannya Pasca 2020. Gombak: IIUM Press

Pusat Komunikasi Masyarakat (KOMAS) Malaysian Discrimination Report Year 2016, 2017, 2018.

Raihanah, M. M. (2009). Malaysia and the Author: Face-To-Face with The Challenges Of Multiculturalism. *International Journal of Asia-Pacific Studies*, 5(2).

Ramlee Mustapha, and Norzaini Azman, and Faridah Karim, and Abdul Razak Ahmad, and Maimun Aqsha Lubis, (2009). Social integration among multi-ethnic students at selected Malaysian universities in Peninsular Malaysia: a survey of campus social climate. *AJTLHE: ASEAN Journal of Teaching and Learning in Higher Education*, 1 (1). pp. 35-44. ISSN 1985-5826

Redpath, J., P. Kearney, P. Nicholl, M. Mulvenna, J. Wallace, and S. Martin. (2013). "A Qualitative Study of the Lived Experiences of Disabled Post-Transition Students in Higher Education Institutions in

Northern Ireland.” *Studies in Higher Education* 38 (9): 1334–50. doi: 10.1080/03075079.2011.622746

Shamsul A. B. (2006). Identity contestations in Malaysia. In Jayum A. Jawan & Zaid Ahmad (eds.) *Inter-ethnic relations in Malaysia*. Serdang: Universiti Putra Malaysia Press.

Shyman, E. (2015). “Toward a Globally Sensitive Definition of Inclusive Education Based in Social Justice.” *International Journal of Disability, Development and Education* 62 (4): 351–62. doi: 10.1080/1034912X.2015.1025715

Sivamurugan, P. (2019). ‘Falsafah Pendidikan Kebangsaan dan ‘Sejahtera’: Tapak Integrasi Masyarakat Majmuk di Malaysia’ in *Pentafsiran Baharu Falsafah Pendidikan Kebangsaan dan Pelaksanaannya Pasca 2020*. Gombak: IIUM Press

‘Tapak Integrasi Masyarakat Majmuk di Malaysia’ in *Pentafsiran Baharu Falsafah Pendidikan Kebangsaan dan Pelaksanaannya Pasca 2020*. Gombak: IIUM Press

Teo Kok Seong (2019). ‘Falsafah Pendidikan Kebangsaan sebagai Penyelesaian Pendidikan Pelbagai Aliran di Malaysia in *Pentafsiran Baharu Falsafah Pendidikan Kebangsaan dan Pelaksanaannya Pasca 2020*. Gombak: IIUM Press

The Star (2018). Mid-Term Review: Pillar II on inclusive development and wellbeing Retrieved from <https://www.thestar.com.my/news/nation/2018/10/18/mid-term-review-pillar-ii-on-inclusive-development-and-wellbeing/#3hTp49KqhksTJSCw> (accessed 15 Mac 2019)

Thomas, L., and May, H. (2010). *Inclusive Learning and Teaching in Higher Education*. The Higher Education Academy. Retrieved from: https://s3.eu-west-2.amazonaws.com/assets.creode.advance/document-manager/documents/hea/private/inclusivelearningandteaching_finalreport_1568036778.pdf

Wan Mohd Zahid, M. N (2019). 'Falsafah Pendidikan Kebangsaan: Sejarah dan Matlamat.' in *Pentafsiran Baharu Falsafah Pendidikan Kebangsaan dan Pelaksanaannya Pasca 2020*. Gombak: IIUM Press

Zubedy, Anas (2012). What Is Ketuanan Melayu? Published online in Malaysia Today. Retrieved from <https://www.malaysia-today.net/2012/06/12/what-is-ketuanan-melayu/>

Chapter Nine

Facing Forward: How Foresight Can Help Malaysia Shape Its Higher Education Sector for Future Generations

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Introduction

This concluding chapter offers a summary of overarching themes, implications and recommendations emerging from previous chapters, and aims to supply material to help stakeholders in higher education in Malaysia and beyond continue the conversation about the future of the HE sector.

Applying strategic foresight to the HE sector

Malaysia is a future-oriented country, one that has seen increased interest in and uptake of strategic foresight as a craft in recent years. There is a close interest in the higher education (HE) sector in using strategic foresight techniques — and the wider foresight mindset — to crystallise thinking about the future and put the sector in the best possible place to ensure it can produce universities of international standing, meet the demands of employers, equip graduates to thrive in a fast-changing local and global jobs marketplace, and serve the country’s overall economic and social ambitions.

As the Malaysia Education Blueprint for Higher Education or MEB (HE) (2015-25) sets out, Malaysia needs to invest in its human capital, and develop the skills of its young people, to “equip [it] for the final leg of its journey towards becoming a high-income nation”.¹ The HE sector has a central role to play in helping Malaysia “move out from its

¹ Source: the Malaysia Education Blueprint 2015-25, accessed 12/09/2019 at https://www.um.edu.my/docs/default-source/about-um_document/media-centre/um-magazine/4-executive-summary-pppm-2015-2025.pdf?sforsn=4

² Source: the National Mission (Ninth Malaysia Plan 2006-10), accessed 12/09/2019 at <https://www.pmo.gov.my/dokumenattached/Dasar/NationalMission.pdf>

‘middle development’ stage towards a human capital driven economy” (the ‘National Mission’, 2006-2020).² Foresight, used well, will enable the sector to fulfil this role, both by guiding internal thinking about uncertain futures and potentially radical shifts ahead and by helping the sector develop strategies to respond. It will also — if taught as part of the curriculum — equip young people to think about and shape the future, in the context of significant uncertainty about employment, jobs and wider social wellbeing.

The rationale for this book was the belief that applying the tools of strategic foresight to specific policy areas identified by the Ministry of Education (MOE), and looking ahead to 2030, could lay the foundation for more comprehensive foresight work and so proactively help shape the future. Identifying drivers of change, critical uncertainties, shocks and potential wildcards, and drawing out the implications for policymaking, helps future-proof organisations and governments.

