# Significance of Technology-Enabled Teaching and Learning in Times of Disruptive Crises

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**Abstract**

The Novel Coronavirus or COVID-19 pandemic caught the world by surprise, even though many futurists and emerging infectious diseases experts had anticipated the 'seeds of the Corona', or the weak signals for a decade. What appeared impossible to the general comprehension, suddenly becomes plausible. The world is pushed towards a new normal that demands reeducation of norms. The pandemic is catastrophic to humans and the whole ecosystem, in essence, the virus, may be invisible in nature but is extremely invincible to the politics, economics and social landscape of the world – henceforth, disrupting the otherwise operational future. Within the landscape of the Malaysian Higher Education scenario, a new narrative ensues. The metaphor of universities as ivory towers has become a passé and seriously challenged. The factory model of knowledge dissemination turns out impractical. Virtualization and customization of teaching and learning become an expectation and not an exception. In the context of Universiti Teknikal Malaysia Melaka (UTeM), the initial preparation for its five-year Strategic Plan circa 2012, has been prophetical. In anticipation of the changing future, the preferred scenario of maximizing technology-enabled teaching and learning delineated by the University's stakeholders, has reigned supreme - replacing the litany of face to face methods. In ensuring viability during the period of crisis, UTeM reviewed the precision and significance of its preferred future. In essence, the substantial key outputs collectively mapped through the Causal Layered Analysis framework or CLA and the Integrated Scenario Approach, which was embedded in UTeM's Strategic Plan 2012-2020, had actuated and proven compelling in sustaining the University's teaching and learning operations throughout the crunch.

**Keywords:** Higher education; Causal layered analysis; Scenario planning; Technology-abled; Human factor; Science; Technology; Futures; Foresight

# 1. Introduction

Pandemics trigger radical changes in human behavior in all aspects. The COVID-19 pandemic is a catastrophic crisis of infinite magnitude for humanity. Prospecting the futures of higher education, the immediate challenge is for institutions of higher learning worldwide to continue their relevance and operations within the learners status quo of where they are, within the infrastructure and setting they are in. This predicament requires hefty innovation and creativity that may not have been thought of. Technology-enabled remote learning tools, services and education surfaced at an exponential rate throughout the Movement Control Order (MCO) as universities began to reckon on their state of preparedness. Can universities remain relevant? Can remote learning or technology-enabled learning parallel the conventional asynchronous learning? Are lecturers prepared with adequate knowledge and technical know-how to deliver classes online and offline while simultaneously providing students avenues for experiential learning? Are syllabi online-friendly? Can laboratory work and teaching-factory simulations be conducted ubiquitously? Can administrative and academic staff be equally productive 'fishing from home'? As the future sees the importance of a balanced work and personal life as a catalyst to high- impact productivity and accelerated performance (Inayatullah and Ithnin, 2018), the foresighted future scenarios are not yet inclined towards this. Will the COVID-19 epitomize just as a pause button or will it kindle a justified norm towards a transformative shift in an organization's operations or will it return to business as usual, especially when states still do not support employees in this process as trust is a factor (Inayatullah and Black, 2020). The onset of the COVID-19 which has closed more than half of Malaysia's small and medium enterprises and almost certainly plunged the country into recession, is exacerbating the outlook for a university sector already in deep trouble (Hunter 2020).

This study is aimed at analysing the salient outputs of the anticipatory foresight round table conducted by UTeM in 2012 and their omnipotence in ensuring the sustainability of university pedagogical operations, specifically during the disruptive COVID-19 crisis. Analysis of pre and post scenario planning of UTeM as a Malaysian Technical University Network higher education provider were studied, the results of which became the determinant for the University to adopt a similar approach as its way forward.

The prelude of UTeM's scenario planning in 2012 involved various stakeholders, namely members of the Board of Directors, University senior management, deans and directors of faculties and offices, alumni and students. Images of the preferred technical university of the future were visualized, among others, through the causal layered analysis framework which provided a platform in creating transformative spaces for the creation of alternative futures (Inayatullah, 2004). The consolidation of data was documented into the University's 8-year Strategic Plan 2012-2020, which in essence would have culminated in 2020. With the Strategic Plan's timeline ending, UTeM reviewed the process at the onset of 2020 and three months into the mapping of UTeM's next decade, the COVID-19 pandemic inundated. Embodying the intervention of a crisis, the COVID19 became a test-bed scenario for the predominance of UTeM's preferred scenario of a technology-enabled narrative of a university's forward march against the waves of a vicious global pandemic.

