

Futures Scenarios for Universiti Teknikal Malaysia Melaka (UTeM)

¹Fazidah Ithnin, ²Mohd Jailani Mohd Nor, ³Mohd. Rahimi Yusoff and
⁴Sohail Tahir Inayatullah

¹Centre for Languages and Human Development,

²Office of The Deputy Vice Chancellor (Research and Innovation),

³Faculty of Engineering Technology, Universiti Teknikal Malaysia Melaka, Melaka, Malaysia

⁴Institute of Futures Studies, Tamkang University, Taipei, Taiwan

Abstract: This study aims to present the scenarios, visions and strategies that resulted from a 3 days foresight workshop for Universiti Teknikal Malaysia Melaka (UTeM) in Melaka, Malaysia. The workshop used the “six pillars” approach to foresight. The methods used included: the futures triangle, emerging issues analysis, the futures wheel, the Sarkar game and macrohistory, causal layered analysis, the integrated scenario method, visioning and backcasting. The workshop was held over three days in Melaka, Malaysia. Three visions were developed: UTeM Everywhere (Apps University): Redefining and realigning academic programmes at UTeM towards the broad-based model which is globally recognized which resonates with UTeM’s tagline of always a pioneer, always ahead-a future as the catalyst of change, leading changes in technical education and redesigning the future of technical education in Malaysia through enhanced massive open online courses specifically crafted to enable seamless learning. A higher education hub is where academics and industry experts synergize in research, development and innovation. The enhancement of TiCOE (Technically Competent, Industry Driven Centre of Excellence) procreates income for the university through rigorous product commercialization and knowledge-sharing. UTeM SOHO-A university that promotes wellness with a balance between work and family among staff members. A concept of quality time at the office and at home with the tagline “A happy employee comes from a happy family” and contentedness spurs passion and productivity. The visions are considered complementary and are being used to develop the UTeM strategic plan 2012-2020. This model of foresight provides a practical model for engaging in planning the long-term futures, especially when there are a diversity of interests and stakeholders. The workshop has led to distinct and practical strategies as the university moves forward to 2020. This model of foresight provides a practical model for engaging in planning the long-term future especially when there is a diversity of interests and stakeholders. The workshop has led to new and executable strategies as the university forges ahead toward 2020.

Key words: Backcasting, UTeM, Technical and Vocational Education and Training (TVET), causal layered analysis, scenarios, university futures

INTRODUCTION

The technical university of the future-UTeM 2025

Always a pioneer, always ahead: Technical and Vocational Education Training (TVET) has been identified in the Malaysian Education Blueprint Higher Education 2015-2025 (MEB HE) as one of the key initiatives for the nation’s future. Although, the first trade school in Malaya/Malaysia was established as early as 1906, Technical and Vocational Education and Training (TVET) remains as an important pathway for vocational education and skills development as stipulated in the Malaysian Education Blueprint Higher Education 2015-2025 (MEB HE).

The United Nations Organization for Education, Science and Culture (UNESCO) defines TVET as “those aspects of the educational process involving in addition to general education, the study of technologies and related sciences as well as the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life” (Etzkowitz, 1998).

In Malaysia, TVET programs focus >50% of content on technical and vocational skills encompassing certificate, diploma and degree level qualifications. MEB HE has outlined 10 shifts which aspire to produce balanced and holistic graduates with entrepreneurial mindsets, nurture “job creators” rather than just ‘job

seeker's, place TVET programs on par with traditional academic offerings and make lifelong learning part of the nation's culture. Shift number four of the MEB HE places specific focus on quality TVET graduates which emphasizes on the importance of fulfilling the industries need for highly skilled workers.

Universiti Teknikal Malaysia Melaka was established on 1 December, 2000 under the college and university act 1971, study 20 (Act 30) with the name Kolej Universiti Teknikal Malaysia Melaka (KUTKM). As the 14th public university established in Malaysia, UTeM was mooted to be a higher technical education powerhouse for Malaysia's development towards a fully industrialized nation in 2020.

