

Re-design and Making Relevant University of the Future through Humanizing Education and IR 4.0

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Abstract: Digital technologies have brought impacts to higher education, that force the universities to change their current business model. For the university to be in top ranking is a time for transformation into the new digital age and Industrial Revolution 4.0 by establishing humanizing education that creates value to the customer segments and makes the university to stay relevant in the competitive market. The aim of this paper is to seek the way on how to transform the current university into the digital capabilities, this paper uses the design thinking and system thinking approach in the transformation into the digital age and Industrial Revolution 4.0 (IR 4.0). By using business modelling tools such as Business model canvas (BMC), Value proposition canvas (VPC), Environmental map (EM) and Strategy canvas (SC) those helps in the process of analyzing, evaluating and designing business model option for the purposes of creating value to the future university. The methodology used in this paper is based on the literature review, business modelling tools, and validation from the interviews to enhance the designing of future universities business models. The sample size for the interviewees was 32 students including undergraduate, postgraduate, international, local and worked students.

Keywords: Higher education, IR4.0, University of the future, BMC, VPC, SC, EM, Digital capabilities, stakeholders, Business model.

1. INTRODUCTION

A business model is a conceptual structure describes the rationale of how an organization creates, delivers, and captures value, in economic, social, cultural or other contexts. The process of business model construction and modification is also called business model innovation and forms a part of business strategy. A business model can be transformed into the Industrial Revolution (4.0), the Industrial Revolution on Digital Transformation can be implemented to fulfil the requirements of students in higher learning education. In the world of globalization, the higher learning education sector experiencing fundamental changes as the force of enhancing new business model and Industrial Revolution (IR4.0) [3]. Colleges and universities face intimidating challenges in establishing business models. The cost of running higher education continues to rise but sources of funding have eroded. Further worsening this challenging climate, the public is beginning to question the value of higher education given the large debt incurred by students and their often poor prospects for employment [7].

A number of key studies have argued universities are in need of new business models in order to stay relevant and sustainable. However, competition in the higher education sector increases which make the universities to be able to differentiate themselves by designing new and innovative models in order to deliver good and applicable knowledge in the society of globalization. These can improve the university by having many stakeholders need to invest due to the specific value offered by the university. Furthermore, the university needs to have a better strategic vision for the whole institutions, not just the IT department. By following this lead to transforming the university into the digital capabilities that change academic, staff and students culture into the new age [4]. There is a need for innovative and dynamic business model designs in meeting the changing requirements of the University of the Future (UotF). The variations are dynamic

and complex. It is difficult to analyze complex problem without a proper methodology and business modelling tools. The design thinking approach and system thinking approach with business modelling tools, the Environmental Map (EM), Business Model Canvas (BMC), Value Proposition Design Canvas (VPC) and strategy canvas are used to analyze, formulate, design, and estimate future business models and value propositions for the UotF [3]. This paper seeks to explore the application of business modelling tools to help analyze, design and build viable business models options for the UotF.

2. PROBLEM STATEMENT

The target of transforming universities into digital transformation has become a paramount important agenda for many universities, however, most of them have faced many challenges to implementing this agenda. This causes them to fail to align with others top university around the world and its graduates becoming irrelevant according to nowadays demanding. [15]. In addition to that, most of the university have a curriculum on humanizing knowledge to their students to become good people and with the appropriate manner in their workplace. The experience has shown that most of the graduates are involve into malpractices such as white collar crimes, they commit suicide which is against the objective of most universities particularly Muslim's University [1]. Therefore, this paper aims to discuss a new business model that transform current universities into universities of the future with a concentration on digital transformation and humanizing knowledge to their students because of the global drivers of change in the higher education sector as well as reducing white collar crimes in workplaces.

3. METHODOLOGY

This paper adopted the design thinking and system thinking approach [3]. The Business Model Canvas (BMC) is a tool to define how an organization creates, delivers, and captures value [2]. using business model canvas, strategy canvas and value proposition canvas as a tool for enhancing business model for the digital transformation of the University of the future. Business modelling tools permit different methodologies of doing business to be demonstrated insufficient details enabling us to frame, design and validate the business. Strategy canvas is mainly a line graph that plots functions/factors against importance for a company or an organization and then overlays competitors or industry standards. However, the methodology used in this paper is based on the literature review, validation from the interview and business modelling tools to gather data required in the transformation of the industrial age.