The research process involved a review of the preceding scenario planning followed by a comparative analysis of tangibles from the pre and post 2012 discourse and the canvassing of the University's pedagogical way forward 2021-2025.

## 2. Literature Review

The capacity of a university in times of disruptive crises has been a cause for concern for higher education providers worldwide. University operations which include teaching, learning and assessment must be crisis-proof. Kernohan (2020) asserted that in the more specific context of universities, academics as higher education providers have been thrust headlong into providing for their students exclusively via a digital interface. Watermeyer (2020) pointed out that perhaps more than this, the experience of rapid online migration of learning, teaching and assessment has revealed much of the deficiencies of the higher education sector and much perhaps of what needs to change in universities. COVID-19 crisis, like nothing else before it, is articulating the severity of social and economic inequality and fomenting also a reconsideration, even refutation of the kinds of social stratification and democratic infringements (Zuboff, 2019) committed by global capitalism—and equally mobilizing the restitution and reclamation of the public sphere—so too is it magnifying the egregious faults and failures of universities (as explicitly, even now unapologetically neoliberalised organizations) and with such force that they may no longer be hidden or defended.

Wang and M. Hutchins (2010) asserted that for administrators of educational institutions, it is crucial to develop an effective strategic plan that would likely prevent the occurrence of a crisis event or minimize the impact if one occurs. Inayatullah and Ithnin (2018) affirmed that it is imperative for organizations to envisage the future through the mapping of time – where we have come from and where we are heading next and in so doing, the unknowns are incorporated into decision making. Sardar (2021a) contended that the impacts of global changes in times of unrelenting crisis, such as the COVID19, are markers for postnormal times, where 'much of what we have taken as normal, conventional and orthodox just does not work anymore. In a similar vein, Inayatullah (2020) asserted that times of major disruptions call for a world where learning context becomes borderless, timeless, fluid, inexpensive and futures-oriented (Inayatullah, 2020). In unison, Ramos, Uusikyla and Nguyen (2020) posited that the weights of these changes can be seen as opportunities by organizations and be used to our advantage if we are able to identify them early and find ways of anticipating and acting on them.

## 3. Incepting Futures Thinking in the Higher Education Setting

Robert Greenleaf (1996), who popularized the term "servant leader", esteemed foresight as "the 'lead' that a leader has, the possession of which is one of the bases of trust of followers, is that she or he cares more, prepares better, and foresees more clearly than others". As the main drivers of change for Malaysia towards realizing her aspiration of National Transformation 2050 or TN50, higher education must be at the heart of the future. Indubitably, it is through learning that the path from which not only the new human will emerge, but will also create the opportunities that will prepare learners for that future (O'Brien and Forbes, 2021). Futures thinking, therefore, incites a future-oriented mindset, that challenges operational thinking through a systematic method of exploring alternative futures. In the case of UTeM,

the need to catalyze new capabilities and incubate new possibilities of an MTUN university had resulted in the call for the Strategic Plan 2012-2020. Transformative leadership and breakthrough capacities were enabled through a 3-day foresight workshop which adopted the Six Pillars Approach Scenario Planning. The vision foresighted in the anticipatory futures planning workshop was for a preferred technical university of the future. The strategic directions then were skewed towards current trends in globalization, mobility, international collaborations, evolution in learning and teaching, technology-enabled, global university best practices, student entrepreneurial attributes and community outreach (Inayatullah and Ithnin, 2018).