In aspiration where does UTeM position itself in 2025. Will the university be able to keep up as one of the world's leading innovative and creative technical universities. Will the university continue to pioneer in practical-oriented teaching and learning explicating the Fachshule Model. A fachhochschule (About this sound fachhochschule, FH, plural fachhochschulen) or University of Applied Sciences (UAS) is a German tertiary Education Institution, Specializing in topical areas (e.g., Engineering, Technology or Business). Fachhochschulen were first founded in Germany and were later adopted in Austria, Liechtenstein, Switzerland and Greece (where they are called TEL-Technological Educational Institutes). The fachhochschule represents a close relationship between higher education and the employment system. To succeed in your mission, you must have a single-minded devotion to your goal (Tunku Abdul Rahman Putra AlHaj, first Prime Minister of Malaysia). Will the teaching factory model remain a distinguished feature of the technical university of the future. Will UTeM continue to champion the areas of technical and technology or will it modulate towards a comprehensive university offering a diverse range of programmes.

These and other questions were deliberated in Melaka by participants at the futures scenario workshop for UTeM from 7-9th Jun. Thirty participants from the senior management which included Members of the Board of Directors, Vice-chancellor, Deputy Vice-Chancellors, Deans, Directors, Student Representative Councils and Alumni. Participants canvassed several alternative futures scenarios for UTeM in 2025 in the 3 days meeting, facilitated by the renowned Futurist Professor Sohail Inayatullah. The output of the discussion becomes the foundation of the UTeM Strategic Plan 2012-2020 (Mohd, 2012).

Futures scenario planning for the preferred technical university of the future: To provide rigor and relevance

in answering these questions, the "six pillars" approach to foresight was used (Inayatullah, 2008). The six pillars consist of first mapping the future through the futures triangle, second, anticipating the future through emerging issues analysis and the futures wheel, third, timing the future through an exploration of macrohistory, fourth, deepening the future by understanding core metaphors that underpin stakeholder's views through the causal layered analysis methodology (Inayatullah, 2012), fifth, creating alternatives through scenarios and finally, sixth, transforming the present and future through visioning and back casting. The foresight process sought to ensure that participants moved out of their current understandings; for example, participants explored emerging issues that could challenge the current map of the future.

In pursuit of global recognition, UTeM sets the target of a globally recognized TVET programme provider that will parlay the university in the international arena. The university has set forth among others to increase the number of collaborations with top international universities in its desired key performance indicator. This is in support of the aspiration of the ministry of higher education which places specific emphasis on institutional networking and internationalization and has included it as one of the institutional Key Performance Indicators (KPI), in most universities' blueprint for higher education in Malaysia. "Global prominence in higher education requires four elements visibility, recognition, distinction and expansion. To tap these elements, the Ministry will strengthen the promotion, marketing and value proposition of Malaysia's higher education system; identify ways to increase the enrolment of high caliber international students and establish stronger ties with the global higher education community".

In striving for global presence, UTeM needs to highlight its unique features, its capabilities to excel at what it can do best, developing excellent engineers, technologists and technopreneurs. Technopreneur is a unique term reference used to refer to technology entrepreneurs produced by UTeM from the faculty of technology management and technopreneuershi and to build its reputation based on its achievements in integrating available resources with expected performance outcome. Emerging issues such as the relevance of focused technical programmes in the future and financial sustainability in the next 5-10 years were debated. Worst case scenarios such as whether UTeM will cease to operate or be out of business in the heat of the rising mobile and apps learning mode by universities globally and if such scenario happens how then should UTeM rewrite its story in preparation for the best-case scenario

or the desired future. The generally accepted assumption was that the world changes and what we know today may no longer be relevant tomorrow. Thus, preparing for the uncertainties, UTeM needs to learn about learning in order to reflect on new challenges and to know the unknown (Inayatullah, 2012). With the advent of never-thought before technologies bring about new meanings of communication, UTeM has a choice of ignorance, thus missing the invaluable opportunities or it could seize the moment, be the change agent, create new alternatives and assess global trends in higher technical education and adapt accordingly: digitalization, gaming as learning, peer-to-peer student learning and wikis, corporatization and reduction in subsidies from the ministry of higher education (Inayatullah, 2012).