For the future, a new improvement of business model has been directed to make sure that the university has succeeded to a high level of the educational institution. This development of a new business model is required to transform the current university into the University of the future. The first step is to see the customer requirements which includes the student, staffs, clients as well as government as a stakeholder. Then covering the enterprise end-to-end by applying all the digital capabilities as stated in Business Model Canvas.

4. LITERATURE REVIEW

According to [10] In the progress of this development business models experience changes at the same step as technology. Digital transformation affects business architecture in all areas (e.g., strategy, business model organization, processes, solution portfolio, technology, competencies). This creates a business model (re-)design vitally significant, requiring business leaders to take a systematic approach in this direction.

Drivers of Change

In the word of [5], there are several ways to recognize the challenges of transformation higher education, five external drivers whereby university stakeholders have partial control which together will figure the future of higher education in Australia.

Changing the world of work: Both employment and employability are affected by the change in technology thus graduate students also will be affected due to the advancement of technology, because most of the work is driven by machines.

Blurring industry boundaries: Almost every industry is driven by the convergence of technology, that's why a university in teaching and learning process must offer new education services to overcome challenges within the industry.

Evolving digital behavior: The university needs to change the learning services from traditional classroom to online education by establishing Massive Open Online Course (MOOC) and GOALS and other courses that offers stakeholders to be in the marketplace.

Increasing International Competition: The universities must have strategic goals for internationalization to offer knowledge of their students to be in the global ranking. Students and academics are changing the higher education landscape.

The rise of continuous learning: Students are advised to spend more than five hours a week in online learning in order to be familiar with the technology, this is due to the fact that demand in the new technology is increased for higher education.

University of the Future Business Model

Many strategic business model options for the University of the future guide different kinds of literature to choose and make a decision in order to develop strategies for the future university, by looking the requirements of stakeholders as well as the university itself [3]. The recommended business model option for the University of the future depends largely on the cost and funding generated by the university. Endowment and gifts from donors have a large impact on the university strategy to make sure that the university sustains in the long run [9], [12]. Transforming the current university into University of the future is not an easy way so need to have strong management and good strategic plan in order to develop the idea of change, in developing a business model for the University of the future four scenarios must be looking for [5].

Future Scenario 1: Champion University- Universities who enrol traditional undergraduate and graduate students need to set a strategic goal on how they deliver knowledge in higher education. Because most of the students are of the age between 18 and 25 so, the technology integrates into traditional university models.

Future scenario 2: Commercial University- universities need to develop the models of teaching and research in order to familiarize with industry because in 2030 the government hands-off and requires the university to be financially independent.

Future scenario 3: Disruptor University- universities to be highly competent by delivering a good knowledge like teaching and research, business, science and humanities by giving micro-certificate to their students that can help them on demand when the technology disturb their marketplace due to the fact that the competition is increased in 2030.

Future scenario 4: Virtual University- the expectation during 2030 is that every human activity changes to technology, so universities must be aware on that by restructuring into networks for the purpose of getting brand-name as top ranking universities like Oxford and Stanford.

According to [4] other three broad lines that can help in developing business model are as follows:

- i. Streamlined Status Quo: some of the universities established will continue to operate as broad-based teaching and research institutions, but progressively transform the way they deliver their services and administer their organizations with major suggestions for the way they engage with students, government, industry stakeholders, secondary schools, and the community.
- ii. Niche Dominators: Nowadays many established universities and new entrants that basically redesign and refine the range of services and markets they operate in, pointing particular 'customer' segments with tailored education, research and other services with a concurrent shift in the business model, organization and operations.
- iii. Transformers: Private providers and new entrants that carve out new positions in the traditional sector and also create new market spaces that combine parts of the higher education sector with other sectors, such as media, technology, innovation and venture capital. These will bring economic value by creating new markets, new segments and ultimately increase competition in teaching, research and innovation which lead to increase revenue for the investors.

