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Malaysian University of the Future: A Conceptual Business Model

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Abstract: **Higher education enrolment in Malaysia 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. This paper identifies the main forces impacting the higher education industry locally and globally, and the opportunities, challenges and implications. It also lists the emerging trends of higher education and technology, understand the model of university of the future and examines different business models for online higher education. The findings can use to develop a new IT Strategic Plan (ISP) for transformation to university of the future in Malaysia.**

Keywords: **higher education, university of future, digital transformation, ISP, BMC.**

1. INTRODUCTION

Home to countless of both local and international universities, Malaysia is known as one of the most affordable cost of quality tertiary education. In fact, Malaysia has continuously made an improvement and innovation in their higher education sector over the years to attract more students to study here [1]. Recently, there has been a talk on transforming local universities to become an organization that offers world class quality that support information technology. Unfortunately, there are few universities that still far lacked behind in term of utilizing the existence of technology and one of it is the public university that is located in Kuala Lumpur. Not only in Kuala Lumpur, had this university also consisted of few other branches located in other state across the country. This situation is quite alarming due to the nature of this digital era where technology and digital transformation has become one of the main pillars that ensure the survival rate of Malaysian higher education system.

O'Connor and Moodie, in one of the speech mentioned that, technology is changing the way university teach, research, support students and administer themselves [2]. While one needs to temper the hype of technology boosters, and while universities will be affected by some new developments less than others, more big changes are expected to come. This was mentioned for more than a decade ago when technology in education is still at its early age and of course it offers a greater change in today's world as technology has become part and parcel of citizen's everyday life. Hence, it no wonders that technology hold a vital role in higher education system.

It is true that technology has become threat to the traditional management of the university but it also offers a whole lot of new opportunities to improve higher education system to overcome the new challenges that university yet to face and currently facing. In fact, according to the statistics, in 2014 only, 81% of students used smartphones and tablets to study [3]. This proves that the means of education is changing rapidly in line with the fast growing innovation of technology. Students are no longer solely depends on physical books but more and more, change their way of study towards

technological-driven environment as it is proven to be effective and save a lot of time. Thus, the main concern is that how this university can be encouraged to take the first step in transforming their way of doing things using technology.

To that end, this paper focuses on the need of digital transformation to the targeted public university in Malaysia - in terms of making a good use of the benefits offered by 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 integrates all of the processes in a single platform. Hence, the university should be aware of the importance of digital transformation.

This paper proceeds in 5 main sections. First is the problem statement which is exposing the reasons why the university needs digital transformation. Next is on the methodology, indicating methods and benchmarks for transformations of other universities by leveraging and harness on the use of digital technology. Next is conducting literature review. Later, analyze findings from literature review by utilizing tools such as 4 Lenses of Innovation. Next, is formulating initial Business Model for University of the Future. Then, interviews were conducted based on the initial Business Model. Lastly, establish the enhanced Business Model that will lead to University of the Future.

PROBLEM STATEMENT:

Digital technologies will drive the realization of tomorrow's "intelligent cities." Digital oil fields will lead to increased savings and output in the energy space, while "smart grids" will revolutionize the production, delivery and use of electricity worldwide. The ability to create digitally based business models has lowered the barrier to creating new and innovative ventures for entrepreneurs around the world [4]. With current and future world's situation, all field will transform including the education system. In order for university especially in Malaysia to cope with the situation, it is important for them to be aware or informed with what are happening with current global technology.

There are several reason why Malaysian universities should transform and guidelines on how universities work nowadays with the technologies. First, democratization of knowledge and access.

"Teaching methods have to change. We can't rely on delivering content anymore – it's all about contextualization, ways of thinking, and the student experience."-University Provost-

Before this, universities holds the sources of knowledge physically and philosophically on their library, faculty domains and research institute where internal people such as students and staffs of the university only are able to accessed for it. However, with current technology, the knowledge is open to anyone globally with element of mobility; anytime, everywhere and on any devices. This had bring a huge impact on China's tertiary education participation where it increased from 8.0% to 25.9% in the first decade of this century and is likely to double again in the next 10 to 15 years [5].

Second, contestability of markets and funding. While traditional universities rely heavily on government appropriations and private donations, a future university must be self-sufficient and respond to market forces. The market is a place where it is naturally forced future university to offer an educational product that is valuable to students and to do so at a reasonable price. Traditional institutions, however, are not always subject to this threat of **''creative destruction''** [6]. Figure 1 shows that the public universities' operating expenditure in budget 2016 and 2017 [7]. It shown quiet a decrease for most of the universities. This is to force the universities to able to generate their own funding rather than rely on the government.

A number of universities that had previously felt secure in their market shares found themselves confronted by losses in share of 5-10% or more as 2011 first preferences. In Victoria, Canada for example, four universities lost 3.5% market share or more [5].

The third reason why university should changes is the digital technologies. Not only education field, this digital technology has disrupt many other fields such as media, retail, entertainment and many more. However the disruption made are not bad. It links all field together and bring convenient environment to the education field.

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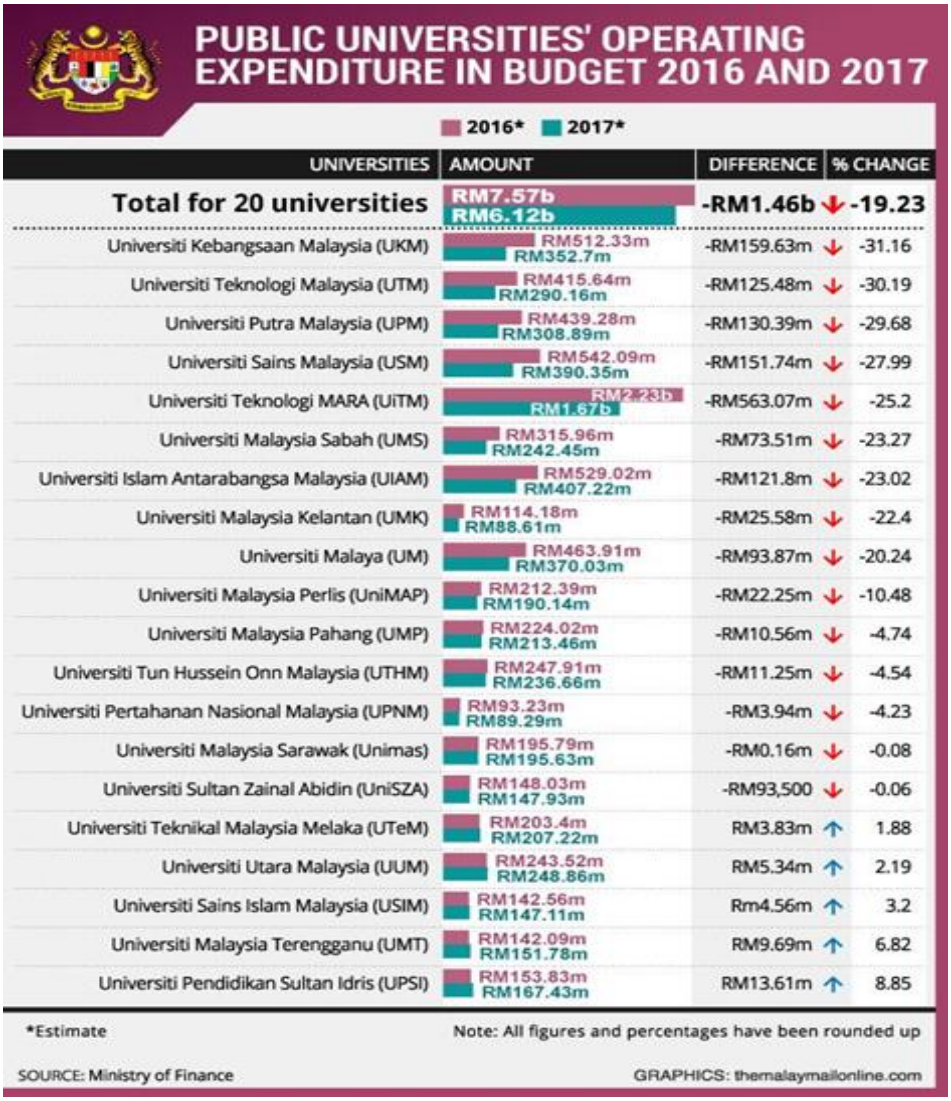

