University of the Future: A Conceptual Business Model of University Putra Malaysia

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Abstract: Higher education enrolment in Malaysia has increased over the last 10 years. Malaysia must continuously improve to thrive in an increasingly competitive global economic environment including the transformation of its Higher education system. One of the transformation initiatives is digital transformation of the Malaysian universities. Hence, the focus of this paper is to digitally transform University Putra Malaysia (UPM). The methodology used is based on COBIT implementation framework, literature review, interview, and business modelling framework. The main contribution of paper is the conceptual business model and game changers specifically for UPM, and generally for other universities.

Keywords: Digital transformation, BMC, higher education, UPM.

I. INTRODUCTION

The very nature of Higher Education, how it is conveyed and the part of the university in the public eye and the economy is changing and will keep on changing altogether in the following decade. university are contending all around for understudies, scholastics and financing, and just those that stay pertinent and use new computerized abilities will profit in this advanced age. this paper hubs and focuses on the essential of digital transformation to the targeted public university in Malaysia - in terms of making a good use of the advantage offered by new advance technology in the higher education system. While it is undeniable truth that this university already implement some of the technology as part of the education system but technology that work as a support alone is just not enough. It should be at the core of the university which combines all of the processes in a single platform. Hence, the university should be aware of the importance of new digital transformation [1]. These University's neglect to value that they needn't bother with a computerized procedure – only a business methodology that is fit for the advanced age. Remaining important in the advanced age requires a key vision for the entire organization, a dream that is driven by senior administration with help from numerous offices, not simply IT. A lack of digital literacy amongst academics, students and staff means that early engagement and interaction to build the right support networks is essential to achieving sustainable change across the entire institution. Universities that are not equipping themselves to adapt to this new digital era will be left behind. Whether you want to be a digital leader or simply stay relevant in the digital age, the time to act is now. Furthermore, even though the Malaysian higher education has made significant progress particularly since the Government decided to establish a separate Ministry of Higher Education in 2004. "Higher education enrolment has increased by 70% to 1.2 million students over the last 10 years. The growth rate of research output and quality has been one of the highest in the world, and Malaysian institutions are ranked strongly amongst our Asian peers. Malaysia is also now a top 10 destination for international students. But, there are still some challenges in term of digitalizing to over come this challenge MOHE come up with idea of MEB "That is why we have adopted the Malaysia Education Blueprint 2015-2025 (Higher Education), which will transform Malaysia's higher education system to meet these new challenges.".an ambitious plan which will guide Malaysia through to 2025 and beyond". MOHE stated that. [21]

II. BACKGROUND

University Putra Malaysia (UPM) is recognized by the independent government assessments as one of Malaysia's leading research universities offering undergraduate and postgraduate courses with a focus on agricultural sciences and its related fields [4]. Founded in 1931 as the School of Agriculture, UPM's main campus is in central Peninsular Malaysia, close to the capital city, Kuala Lumpur and next to Malaysia's administrative capital city, Putrajaya. It was formerly known as University Pertanian Malaysia or the Agricultural University of Malaysia. Now, UPM offers a wide range of undergraduate and postgraduate programme in most fields such as science, engineering, medicine, veterinary medicine, business and social science. It was ranked as the joint 229th best university in the world in 2017 by Quacquarelli Symonds. and it was ranked 36th in Best Asian Universities and the 2nd best university in Malaysia [2]. Furthermore, University Putra Malaysia has aimed to be in the top 200 in the world by 2020. [13]

III. PROBLEM STATEMENT

The difficulties ahead for advanced education not simply in Malaysia but rather around the globe seems driven by disruptive change in the powers of technology, financial, political and instruction area which debilitate to undermine its business model, governmental help and working mission. These powers additionally include dramatic new sorts of economic competition, troubles in developing income stream as we had previously, relative decrease in government support, genuine and some obsolete strategies for teaching and learning that have been unchanged for years [5]. Malaysia must continuously improve to thrive in an increasingly competitive global economic environment including the transformation of its Higher education system. One of the transformation initiatives is to digitally transform University Putra Malaysia (UPM) in total including, business model, teaching, learning (T&L), R&I, and services.