Megatrends

Megatrends are global, sustained and macroeconomic forces of expansion that influence business, economy, society, cultures and personal lives thereby defining our future world and its increasing step of change [6]. The following are megatrends that affect higher education: a) Aging world: establishing new education for the purpose of finding opportunities in the industry, b) labour market shifts: increase innovation in higher learning to capture global workforce, c) capacity imbalance: the product produced does not meet with the product demand, d) budget pressure: the problem in higher education is public funding, e) economic shifts: higher education mostly depend on industry for the growth if the economy,

f) rapid urbanization: most of the graduates need to shift from the home cities to search for the job, g) skill mismatch: there is a gap between the industry demand and the education provided, h) stricter immigration policies: barriers for the graduate to move to search for high-income destination, i) She-economy: Nowadays every woman need to work in order to avoid independent and to develop her skill.

Industrial Revolution 4.0

The Industrial Revolution is very important in transforming the current university into University of the future in order to adapt the change in technology because IR4.0 disturb almost all industry in the world by replacing the old technology into new technology [14]. The industrial revolution 4.0 changes the whole system such as production, management, services as well as governance [19].

Universities need to have good strategies to ensure that their stakeholders are familiar with the industrial revolution by providing better knowledge that creates value within and outside the industry. Furthermore, training to graduate students is needed to enhance better innovation and skills that help them in the rapid change of technology. Also very important aspect in this transformation is humanizing knowledge due to the fact the many graduated students just focus on how they get a good job but they don't care about the white collar crime that they commit in their workplaces, so this knowledge also will help them to reduce or even to finish this critical problem.

New entrants University

New technology that we have nowadays lead to increase in many online universities that help to improve digital capabilities. A well-known example is Google and Alibaba. Alibaba Business College and Nanyang International Business College (NIBC) will offer the trainers and curriculum, likewise Singapore National Trades Union Congress (NTUC) and LearningHub in collaboration with Employment & Employability Institute (e2i) will provide e-commerce master class program, they will learn about e-commerce business models and platforms, online retailing and digital marketing, and finally to offer certificates to those participants of the program. Alibaba business college campaigns are to move out a digital e-commerce course in countries under China's Belt and Road Initiative and will launch the course first in Singapore [14].

Humanizing Education and Technology

Most universities in the world concentrate much on developing and using technology to its students as a means to ensure that they coping with the current situation in the world. In so doing, they do not concentrate much on how the uses of technology dehumanize society through different aspects. The experience has shown that technology is used to bring not all positive impacts but also calamities to the societies from Hiroshima bomb, cybercrimes and misuses of social media. Thus, to overcome this situation there is a need for universities also to concentrate on education which humanizing its students to become a good citizen who fears God. To implement this notion, some countries have started to change its education policy to align with the concept of humanizing education. For instance, one out of the four dimensions of the National Education Policy of Malaysia includes a balance of intellectual, spirituality, emotion and physical well-being in line with the religious faith in God [18]. This is also supported by growing interest in different colleges and universities through their scholars to implement this idea for the wellbeing of its students and citizen at large.

According to [18] to humanize education it must contain ten essential skills which are Spirituality, Physical-psychological, Intellectual, Cultural, Cognitive, Emotional, Ethical, Economic, Ecological and Societal (SPICE). If these elements inculcated into the students' minds during their education there will be a hope to become good citizens with productivity, commitment, joy and success [17]. In the contrarily, the absence of them the advancement of technology to students will have no meaning but it will bring destruction to societies as evidence in many parts of the world technology is misused by those who have knowledge of it [21], [8].

5. ANALYSIS AND DESIGN OF BUSINESS MODEL OPTION FOR UOTF

Based on the literature review above, the design and formulation of the business model option for the University of the future are done by adopting design thinking and system thinking approach. Several business modelling tools are used such as business model canvas (BMC), strategy canvas (SC), environmental map (EM) as well as value proposition canvas (VPC). This study was formulated initial business model canvas (BMC) and initial value proposition canvas (VPCs) before interviewing with the head of the strategic plan and customer segment. After the interview and validation, the enhanced BMC, VPC, SC and EM were drawn.