Figure 1: Public universities operating expenditure

For example, digital technologies will not cause the disappearance of the campus-based university. Campuses will still exist as places of teaching and learning, research, community engagement, and varied forms of student experience, assuming universities can deliver a rich, on-campus experience. But digital technologies will transform the way education is delivered and supported, for example through applications that enable real-time student feedback, and the way education is accessed in remote and regional areas, both in the developed and developing world.

Digital technologies will also fundamentally transform the way value is created within higher education and related industries. For example, new technologies will enable public and private providers to specialize in parts of the value chain which is content generation, content aggregation, mass distribution, certification, and commercialization and so on. New technologies will enable media companies to enter the university sector, either in partnership with incumbents, or potentially in their own right. The so-called Massive Open Online Courses (MOOCs) are an early stage example of the search for new models. Some of these models will decline and fail, others will create very substantial economic value.

The fourth reason why university should change is global mobility. Global mobility will continue to grow for students, academic talent, and increasingly for university brands. International students have been the lifeblood for Malaysian universities. The international student market is growing but will fundamentally change in structure in the coming decade and beyond. Likewise, the sources of academic talent will become more diffuse as academics from emerging markets become increasingly mobile and in demand, providing a growing source of talent for universities in both developed and developing economies alike.

Global mobility of academic brands is a newer phenomenon, but is also growing in importance. 'MOOC-based' distribution of content by the likes of Harvard, MIT and others is creating a global brand impact, if not revenue at this stage. The likely outcome over the next 10-15 years is the emergence of a small number of elite, truly global university 'brands'. These global brands of the future will include some of the 'usual suspects' which is a subset of Ivy League and Oxbridge institutions, as well as a number of elite institutions from China. China's 'C9' institutions have the resources, government support and intent to achieve global elite status. This will drive new partnership opportunities and new sources of competition for Malaysian universities.

The last reason why education system of university should change is integration with industry. The relationship between industry and the higher education sector is changing and deepening. Industry plays multiple roles which is as a customer and partner of higher education institutions and, increasingly, as a competitor. For universities to survive and thrive, they will need to build significantly deeper relationships with industry in the coming decade. Scale and depth of industry based learning and internships, for example, will become increasingly critical as a source of competitive advantage for those universities who have the industry partnerships and pedagogy to do it well. Thus, industry will increasingly compete with universities in a number of specialist professional programs. Accounting industry bodies already provide a range of specialized postgraduate programs (CPA, CA, CFA etc). Other industry groups, for example engineering associations and pharmacy guilds, may play an increased role as certifiers and deliverers of content.

2. METHODOLOGY

A. Comparative Analysis:

The need for digital transformation in higher education has been widely known and implemented by some of the world class university. Hence, a method of comparative analysis with other successful university like Harvard and Oxford is necessary in order to fully understand the concept of digital transformation to the university done by the expert. This approach helps the university to compare their current state of performance and set a new benchmark for better digital transformation.

B. 4 Lenses of Innovation:

According to his book, Rowan Gibson shares his opinion on how organization can go through digital transformation following the concept of 4 lenses of innovation as shown in Figure 1.2.

Figure 1.1: 4 Lenses of Innovation

Based on this methodology, it emphasis on where and what angle exactly they can start the digital transformation in the organization. It also explain the steps of planning strategies for changes within organization to ensure the successfulness of the organization in recent modernize world [10].

C. The Innovators' Method:

This method of the ideas from Nathan Furr and Jeff Dyer tells us how successful innovators work and why. According to Furr and Dyer, it's all about looking for a problem, developing prototypes and establishing a solid business model. They have devised the Innovator's Method to help us do all of these things successfully, by going through each of the following

six stages; insight, problem, solution, Biz Model, pivot, Scale It. By following these six key steps, entrepreneurs will be able to come up with innovative ideas that are sure to sell [11].

D. Interview:

In order to get more exposure on how higher learning education are working right now and what are the transformation that can be made, we have interviewed a former staff in Information Technology Department (ITD) of one of the public higher education. The findings from the interview help us more in understanding how transformation can be made. As an IT unit, ITD 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 fulfill all the requirement. They did perform their best but there are some limitations.

There are several ways to overcome the situation proposed by the former staff. One of it is by having a one stop center that can connect the university with the public, government and industry. In order to implement this, university will play the vital role in making sure that the public, government and industry are aware with the one stop center.

3. LITERATURE REVIEW

A. Harvard University IT Strategic Plan:

In order to come out with a IT strategic plan, Harvard consider overall trends in higher education and technology, identify Harvard priorities and organizational enablers and barriers that can affect Harvard does it work shows in Table 1. Harvard priorities are One Harvard, teaching and learning, research, globalization, campus enhancements and The Harvard Campaign [8].

Table 1: Harvard Enabler and Barrier

Enablers	Barriers
• Increasing leadership recognition and commitment to the importance of technology across the University • A skilled and experienced staff of IT professionals • Collaboration within Harvard's IT community and with external strategic partners • Pockets of innovation • Significant investments and expertise in research computing and online learning	• A large user community with diverse needs, expectations, and technical skills • Locally supported, non-integrated applications • Harvard's decentralized governance, planning, and funding processes • Unnecessarily complex infrastructure, systems, and processes • Expectations for ease of use and speed of deployment that drive users to purchase and deploy their own technology solutions • Increased competition for key IT skills

After analyzing the emerging trends and institutional priorities, Harvard created a vision to describe what all these data mean for technology at Harvard in table 2. They also said that the vision can give dual purposes which are to establish an ideal toward which the IT community should strive and also communicates to the community what it should expect from the CIO Council, holding them accountable to their own ambitious aims.