IV. METHODOLOGY

A. Comparative Analysis:

This is true that the need for digital transformation in higher education has been very important and widely known and implemented by some of the world class university. Therefore, to fully understand the concept of digital transformation, it is important to make a comparative analysis with other successful universities worldwide such as Harvard and Oxford. Thus, this will help the university to compare their current state of performance and set a new benchmark for better digital transformation.

B. 4 Lenses of Innovation:

Rowan Gibson shares his opinion on how organization can go through digital transformation as shown in Figure 1.

Figure 1: Lenses of Innovation

Basically, it emphasis on where and what angle exactly they can start the digital transformation in the organization. [17].

C. Interview:

To explore more on how UPM is working right now and what are the transformation that can be made, we have interviewed with the head of innovation and e learning canter for academic development at UPM. The findings from the

interview help us more in understanding how transformation can be made. As an IT unit, IDEC supposed to be the infrastructure provider for any IT process such as storage, servers, software, hardware and many more. However, due to several circumstances, IT unit was not able to fulfil all the requirement. To overcome the situation. One way is to facilitate or provide away that connects the university with the public, government and industry.

a. COBIT:

COBIT 5 is an enterprise level ITGF that applies to business from an executive, strategic, managerial and operational level. COBIT 5 gives a far-reaching system that helps enterprises in accomplishing their targets for the governance and management of enterprise IT and helps enterprises make ideal incentive from IT by keeping up an adjust between acknowledging advantage and optimizing risk levels and resource use. It unifies other standards, practices, and frameworks and further amalgamates the principles of earlier versions of the CoBIT frameworks into a single ITG framework. The components that make up CoBIT 5 are its principles, enablers, architecture and knowledge base [16].
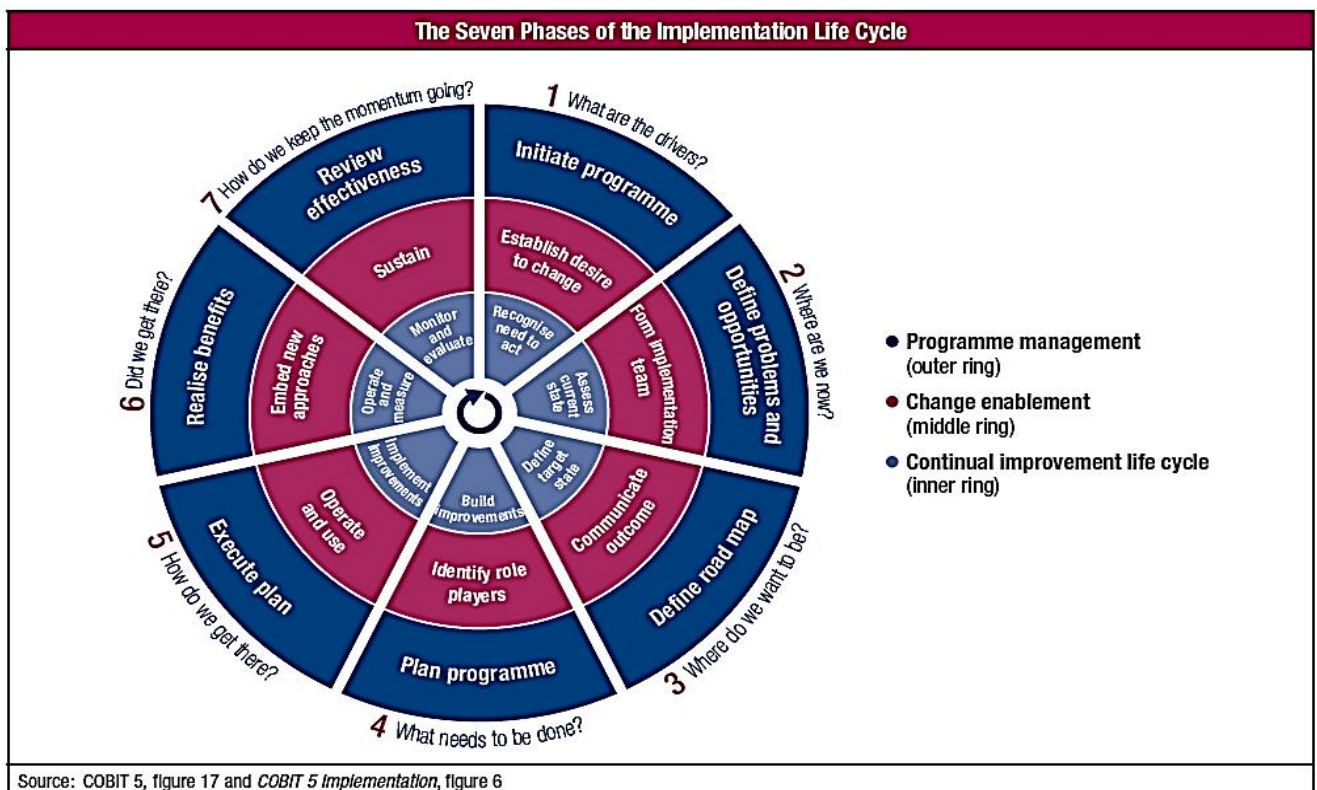