6. INTERVIEW ON BMC AND VALIDATION OF VPC WITH CUSTOMER SEGMENT.

After interviewing the Head of Strategic Planning of a Malaysian public university on the initial business model canvas (BMC), it was revealed that the transformation is relevant and important not only in business organization but also in other sectors including higher education industry. He intends to transform universities in terms of academics, curriculum, research, development and commercialization (R&D&C), teaching and learning methods, access and mobility of information, globalization and standardization and resource utilization. Higher education industry needs to transform due to technological factors such as MOOC, blended learning, cost of operation can be reduced. However there are many challenges, but the Malaysian public university leaders show readiness of transforming their current university into the new digital age, whereby almost all top ranking universities have transformed or in the process of transformation.

Validation of the value proposition canvas (VPCs) with customer segments (CSs) was done by interviewing Undergraduate and Postgraduate students. The number of undergraduate students was 11 (7 are Malaysian and 4 international) and postgraduate students were 21. Although in the group of PG students, 12 are international students and 9 local students (in this group there are 6 students who work). Total local students for PG and UG was 16, and total international students for PG and UG was 16 that make a total number of 32 students.

7. KEY FINDINGS. ENHANCED BUSINESS MODEL – BMC, VPCS, EM, SC

The key findings include: (1) prefer digital learning: helping in cost reduction and time management, (2) responsible research: focusing on the sustainable development goals (SDG), (3) scholarship and financial opportunities: serving postgraduate students in doing responsible research, (4) relevant, new knowledge and skills: creating new opportunities of employment and values for many, (5) humanizing education: bring moral values such as integrity, spiritual and good manner.

7.1 Enhanced Business Model Canvas

Key partners Researchers. Government. Local and International Industries. Higher Institutions. Top universities.	Key activities Teaching and Learning. Research and Innovation with SDG Publication. Entrepreneurship. Digital platform	Value propositions Blended learning. Digital marketing. Responsible Research, Development and Commercialization focusing on SDG. Increase publication to meet market needs. Scholarship and Financial opportunity. Humanizing education. Relevant, new knowledge & skill.	Customer relationships University social networking. University email system. Alumni organizations.	Customer segments Students including (Undergraduates, Postgraduates, Local and International). Top ranking Universities Researchers Government Lecturers Local and International Industries Higher Institutions Community/society Donors
	Key resources Researchers Publishers Students Digital platform		Channels On campus teaching. University website. Email. Digital teaching.	
Cost structure Transformation cost IT Infrastructure cost Maintenance cost Salaries for staffs and workers		Revenue streams Research Fees Publication fees Student tuition fees Medical, hostel and other facilities Endowment		

Fig 1: Enhanced Business Model Canvas

Customer segments: For transformation to future university, students, top ranking universities, researchers, higher institutions, international industries, government, donors and community can be added to gain advantages in the new digital age.

Value proposition: humanizing knowledge: building good and human values such as integrity. Blended learning: reduce cost, scholarship and financial assistance: helping postgraduate students in doing research. those can be an added advantage during transformation that makes future university to stay relevant and sustainable.

Customer relationship: For the future, the university needs to have proper communication for the purpose of creating a good relationship with its customer segments and key partners.

Channels: In the new digital age, Digital teaching is very essential because it saves time for the students who need to join the study, mostly worked and international students will bring advantages to them.

Key partners: among the key partners of the University of the future are higher institutions, top universities, local and international industries those may help to increase value to the university.

Key activities: In transforming the university entrepreneurship and digital platform are major concerns to make the university in a better marketplace.

Key resources: Despite having many resources as a source of capital, also digital platform is very crucial in the future university.

Revenue stream and Cost structure: for future university need to have other sources of fund and not depend only on endowments and other sources of capital.

7.2 Enhanced Value Proposition Canvas

In value proposition canvas we have to have a look on customer segments and value whereby certain university might offers to their stakeholders, among of the customer segment are undergraduate students, postgraduate students, local students, international students, full-time students, part-time students, and public/community.