As part of the process for producing the book, UNIRAZAK held lectures on trends, scenarios and visioning, and carried out related exercises with its own students and students at USM. It also hosted seminars, ran workshops (both virtually and offline) and held roundtable discussions with authors and research teams, and engaged with IPPTN. These activities, carried out under the auspices of the Professorial Chair of Futuristic Leadership, were designed, partly, to involve a range of people with a ‘stake’ in the future of higher education in Malaysia.

The global environment that emerges throughout the chapters is one of flux and volatility: megatrends such as changing social expectations, geopolitical shifts, changes to the nature of work, and the Fourth Industrial Revolution will shape the future of higher education.

Across the board, a picture emerges of the central role of higher education in helping Malaysia meet not only its ambitious economic objectives, but also its commitments under the UN Sustainable Development Goals (SDGs) and the Transformasi Nasional 2050 (TN50) strategy. Importantly, the TN50 sets Malaysia the goal of becoming one of the

world's top 20 nations in terms of happiness, creativity and innovation, by, for example, addressing youth unemployment, promoting multi-ethnic cohesion and boosting lifelong learning opportunities.

Summary of implications for the higher education sector

The most pressing questions the sector faces are drawn out throughout this book. They can, in simple language, be expressed in terms of what is taught and how, who is taught and by whom, and how decisions on the future of the sector are made. To explore each of those in turn:

- i. **What is taught and how.** Here, the chapters in this book draw out important questions about the content of the curriculum, the focus on STEM versus other subjects and the need to get better at cultivating creativity, incubating entrepreneurialism and, ultimately, boosting employability. They also consider what delivery methods will be best for higher education in the future — the traditional degree course model versus personalised, flexible, internationalised and distance learning.
- ii. **Who is taught and by whom.** Here, the chapters draw out important questions about the ethnic segmentation of students, the diversity of intakes and achievement, the changing demographics of learning (the need to expand the future HE offer to continuous learners instead of just school leavers), and internationalisation — with future changes likely to the source countries of international students. Also explored are questions about talent management. For example, will academics increasingly straddle the boundary between academe and industry? And will they play a role in boosting the 'applied learning' offer in the workplace, as the nature of work itself evolves and continuous lifelong learning becomes the norm?
- iii. **How decisions on the future of the sector are made; how to ensure that there is adequate recognition of the sheer scale of the shift that may be needed.** The key question here will be

whether the leadership of the sector can offer the kind of visionary, front-foot leadership explored in Chapter One, and whether it will both recognise and respond to the scale of the shift potentially needed. These are the kinds of questions recently posed by Adrian Kuah, Director of the Futures Office at the National University of Singapore, in his article *“Where, what and when is the ‘university’?”*³ Several of the thematic chapters point to the need for a model for the HE sector that is future-minded, flexible, strategic and evidence-based (for example, better aligned with the overall national policy objectives for human capital), to ensure that universities are producing cutting-edge research and exploiting opportunities to commercialise that research, and that graduates are employable, entrepreneurial and adaptable to future change.

Chapter summaries

In the preceding chapters, authors raise a number of vital questions about the future of Malaysia’s HE sector. In Chapter Two, they give an overview of planning for the HE sector since independence and explore the major themes that should shape the policy of the future, including globalisation, internationalisation, responding to the Fourth Industrial Revolution, the need to focus on STEM education, the need to consider how delivery of education might change with new technologies on offer, and the need to ensure that higher education is truly inclusive. Malaysia, as a country, has been comparatively dynamic in its tradition of looking out to the future strategically, and using scenarios. However, there is still more to be done in implementing and acting on the insights gained, and the second chapter makes clear the challenges for the HE sector.

The remainder of the chapters look ahead to the 2030 horizon. In Chapter Three, the authors interrogate the idea of entrepreneurialism, emphasising that entrepreneurial graduates need a range of characteristics to bring entrepreneurial attitudes to whatever field of

³ Source: <https://www.linkedin.com/pulse/where-when-what-university-adrian-w-j-kuah-phd>. Accessed 26/09/2019.

work they enter. They highlight the vital role of university leadership in 'leading from the front', including academics being ready to monetise their skills and specialisms (through consultancy, for example), establishment of science parks and incubator centres, and seeking chairs and endowments in support of entrepreneurialism. They underline the importance of transforming graduates from job seekers into job creators, in line with universities' role in human-capital development.

In Chapter Four, the authors explore how internationalisation of the HE sector could change through to 2030. They flag opportunities from innovations that may increase remote learning options, and they ask a bold conceptual question: could the historic, primarily financial ('monetary'), rationale applied to the internationalisation agenda (seeing hosting international students as a revenue-generator) be replaced with one more focused on values; in particular, could provision be made for more migrants and refugees to become students?

In Chapter Five on talent management, the authors explore how the sector can best recruit and retain academic talent in a challenging future, asking, among other things, *"In an increasingly globalised world, can Malaysian universities continue to rely on local academic talents?"* They highlight key future issues, including: financing for the (public) HE sector to support recruitment and retention of the best staff; the ever-quickenning pace of globalisation of talent mobility and brain drain (as well as the potential for 'brain gain' in Malaysia); the need to formulate the right immigration policies; and the changing expectations of academics seeking continuous development and learning opportunities as a part of their employment package. As they imply, the future leadership of higher education institutions will play a critical role in attracting and harnessing talented staff: leaders will need to be globally-minded and culturally sensitive, and to develop a culture of creativity and innovation.