Central to inventing the new future was finding a new narrative. In the “Six pillars” approach, foresight is not just about an evaluation of disruptive trends in digital, brain and genomics technologies or issues of income and demographics but equally involves transforming the core stories that define the narrative. Organizations have narratives-myths and metaphors of how they interpret reality. These narratives can sometimes help create the desired future. More often than not however they are based on the used future-on what worked in previous eras and not on what is relevant today or productive for the future. In education, the factory model of learning and teaching is often dominant, making students into products and professors into managers of data (Inayatullah *et al.*, 2006).

Virtualization of a technical university: Fundamental to achieving the desired future of a globally recognized technical university is the ability to virtualize technical education. That being said new applications, indeed, “an app for everything” is the new analogy for the futures of instruction. New applications are changing the nature of pedagogy and with exponential technological advancement we can see virtual becoming more like face-to-face. Costs will continue to go down (and climate change/peak oil/security concerns are likely to provide further incentives to virtualize). Innovation will continue to find ways for academics and students to become more comfortable in future virtualized “classrooms”. Over the long term the current distinctions between virtual and real will likely disappear and we particularly digital and genomic natives (the double-helix children) will become comfortable with different types of reality (Inayatullah, 2012).

From the discussions in the subsequent sessions, UTeM leaders articulated on a number of preferred futures scenarios after a back casting session reflecting on

UTeM’s past. How did we get here and where do we see ourselves in the future. The used future may not be applicable anymore. UTeM needs to work on a new future based on current trends and future needs in the industrial sectors. Relying on its strength as a technical education provider, UTeM’s sustainability can be rest assured given the foreseen needs for highly technical and skilled workforce in the future.

Enhancing local relevance and strengthening global presence:

According to the Economic Planning Unit (EPU) labour force survey 2013, the gap in supply and demand of additional TVET workforce from 2014-2020 is rather stark. It is projected that in 2020, 3.3 million new job positions to be created and added into the workforce. However, current highly skilled workers only account for 28% of 12 million workers in the country. To become a developed country, Malaysia is required to meet the target of 40% skilled workforce and we still have a long way to go in terms of developing the skilled workforce. The local businesses also require 62% technical workers and they are having difficulties to source skilled workers. Thus, technical and vocational education in the country is essential in increasing the skill level of the workers and filling the demand gap.

Enhancing UTeM’s presence locally and accentuating its presence globally, a number of alternative scenarios were proposed by the participants, among others three groups suggested the acute necessity of UTeM moving towards a virtual university through the idea of “UTeM Every where”, UTeM SOHO (Small Office Home Office) and UTeM Apps. While the terminology may be different but the context is analogous. These proposals were founded on the basis that with technology and communication getting more sophisticated, the idea of promoting the UTeM brand both locally and globally may become accessible and more plausible. In one group’s view, UTeM should remodel into a wellness university with the co-existence of technology, spirituality and greenness. Another group mooted the alternative future of UTeM as a “mecca of higher technical education” with open access facilities for everyone everywhere and recognized worldwide. All these proposals were dwelled onto, debated and rationalized thoroughly with specific emphasis given to the core business and expertise of the university, specifically the curriculum design, student entrepreneurial attributes, university-community network and commercialized-ready products through the fortification of TiCOE. TiCOE is a term coined to refer to technically competent and industry driven centre of excellence producing high impact research with close industrial collaboration.

**ALTERNATIVE FUTURES OF UNIVERSITI
TEKNIKAL MALAYSIA MELAKA (UTeM)**

After three days of using foresight methods to analyze and explore possibilities, the final session of the meeting produced three alternative futures for UTeM 2025.