CUSTOMER SEGMENTS	CUSTOMER JOBS	GAINS	PAINS	GAIN CREATORS	PAIN RELIEVERS	PRODUCTS AND SERVICES
International Students	-Learning and research. Employment opportunities.	-Academic qualification. -enough time in learning. -Access to online materials.	-High tuition fees. -traditional education contents. -language. Environment. -social interaction -Students debt.	-Humanizing education. -Digital contents -Quality education -Employment opportunities.	-Students scholarship. -Digital learning. -Study loan. -Short semester choice. -Endowment funds.	-Unique programs. -Good campus facilities. -Online books. -Open access publication.
Local Students	-Teaching and learning. -Seek for employment	-Quality education. -conducive environment.	-they don't change the environment. -Lack of enough learning facilities	-Employment opportunities. -Humanizing knowledge	-Short semester choice.	-Research publication
Undergraduates students	-Teaching and learning	-Good Academic qualification - Employment	-Tuition's fee costs. -Students debt	-Humanizing education. -Employment Opportunities.	Students scholarship. -Short semester choice. Study loan	Online library. Campus facilities.
Postgraduates students	-Teaching and learning. -Research and innovation -Promotions	-Quality education -Access to online materials.	-Tuition's fee cost. -Students debt.	-Digital contents -Employment opportunities. -Humanizing education with quality	-Students scholarship. -Digital learning	-Research and innovation with SDG -Open access publication
Working students	-Teaching and learning. -Working	-Quality education. - Employment	-Lack of enough time in learning	-Digital contents. -Salary.	-Short semester choice. -Digital learning	-Online library. Open access publication

Fig 2: Enhanced Value Proposition Canvas

7.3 Environmental Map (EM)

Fig. 3 is the business model environmental map that describes how different forces has brought challenges in the universities market, but those challenges are the key drivers that motivate transformation. UotF needs to join on the key global trend such as IR4.0 and digital technologies in order to change the world of work and to be sustainable in the market competition. Also, contestability of market and funding is a massive challenge for a student in higher education as well as for the university itself in the future. Likewise, global mobility, economy shift and new entrants with the digital and innovative business model may cause more disruption in the industry.

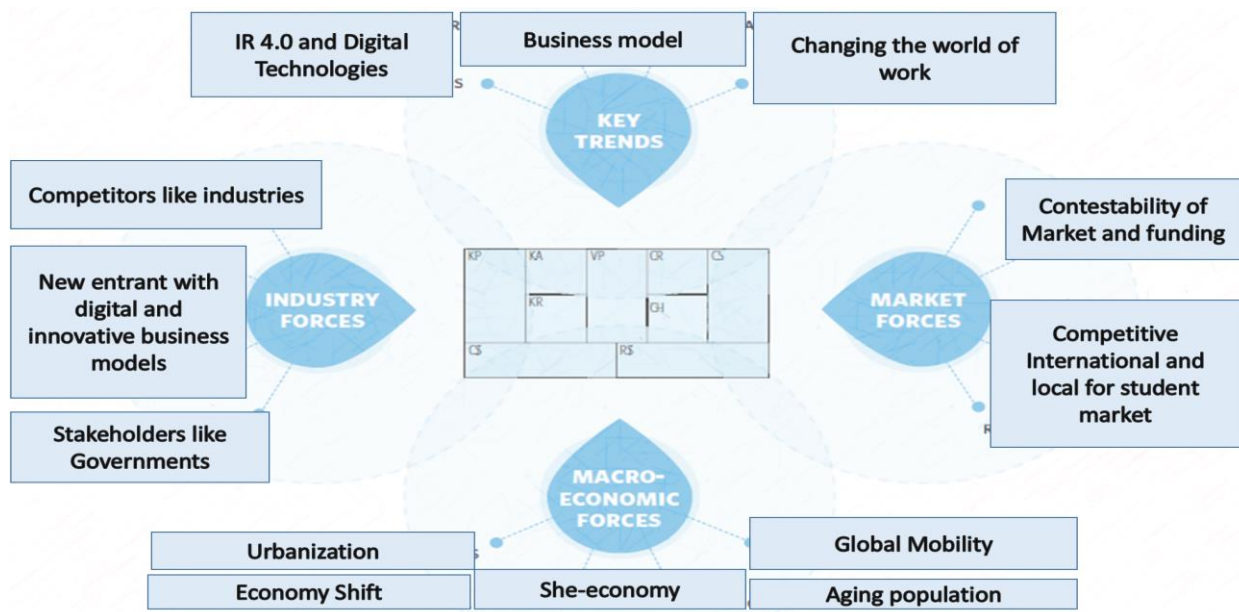


Fig 3: Environmental Map

7.4 Strategy canvas (SC)

Fig. 4 below shows the strategy canvas of current vs future higher education. The red line describes the current activities done within the university which now is not important to do, while the blue line shows how the activities rise according to Sustainable Development Goals (SDG) to solve the challenges faces the university.