Table 2: Harvard IT Vision

Harvard IT Vision
Empower the Harvard community through technology that enables: • **Effortless access** to data, information, and knowledge • **Rapid and profound innovation** in teaching, learning, and research • **Seamless collaboration** across communities and disciplines

Harvard endured the framework as in Figure 2, established in 2012 which are technologies that support teaching, learning, research, and administration, common platforms that are built at a University level and can be shared across schools and foundational strategies that define policies to guide IT work across the university.

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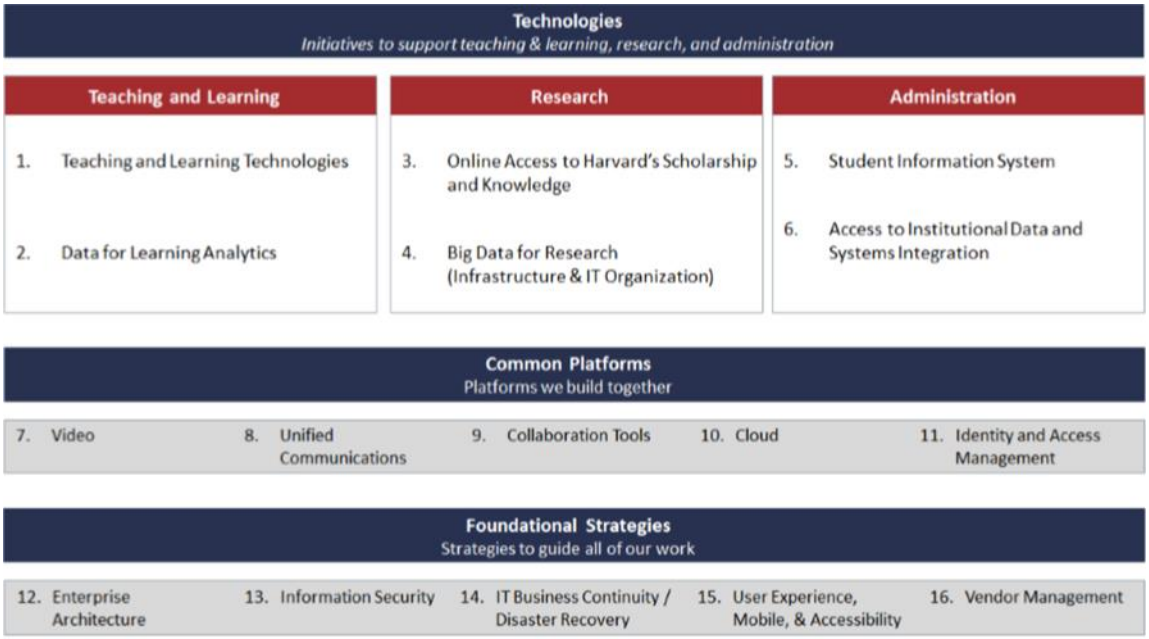

Figure 2: Harvard IT Framework

B. University of Oxford IT Strategic Plan:

The implementation of this Strategic Plan will prepare the collegiate University to achieve the maximum benefit from information technology innovations, increasing research capability, enhancing teaching and learning, and delivering efficiencies in support of administrative functions. It will play an important role in supporting the recruitment and retention of world-class students, researchers, academics and IT staff, while providing the foundation for the global sharing of research and teaching resources. The guiding principle of the University is subsidiarity and is respected within this IT Strategic Plan. They also created a set of principles and assumptions to support the balance across the organization and promote a common direction and alignment. The delivery of the plan assumes partnership and collaboration and also efficiency and effectiveness. Teaching, research and administrative staff work in partnership with IT providers is important to ensure that IT delivery works as a strategic enabler for the University but this can only be achieved through a deep understanding of the University functions that might benefit from technology, and it requires a close collaboration of staff and students, subject matter experts, and IT specialists. The collaboration of central and local IT work and take shared responsibility to deliver IT services to the collegiate university, facilitated by a shared end-to-end support process. IT services must delivered in a way that maximizes value to the collegiate University, whether third-party or open-source solutions, taking into account total cost of ownership (development and service provision), fit within the current IT architecture, and benefits that can be realized. It also should gain acceptance, have wide applicability and use, with clear benefits to staff and/or students, should be sustained.

For enterprise administrative information systems, Oxford ensure that as part of the IT service development and enhancement cycles IT systems are designed to optimize operational efficiency of University processes, where possible creating measurable cost savings. They also develop data architecture and governance framework to support the integration of information systems to provide high-quality information that meets the needs of service owners and users and upgrade enterprise systems as planned in the capital plan renewal roadmap to ensure full support and enable improvements in functionality. The objective is to increase the business value of administrative systems through improved usability, integration of independent information streams, and reporting tools [9].

C. University Of The Future:

In 2012, Ernst and Young published their work on the *University of the Future (UotF)*, while Ibrahim and Dahlan [23] have provided the business models options for UotF. It discussed about current business model of universities and shown in Figure 3, the concept of *Drivers of Change* mentioned in detail why every university should undergo a digital transformation [5]. The UotF was the result of extensive analysis on current technological evolution, recent community preferences and many more. All of these lead to the idea of *Drivers of Change* in which it urges university to take

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immediate action as not to lag behind in all of this fast growing transformation. It also describes how the universities will be operated in the future with 3 models namely streamlined status quo, niche dominators and transformers.