Figure 2: COBIT

V. SEPARATING GOVERNANCE FROM MANAGEMENT:

The COBIT 5 framework makes a clear distinction between governance and management.

These two disciplines

- Encompass different types of activities
- Require different organisational structures
- Serve different purposes

Governance In most enterprises, governance is the responsibility of the board of directors under the leadership of the chairperson. Management In most enterprises, management is the responsibility of the executive management under the leadership of the CEO. Governance ensures that stakeholders needs, conditions and options are evaluated to determine balanced, agreed-on enterprise objectives to be achieved; setting direction through prioritisation and decision making; and monitoring performance and compliance against agreed-on direction and objectives (EDM).

Page | 208

VI.   LITERATURE REVIEW

The reason for higher education is to prepare understudies for accomplishment in life either in their individual life, work environment and in the social orders. Although this reason has stayed steady for centuries, the world around advanced education experiences consistent change [4]. The University campus, the library, the classroom and the customary age understudy might be basic features of advanced education yet may not satisfactorily portray advanced education's future.

a) DRIVERS OF CHANGE:

This five key point will transform the higher education sector [12]. Our research and University discussion featured various significant powers affecting the advanced education segment in UPM and globally. These powers combine around five key drivers of progress. The principal area of this paper investigates every one of the five drivers and their feasible effect in the decade ahead.

1. Contestability of markets and funding

    • Fiercely competitive domestic and international student markets

    • Challenges to government funding

    • Competing for new sources of funds

2. Global mobility

    • Emerging markets getting to be international-scale rivals in the global student market

    • Academic ability progressively sourced from developing markets

    • Emergence of tip top, truly worldwide University brands

3. Integration with industry

    • Scale and depth of industry-based learning

    • Research partnerships and commercialisation

    • Industry as competitors in the certification and delivery of content

4. Digital technologies

    • Bringing the university to the device — MOOCs, COOCs, SPOCs and the rise of online learning

    • Bringing the device to the university — the use of digital technologies in campus-based learning

    • Blended learning

5. Democratisation of knowledge and access

    • Ubiquitous content

    • Broadening of access to higher education

    • Increased participation in emerging markets

The word "digitalisation" has been used since the early seventies. First it was about IT and automation, then came the internet and e-business, later the mobile internet, social media and so on. Through this, the message has dependably been that the world will change fundamentally [7]. One of the most recent new advancements on the computerized front is the modern web. Purchaser business has just been affected intensely, and now it's the ideal opportunity for assembling to likewise go computerized. These advancements are developing quickly, and when connected alone or together, the outcomes can be astonishing. It is anything but difficult to picture a radical new reality of canny robots performing confounded errands, rambles flying noticeable all around making express conveyances to clients, on-line information envisioned on eye glasses for performing upkeep activities, save parts printed with 3D printers on-request, payload proceeding onward the street and ocean without drivers, just to specify a couple of moderate situations.

b) Megatrends:

There are a few things that will be greater and greater in future. The content portrays how computerized future, business rising, worldwide commercial centre, urban world, ingenious planet and wellbeing reconsidered will work later on. Digital future Energized by the merging of social, versatile, cloud, big data and developing interest for whenever anyplace access to data, innovation is disrupting all regions of the business enterprise. Disturbance is occurring over all industries what's more, in all geologies. Gigantic open doors exist for undertakings to exploit associated gadgets empowered by the "Web of Things" to catch immense measures of data, enter new markets, change existing items, and present new business and conveyance models. however, the development of the digital enterprise also shows significant challenges, including new rivalry, changing customer engagement and business model, remarkable straightforwardness, security concerns and cybersecurity threats [8]. Technology is also changing the ways that people work and is increasingly enabling machines and software to substitute for humans. Enterprises and individuals who can seize the opportunities offered by digital advances stand to gain significantly, while those who cannot may lose everything.
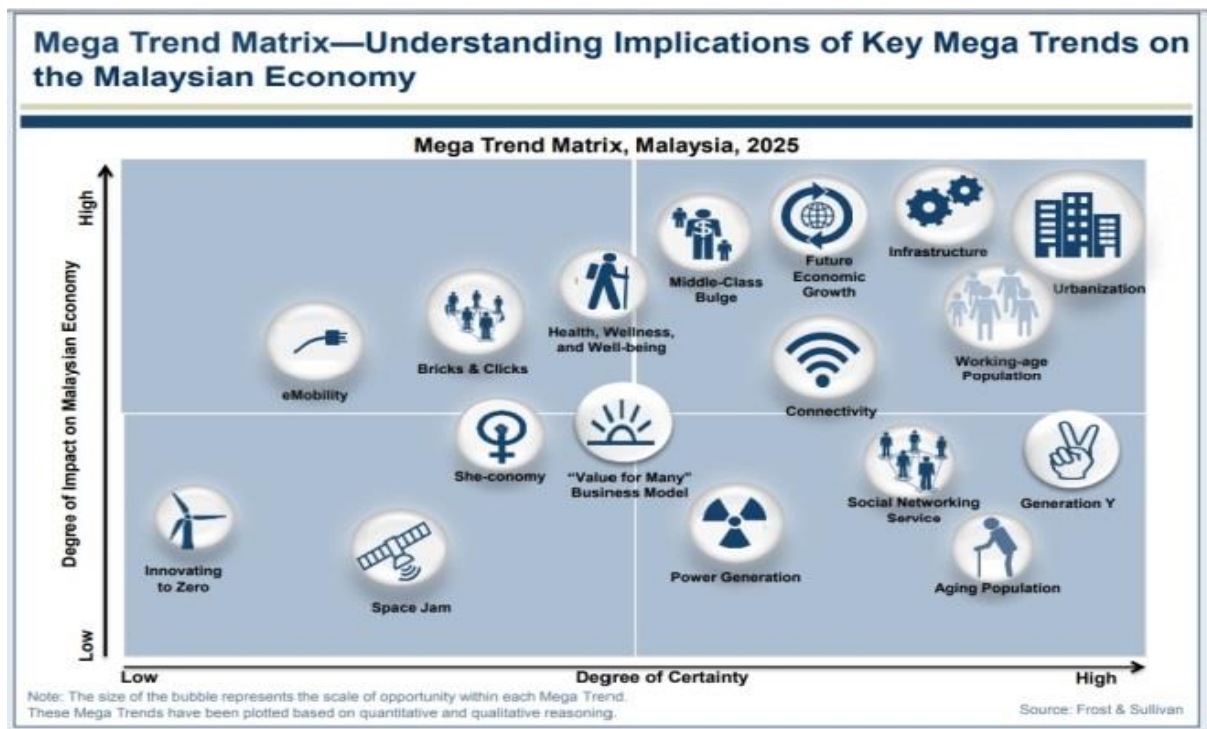

Figure 3: Megatrends

c) MEB 2015-2025:

The Malaysian higher education system has growth from quality to quality over the last decades. In the last ten years alone, the framework has made huge picks up in student enrolment. These achievements are a testament to the drive and innovation of the Malaysian academic, the Ministry of Education recognizes that the system will need to keep evolving to stay abreast with. Planning Malaysian youth to flourish in this complex and consistently changing future will require a similarly principal change of how the advanced education framework and higher learning organizations (HLIs) as of now work. In 2013, the Ministry along these lines started building up the Malaysia education blueprint 2015– 2025 or the MEB (HE). to pioneers of Malaysian HLIs and individuals from people in general. Malaysians, and that will prepare Malaysia for the last leg of its voyage towards turning into a high-pay country [9]. The first four Shifts focus on outcomes for key stakeholders in the higher education system, including students in academic and TVET pathways, the academic community, as well as all Malaysians participating in lifelong learning. The other six Shifts focus on enablers for the higher education ecosystem, covering critical components such as funding, governance, innovation, internationalization, online learning, and delivery.
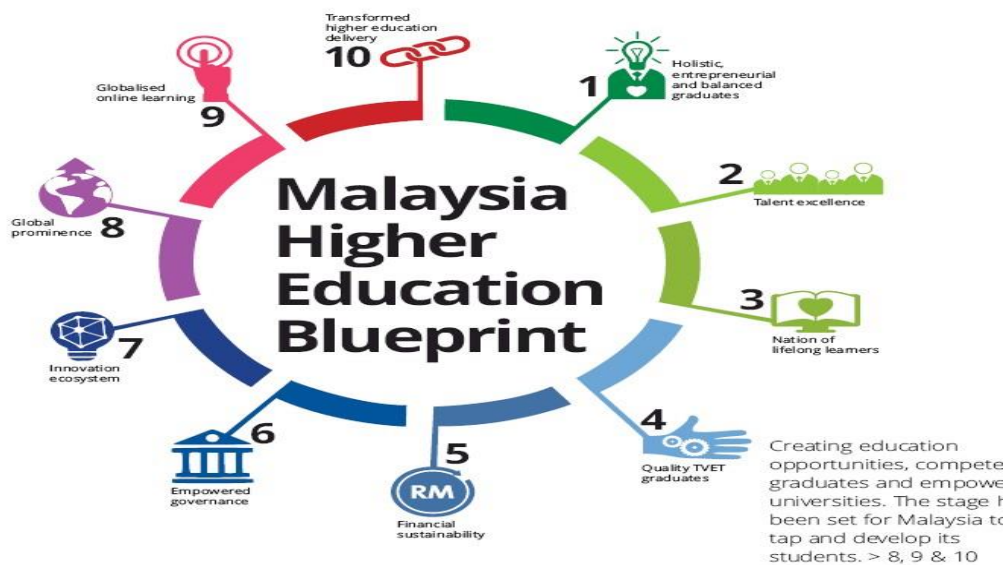
Figure 4: MEB 2015 – 2025

Digital transformation – Shift 7, 8, 9, 10

Shift 7 Innovation Ecosystem:

How Will We Achieve This? To achieve these outcomes, the Ministry will elevate a few priority research areas critical to Malaysia's growth, catalyse private sector and industry involvement, as well as create a supportive environment to facilitate the commercialisation of ideas. Key initiatives include:

- Focusing on creating scale and growth in a few strategic research areas which are linked to national priorities for economic growth, and where Malaysia has distinctive capabilities;

- Playing a catalytic role in securing investments, particularly through matching schemes like the Private-Public Research Network (PPRN), and redesigning existing financing criteria and grant review processes for greater transparency and accountability; and

- Incentivising HLIs to establish supporting systems for the commercialisation of ideas, such as technology transfer offices, mechanisms for the co-utilisation of infrastructure, enhanced data monitoring systems, and talent development programmes. [14]

Shift 8 Global Prominence:

How will we achieve this? To achieve these outcomes, the Ministry will enhance the end-to-end international student experience, increase brand visibility, and strengthen existing and new markets for international students. Key initiatives include:

- Collaborating with other ministries and agencies to improve and streamline immigration procedures and processes to match international best practices, for example, through the introduction of multiple year student visas and the provision of an accelerate "green lane" approach for students from HLIs that have consistently demonstrated high quality standards;

- Increasing the proportion of postgraduate international students and students from high priority markets such as ASEAN nations, by diversifying and raising the quality of niche programmes; and

- Strengthening the promotion and marketing of Malaysia's higher education system through targeted measures such as hosting major international education conferences and strengthening MyAlumni. [14]