While stakeholders concurred that UTeM will continue to offer market driven technology and technical-based programmes, concerns of a sustainable growth seeped in as the concept of a disowned business-as-usual future foreshadowed unto UTeM (Inayatullah and Ithnin, 2018). In search of plausible alternative futures, the participants presented several preferred visioning and scenarios through the Causal Layered Analysis (CLA) (Inayatullah, 2020) which underlined the four variables of litany, systemic, worldview and myth/metaphor. The futures approach has been about using the future to rethink and eventually re-create the present. The conviction is based on the assumption that while we live in a world of imperfect information and the future in particular is uncertain by using the views of many in the context of structured foresight methods, enhanced our ability to map and create desired futures.

CLA framework unpacks the future at four distinct levels. This method and theory of knowledge seeks to deepen the future (Inayatullah, 2007). Understandably for UTeM, the preferred narrative included all four levels: data to measure the new desired future, systemic changes, mindset shifts, and new metaphors.

Table 1. Causal Layered Analysis (CLA) of UTeM's Futures 2012-2020

| Causal Layered Analysis of UTeM's Futures | | | | |
|---|---|---|---|---|
| | **UTeM SOHO** | **UTeM@Apps University** | **University-Industry Integrated** | **UTeM Open University** |
| Litany | UTeM staff spends more quality time with their family, resulting in savings of utilities and space. | Academic programmes offered by UTeM becomes available globally, functional and accredited internationally | UTeM leads in industry-driven and advanced technologies in collaboration with strategic industries in Malaysia. | UTeM offers higher education opportunities to all regardless of qualification, financial status, geographic location, age and abilities – |

| | | | | indirectly promoting personal and professional growth in the society. |
|---|---|---|---|---|
| Systemic | Implementation of new policies, enforcing staff monitoring systems and discipline. | Programmes need to comply with needs of industries and duly accredited by international accreditation bodies. | Hosting industries within the university environment also known as the 'Teaching Factory' model. Industries providing factory-scale equipment for teaching and learning. | Advancement of technology & infrastructure. The need to establish a framework to support staff development. |
| Worldview | Out of sight, out of responsibility. | Globally recognized university and global graduate employability. | University educate; industry trains. | Internationalization of industry-based learning. |
| Myth/Metaphor | Fishing from home | UTeM On-Deck | Partners for growth, 'Together as one'. | Mangrove Ecosystem |
| Strategy | Retain the dedicated staff and provide suitable incentives to encourage performance. | Attract top academics and students globally. Invest in latest technologies and teaching and learning facilities. | Organize structured collaborations with industries. Invite leaders of industries as academic programme advisory panels. | Introduce broad-based academic programmes alongside focused-based existing programmes. Invest in innovative teaching and learning infrastructure. |

In essence, the CLA became the core reference for UTeM's way forward. Resources were amalgamated towards prioritized sectors. UTeM Small Office Home Office (SOHO), UTeM@Apps University, University-Industry Integrated and UTeM Open University, were all skewed towards a technology-enabled anomalous future. Ironically, these four visions were actualized as the best-case scenarios of higher education throughout the COVID-19 stretch which entails renewed norms in the daily operations, specifically pedagogical facet of the university.

## 4. Sustainability of Higher Education in the COVID-19 Crisis

As the globe revolves with pushes of uncertainties accelerated by the COVID-19 pandemic with the aggregated impacts of which are still insurmountable, the likelihood of it cascading into other disruptions such as new pandemics, financial shocks and climate change (Inayatullah and Black, 2020) is plausible. The business as usual teaching and learning approaches at institutions of higher learning need to embrace innovations and articulate new scenarios and new narratives – pronto. Prior to the pandemic, intellectuals around the world had identified various potential future disruptors in the likes of climate change, anomalies of the digital age, disruptive technologies brought by industry 4.0, global competitions due to globalization and global economic crisis. A lethal virus was an outlier.

On 31 December 2019, the Wuhan City Health Committee (2019) reported a cluster of 27 pneumonia cases stemming from an unknown etiology, with a preliminary source linking this to the now closed Wuhan Huanan Seafood Wholesale Market. This was later determined to be a novel coronavirus (2019-nCoV) or COVID-19. Since then, there has been substantial growth across the globe. According to the World Health Organization (2020a), on 31 March 2020, there have been 697,244 confirmed cases with 33,257 deaths (4.77% mortality rate). The World Health Organization (2020b) has declared COVID-19 a pandemic. The top ten countries by reported cases are: China, Italy, United States of America, Spain, Germany, Iran, France, South Korea, Switzerland, and United Kingdom (World Health Organization, 2020a).