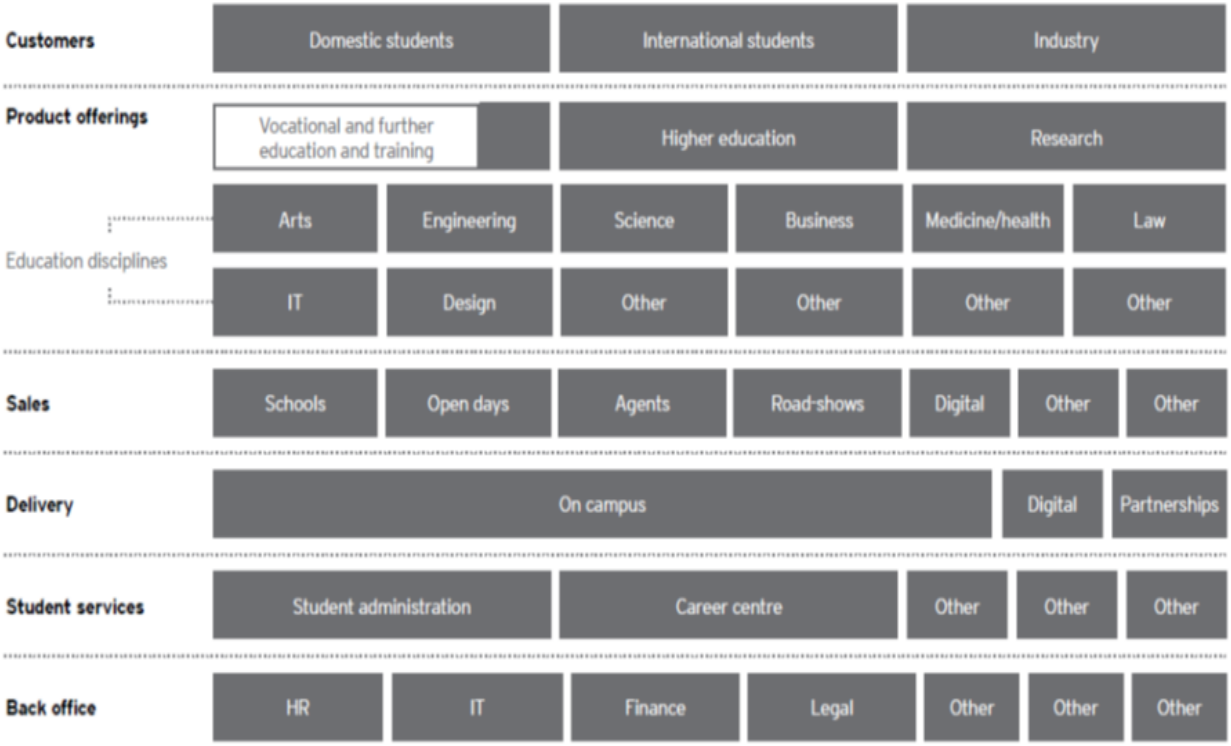

Figure 3: Universities current business model

Streamlined Status Quo:

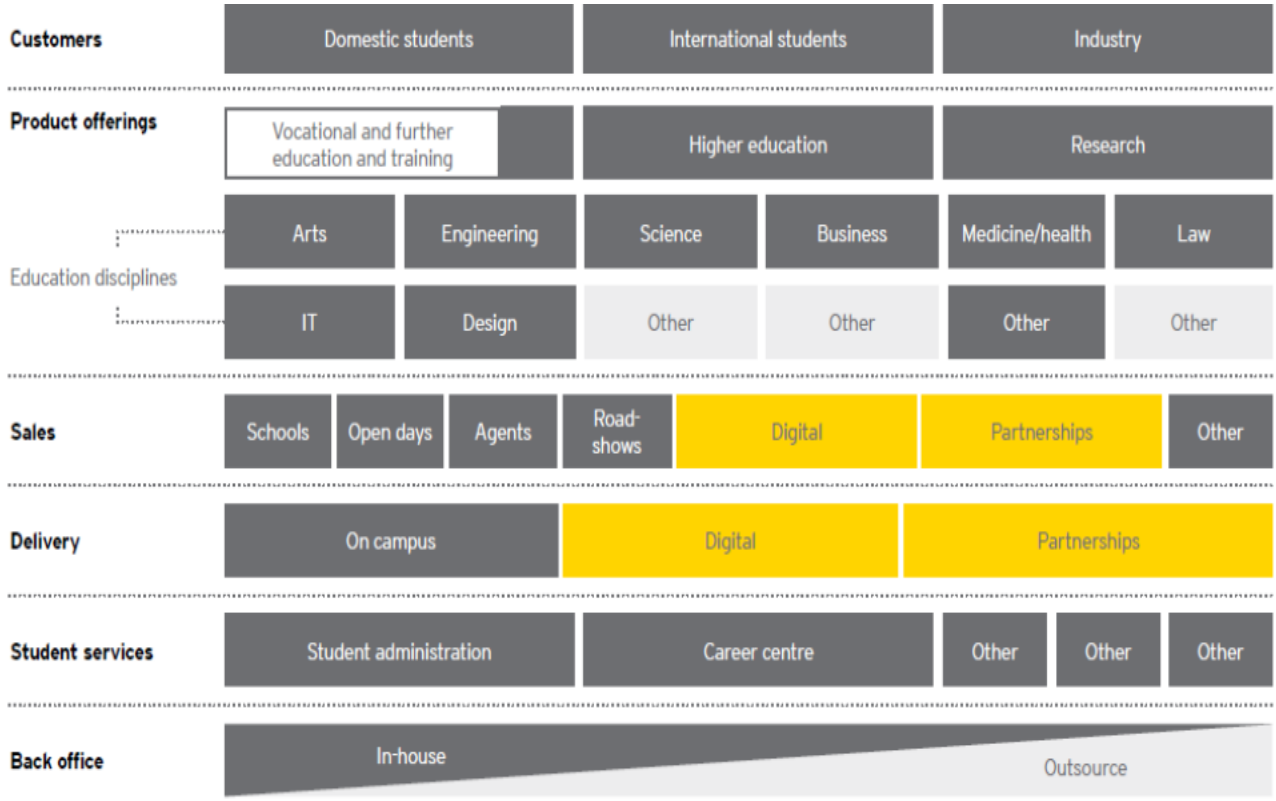

Figure 4: Streamlined Status Quo

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This model shown in Figure 4 explain universities,

- Continues to serve a broad mix of student segments.
- Continues to offer a broad range of disciplines, but discontinues a small number of sub-scale/unprofitable disciplines (or merges those disciplines with a 'competitor institution' to achieve scale) — providing the resources required to maintain international competitiveness in other disciplines.
- Invests heavily in digital sales and delivery channels, both 'pure play' digital channels and blended models.
- Forms a range of sales and delivery partnerships with public and private higher education providers, TAFEs, secondary schools, industry partners and other institutions that can open up new markets — or more efficiently
- access and serve existing markets.
- Outsources some back-office functions to realise lower operating costs, and/or drives efficiencies through shared services arrangements with like-minded institutions

Niche Dominators:

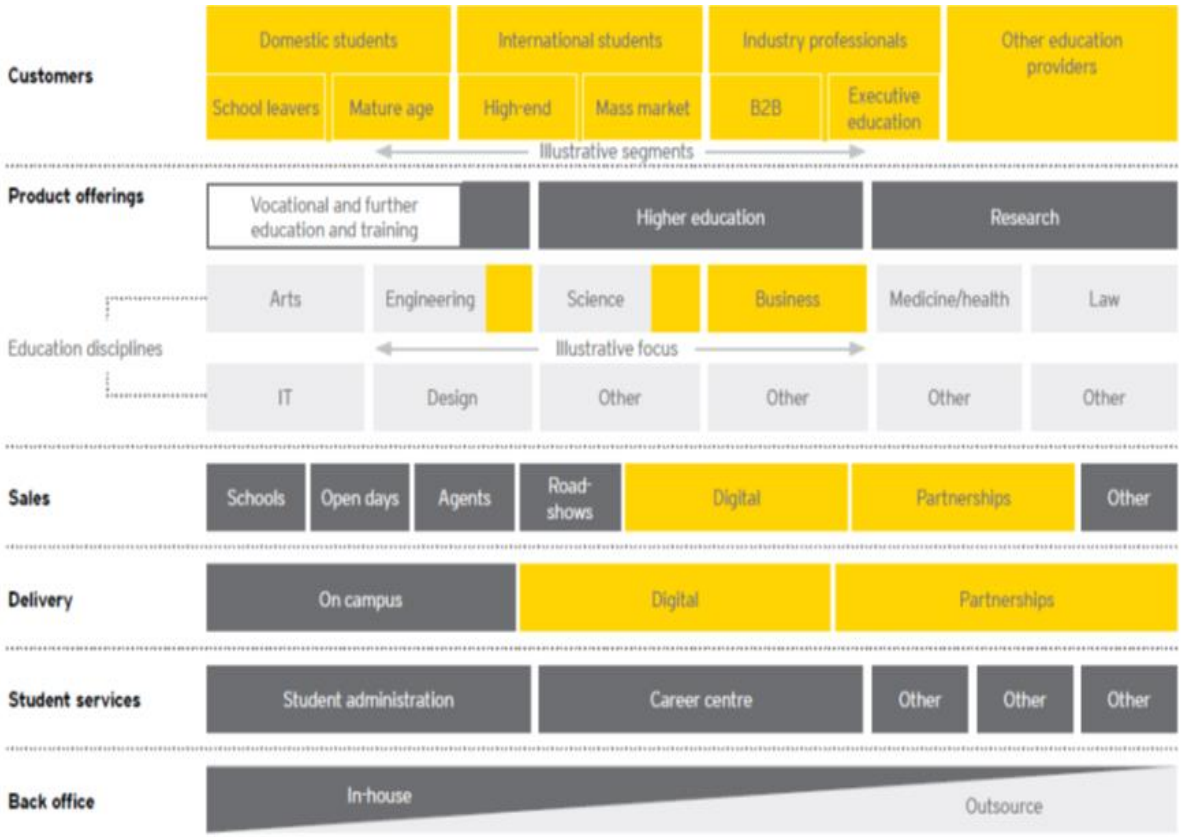

Figure 5: Niche Dominators

In this model Figure 5, the university chooses particular customer segments to focus on. For example, mature age distance learning students, international mass market or industry professionals which enabling the targeted development of course offerings, sales channels, delivery, and related services, such as industry based learning, career placement and outreach, and embedded research programs. This model also significantly reduces its range of education disciplines, creating a focused set of areas of genuine domestic and global strength and credibility. Besides, it builds deep alliances with industry in its chosen fields, including partnerships to support R&D, commercialization of research and innovation, professional skill development, and lifelong learning. This model also streamlines its back office, including using outsourcing and/or shared services models to drive efficiency and economies of scale.

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Transformer:

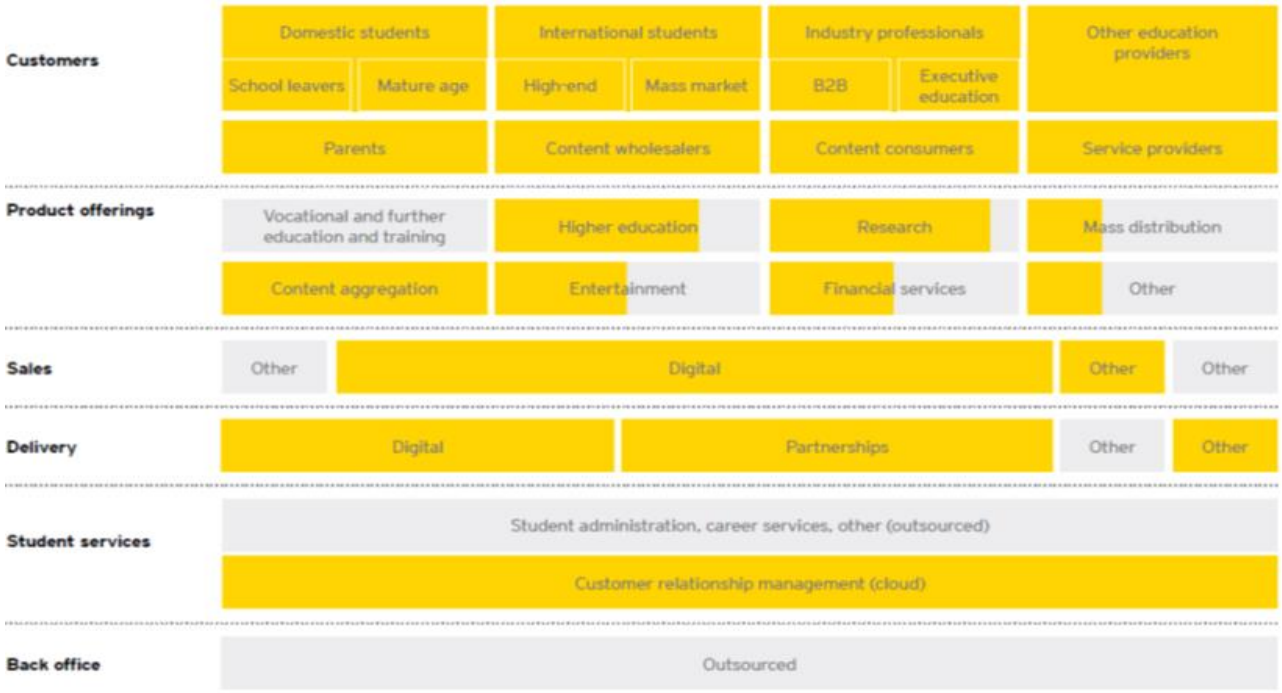

Figure 6: Transformer

The model in Figure 6 represents a range of possible market positions to be pursued by innovators, rather than representing a 'model' of a single institution. In this world, the innovators:

- Extend the definition of a higher education 'customer' to include content wholesalers, content consumers, financiers, employers and parents.
- Disaggregate the value chain to create new areas of specialization, such as content aggregation, mass distribution, assessment and certification.
- Combine traditional education services with services in related industries, such as media and entertainment, financial services and venture capital.
- Build a sales model that is predominantly digital and build delivery models that combine digital services and specialist 'face to face' services sourced from partners.
- Outsource student services, while retaining ownership of their customer relationships, using cloud-based customer relationship management tools and techniques.
- Outsource their full suite of back office functions.

D. Megatrends 2015:

There are several things that will be bigger and bigger in future. The text describe how digital future, entrepreneurship rising, global marketplace, urban world, resourceful planet and health reimagined will work in the future [4].

Digital future:

Fueled by the convergence of social, mobile, cloud, big data and growing demand for anytime anywhere access to information, technology is disrupting all areas of the business enterprise. Disruption is taking place across all industries and in all geographies. Enormous opportunities exist for enterprises to take advantage of connected devices enabled by the "Internet of Things" to capture vast amounts of information, enter new markets, transform existing products, and introduce new business and delivery models. However, the evolution of the digital enterprise also presents significant challenges, including new competition, changing customer engagement and business models, unprecedented transparency, privacy concerns and cybersecurity threats.

Entrepreneurship rising:

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.

The growth and prosperity of all economies, rapid-growth and mature, remains highly dependent on entrepreneurial activities. Entrepreneurs are the lifeblood of economic growth which they provide a source of income and employment for themselves, create employment for others, produce new and innovative products or services, and drive greater upstream and downstream value-chain activities.