Shift 9 Globalised Online Learning

How will we achieve this? To achieve these outcomes, the Ministry will work with HLIs to build the capabilities of the academic community and explore the establishment of a national e-learning platform to co-ordinate and spearhead content development. Key initiatives include:

- Launching MOOCs in subjects of distinctiveness for Malaysia such as Islamic banking and finance, in partnership with high profile international MOOC consortiums like EdX and Coursera, so as to build Malaysia's global brand;

- Making online learning an integral component of higher education and lifelong learning, starting with the conversion of common undergraduate courses into MOOCs, and requiring up to 70% of programmes to use blended learning models; and [14]

Shift 10 Transformed Higher Education Delivery

The Ministry recognises that a well-conceived strategy or plan is only the starting point. The MEB (HE) will not succeed without effective implementation, as well as commitment and collaboration across the Ministry, HLIs, the academic community, and relevant stakeholders. How will we achieve this? To achieve these outcomes, the Ministry will redefine the roles, organisation, and operating model of the Ministry, enhance delivery capabilities within the Ministry, and harmonise across public and private institutions. Key initiatives include:

- Launching the University Transformation Programme by working in close partnership with pilot HLIs, including identifying, codifying, piloting best practices and tools, and disseminating "playbooks" (buku panduan) to all HLIs on critical improvement areas;

- Restructuring the Ministry organisation to focus on core functions, create stronger links between HLIs, the community, and industry, and promote greater efficiency in operations, particularly for key frontline services like student admissions and international student services; and

- Create greater consistency in performance standards and regulations across public and private HLIs, by enhancing MQA processes and quality assurance frameworks, and eliminating unnecessary red tape [14]

d) MOOCS/ COOCs/ SPOCs:

The idea of harnessing trends from 4 lenses of advancement is really a mind opener to the university's method for conveying training. People in general university's conventional methods for educating and gaining is no less from others. However, focusing exclusively on the customary techniques is not any more an alternative in today's world. Numerous eminent University begin to take another advance forward by applying the idea of mechanical driven University. Another pattern of training that depends on data innovation has developed which are more advantageous for both the University and understudies. In a roundabout way, this new pattern will probably offer a positive effect to the university's accomplices too. One of the mainstream patterns is Massive Open Online Courses (MOOCs) display, for example, that gave by EDX, Coursera, Udacity and Future Learn. Even though this model is still in the experimentation period of its usage, there are a lot of reasons why University should participate in it. The innovation of MOOCs display change the way University conveys courses to be more interactive while creating a new rush of educational approach that lower the cost and increment the effects. It additionally turns Malaysia's higher education system to be more reasonable and available. Furthermore, Lynn Pasquarelli, leader of the Association of American Schools and Universities, share her feelings on how MOOCs have catalysed workforce improvement around flipped classrooms, taking into consideration more drew in learning in customary classrooms, and provoked research and dialogs around the advantages of giving distinctive types of evaluation and more frequent feedback to students. The availability of MOOC program does not only benefit the currently enrolled students but also to those who did have the chance to do so in the past [10]. On top of that, it can be one of the platforms that offer long distance education for those who have limitation.

SPOCs

The SPOC-based learning model has some special learnings features over the previous learning models. firstly, preserves students' learning attentiveness. It has modular mini-lectures and highly pertinent exercises. The students, before the classroom session, self-study the mini-lectures through a series of videos followed by specific and targeted exercises to guarantee understanding. Secondly, this model satisfies individualistic learning needs. Students can replay the videos online, freely arrange their time, place of learning, and pose insightful personal questions towards the course. SPOCs mainly differ regarding their target audience: they are not open to all and are limited to a maximum of around 30 participants.