Malaysia was labelled "by far the worst-affected COVID-19 country in Southeast Asia" (New Straits Times, 2020b). In response to the alarming increase of infections in Malaysia, Prime Minister Muhyiddin, under a nationwide Movement Control Order, banned all non-essential social activities (including religious, sport, social, and cultural events) from 18-31 March to curb the spread of COVID-19.

As of 16 March 2020, the response by most of Malaysia's 20 public universities was to encourage or mandate technology-enabled online learning (Lim, 2020), using live streaming on Facebook or YouTube, Light board Video Technology, Zoom, or in-house e learning platforms (Lim, 2020; Ramadan, 2020; Teoh, 2020; Universiti Malaysia Sarawak, 2020). This approach, however can be viewed as a fragmented approach to achieving higher education learning and teaching quality. Assessment strategies such as lab research continued to be allowed at Universiti Kebangsaan Malaysia and Universiti Malaysia Terengganu; face-to-face lectures going on as usual at Universiti Utara Malaysia and International Islamic University Malaysia; or Universiti Malaysia Perlis disallowing their students from leaving campus without express permission (Lim, 2020).

Face-to-face classes at local universities were supported by online strategies, galvanizing a sudden EdTech boom. Universities use web-conferencing platforms such as Zoom, Webinar, and Panopto, partially as contingency measures, and partially integrated into their learning management systems. At UTeM, the alternative future of University@Apps parlayed in 2012 had aptly prepared the University towards this unprecedented scenario. Structurally planned technology-enabled programmes were designed; a full office to oversee e-learning was established on 26 April 2013. Massive Open Online Courses (MOOCs) were initiated and offered. Additional budget for expansion of information structure for online learning management system or U-Learn has since been prioritized.

## 5. The essence of technology-enabled education

Higher Education worldwide has been in crisis since the onset of the COVID-19 due to the closure of schools and universities in over 188 countries which was aimed at "flattening the curve". This scenario took 91% (1.6 billion) of the world's students out of their classrooms of which 574 million of them are in the Commonwealth countries (UNESCO statistics, 2020). Funding dilemma hit universities exponentially especially the private universities of which depended highly on enrolment of international students.

The COVID-19 crisis confirmed the indispensability of technology-enabled education via distance and online learning modes. As Universities and schools moved from education in the classroom to education at home, Malaysia, as with many other countries were ill-prepared to do so. Enforcing the use of alternative technologies in areas without internet or electricity would be unfavorable. The pandemic has widened the inequalities of educational opportunities between the have and have nots. Teachers and lecturers are not adequately trained yet to do online learning and many countries were not adequately prepared to provide alternative technologies to educate students who do not have access to the internet (Ismail, 2020).

Online education is a complex issue. It is important to set realistic understandings and expectations of how it can support students who are affected by COVID-19 constraints. Universities, in general, are not progressing strategic moves to online teaching. Rather, they are moving to emergency online delivery of in-person content (Crawford, 2020). On the flipside, UTeM had, by design, prepared for this digital shift in 2012 through the intensive CLA discourse and followed suit by a rigorous implementation plan. The setting up of the Centre for Instructional Resources and Technology (CIRT) which oversees the complete operations of technology-enabled and remote learning provides for consistent digitization of University courses. The table below presents the comparative data of UTeM's eLearning preparedness prior and post Scenario Planning intervention:

Table 2. Massive Open Online Courses (MOOCS) at UTeM (2015-2020)

| 2012-2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|
| Planning and Developme nt of MOOCs post Scenario Planning Workshop | 1) Critical & Creative Thinking (BLHC4032) | 1) Technology Entrepreneurshi p (BTMW4012) | 1) Japanese Language Studies (BLHL1312) | 1) Numerical Methods (BEKG 2452) | 1) Mechanical Vibration (BMCG 3233) | 1) Arabic Language Studies (BLHL1112) |
| | 2) Mandarin 1 (BLHL1212) | 2) Programming Technique (BITP1113) | 2) IT Security (BITP3433) | 2) Motion Graphic (BITE3623) | 2) Research Methodology (PPSW 6013) | 2) Efficient Energy Management (UTeM Staff) |
| | 3) Database (DITP1333) | 3) Multimedia Systems (BITM1113) | 3) Malaysia University English Test (MUET) | 3) Principles of Electrical & Electronic (BETA1313) | 3) Green Technology and Environment (BKKM 1931) | 3) Green Sustainabilit y Practices (BKKM 1911) |

The data in Table 2 depicts the gradual shift from conventional teaching and learning to digitized learning; 2012 being the impetus of transformation with implementation of the first three courses in 2015, waxing to 18 MOOCs in 2020.

Blended Learning which was introduced in 2016 at a meagre 2% of implementation, had sharply fortified through the years, eventually anchoring at an optimum execution of 100% in 2021.

Table 3. Percentage of Blended Learning at UTeM (2016-2021)

| 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|
| Sem. 2 15/16 | Sem. 2 16/17 | Sem. 2 17/18 | Sem. 2 18/19 | Sem. 2 19/20 | Sem 2 2020/2021 |
| 2 % | 61% | 58% | 80% | 84% | 100% |
| Sem. 1 16/17 | Sem. 1 17/18 | Sem. 1 18/19 | Sem. 1 19/20 | Sem. 1 19/20 | Sem 1 2020/2021 |
| 48 % | 52% | 76% | 87% | 87% | 100% |

Publication of iBooks to shore up available physical resources at UTeM's libraries were also amplified. As students become more technologically gadget-dependent throughout the pandemic-quarantined period, references too, as per envisioned in the 2012 scenario exercise,

must be apps-friendly. The initiative which started with only four iBooks in 2014, manifolded to more than 35 iBooks in 2020 and this has proven handy to the needs of the students who were in need of these essential resources throughout the 'learn from anywhere' pandemic period.

Scanning for changes, several plausible scenarios, including the dominance of technology-enabled learning had been projected in the 2012 Scenario Workshop which adopted the CLA and the Integrated Scenario model of Scenario Planning. The Integrated Scenario model contends that the impossible can become, if not the plausible, at least the probable (Inayatullah, 2018). UTeM had cumulatively presented the Preferred scenario, Disowned scenario, Integrated scenario and Outlier scenario as shown in the Figure 1.

| **Preferred** | **Disowned** |
|---|---|
| • Number of preferred programs relevant to the global industry<br>• Advanced infrastructure with global recognition<br>• World Leading virtual technical university<br>• Metaphor – global brai  | • Identity trade-off<br>• Less hands-on<br>• Lost human touch and soft skills, no physical assessment<br>• Metaphor –brain drai  |
| **Integrated** | **Outlier** |
| • Competitive paid salary globally<br>• Sharing resources globally/global franchise<br>• Global Industrial based program with GLOCAL flavor.<br>• Metaphor – networking brain  | • Limited programs meeting industry needs<br>• Conventional way of delivery methods<br>• Less presence felt<br>• Metaphor – brain death  |

Figure 1. Apps University (Virtual University)

Note. From Transformation 2050: The Alternative Futures of Malaysian Universities (p.43), by Sohail Inayatullah and Fazidah Ithnin, 2018, Malaysia, USIM Press.

The compelling image of the "University in a gadget" implies an "Apps-based university", similar to a mobile application of which UTeM is envisioned to be a university with which there is easy access and easy 'to connect' (Ithnin et al., 2017). The framework to reinforce the emergence of the nomadic, mobile learners who are dependent not on the teacher or formal

education systems but on the network of knowledge and skills that are within reach - anywhere and anytime has been in place at UTeM and has since been continually developed since 2012.

## 6. The Process of Change (Behavior, Science and Technology)

Deconstructing the normalcy of the past, scenario planning directs our thinking towards foreseeable alternative futures that reminds us that while we cannot predict a particular future always accurately, by focusing on a range of alternatives, we can better prepare for uncertainty, indeed, to some extent embrace uncertainty (Inayatullah, 2007).