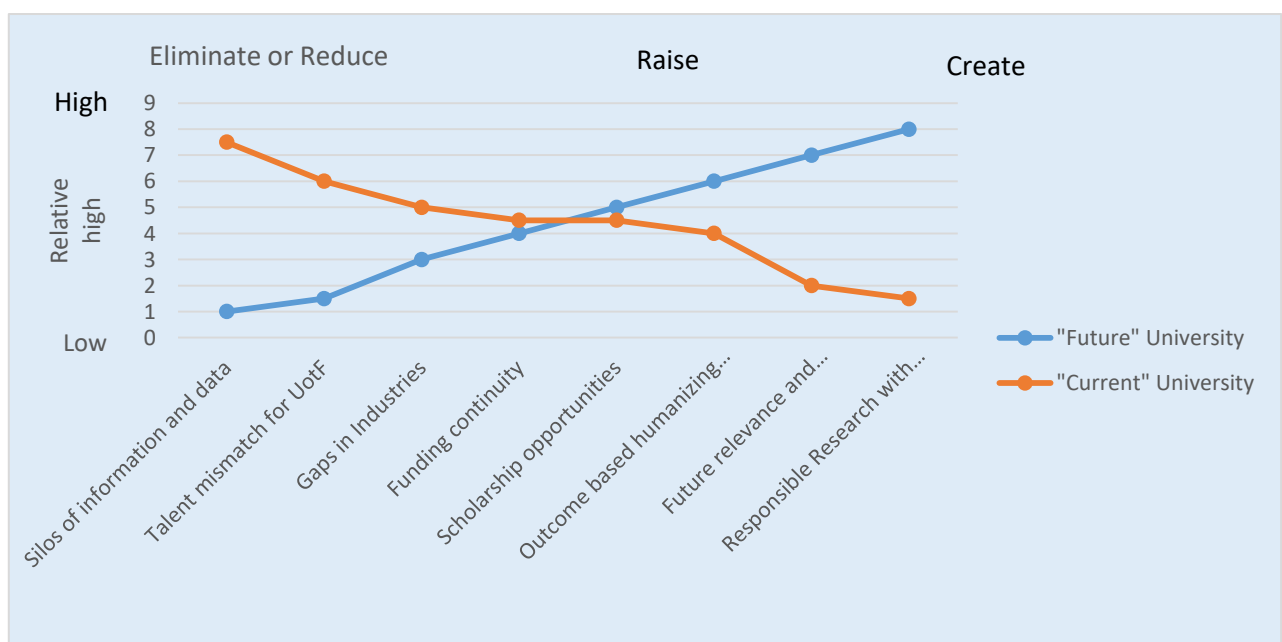


Fig 1: Strategy Canvas in the context of “current” vs “future” University

8. CONCLUSION AND FUTURE WORKS

Higher learning education has challenged due to the advancement of technology that changes the higher learning industries. The challenges are the factors that motivate the universities to transform and stay relevant and sustainable. Because there are several external keys includes market forces, industry forces and macroeconomic forces that prevent employment opportunities. This is the time for higher education to transform their universities for future by having humanizing education that builds integrity, responsible research focusing on SDGs, relevant, new knowledge and skills, blended learning and scholarship and financial assistance for their students. The design and system thinking approach implemented in this paper will help to analyze and plan for the new business model that makes future university relevant and sustainable.

There is a need to conduct an interview with other customer segments such as Government, Donors, researchers, lecturers, local and international industries, top universities and society. However, an increasing number of students in conducting an interview for further research is better, because this study has a limited number of sample.

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