Global marketplace:

Faster growth rates and favorable demographics in key rapid-growth markets will continue to be a feature of the next decade or so. The gulf between "mature" and "rapid-growth" countries continues to shrink. A new tier of emerging nations, driven by their own nascent middle classes, will draw global attention. Innovation will increasingly take place in rapid-growth markets, with Asia surfacing as a major hub. In the global marketplace, the war for talent will become increasingly fierce, necessitating greater workforce diversity to secure competitive advantage. Pushback and opposition to global integration manifests itself in various economic, political and cultural forms, including trade and currency protectionism, the imposition of sanctions to achieve political aims, anti-globalization protests, as well as the strengthening of nationalistic, religious and ethnic movements around the world.

Urban world:

The number and scale of cities continues to grow across the globe which driven by rapid urbanization in emerging markets and continued urbanization in mature markets. The United Nations (UN) reports that 54% of the world's population currently live in cities, and by 2050, this proportion will increase to 66% [4].

In order to harness the economic benefits of urbanization, policy-makers and the private sector must do effective planning and attract sustained investment in railroads, highways, bridges, ports, airports, water, power, energy, telecommunications and other types of infrastructure.

Resourceful planet:

Absolute population growth, economic development and more middle-class consumers will drive increasing global demand for natural resources both renewable and non-renewable. While the world's supply of non-renewable resources is technically finite, new technologies continue to impact the future supply picture by allowing access to formerly hard-to-reach and valuable oil, gas and strategic mineral reserves. The application of new technologies, as well as the shifting supply environment, will drive business model adaptation and innovation in multiple sectors as well as impact the geopolitical balance of power.

Health reimagined:

Health care which already accounts for 10% of global GDP is embarking on a once-in-a-lifetime transformation [4]. Health systems and players are under increasing cost pressure driving them to seek more sustainable approaches, including incentives that emphasize value. These cost pressures are exacerbated by changing demographics, rising incomes in rapid-growth markets and an imminent chronic-disease epidemic. An explosion in big data and mobile health technologies is enabling real-time information creation and analysis.

E. Malaysian Education Blueprint 2015 – 2025:

This blueprint elaborate the current situation of Malaysian higher education system and highlight where it will go in the future. It also talk about how it will work in the future and where the changes will take places. Figure 7 show the 10 shift that outlines what will spur continued excellence in the higher education system. All 10 Shifts address key performance issues in the system, particularly with regard to quality and efficiency, as well as global trends that are disrupting the higher education landscape.

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

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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 7: The 10 Shift

4. FINDINGS

In order to have clear current situation of Malaysian universities, it is easier to use Business Model Canvas (BMC), Figure 8. Below is the current BMC which is how Malaysian universities work [12].

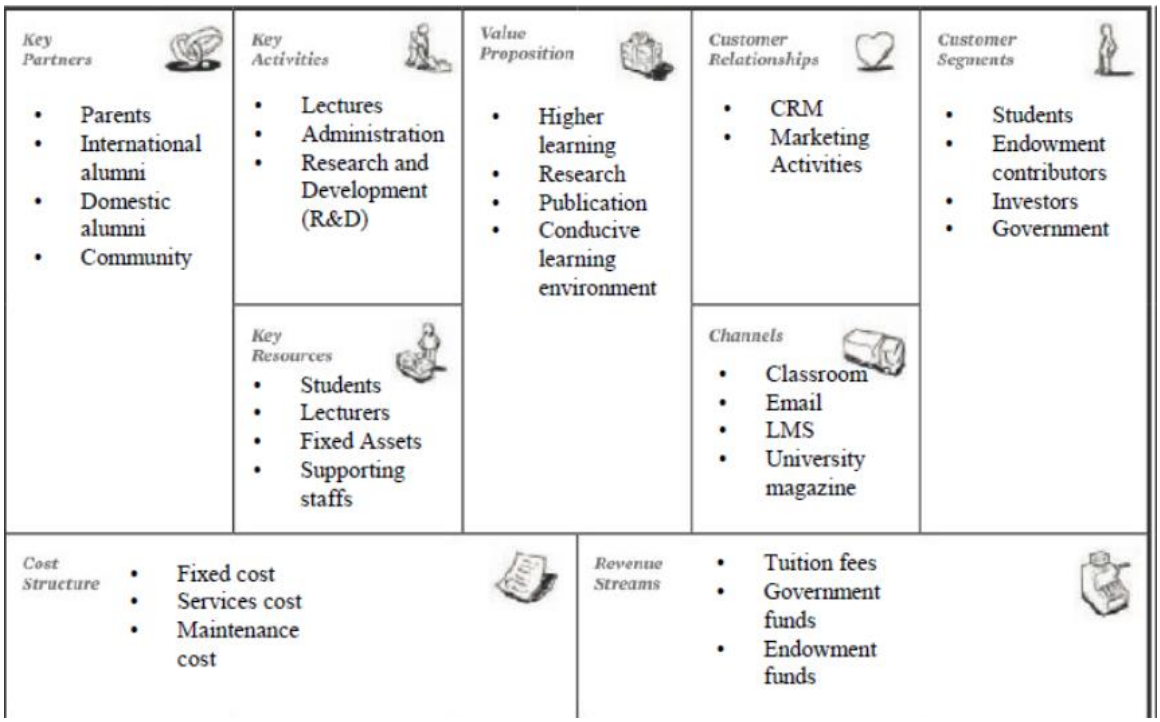

Figure 8: Current Malaysian universities BMC

5. CONCEPTUAL MODEL OF UNIVERSITY OF THE FUTURE

In one of the interview conducted by outside party, it is suggested that, artificial intelligence will consign the university to history within just 15 years which is quite a worrisome statement (2015). Centered on the pace the world is moving right now, it is not something without basis [1]. With all the newly created term and philosophy such as machine learning, predicting possibilities of future occurrence with complex algorithm and artificial intelligence, it almost seems like university has no future. Technology will slowly but gradually replacing the job of human beings and soon enough even going to the university will become obsolete. To prevent this, university 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. Funding:

Most of the world modern higher education sectors are paying more attention on a contemporary method of sustaining their organization instead of relying on the governmental funds. Looking back at how technology evolutionary brings about new ideas where people create businesses through "Technopreneurship", university should be able to do the same with digital transformation. Regrettably, some public university happens to have the "blind faith" that they could always rely on government in term of funding to cover the cost incurred by the university. That might not be so applicable in the current state of performance and recession. Based on the 4 lenses of innovation theory, this kind of orthodoxies and obsolete beliefs ought to get rid of. Recent trend suggest that university or faculty should leverage resources through partnership and collaboration with industry (Dotolo & Noftsinger, Jr, 2002). This amazing idea ought to be optimized into current education system. Why? With the world economy instability, the costs for operation keeps rising up while the funds steadily going down [8]. Hence, it is believed that higher ups should rethink about the current situation and take immediate initiatives to reconstruct university's management. Forming a partnership seems to be the most effective and efficient way to counter the funding problem based on the assumption that the industry will be able to provide the university with skills and knowledge needed. For example, industries are full with certified instructors that can share information on new sets of practices in industry or provide the university with technological infrastructure for free. This will expose students with the rising trending of today's industry aside from providing an opportunity to build a wider social network.