COVID-19 has, in its magnitude, forced an ultimatum for higher education to strategically embrace change and synchronously adapt to the changing landscape of the future (Inayatullah and Ithnin, 2018). Higher Education in Malaysia has long pondered to such radical possibility. Various foresight-based planning at the organizational level had been carried out and post workshop reports submitted albeit lack of urgency in execution.

Sardar (2021b) postulated that the post-normal times is a period of transition characterized by complexity, chaos and contradiction (Murray, 2020). The way is only forward and for higher education, specifically the MTUN universities which are focused on 'hands-on', is to quickly adapt to a new age normalcy which entails the recalibration in behavior, science and technology. The new norm of physical distancing, digitalization of services and technology-enabled communications has challenged higher education providers to shift towards more flexible modes of learning – both lifelong and life-wide.

Critical of the present and anticipative of the future, academics must be passionate and aligned to clear foresights of the preferred future. In the case of UTeM, the metaphor, "Always A Pioneer, Always Ahead", calls for a mindset change – behaviorally, thinking needs to be strategized ahead of time or crisis. Visioning and creating alternative futures becomes an expectation and not an exception.

Above all, the agility of a university to embrace transformation is imperative in securing its viability especially during unwarranted crises. Transitional strategies are crucial to avoid from being 'kodaked' (Inayatullah, 2020b). Entrenched ways of thinking and doing are definitive idle barriers to change. A mere 'turnaround' which only implies incremental progress while still being on the same plane, is not befitting and has a tendency of pushing an organization's thinking and actions towards a used future.

Necessarily, our response to the COVID-19 pandemic has enabled us to re-imagine the future that can be both fluid and malleable to human maneuvers; a set of unknown possibilities that can be optimized through various existential strategies (Saniotis, 2020). Maximizing the adoption of technology becomes a requisite to ensure that teaching and learning persist throughout the COVID-19 crisis. Access to technology, which was once a luxury, has become an irrefutable necessity. The alternative future of a technology-enabled university or 'University Anywhere' has effectuated by default. The pandemic, in all its extremities, has pushed an opportunity for the development of more innovative and flexible learning methods through ingenious use of technology-enabled, remote learning and digital tools. With the

Massive Open Online Courses (MOOCs) and ibooks, the learning process continues amidst the COVID19 predicament.

Similarly, technology-enabled medium has allowed for extant webinars, creating greater outreach for dialogues, discussions and conferences sans physical presence. This seamless learning scenario ignites global reawakening through the sharing of knowledge, solutions, expertise, thus affirming the metaphor of a global brain depicted prior. Learning, hence, becomes more fluid and is no longer bound by traditional semesters, residential time spent on campus is no longer necessary. Travelling to campus becomes a passé. Technological innovation driven by urgency has enabled mass accessibility to learning at the comfort of home.

## 7. The Way Forward

By and of itself, UTeM has garnered the strength to rise above the somber COVID19 by virtue of its methodical mapping of its future; guided by the CLA framework, UTeM had envisioned the preconceptions of changes that will have occurred in the higher education industry when its mission has been, or is being, accomplished (Curtis, 2010).

The depiction of a technology-enabled virtual university or University Anywhere, University@Apps and the SOHO working environment which were initially crafted as alternative futures, came to pass during the COVID19. The collective anticipatory scenario foresights had proven valuable and became its principal strategic framework.

Leaving the analog era for the mainstream digital era of a robust future, UTeM has since started canvassing its next phase of relevance in the Malaysian Higher Education scenario. Intensive discussions and groundworks for the Strategic Plan 2021-2025 has been carried out. The series of engagements with key stakeholders of the university, encompassing the board of directors, top management, deans and directors of faculties and centers, student representatives and alumni, had amalgamated into valuable outcomes. The University's next phase was triangulated into seven strategic goals as follows:



Figure 2. UTeM's 7 Strategic Goals 2021-2025

Based on the seven (7) strategic goals, rigorous discourses and presentations were carried out. Measuring on the success of the preceding strategic plan, the CLA method of mapping the

future has been replicated to guide this next phase. The stakeholders' CLA of UTeM's next five years, can be delineated as follows:

Table 4. Causal Layered Analysis (CLA) of UTeM's Futures 2012-2025

| GOALS | STUDENTS' UNIVERSITY OF CHOICE | EMPLOYERS' GRADUATES OF CHOICE @ TUAH* | SOLUTIONS PROVIDERS FOR INDUSTRIAL & SOCIETAL ADVANCEMENT | COMPETENT & ROBUST TALENT | VISIBLE & GLOBALLY PROMINENT | SMART & DYNAMIC CAMPUS | FINANCIAL SUSTAINABILITY |
|---|---|---|---|---|---|---|---|
| LITANY | UTeM as the best university in Higher TVET | Diversed future proof & employers' sought-after graduates. | Value creation through available expertise at university. | Technology scholars with pertinent knowledge and skills to support teaching and learning. | Positioning UTeM's visibility with the best among equals in the world. | Integrated, harmonious infrastructure within and outside campus | Anchored & sustainable financial growth. |
| SYSTEMIC | Specialised programmes locally approved & globally endorsed | Implementation of structured character-grooming programmes as graduates' added value elements. | Incorporation of TUNAI* in the university research, innovation and development initiatives. | Developing accomplished Researchers: Strengthening researchers' competencies to lead in strategic research fields that are highly relevant to the industry | Enhance initiatives towards global recognition and rankings. | Coordinated and connected campus planning. | Optimizing UTeM's Operating Expenditure |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | and societal needs. | | | |
| **WORLD VIEW** | Seamless and fluid recognition of programmes and accreditations. | Globally adaptive and holistic graduates imbued with the sound attributes of TUAH. | University as a wind tunnel for sustainable development. | Professional practitioners who are globally recognized, referred and respected by industry and society | World-ranked universities are well recognized and attract best students worldwide. | A dynamic and connected campus offers fulfilling student life-experience. | Financially sustainable operations increases confidence among stakeholders and investors. |
| **MYTH/ METAPHOR** | UTeM UNO | UTeM TUAH* | UTeM TUNAI* PARK | UTeM R.I.S.E* | UTeM CHAMPS | UTeM CONNECTS | UTeM TREE OF LIFE |
| **STRATEGY** | Provide transformative and experiential learning environment through flexible industrial-based curriculum and latest technology. Enhance students' life | Position TUAH icons through leaderships, sports, entrepreneurship, volunteerism. Engage students with impactful TUAH Go! Programs . | Enhance industry driven based projects. Develop holistic and highly competent technology scholar. Strengthen strategic linkages between UTeM-Industry-Community. | Inspired Educators: Elevating educators' talent and equipped with future ready teaching and learning innovative skills. • Strengthen researchers' competencies to lead | Ensure UTeM's visibility in the world-ranking platform. Amplify strategic and dynamic technology scholars through affiliation with renowned global | • • Enhance digital infrastructure & infostructure. Design and develop spaces/lands in-campus UTeM accordance to university physical | Increase student enrolment. Provide attractive programmes/activities which contribute to higher margins of profit. Strengthen asset monetization. Strengthen marketing initiatives. |

| | experience. Intensify high impact marketing. | | Promote Quadra-helix Engagement. | in strategic research fields. | researchers. Empower Strategic collaboration with government, industry, academia, and community. | development plan <br>• Provide high quality services to ensure on-campus facility are well maintained and up to the customer's expectations. | |
|---|---|---|---|---|---|---|---|

## 8. Conclusion

Scenario planning has played a substantial role in enabling UTeM to salvage its pedagogical narrative favorably throughout the disruptive COVID19 crisis. With all resolutions from the workshops factored in, the uncertain has become apparent and the University was able to realign steadily to the predicament of the pandemic while other universities had a lot more ground to cover. The strength of a technology-enabled university which was foresighted for UTeM as the preferred model of an agile technical university has not only pulled UTeM out of the raging pandemic but also synchronously reinforce its buoyancy as an accomplished technical university.

• RISE is an acronym for Responsibility, Integrity, Sustainability and Empathy. These are the attributes that UTeM aspires of its staff members.

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