In Chapter Six, the authors flag that current STEM education provision is not meeting the requirements of leading employers and that — particularly in the context of the Fourth Industrial Revolution — it

needs to be reformed to be fit for purpose by 2030. They make the case for closer collaboration between providers, students and employers to better understand what employers are looking for ('job fit' and 'market readiness') and to repair the broken 'pipeline' from higher education to employment. They also examine the impact on STEM education of the changing demands and expectations of future generations of students, exploring how HE providers can reform their STEM curricula and overall offerings to address blockages in the STEM pipeline, including integrated work placements, experiential on-the-job learning, and micro-certifications offered as part of or in lieu of traditional full degree courses. The authors make a compelling case that more innovative forms of provision will be needed in a world where new technologies affect "how learners are consuming, sharing and co-creating knowledge". Their lively set of scenarios includes the potential for more foreign providers to enter the STEM market, better commercialisation of inventions, and a world where STEM academics fluidly move between academia and industry.

The authors of Chapter Seven on employment examine the factors that will make graduates more employable (and thus stimulate economic growth). They underline the change needed to address the current situation, in which the youth unemployment rate is significantly higher than the overall national unemployment rate, and people with tertiary education make up a notably high share of the unemployed youth population, suggesting that their education is not equipping them for the jobs available (a 'mismatch of talent'). They flag a striking perception gap between universities (which tend to believe they have adequately prepared their graduates for the workplace) and employers (who tend to disagree). Looking ahead, they point to the need to focus on equipping graduates with attributes that will boost their employability, but they also point to a challenging intersection of two trends: the growing numbers of students gaining degrees versus automation that puts graduate jobs at risk.

In Chapter Eight on inclusive multicultural education, the authors explore the vital role of education in addressing Malaysia's continuing ethnic-integration challenges. They highlight the gap between rhetoric

and reality, in terms of (de facto) segregation in higher education. Looking ahead to 2030 and beyond, they emphasise the critical importance of inclusive leadership in the HE sector to change the picture both in education and in later job prospects. They conclude that it is paramount for Malaysia to address now its long-unattended ethnic issues, and that higher education will be a key part of the package of policies for doing that.

Emerging themes and associated challenges and opportunities

Across the chapters, key common themes emerge, often revealing the interlinkages between the areas the chapters address. They are summarised here:

1. **The need to look closer at future changes in the form and formats of learning:** several of the authors foresee a future shift away from traditional full-time undergraduate degrees towards more flexible, modular, personalised and digitised models of learning, and towards more continuous, lifelong learning for people of all ages and at all stages of life. How will Malaysia respond to the challenge that traditional degree courses — in traditional subjects — are unlikely to continue to meet the needs of (a) employers in Malaysia, regionally and globally, and (b) of new generations of students accustomed to greater personalisation and with a close eye on value-for-money?

Drivers of this change are likely to include: employer demand (based on feedback from employers, tertiary education is not equipping young graduates with the skills and knowledge needed); changing learner expectations and demand; the trend towards personalised learning; and the impact of a more technologically-attuned generation ('Generation Alpha').

- i. **Employer demand:** as this book highlights, employer feedback already shows a perception gap. Most higher education institutions believe that they are equipping their graduates well for the working

world; most employers disagree. Alignment of perspectives is key, and employer feedback should be taken seriously and acted upon in detail. Employer demand may become ever more influential as students learn more 'applied' skills. As Chapter Six shows, future employers in the STEM sector may demand quick turnaround on innovative programmes to match new skills needed.

- ii. **Learner expectations and demand.** As set out in Chapter Six's 'Tesla' scenario, learners by 2030 may demand more personalised, more continuous and active learning, and more digitised content. Many may see the continuation of learning not as an 'extension' of tertiary education but as an opportunity to acquire skills that are immediately translated into practical experience (through, for example, micro certifications in STEM courses). Although trends remain uncertain, as the Chapter Six authors argue, the learners of 2030 may be digital natives completely at ease in making technology the medium for pursuing academic qualifications, learning skills and updating knowledge. They could therefore demand more digitised, flexible learning opportunities and more seamless integration of learning into other spheres of life.
- iii. **The trend towards personalisation of learning:** several authors draw out the likely trend towards tailoring the curriculum and teaching methods more to the learning needs, strengths and weaknesses of the individual. In this model, universities could increasingly move away from the physical campus towards individualised, personalised learning platforms that meet individuals' cognitive and behavioural preferences — including preferences for working later in the day and in increments (mini-modules) rather than 'blocks' and through experiential learning rather than the lecture hall, or through a blend of auditory and visual media and practicals.
- iv. **Generation Alpha** (the generation born after 2010, and the first born entirely in the 21st century, expected to be the longest-living, best-

educated and wealthiest generation ever) could have a profound impact on the HE sector. For them, digital devices are omnipresent and the physical and digital worlds ‘merge’ into one. It is worth noting too, however, as the Chapter Six authors highlight, the preference among many young people for ‘communitarian’ models of shared experience, which could make collaborative learning, instead of isolated individual learning, an important part of the future education offer.

2. **The impact of AI and the Fourth Industrial Revolution** both on what the students of tomorrow should be taught, and how. As we are already seeing, the impacts are wide-ranging and predictions/scenarios vary widely. But we can be sure that the implications will continue to unfold across the world of work and of education to 2030 and beyond. Chapter authors draw out the potential for automation and the Fourth Industrial Revolution to undermine employment opportunities for graduates, but, on the other hand, to enhance learning opportunities for all through, for example, ‘virtual’ lecturers and professors and better continuous, lifelong learning opportunities that fit around full-time employment. Equally, we should be aware of potential risks — for example, the risk that (private) universities or other players monetise access to these new technologies, creating an uneven playing field for students from less privileged backgrounds.
3. **The continually unfolding impacts of globalisation and geopolitics on education and jobs:** across all the themes in this book, the challenges of (a) a global marketplace for jobs and skills and (b) a global marketplace for education resonate. The geopolitical shift to China is another key undercurrent (with long-term implications for the use of English in education and skills taught for employability). The education sector is far from immune from globalisation and its impacts: Malaysia’s efforts on entrepreneurialism and boosting STEM capabilities and talent management are all affected by the sheer competition it faces regionally and globally. Higher education provision is increasingly

transcending national boundaries, and digitisation is set to intensify that trend (already there are some 13 million cross-border, online students around the world). This is, of course, an opportunity as much as a threat, if Malaysia positions its HE sector right.