Scenario 1

UTeM Everywhere (Apps University): Mapping the future of UTeM as an Apps University, the futures triangle was used. The futures triangle method consists of identifying three distinct factors. The first are the contending pulls of the future. These are current images of the future could be or should be. The second are the critical drivers pushing the future. These are quantifiable. The third factors are the weights of history. These are the barriers preventing the realization of a particular image of the future. A weight for one image of the future of course can be a driver for another. Weights are more difficult to quantify.

The first alternative of the future of UTeM Everywhere predominates on UTeM as a globally accessible university. This future puts forth the denotation of a virtual university. To be sustainable, UTeM needs to be accessible “everywhere”. Academic programmes offered by UTeM must not only be obtainable globally but also functional and accredited internationally. Employing the metaphor, “UTeM OnDeck”, potential students worldwide will become stakeholders of UTeM, following lectures at the comfort of their home country through innovative and advanced learning technology such as the Massive Open Online Courses or MOOCs. Learning contents are shared through online materials which enable students to be engaged in a more personalised learning setting at a place of their convenience and around their own schedule. The open learning environment not only ensures lifelong learning that transcends qualification, financial status, geographical locations, age and abilities but also indirectly promotes personal growth in the society.

In addition, the UTeM apps university will also result in the increase of high quality graduate students and postdoctoral fellows into research that is deep, broad and challenging given the multitude of academic and physical backgrounds they come from. The most effectual impact of the UTeM apps university is undoubtedly the significant increase of international graduate student enrolment which will definitely promote UTeM in the global arena. The compelling image of the “university in a gadget” implies on an “app-based university”, similar to a mobile application, UTeM is envisioned to be easily accessible and easy to use (Table 1).

Table 1: Apps University (Virtual University)

Variables	Images
Preferred	
Number of preferred programmes relevant to the global industry	
Advanced infrastructure with global recognition	
World leading virtual technical university	
Metaphor-global brain	
Disowned	
Identity trade-off	
Less hands-on	
Lost human touch and soft skills, no physical assessment	
Metaphor-brain drain	
Integrated	
Competitive paid salary globally	
Sharing resources globally/global franchise	
Global Industrial based program with GLOCAL flavour	
Metaphor-networking brain	
Outlier	
Limited programmes meeting industry needs	
Conventional way of delivery methods	
Less presence felt	
Metaphor-brain death	

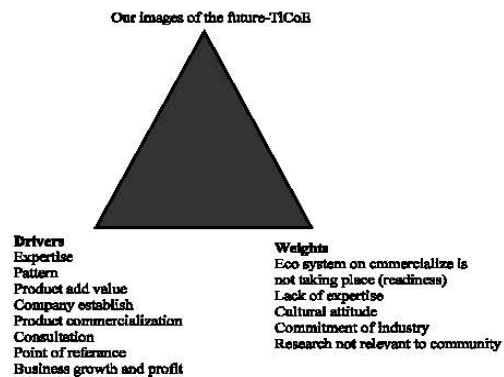


Fig. 1: Futures triangle (Mapping the future)

Participants further articulated their vision of what the preferred future would look like. Using the Causal Layered Analysis (CLA) they came up with several scenarios of a UTeM everywhere futures (Fig. 1 and Table 2).

Scenario 2; UTeM-industry integrated: From an industrial perspective, relations with universities have traditionally been viewed primarily as a source of human capital, future employees and secondarily as a source of knowledge useful to the firm (Etzkowitz, 1998). Fortifying the strategy of boosting potentials in university-industry synergy, participants put forth the significance of “placing industry in the university”. The current TVET programmes in Malaysia are largely supply-driven. Hence, resulting in a mismatch training to available jobs. There is obviously a need to improve links between institutions and industries so as to minimize this mismatch. This move will not only ensure technology transfer from university to industry and vice versa but also redefine learning by