B. Answering the needs of Industry:

Not to mention, industry is in dire need of reliable workforce with up-to-date skills and knowledge to withstand the ever changing trends of businesses' process. When analysis are being conducted to understand the needs of today's industry, surprisingly, industry and academic leaders revealed that the very skills needed for workforce success are the same skills graduating students lacked — such as analysis and problem solving, collaboration and teamwork, business-context communication, and flexibility, agility, and adaptability (King, 2015). By way of collaborating with industry, they are able to instill the skills needed for their organization into the students' curriculum practices [9]. 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. Highlighted by American press, Business and postsecondary education have found common cause in recent decades in the preparation of a highly skilled workforce to preserve the nation's competitiveness and economic opportunity in response to rapid technological change and increasing global competition (Soares 2010) [10].

C. MOOCs:

The idea of harnessing trends from 4 lenses of innovation is truly a mind opener to the university's way of delivering education. The public university's traditional ways of teaching and learning is no less from others. However, focusing solely on the traditional methods is no longer an option in today's world. Many renowned universities start to take a new step forward by applying the concept of technological-driven university. A new trend of education that is based on information technology has emerged which are more convenient for both the university and students. Indirectly, this new trends will likely offer a positive impacts to the university's partners as well. One of the popular trends is *Massive Open Online Courses* (MOOCs) model, such as that provided by edX, Coursera, Udacity and FutureLearn. Although this model

is still in the experimentation phase of its implementation, there are plenty of reasons why university should participate in it. The invention of MOOCs model change the way university delivers courses to be more interactive while creating a new wave of educational approach that lower the cost and increase the impacts. It also turns Malaysia's higher education system to be more affordable and accessible. Additionally, Lynn Pasquerella, president of the Association of American Colleges and Universities, share her opinions on how MOOCs have catalyzed faculty development around flipped classrooms, allowing for more engaged learning in traditional classrooms, and prompted research and discussions around the benefits of providing different forms of assessment and more frequent feedback to students (DeNisco 2016) [11].

The availability of MOOC program does not only benefitting the currently enrolled students but also to those who did have the chance to do so in the past. On top of that, it can be one of the platforms that offer long distance education for those who have limitation. According to Harvard in their Harvard edX program, when administrators examined the data, they found something surprising: More than 70% of registrants already have a bachelor's degree (DeNisco 2016). This means that MOOC is not replacing the methods of education, rather, it extends to those who wish to learn [11].

Obviously, this opportunity should be taken as part of university's digital transformation to fulfill the duty as education service provider. It is unavoidable circumstances as the risks are there but still, it worth a try rather than waiting and observing eternally. In fact, other education providers believe we have entered a brave new world of experimentation, innovation, and opportunity in higher education, in which they will play a critical role (2015). The first step forward in digital transformation will become a major breakthrough in challenging the traditional ways of higher education system [13]. This puts Malaysia in a good position to harness the power of online learning to widen access to good quality content, enhance the quality of teaching and learning, lower the cost of delivery, and bring Malaysian expertise to the global (2012) [12].

D. Device in Class:

Nevertheless, the main purpose of technology adaption is for amplifying learning process and not to replace the traditional concept altogether. In reality, according to John Palfrey, head of the Philips Academy in Andover, Mass, he even warned that online learning had its own limitation (Tugend 2016). It is not applicable in measuring the level of team-work, softs skills, and few others of the students' abilities and capabilities [13]. In certain cases, there is still need for physical, face to face interaction in class. Thus, in this case, rather than online learning, technology should be adapted for enhanced learning process in classroom-based education. Take interactive whiteboards, for instance. Instructors can directly scribble, writing notes and explanations about the slides presentation. Consequently, the learning process will become more interesting, effective and save a lot of time.

In this digital age, smartphones has invaded the lesson in class and distract students' focus. Based on the statistic by Tindell and Bohlander (2012), it was found that 95% of students bring their phones to class every day, 92% use their phones to text message during class time, and 10% admit they have texted during an exam on at least one occasion [14]. Hence, the university can take a brave approach of manipulating this distraction into something beneficial through digital transformation. People are now looking at the new notion of *Bring Your Own Devices* (BYOD). 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 tons of heavy looking reference books to class or going back and forth to the library. Students can now access almost to everything with the help of internet either to e-book, Wikipedia, online journal or article, only at the tips of their finger. More than that, everyone can take quizzes online, conduct research at higher speed and store their massive work load on cloud at real-time. Eventually, this kind of encouragement will instill some discipline on students in regards to their internet consumption habits and help them to utilize their devices in more sophisticated manner.

E. Leveraging Resource (Students):

Living in the world of scarcity where there is little and limited resources, does not seem to be affecting the continuous grow in demands for qualities. People are racing up to one another to secure the best resources for long-term processes and sometimes the existing resources unable to cover all the demands. On the other hand, an organization like the university is gifted with abundant of resources, which are students, the biggest part that made up the community of the university. Students are assets that can be utilize in many different ways according to their talents, knowledge, spirit of voluntarism and many more, and ready to serve as part of the university. The question is that how university can actually arrange and leverage the assets of students, into a new combination that will eventually profiting the organization itself. It

takes more than just identifying assets and then does nothing. It needs innovation and creativity to be sure that the abilities and capabilities of the students are fully being optimized.

Taking technology into consideration, universities are indeed able to perform more than what they have now. One way in leveraging resource is by utilizing the final year project of students which is compulsory for certain faculty. Before, not much attention are given to this subject and it only be considered as one way of evaluating students' skills but now, with the concept of leveraging every resources, this assets can be made into new form of business concept with the technology integration, for example, any ideas or completed projects can be immediately applied to the public or put into practice. Any further research or development processes are being immediately put into motion with the intention of publicizing the complete end product to the world. What is in store for the students? Obviously they are able to take benefits from their projects and efforts, either monetary values or become their precious experiences.

F. Social Media and Big Data Analysis:

Aside from that, another way of fully leveraging university's resources is by creating a worldwide network through constant communication and sharing of information with the international students. Technology makes it possible for us to reach beyond the national boundaries. As stated by Porter and Sherwin (2013), "The global nature of internet (technology) means that global reputations can be nurtured and enhanced quickly". With this, a new concept of "Uni Go Global" can be built by keeping a wide network across the globe through the connection that university have with the alumni from foreign country. Facebook, twitter and Instagram is only a few platforms of social media where university can exploit these technologies to stay connected with others [15]. Not to mention, these technologies are the mediums provided free for the world where anyone can use it. However, many are still unaware that this kind of invention stores a bigger and more profitable value to the organization such as university. This is because these mediums allow experts to conduct the complex process of *Big Data Analytics* and *Data Mining* processes to determine previous performance and predicts future trends. In conjunction with that, university also able to pinpoint the satisfactory level of the university's residents and gather feedback from their statements or comments in social media for future reference and improvement. This way, the university will eventually realize where they stand in the eyes of the society.

G. Quadruple Helix Model:

This model, Figure 9 emphasis on the importance of integrating individualistic sectors, namely, government, academic, industry, and citizen into an intertwining collaborative model. It denotes the constant relationship and connection with one another to produce a greater outcome and to be more effective as well as efficient even in the current economic instability. This model is indeed useful for higher education in their effort to go forward on digital transformation as it list out all the key stakeholder that play an important role in order to survive the blizzard of digitalize world [7].