4. **The value of a rigorous understanding of history to help inform thinking about the future.** Several chapters offer an opportunity to learn from previous experience — for example, the failure, despite decades of orientation towards STEM education, to consistently increase the numbers studying STEM subjects and to support an effective diversification of the Malaysian economy away from commodities and towards knowledge-based industries by making sure graduates are adequately equipped for the workplace. Unless we learn from the past, universities might continue to provide training that isn't relevant to the economy of the future, rely on traditional teaching methods and talent management practices, or fail to fulfil their wider social function in promoting socioeconomic (and ethnic) inclusion.
5. **The demand for 21st century leadership:** throughout this book, there is a sense that the leadership of the HE sector needs to be more future-minded, more empowering and more diverse to help spur entrepreneurship, make the most of the opportunities of the Fourth Industrial Revolution and drive Malaysia's growth. Recommendations on leadership of the sector — and integrating foresight — follow in the last sections of this chapter.
6. **The need to solve the problem of ethnic polarisation (as it is termed in the National Mission 2006-2020) in higher education,** draw on the totality of Malaysia's rich pool of talent and unlock the potential of the HE sector to foster an inclusive (and thus ultimately more prosperous) society.
7. **And the need for government HE policy to be co-ordinated and harmonised across ministries** to best support the higher education sector — for example, through a policy on visas that helps internationalise institutions.

Conceptualising the higher education sector of the future

A number of alternative models, or ways of conceptualising HE and education emerge, whether implicitly or explicitly, throughout this book. These speak to questions of *purpose* in the model of the future. The overall future purpose of the sector will be a negotiated combination of all the below, but spelling them out may offer a useful stimulus to further thinking.

Framing 1: Education as a driver of economic growth. This has been the central logic behind much effort and reform in the HE sector, but uncertainties remain about how exactly to shape the sector for maximum economic impact. Throughout this book, the questions resound: how to stimulate innovation (what to teach and how to teach it); how to inculcate entrepreneurial spirit (the importance of creativity, the need for routes to commercialisation); how to link up HE far more closely with industry (meet employers' expectations, monetise and continually improve research, integrate HE providers of STEM with technical and vocational education and training providers). This rationale appears likely to remain a central tenet of education policy.

Framing 2: Education as an aspect of human-capital development and national wellbeing. As well as focusing on national economic objectives (boosting growth through investment in knowledge-intensive industries), higher education has a vital role in building prosperous and equitable futures for individuals and generations. So Malaysia's higher education effort is not just about achieving national economic goals but also about sustainable development. UN Sustainable Development Goal 4 sets out the objective of "*Ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all*", recognising that education is one of the conditions that underpins all other forms of development and will enable or inhibit attainment of all the other SDGs. It is also worth noting (in light of continued ethnic polarisation in the sector in Malaysia) that equality of access and opportunity are integral to the design of the SDGs' objectives and indicators on education.

Framing 3: Education as an engine of national identity and cohesion.

The UN's Education 2030 Incheon Declaration and Framework for Action again underlines the importance of inclusion and equity in and through education, of “addressing all forms of exclusion and marginalization, disparities and inequalities in access, participation and learning outcomes. *No education target should be considered met unless met by all*”. In Malaysia, additional effort is needed to ensure that all sectors of society can aspire to the same achievements.

Framing 4: Education as a tool of ‘nation branding’, cultural diplomacy and soft power.

Chapter 4 raises the provocative vision of Malaysia as the first country in the world to actively ‘internationalise’ its HE sector with a view to welcoming migrants and refugees, thus making a bold ‘nation-branding’ statement. More broadly, the value of the HE sector in nation-branding is raised across several chapters as they consider Malaysia’s global rankings for HE, and its ability to appeal to the best international students and academic ‘talent’ through a strong reputation for excellence.

Recommendations: thinking further about HE futures

This book has been an important staging-post in the journey of rethinking the role, shape and context of HE in Malaysia in the period to 2030. The authors have made valuable contributions in applying foresight methods to six areas identified by the MOE as critical to the future of HE. We now have a cadre of people actively engaged with the future of higher education. But there is still more to do. The tools the authors used need to be deployed at the collective level of the institution and sector to effect real change and future-proof strategies. Concerted effort results in more coherent plans, partly because it ensures a more comprehensive view of relevant issues. The positive reform of the HE sector is not going to be achieved if stakeholders work in silos and their analysis of what needs to change is fragmented.

Recommendations follow for: (a) conducting a systematic review of the HE sector as a whole from a ‘futures’ perspective; (b) embedding

foresight thinking and practice more deeply in the sector. They include specific recommendations for government policymakers and HE institutions and external 'actors'.

There are four areas in particular where using strategic foresight will help the HE sector. They can also be considered as four stages in a process:

1. Stage One: **using strategic foresight to examine more systematically the future contexts in which the HE sector will be operating**, in order to think afresh about *what kind of education will be needed* (more emphasis on entrepreneurialism, creativity, critical thinking, flexibility and resilience).
2. Stage Two: **using strategic foresight to determine the internal strategic response of the sector to Stage One**, by rethinking the implications of uncertain and varied futures. This may include rethinking the role of the future university, and changing modes of delivery (curricula and teaching methods) to provide young people with the quality education they need, focused in the right areas.
3. Stage Three: **teaching the skills of strategic foresight to young people to enable them to think about and shape their own and their country's future**. Stages One and Two help the sector achieve this important outcome.
4. Stage Four: the impact of the three preceding stages can be recognised and measured in the final stage, namely **using strategic foresight to increase the HE sector's resilience to the challenges the mid-21st century will present**, for example, competing in global rankings and outperforming regional competitors such as Singapore, Hong Kong and South Korea.

The recommendations below focus on taking this project to the next level through collective foresight exercises.