Table 2: UTeM Everywhere

Variables	Management	Staff	Government	Students
Litany	Saves utilities and spaces	More time with family	Better life quality	Independent learners globally
Systemic	Monitoring system	Self-discipline	New policies	Implementation
Worldview	Unproductive	Balance between work and personal life	Difficult to manage	Creative and innovative
Metaphor	Office sweet office	Fishing from home	We know what's best	Virtual UTeM (UTeM On-Deck)

which students are equipped with matching technical skills sought by industries. The teaching-factory model established in UTeM will be further fortified by the industry within the university concept where structured activities that enhance student's knowledge and skills could be coordinated. Participants also proposed the idea of establishing an industry centre with an advisory role in the enculturation of the research to richness agenda that will result in mutual benefits (Claudia and Goby, 2010). For a start, UTeM initiated the CEO. Roundtable programme in 2010, inviting and providing a platform for captains of industries locally and regionally in a knowledge and expertise sharing session with the aim of providing advice and feedbacks that would enhance UTeM's academic programmes and elevate graduate employability (Table 2).

In the field of research and innovation, the integrated concept warrants a sustainable research culture. Knowledge and technology transfer by both university and industry allows for a more expansive ventures. Research products initiated by the university can be further developed by industries with the potential of commercialization. As for industries, products used for manufacturing processes can be further improved or even improvised with the academic knowledge and expertise available within the university. Although, many challenges remain such as increasing the amount of research grant funding, involving industry partners in R&D activities, commercializing R&D products and having a direct socio-economic impact via R&D initiatives but with a committed effort from university researchers these challenges will soon be overcome.

This university-industry integrated future also conjoins the significance of the university in co-creating economic prosperity with the state government of Melaka through the optimization of available resources and expertise. The involvement of strategic industries in Melaka with the university will not only enhance superiority and relevancy of the curriculum but also assist UTeM in strategizing its research agenda thus further boosting the research to richness initiatives within a flourishing research, development and innovation environment.

Scenario 3; UTeM wellness SOHO: Wellness was the keyword in the third future for UTeM as proposed by the participants. With the conviction that UTeM will prosper

Table 3: Wellness SOHO university CLA

Variables	Staff	Student
Litany	High happiness index	Exciting campus life
Systemic	Smart working condition	Liberal and multidisciplinary curriculum with integrated and extracurricular activities
World view	Motivating, proactive and healthy	Healthy students are agile, smart, flexible and forward looking
Metaphor	Role model and exemplary leaders	Well rounded and marketable students

by keeping people healthier and more productive for longer. The third future was referred as SOHO UteM which stands for small office home office UTeM. This future sees the importance of a balanced between work and personal life as a catalyst to high-impact productivity and accelerating performance of the university (Table 3).

Four scenarios were drafted using the six pillars approach of creating alternatives scenarios of a SOHO UTeM. These scenarios have multipurpose functions, among others as a contingency planning to assess and prepare for what might go wrong, creating a conceptual distance from the present so that the present is seen as less real and fixed and thus changeable, understanding and managing uncertainties, gaining a better understanding of chaos and complexity including the potential levers of influence, understanding the views of different stakeholders and perspectives, finding new areas of growth, products, processes, people, possibilities, clarifying often hidden assumptions about the future and enhancing organizational learning capacity. Ultimately scenarios planning both reduce risk and enhance reward (Inayatullah, 2012).

All functions of creating alternative scenarios considered, the outcome of which was the importance of elevating the wellness trajectory in the UTeM context. As a relatively young university, UTeM's staff composition consists of 80% young academicians of age <40 years old and 20% senior academics of age >40 years old. As the shakers and drivers of the university, the young academics are at the onset of starting a family and building a life career thus a conducive work environment is pivotal. A vibrant environment that supports professional and personal growth is paramount in developing passionate and resilient academics, resulting in a high-performance work culture. Studies have shown that highly motivated academics have an acute effect on

student's performance. Although, money is influential factor at every stage but at the same time it is not necessary that money alone can increase motivation of every worker there are intangibles (for instance empowerment, recognition and feedback) that are primary motivators for the worker's inspiration to perform effectively (Fuhrmann, 2006).