COOCs

Community Open Online Courses (COOCs) model to explore the implications for Popular Education approaches in online space.to make it short, COOCs are created by and for each specific company and its staff.

e) UPM current digital initiatives

University Putra Malaysia (UPM) will launch the Putra Future Classroom, which will serve as a canter of reference for best technology integrators in teaching and learning for all parties. about the future use of technology in UPM "We have introduced and launched in the February Putra Future Classroom In the faculty of educational study, where they use the latest technology including ER/VR/AR and the latest gadget in E-learning Like touch screen and smart bored" head of innovation and e learning canter for academic development of UPM said that. Furthermore, UPM also has some of the application and system that they have now such as student academic, distant learning, finance, human resource(HR), administration (for e-mail), web portal, etc. Also, UPM uses for ELMS they are using E-learning model 2 for their system and staff use a computer lab so the aim is to enhance the teaching and learning process [15].

VII. INITIAL BUSINESS MODEL CANVAS

In order to have clear current situation of Malaysian universities, it is easier to use Business Model Canvas (BMC), Figure 5. Below is the current BMC which is how Malaysian universities work [4]

Figure 5: initial BMC

INITIAL VALUE PROPOSITION DESIGN CANVAS VPC:

Basically, VPC is a straightforward way to understand your customer's needs, and design products and services they want. It works in conjunction with the Business Model Canvas and other strategic management and execution tools and processes. After exploring the customers' needs and problems, the value proposition canvas which consists of value map and customer profile has been created. The objective of the value map is to describe explicitly how the products and services create value to the customers whereas the customer profile visualizes what matters to the customers in a sharable format.

Table 1:

CUSTOMER SEGMENTS	CUSTOMER JOBS	GAINS	PAINS	GAIN CREATORS	PAIN RELIEVERS	PRODUCTS & SERVICES
Students	- Attend lectures -Purchase academic materials - Curriculum involvement	-Academic qualifications - Knowledge	-High tuition fees - Expensive academic materials -Longer time to complete the study	-qualification -Quality education	-Student scholarship -Study loan - Short semester option -semester break	- Qualified lecturers -Recommendation on scholarships - Good campus facilities
Endowment Contributors	-Donate cash -Donate assets	-Feel good factor -Making others happy -Building reputation	-No pains I guess	-Social Responsibility -Relationship building -Mutual respect	- Tax exemption	- Improvement in university assets -Student scholarship
Investors	* Investment * Do research on the university * Evaluate the potential gains	* Financial gains * Shareholder value	* Monetary investment * Key personnel involvement * Bad ROI	* A stake in the university * Evolve with the university	* Diversified portfolio * New learning curve	-University sustainability performance
Government	-financial support -evaluate students result	-Educated citizen -economic growth	-Financial crises -lock of subject experts	-Skilled workers Better education system -educated nation	-College produce more experts	-Produce fresh graduates

VIII.   INTERVIEW/VALIDATION WITH UPM

University Putra Malaysia (UPM) will launch the Putra Future Classroom, which will serve as a centre of reference for best technology integrators in teaching and learning for all parties. "We have introduced and lunch in February Putra Future Classroom In the faculty of educational study, where they use the latest technology including ER/VR/AR and the latest gadget in E-learning Like touch screen and smart bored also, for the future every faculty will have a future class room" head of innovation and e learning centre for academic development at UPM said that. Moreover, the question about the future 4.0 Mr. head of innovation and e learning centre for academic development of UPM said "In Industry 4.0 everyone think that will be robotic, but this is not how we deal with technology we will focus in transfer our system to the online and technology part, and we are not going bound with VR technology and everything we don't need, we believe that technology must be used but step by step after making the right research and develop the perfect model, then only we can introduce it to our UPM system".

IX.   THE ENHANCED BUSINESS MODEL CANVAS

After doing the interview in validating the initial biz model, the enhanced biz model is shown in Fig. 6 below.

Fig 6: New BMC

a. Customer Segments:

There are four customer sections distinguished students, donation(waqf) contributors, industry experts and other instruction suppliers. For UPM, there are a couple of sub-classes of students which have been distinguished which is domestic, international, undergrad, post-graduate and virtual. Also donate (waqaf) supporter are would assume an essential part as the subsidizing being slimmer by the government.

b. Value Proposition:

The value that the UPM would create for the students is the Islamic environment of knowledge which it will be the pioneer university in Malaysia that integrates the qualities of "iman", "'ilm" "akhlaq" "halifa of Allah" and "rahmataa lil-allamin" through Islamic education. In addition, the value proposition for the students is digitalization of learning that takes the students to a different method of learning as compared to the traditional way. The UPM will also focus on research and publication with a special attention in the crucial areas and topics.