Recommendations for the Ministry of Education and policy stakeholders:

- i. **Bring together a core group of key policy stakeholders (including the Cabinet Office and finance ministry, MoHE, and the leading HE institutions) to:**
 - a. *Conduct a **joint** scenarios exercise for the sector, looking out to a 2040-50 horizon, and develop a **joint** vision for the sector, taking recent work on the future of education and universities, including 2019 research by the OECD, into account (see university recommendations, below, and references.)*
 - b. *Conduct a joint SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis, examining the strength and resilience of current products and offerings (in the HE market) and operating models at the macro level, and identifying (based on Weaknesses and Threats) where risk mitigation or policy shifts are needed to prepare for 2030.*
 - c. *Further consider the key themes raised in this book, namely the ‘what’, ‘who’, ‘how much’ and ‘how’ of running the HE sector:*
 - *What is taught and how: design of curricula, the learning ‘offer’, innovative course delivery methods; what the objectives of a Malaysian HE experience should be (what values, skills, knowledge to impart); what employer and student feedback is saying.*
 - *Who is taught, and by whom: who the core ‘customers’ for HE in the Malaysia of the future are — in terms of ethnicity, gender, age/working status, and nationality, what ‘talent’ you need in the sector (and how to get it).*
 - *What it all costs (financing, resourcing and staffing changes, including potential cost savings from going ‘off-campus’, the costs of implementation of new teaching approaches, and potential income from commercialisation of research).*

- And finally, *how decisions on future orientation and sectoral reform are made*: which decisions are best made individually (by individual HE organisations) and which collectively (at sectoral level)? Are the mechanisms in place to facilitate cross-sectoral thinking about the future?
- ii. **Tightening existing government strategies with the application of foresight:**
- a. *Embed foresight in the next edition of the Higher Education Blueprint or its successor*: explicitly set out the key uncertainties about the future, and the government’s vision, scenarios and strategy for managing uncertainties.
 - b. *Connect the central government strategy and vision for Malaysia clearly and visibly with the Blueprint strategy (or its successors) in the HE sector*, so that the big-picture economic vision is reinforced with the right specificity at the HE sectoral level (as to what is needed to help drive those big-picture achievements).

Recommendations for individual HE institutions, such as universities:

- i. **Leaders can show they value strategic foresight and will champion it in the face of internal resistance by practising it at the decision-making level in their own organisations.** Today’s leaders in the sector, including chairmen, vice-chancellors, professors and other senior academics, can be proactive in exploring and embracing likely changes to the future role and demands of a university. They should also consider what future leadership in the sector could look like: there may, for example, be a need for greater emphasis on innovation, strategic thinking, resilience and/or diversity.
- ii. **Academics and faculty members can embed foresight skills in the curriculum,** preferring practical ‘applied’ foresight classes to an emphasis on the theory to ensure that students become confident

practitioners of foresight and go on to use it in their working lives. Curricula can be re-designed to help students develop skills such as:

- Continuously challenging their assumptions about the future, ‘official futures’ or blue-skies futures by conducting rigorous and evidence-based analysis of trends and drivers of change.
 - Regularly scanning the horizon for threats, opportunities, trends and ‘weak signals’ of changes that emerge slowly over years or decades.
 - Systematically anticipating the alternative plausible futures (scenarios) that may develop.
 - Drawing out the policy /operational implications of those scenarios.
- iii. The university as a collective can learn from inspiring work on the future of higher education carried out in other countries. The Association of Universities in the Netherlands (VSNU), together with the public research institute Rathenau, produced four scenarios for the future looking out to 2025 in 2014; a 2018 Australian study on universities, meanwhile, looks out to 2030 (see references). Some years previously, the office of the president of Canada’s polytechnic university, KPU, used scenarios for strategic planning. Universities can also consult the growing body of research by the OECD on the future of education and universities. Trends and meta-scanning work on universities carried out by the OECD is worth engaging with since it captures some of the latest thinking (see references).

Recommendations for external supporters of the HE sector:

- i. **Provide sustained long-term support for foresight in the HE sector, in lieu of short-term interventions**, as this helps ensure that it becomes ‘habit’ and ‘practice’ for the next generation of Malaysian leaders. Build on the strong Malaysian tradition in strategic foresight, including the work of the Malaysian Foresight Institute, the Transformasi Nasional 2050 (TN50), the Academy

of Sciences' *Envisioning Malaysia 2050 initiative and its Science and Technology Foresight Malaysia 2050* work and publications such as Sohail Inayatullah and Ithnin Fazidah's 2018 *Transformation 2050: the alternative futures of Malaysian universities* and UTM's work on Higher Education 4.0. The energy and talent of young foresight practitioners regionally such as Veerappan Swaminathan from Singapore — winner of a Next Generation Foresight Practitioners' Special Award in 2018 — can also be harnessed.

ii. Consider specific actions and commitments, including:

- a. Bringing together HE foresight efforts with existing initiatives in government innovation such as MaGIC (Malaysian Global Innovation & Creativity Centre), and bringing in young changemakers (such as tech innovators) to ensure 'outside' voices are heard on possible futures for HE.
- b. Supporting a research programme on the future of education, which produces papers and stimulates debate on specific themes (e.g. the future of STEM or the future of multi-ethnic education) and is run as a collaboration between industry/employers, universities and think-tanks.
- c. Supporting a lecture series for 'lifelong learners' on the future of Malaysian HE and inviting speakers outside the HE sector, e.g., major employers, to speak on what they most value/seek in today's graduates and where the system falls short.

Conclusion: foresight as a core skill for future generations

Throughout this book, the wider question emerging is the future of Malaysia itself. From our (outside) perspective, it is clear that the country's young people are its strongest asset. A university education has been for generations a central aspiration for bright young people and their families, but the higher education system is at risk of letting

them down — unless it re-fits itself for the middle of the 21st century. Such a re-fit would also support and promote a culture in which lifelong learning is increasingly valued.