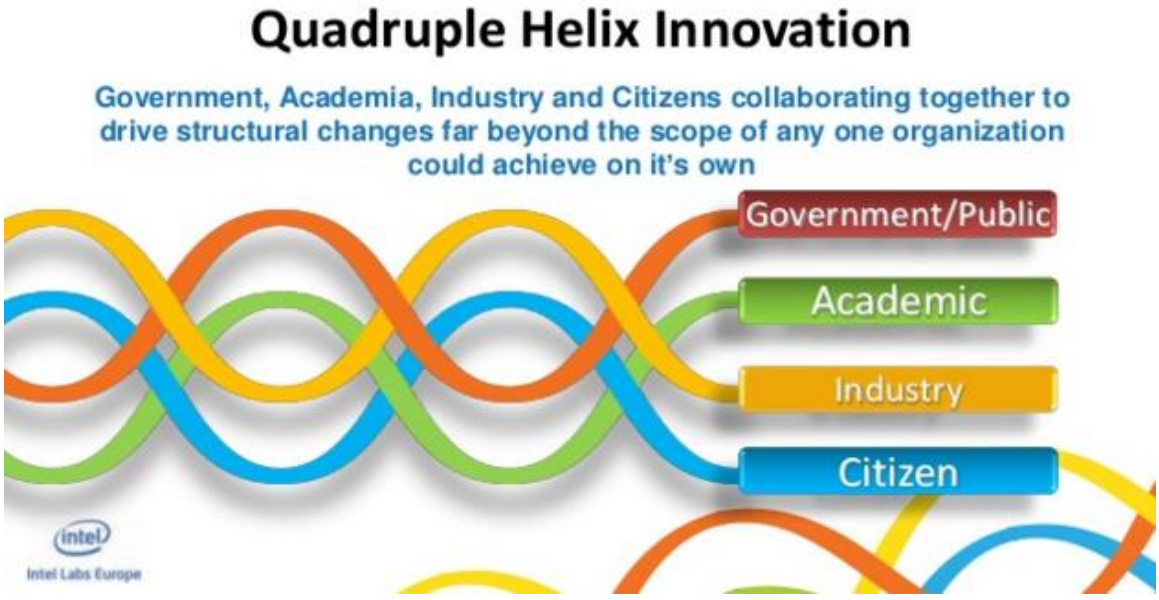

Figure 9: Quadruple Helix Model

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H. The New Business Model Canvas

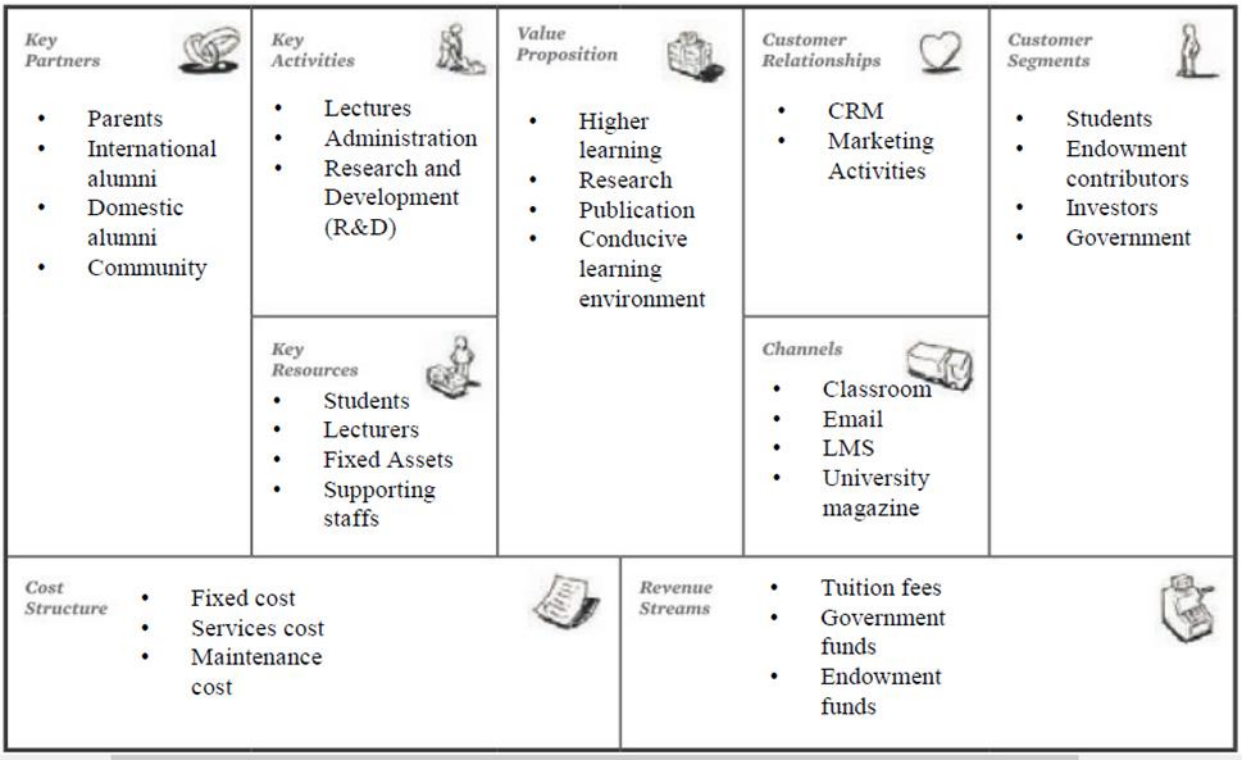

Figure 10: New business model

Figure 10 shows the new business model and in what field it changes. From the initial business model, it can be seen that all of the area are extended to become more specific. For example, the key partners are tremendously change and increase. These changes are made after a deep study are conducted to find the right people to be served and the right way to served them.

6. CONCLUSION AND FUTURE WORK

Higher education is an enormous national asset and its contribution to the economic and social wellbeing of the nation is of vital performance. The challenger ahead for higher education not just in Malaysia but around the world appears driven by disruptive change in the forces of technology. Economic, political and education sector which threaten to undermine its business model, governmental support and operating mission [12].

Despite the attempts to rigorously present and objectively organize the new model, the study comes with several limitations. Future research should seek to overcome these limitations and improve the subject matter of the paper. The first area for future work is to consider different population groups of potential customers for the university. A more detailed result can be achieved if other customer segments are deliberated in details in the study including working adults, specialized students, parents, entrepreneurs and organizations. A second area for future research is to expand and amplify how the new model works among universities in different countries. Universities across the world have diverse attributes that will be able to foresee the effectiveness of the new model. Finally, a third area is to further examine the shifts of research-intensive universities in this 21st century. The so called knowledge-based economies rely heavily on scientific research and a trained workforce. As such, nations no longer compete for industrial capacity or access to natural resources, but rather for skilled workers, intellectual property and knowledge. Malaysian universities must increasingly focused their resources on higher education and establish an impactful research institute in the universities.

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