c. Customer relationship:

To keep up a good relationship with the students, UPM will outsource its regulatory division. The cost productivity and great administration quality by outsourcing will surely benefit the university and its students. Besides, UPM will lead different advertising exercises for the ground level and through advanced media to attract the students to select in the University's projects. To guarantee there is development in student enrolment, the University will name enlistment operators in chose nations. For keeping up the relationship for all the client fragments, UPM will setup the Customer Relationship Management system through distributed computing. An effective CRM system will keep up a positive association with every customer.

d. Channels:

UPM convey its incentive for the most part through computerized as all the customers segments will have the capacity to communicate with the University utilizing this device. Moreover, there will learn lab coordinated with consistent access to data and introduction advancements supplanting the regular classrooms the learning lab will be valuable for the two understudies and industry experts [12].

e. Revenue Streams:

Educational cost charges paid by student is one of the income streams for UPM. Be that as it may, from the assets of donate(waqaf) supporters the University will have the capacity to give free instruction to destitute students who are qualified. As UPM means to direct various research for the business, having this cooperation will make new income stream for the University. Building research focuses will be good as this could be utilized by the University and industry experts.

f. Cost Structure:

The cost acquired to support UPM would be settled costs that comprises of building, representative wages and so forth. There will likewise be benefit. The University will also need to pay for scholarly properties charges for having the advanced tool set up.

g. Key Partners:

Most of the University course enrolment will be from the more youthful students. Such as, one of the key accomplice for the University is student's folks. The legislature also assumes an essential part as an accomplice as every one of the materials and courses offered must be endorsed by the administration.

h. Key Resources:

The key resources are the most important assets for UPM which their lecturers and university buildings are. Furthermore, the university IT infrastructure and digital content is crucial for UPM as it will be highly dependable on these assets.

X. FUTURE WORK

UPM should be prepared by adapting the concept of digital transformation and place technology at the core of the university so that the organization will not be drowned and forgotten in the sea of techno-world.

A. Answering the needs of Industry:

Industry needs reliable workforce with up-to-date skills and knowledge. But, unfortunately industry and academic leaders revealed that the fresh graduates are not as skilled as they should be such as analysis and problem solving, collaboration and teamwork. Therefore, there is a need to by way of collaborating with industry, they are able to instil the skills needed for their organization into the students" curriculum practices. They can deliver and share knowledge with university's students and at the same time, open up a job opportunity to those who performed. In fact, they can evaluate students, first hand, before considering their placement into the organization. Eventually both parties are benefiting from this as the industry able to ease the process of recruitment and the university, able to increase the employability rate of fresh graduates.

B. MOOCs:

Many learning and training professionals are, by now, familiar with the term "MOOC," but the truth of the matter is that MOOC is only the beginning when classifying technology-friendly modes of learning and training. The importance of this course is that it is open to a lot of people students or employees at the same time. MOOCs represent a distance-based approach to e-learning wherein many learners may participate in a collaborative and interactive fashion. Course contents are distributed using a Web platform under a per-course or subscription model. The unique features of MOOCs include mass participation, social collaborations, interactive forums, and open-ended outcomes. MOOC adoption employs various technologies and solutions including Big Data, analytics, gamification and Cloud. Furthermore, there are a few key market factors to consider with MOOCs, including low-cost certification, leveraging various technologies (data; smartphone, tablet and wearable device proliferation; and flexible learning experience), cost reductions for corporate training and others. Arguably, one of the main growth drivers of today's MOOC industry is cost reduction for learning and

development (L&D) programs at major corporations. Therefore, UPM can take full advantage of this in order to take a step forward to digital transformation.

C. Device in Class:

Though, the main aim of technology adaption is for intensify learning process and not to replace the traditional concept altogether. But, in this digital age, bring your own device (BYOD) concept is important. Because, the existence of smartphones, tablets and laptop make things become easier for students. It is portable, light, can access internet and provide a lot of useful application. BYOD allow and encourage students to use their own devices for the sake of learning. No more needs of bringing books to class or going back and forth to the library.

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