Malaysia's brightest and best need an education that prepares them for a global marketplace, makes them the peers and competitors of the finest minds regionally and globally, and equips them to weather the quickening pace of change through soft skills such as creativity, critical thinking, flexibility, resilience and — of course — strategic foresight. They deserve an HE sector that is future-minded and flexible enough to explore and pioneer new methods and new opportunities such as personalised learning.

Malaysia's future leaders will need to be 'future-fit' to thrive in the mid-21st century. Making foresight a core skill for the next generation will help Malaysia not just to become, but also to *remain*, a global leader in innovation.

References

Future knowledge: 4 scenarios for the future of Dutch universities. VSNU and Rathenau Instituut. February 2014

https://www.rathenau.nl/sites/default/files/2018-05/Future_knowledge_-_4_scenarios_for_the_future_of_Dutch_universities_01.pdf

Can the universities of today lead learning for tomorrow? The University of the Future. EY. 2018

<https://cdn.ey.com/echannel/au/en/industries/government---public-sector/ey-university-of-the-future-2030/EY-university-of-the-future-2030.pdf>

CERI— University Futures: Four scenarios for Higher Education. OECD. 2019

<http://www.oecd.org/education/skills-beyond-school/ceri-universityfuturesfourscenariosforhighereducation.htm>

Trends Shaping Education 2019. OECD. 2019

<http://www.oecd.org/education/trends-shaping-education-22187049.htm>

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Dr. Gazi received his PhD in resource economics from Universiti Putra Malaysia (UPM). He is currently Dean of the Graduate School of Business, Universiti Tun Abdul Razak, Kuala Lumpur. His research interests include poverty and livelihood analysis, community-based management, marine protected areas, small scale fisheries, social-ecological and institutional analysis, and social capital. He has published articles in journals and books, written chapters for books and policy briefs, and presented at international and national conferences and seminars. Dr. Gazi has been a principal researcher and co-researcher on several national and international research projects. He has supervised PhD and Master's degree students; he is a fellow member of several international professional institutions and universities.

Annasihah Azman

Annasihah Azman joined UNIRAZAK as a research assistant for the strategic foresight book project. She graduated with a Bachelor's degree in information technology from the International Islamic University Malaysia, specialising in multimedia. She then earned her Master's in informatics, with a focus on business, from University Sains Malaysia. Before this, she worked at the Knowledge Transfer Centre (KTC) as a research assistant for a project funded by the Economic Planning Unit and Ministry of Education.

Professor Dato' Dr Hj Ibrahim Che Omar

Now retired, Professor Dato' Dr Hj Ibrahim Che Omar was the Deputy Vice Chancellor (Research and Innovation) Universiti Malaysia Kelantan (UMK), a senior professor in Industrial Biotechnology and fellows of both the National Higher Education Research Institute (IPPTN) and the Science Academy Malaysia (ASM). He holds a first class Bachelor of Science degree, a Master's in engineering and a doctorate in engineering from Hiroshima University, Japan. Specialising in industrial biotechnology, he has completed over 30 research projects and published over 15 books and 400 research articles. He has also participated in more than 15 research programmes on the policies

on Higher Education in Malaysia and lectured on entrepreneurial leadership and education at various universities and AKEPT. At UMK, he was responsible for the establishment of five science faculties, three research centres, five educational centres and UMK Jeli Campus. He was actively involved in the development of the entrepreneurial philosophy at UMK and the creation of the entrepreneurial ecosystem.

Assistant Professor Dr Noorseha Ayob

Noorseha Ayob is a senior lecturer in entrepreneurship and management at Universiti Tun Abdul Razak. She has been involved in substantial projects such as the Global Entrepreneurship Monitor (GEM), Successful Transgenerational Entrepreneurship Practices (STEP) and the Babson Symposium for Entrepreneurship Educators (SEE). She has also been involved in advising and mentoring students for the 1Malaysia-Young Entrepreneur Challenge, Student in Free Enterprise and DIGI's Challenge for Change Competition. She recently completed her PhD on social innovation at the Yunus Centre for Social Business and Health, Glasgow Caledonian University. Her research focuses on the conceptualisation of social innovation in Malaysia.

Professor Datin Paduka Dr Samsinar Md Sidin

Professor Datin Paduka Dr Samsinar Md Sidin holds a Bachelor of Business Administration (BBA) from Western Michigan University (1984), a Master's in Business Administration (MBA) (1986) and a PhD in Business Administration from the University of Arkansas (1994). She graduated with honours (cum laude) and was the recipient of the Wall Street Journal Award for Best Student in Economics. She also graduated in the top five and was nominated to represent the University of Arkansas for the George Hay Brown Award for excellence in marketing at graduate level in her MBA programme. She is a member of the Yayasan Telekom Malaysia (TM) board of trustees.

Professor Samsinar, who joined Universiti Putra Malaysia (UPM) in 1984, is currently the vice chancellor of Universiti Tun Abdul Razak (UNIRAZAK). She has successfully completed more than 30 research projects and is currently leading several others. To date, she has

published her research in more than one hundred major national, regional and international journals, co-authored three books and written 14 chapters for books. She has numerous patents in construct measurements, and has won several gold, silver and bronze medals at research exhibitions.

Professor Dato' Morshidi Sirat

Professor Dato' Morshidi Sirat is the founding director of the Commonwealth Tertiary Education Facility (CTEF) and a senior research fellow at the National Higher Education Research Institute (IPPTN), Universiti Sains Malaysia. Morshidi was director of IPPTN (2002-2011), deputy director-general of Higher Education Malaysia (Feb 2011-Jan 2013), vice chancellor Universiti Malaysia Sarawak (UNIMAS) (March 2013), and director-general of Higher Education Malaysia (2013- 2014).

He provides consultancy and advisory services to several international organisations and government agencies in Malaysia and is a frequent speaker/trainer at workshops on managing the internationalisation of higher education, with a focus on the South-east Asian experience. As director of the CTEF, Morshidi is also involved with research projects in various regions of the Commonwealth.