Wellness SOHO University

Business as usual:

- Management cost
- Congested
- Stressful environment
- Less attractive, less competitive
- Social issues worst case
- Funding is withdrawn

Best case:

- "Fishing from home"
- Balance between work and life
- Better productivity
- Happy staff "Happy families produce happy employees"

Worst case:

- Funding is withdrawn
- Productivity
- University's image tainted
- Not trustworthy
- "Fish and go home"

Outlier

- High discipline staff
- Student's creativity
- Self-funding
- UTeM as a role model

Business as usual:

- Management cost
- Congested
- Stressful environment
- Less attractive, less competitive
- Social issues worst case
- Funding is withdrawn

Best case:

- "Fishing from home"
- Balance between work and life
- Better productivity
- Happy staff
- "Happy families produce happy employees"

Worst case:

- Funding is withdrawn
- Productivity
- University's image tainted
- Not trustworthy
- "Fish and go home"

Outlier

- High discipline staff
- Student's creativity
- Self-funding
- UTeM as a role model

Organizations invest in effectual strategies to get motivated workforce to compete in the market. Salary alone does not prove to be a vital motivator for everyone in an organization. Various factors motivate people differently depending upon the nature of an organization and its key contributors in developing learning environment. Famous rule of thumb in human resource management is that retaining employees is less costly than hiring new ones. When teachers in universities perform well students are also high achievers and universities contribute more towards higher education (Rasheed *et al.*, 2010).

Thus, the best case scenario for UTeM preferred by the participants is the wellness university, SOHO concept of a balanced work and life scenario with the principle of accelerated productivity through balanced work-family life. The wellness SOHO UTeM Model replicates the comfort of home at the office though not physically but environmentally. In the context of staff it is clear that the stability in their personal life becomes the indicator of their performance at work. This feel good at home feeling is cascaded to the feel good spirit at the office especially with the presence of a strong motivating leadership and excellent infrastructure. Similarly in the student's context, an exciting campus life, a liberal and multidisciplinary curriculum with integrated extracurricular activities will be effectual in producing healthy, agile, smart, flexible and forward looking students. To sum it all a conducive and supportive environment is substantial in ensuring indisputable productivity for the university.

CONCLUSION

UTeM way forward-transformation plan: Sustainability of UTeM's future and the way she charts her presence and relevancy will depend on what we put in the blueprint at the end of the session. Amongst the issues raised include offering a unique UTeM experience for students, UTeM as the premiere technical university in Malaysia, embrace

virtualisation to stay ahead of the future scenario, establishing industry-integrated campus and transforming UTeM for a balanced university incorporating technology, green and holistic approach. The “Six pillar” technique to foresight future scenario for UTeM consist of the following initiatives namely, mapping the future, anticipating the future, timing the future, deepening the future, creating alternative and transforming the future through visioning and backcasting.

REFERENCES

- Claudia, U. and R. Gaby, 2010. University Types: Universities of Applied Science. Deutsche Welle, Bonn, Germany.
- Etzkowitz, H., 1998. The norms of entrepreneurial science: Cognitive effects of the new university-industry linkages. *Res. Policy*, 2: 823-833.
- Fuhrmann, T.D., 2006. Motivating employees. *Adv. Diary Technol.*, 18r>
- Inayatullah, S., 2004. *The Causal Layered Analysis Reader*. Tamkang University Press, New Taipei City, Tamsui.
- Inayatullah, S., 2008. Six pillars: futures thinking for transforming. *Foresight*, 10: 4-21.
- Inayatullah, S., 2012. University futures: Wikipedia uni, core-periphery reversed, incremental managerialism or bliss for all?. *Horiz.*, 20: 84-91.
- Inayatullah, S., M. Bussey and I. Milojevic, 2006. *Neohumanistic Educational Futures*. Tamkang University, New Taipei, Tamsui.
- Mohd, N.M.J., 2012. The Malaysian experience: A new approach in managing multi-disciplinary research projects. *Acad. Executive Brief*, 2: 10-12.
- Rasheed M.I., H.N. Aslam and S. Sarwar, 2010. Motivational issues for teachers in higher education: A critical case of IUB. *J. Manage. Res.*, 2: 1-23.