Since 2015 and with the launch of the SDG, Morshidi has undertaken several studies on SDG4, Quality Education. In April 2019, he became country-case study (Malaysia) leader for the IIEP-UNESCO research on SDG 4, Planning for Flexible Learning Pathways in Higher Education. In addition, Morshidi is also leading collaborative research with JICA RI on the impacts of study abroad in developing countries and with UNESCO Bangkok on supporting the organisational capacity assessment of QAAD, MoHE, Afghanistan.

Assistant Professor Dr Farhana Tahmida Newaz

Dr Farhana Tahmida Newaz is an assistant professor and deputy dean at Universiti Tun Abdul Razak (UNIRAZAK), Malaysia. She earned her PhD in marketing from Victoria University of Wellington, New

Zealand. She holds an MSc in international business from Gothenburg University, Sweden. Prior to joining UNIRAZAK, Dr Farhana was involved in teaching undergraduate courses at universities in New Zealand and Bangladesh. In addition to teaching, she is a regular contributor to international conferences as a reviewer. Dr Farhana collaborates with international researchers and has co-authored articles published in international journals and presented at conferences. She completed her PhD at Victoria University of Wellington on the Muslim consumers of financial products in 2014.

Professor Dr Nik Rosnah Wan Abdullah

Nik Rosnah Wan Abdullah is currently a professor at Tun Abdul Razak School of Government (TARSOG) at UNIRAZAK, where she has been a faculty member since November 2010. Previously, she was with the University of Malaya, where she worked for more than three decades and held several leadership roles, including the executive directorship of the International Institute of Public Policy and Management (INPUMA). She has a DPhil from Sussex University, UK and won a Fulbright Scholar Award in 2005. She is a senior international fellow at Johns Hopkins University, US and a senior fellow at Lee Kuan Yew School of Public Policy, NUS Singapore. Her research interests include public sector reform and regulatory reform in the health sector, public policy and governance. Nik teaches several courses on public policy, leadership and organisational behaviour at the undergraduate and postgraduate level and has published more than 60 papers in internationally referenced journals, and contributed to major conferences.

Dr Wan Chang Da

Chang Da Wan (C. D. Wan) is a senior lecturer at and deputy director of the National Higher Education Research Institute (IPPTN), Universiti Sains Malaysia. He earned his doctorate from the University of Oxford in the field of higher education and was trained as an economist at the University of Malaya and National University of Singapore. His main research interest is higher education policy, specifically in Malaysia, South-east Asia and other developing systems and regions. Chang Da is also an EXCO of the Malaysian Society for Higher Education Policy

and Research Development (PenDaPaT), a member of the Global Young Academy, and an affiliate member of the Young Scientists Network, Academy of Sciences, Malaysia.

Clarene Tan

Clarene Tan is a research officer at the National Higher Education Research Institute (IPPTN). She holds a Bachelor's degree in business administration. Her core work at the institute involves publishing. As a result of this, she is highly engaged in research projects and the publication of papers in the field of higher education. Her current research focuses on governance, internationalisation, diplomacy and human rights in higher education.

Associate Professor Dr Dewi Amat Sapuan

Dewi is a former associate professor of organisational behaviour at the Graduate School of Business, and has held several administrative positions over the course of her 20-year career at Universiti Tun Abdul Razak. In 2011, she set up the Bureau for Excellence in Research and Teaching.

Dewi's career began at the Malaysian International Shipping Corporation after graduating from Universiti Utara Malaysia. She was then awarded scholarships from UNIRAZAK to do an MBA and a PhD.

Dewi's interest lies in human behaviour and human potential and emotion, and she has received grants from the Ministry of Education and the university to conduct her research. In 2012, she won the Best Professor in Management award at the World Education Congress, and in 2014, the Women Leadership award at the World Women Leadership Congress. Dewi was named Best Professor in Organisational Behaviour at the 2019 Asia's Education Excellence in Singapore.

Professor Ir Dr Md Azlin Md Said

Md Azlin is currently professor in water resources engineering at the School of Civil Engineering, Universiti Sains Malaysia. He graduated from Liverpool University with a BEng (Civil Eng) in 1985 and an MSc

(Eng) in 1987 and has a PhD from the University of Wales College of Cardiff (1992), and an MSc (project management) from USM (2005). He is a professional engineer with a practising certificate from BEM, a fellow member of IEM, a professional member of IGRSM and a member of the Akademi Profesor Malaysia, and of several other professional societies.

Md Azlin's career as an academic started in December 1991 at the USM Branch Campus in Tronoh Perak in the School of Civil Engineering. He helped set up the aerospace engineering degree programme and the School of Aerospace Engineering. He served as Dean of Aerospace Engineering between 1999 and 2003. Since 1991, he has served as a USM senate member, been a board member of several schools and institutes and USM committees and an associate fellow at IPPTN.

Md Azlin's research interests are in water resources engineering, remote sensing, GIS, satellite technology, project management and higher education.

Roshana Alma Mohd Ali

Roshana Alma Mohd Ali, a Malaysian, is the under-secretary of Technology Foresight Division, Ministry of Science, Technology and Innovation (MOSTI), Malaysia, and is entrusted to review and analyse emerging issues and future technology.

She has an MSc in the philosophy of science and science & technology policy studies, University Malaya, and a BSc in chemistry and polymer science from the University of Lancaster, UK.

She has 22 years of experience in the public sector, principally at the Ministry of International Trade and Industry and MOSTI, Malaysia.

Muhammad Afif Akmal Mohd Fadzly Shah

Muhammad Afif Akmal bin Mohd Fadzly Shah is currently serving as a faculty assistant at the International School of Kuala Lumpur (ISKL). He has also been an education counsellor for UNIRAZAK.

With several years of experience in the private education sector, he graduated with a Bachelor of Arts (government and public policy) from Tun Abdul Razak School of Government (TARSOG), UNIRAZAK, and is currently completing a Master's in Business Administration degree with CMI UK.

Lilie Zahara Ramly

Lilie Zahara Ramly is a lecturer and programme director for education and English studies at the School of Education and Humanities, Universiti Tun Abdul Razak. She has close to 15 years of teaching experience and is a certified HRDF trainer, who has worked with many notable industries in Malaysia. She has extensive experience in programme development, academic collaboration and learning design. Currently, she is pursuing a PhD in telecollaborative learning in cross-cultural communication competence, as part of a joint Newton Grant Research Project between Universiti Teknologi Malaysia and the University of Leicester.

Associate Professor Dr Zaida Mustafa

Associate Professor Dr Zaida Mustafa was made a Doctor of Philosophy in 2008 by the University of Malaya and awarded a Master's in Education by the University of Houston, Texas in 1994. She has 34 years' teaching experience, in primary, secondary and tertiary education, as a teacher and teacher trainer. She sharpened her managerial and leadership skills as an assistant director at the Teacher Education Division, Ministry of Education. During her tenure with the ministry (2005-2013), she was appointed performance management officer and to a task force for elevating teacher quality under the Government Transformation Programme 2013-2025. She led initiatives for school improvement, using instructional coaching for teachers at low-performing schools. She was appointed as the country expert to develop a framework of quality teachers and teaching for South-east Asian Countries with SEAMEO Innotech, Manila.

Zaida is currently Dean of the School of Education and Humanities, University Tun Abdul Razak, Kuala Lumpur. She has led the development

of numerous undergraduate and postgraduate programmes for national and international students, supervised research projects for PhD and Masters-degree students, and led research projects under government grants and consultancy projects.

Associate Professor Dr Munir Shuib

Associate Professor Dr Munir Shuib serves at the National Higher Education Research Institute (IPPTN), Universiti Sains Malaysia, specialising in English language teaching and learning in higher education. His major studies include graduate employability skills, English for Specific Purposes (ESP), needs analysis and educational technology in higher education. He is also active in providing capacity-building services on creative problem solving for students and professionals in public and private sectors. He is a member of ASIATEFL, the International Association of Scholarly Publishers, Editors and Reviewers, the Creative User Circle, and the Global Higher Education Network (GHEN). He received his MA and PhD in applied linguistics from the University of Sheffield, UK, and graduate certificate in tertiary education management from the University of Melbourne, Australia.

Associate Professor Dr Danial Mohd Yusof

Dr Danial, with a BHsc in political science (IIUM), MA in religion, politics and society (Leeds) and PhD in Islamic studies/political thought, is associate professor and deputy dean (academic and research) at ISTAC. He has been associate research fellow at NaHERI/IPPTN, USM, since 2012, MQA assessor (social sciences) since 2008 and is a lifetime member of PenDaPat (Malaysian Association for Higher Education Development and Policy Research). He will soon be embarking on research into the international student experience at private Malaysian universities for the Ministry of Education. He is also principal researcher for the extremism analytical team at ISTAC, focusing on creating a platform and bridging the gap between CVE (countering violent extremism) stakeholders in Malaysia. Danial is also Malaysian principal researcher for a collaborative effort between ISTAC and the National Consortium for the Study of Terror and Responses

to Terror (START), University of Maryland, which aims to develop simulation, profiling and spatial instruments for future CVE research and education in Malaysia and South-east Asia.

Mohd Zulkeflee Abd Razak

Mohd Zulkeflee Abd Razak was with the international marketing programme at the School of International Business and Finance, Universiti Malaysia Sabah since, between 2004 and October 2010. His last position at UMS was deputy dean of academic and student affairs. He is now serving UNITEN as a senior lecturer in marketing and is currently head of a unit for external relations focusing on work-based learning (WBL) and other related areas. He received his diploma in business studies and BBA (Hons) in international business from the Universiti Teknologi MARA (UiTM), while his MBA (Marketing) is from Universiti Kebangsaan Malaysia (UKM).

He has taught services marketing, product and brand management, international business, international marketing to undergraduate students.

Sophie Middlemiss (School of International Futures)

Sophie is policy and strategic communications adviser to the School of International Futures (SOIF). She has a decade's experience (2008-18) at the UK's Foreign and Commonwealth Office (FCO), working as a speechwriter to the Foreign Secretary, in the Strategy Unit, on EU affairs and on the UK's Russia, Georgia and Ukraine policies. She previously worked as a senior account manager at strategic communications consultancy Portland Communications (2010-11), managing global communications campaigns for clients such as UN Women, The Elders and the Kofi Annan Foundation. As an international affairs and strategic communications consultant, she now writes articles and speeches for high-profile international figures, working (through Portland Communications) for clients such the Mo Ibrahim Foundation and the Gates Foundation. As a travel writer, Sophie has contributed to Rough Guides on a number of European destinations (Russia, Serbia, Hungary

and Kosovo) and is the author of a forthcoming Insight Guides/Berlitz city guide to Belgrade, Serbia (published May 2020).

Sophie sits on the Liberal Democrats' foreign affairs advisory panel.

She holds a Master's degree in international relations from LSE (with distinction) and a first class degree in history from the University of Cambridge.



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RETHINKING HIGHER EDUCATION IN MALAYSIA

STRATEGIC FORESIGHT ADDRESSING CRITICAL FACTORS TO 2030

by Catarina Tully and Samsinar Md Sidin

The Fourth Industrial Revolution is changing the needs and expectations of both employers and graduates. Higher Education Institutions (HEIs), meanwhile, face tougher competition for students. What's the future of higher education in Malaysia and how can we anticipate change and make more informed decisions today? This book provides some answers. Using the techniques of strategic foresight, the authors identify and analyse key trends affecting higher education between now and 2030 and make recommendations that will help prepare the HE sector for the future. With contributions from leading institutions, Rethinking Higher Education in Malaysia is an invaluable resource for HEIs and policymakers today. The book provides an important planning tool to help Malaysia shape the future of higher education and, in turn, the future of the nation.

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