

The Role of Malaysian UotF in the Digital and SDGs Era: Digital Entrepreneurial Education Programs through Digital Platforms and Community Engagement for the Unemployed Graduate Youths of Low-Middle Income Communities in Bangladesh

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Abstract: The design and development of new innovative business models are usually triggered by the arrival of new drivers for change and competitors who perturb the existing equilibrium of current business models. Today, higher education institutes (HEIs) are confronted with numerous challenges and are in need of an urgent transformation to remain competitively operating, stay relevant, and offer value in their role towards society in the years to come. Increasing numbers of unemployed graduate youth, democratization of knowledge, market contestability, competition for funding, global mobility, the rapid rise in digital technologies, and the arrival of online educational providers have all caused disruptions to the current broad-based higher education business models. As a result, HEIs need to re-evaluate their current business models to reclaim their relevancy and position as drivers of innovation, economic development and societal wellbeing. An improved or alternate business model needs to be designed and proposed, one that makes use of digital technologies, actively engages with the community, and incorporates aspects of the SDGs as a central part of its vision and mission. This paper addresses the aforementioned issues, as well as the current graduate youth unemployment issues in Bangladesh, and their need for digital entrepreneurial skills. The paper then proposes with the assistance of a design and systems thinking methodology, a validated conceptual business model using the Business Model Canvas (BMC) and Value Proposition Canvas (VPC) for a Malaysian University-of-the-Future (UotF) that aspires to contribute and assist Bangladesh's low-income communities and their unemployed graduate youths. The validated business model indicates that the principal changes needed for the current business model includes the requirement to provide cheap freemium-based digital entrepreneurial education through digital platforms to educate and empower unemployed graduate youths to enhance their entrepreneurial skills to become job creators and increase their employability capabilities. Additionally, actively engaging with the low-income communities to assess, develop and provide simple innovative solutions through student projects fosters a pragmatic mindset, where the students are able to apply their theoretical knowledge into developing practical solutions.

Keywords: University-of-the-Future, SDGs, International Community Engagement, Bangladesh, Unemployed Graduate Youths, Digital Entrepreneurial Education, Digital Platforms, BMC, VPC.

I. INTRODUCTION

The answer to what characteristics or outcomes contributes to the rise of healthy, successful and prosperous societies, is perhaps a complicated one, with various elaborations and interpretations depending on several factors which influence the society, including history, ideology, culture, economy, geography, technology, etc. Some characteristics of a good society include, members of the society having a decent standard of living, security and freedom to choose how to lead their lives, continuously developing their potentialities emotionally and materially, participating and contributing with care and

respect towards others, and collectively working to build a just and sustainable future [1]. It is however, incontestable that higher education institutions have played one of the most important roles in shaping and contributing to the current state of the societies we observe today. HEIs have acted as generators and repositories of knowledge and have prepared graduates to become future leaders by equipping them with skills and enhancing their passions, abilities and personal development. As a result, graduates are capable of leading and creating business opportunities to contribute to the socio-economic and political landscapes of the society in order to produce a cohesive, prosperous and sustainable society.

Nevertheless, with the rapid exponential growth and advancements in technology and globalization, HEIs and industries are confronted with numerous challenges and are in need of an urgent transformation to remain competitively operating, stay relevant and offer value in their role towards society in the years to come. Higher education industries are being impacted by a number of forces and drivers for change which are disrupting the current traditional higher education business models. These drivers of change include the accessibility of information everywhere through the internet, introduction of new digital technologies, global mobility, higher competition and the need for integration with industries and engagement with the society [2][3][4]. A significant change or transformation is necessary in the way HEIs execute their business model operations and underlying value assets. Additionally, with the assistance of new technologies, HEIs must incorporate and institutionalize innovative learning and teaching delivery mechanisms, introduce new marketing channels, and manage stakeholder expectations [2][3].

The problem of youth unemployment in Bangladesh has exacerbated over the past years due to poverty, inequality, and the incapability of the economy to create jobs. This has resulted in an increase in the competition for jobs that are currently available. The overpopulated country's poor social protection schemes and its ineffective and unsuccessful labour market policies has left many of the country's youth unable to find or create jobs and are solely relying on their families for support, being forced to do low-paid informal labour work, and through illegal work and crime [5]. Moreover, the World Bank [6] reports that in 2019, 46 percent of college graduates and 39 percent of university graduates are unemployed and unable to find jobs within the first two years after graduation. They also indicated that universities should make changes to focus on producing graduates with skills that are aligned with the needs of the industries and the current job market.

With the ever-increasing problem of unemployment, huge costs due to a lack and erosion of funding from the government and other sources [7][2][3], and as competition rises, more young adults are discouraged to pursue a degree and struggle to see the value and quality of higher education in relation to the rise and affordability of the current tuition fee structures. HEIs are encouraged to re-evaluate and rethink their current business models to demonstrate that their role in the digital and sustainable development goals (SDGs) era can be highly beneficial and significant for engendering a prosperous and sustainable society. HEIs could make use of the prevalent enabling and networking technologies available to adopt a "smart" university approach, whereby classrooms, teaching and learning strategies are incorporated and redesigned with the latest state-of-the-art technological devices. Creating or transitioning to a virtual university online is also an alternative which has also been one of the major changes' universities have been forced to implement due to the recent Covid-19 outbreak. HEIs can play a critical role in the accomplishment of the SDGs and can highly benefit from them as they ensure active engagement with the community and environment which also assists in creating new funding streams. HEIs can contribute to the SDGs through SDGs education (learning and teaching, creating jobs), research (producing and implementing innovative solutions), governance and operations, and public engagement [8][9].

II. PROBLEM STATEMENT

Nowadays, a higher education degree is a requirement in order to obtain a decent and well-paid job. As a result, more and more young individuals pursue a degree in higher education to obtain a specific skill advantage, with an expectation of entering the job market immediately after graduating. Over the past decades up till today, universities are being established at an increasing rate to deal with the global demand increase of students. However, every year, graduates all over the world face unemployment issues in today's competitive market, due to the fact that there are more skilled graduates than there are jobs in the job market [10]. As mentioned earlier, the problem of youth unemployment in Bangladesh has exacerbated over the past years due to poverty, inequality, and the incapability of the economy to create jobs. The Bangladesh Bureau of Statistics (BBS) states in their Report on labour force survey 2016-17 [11] that the current unemployment rate is at about 4.2 percent and youth unemployment is at 10.6 percent, and that 79.6 percent of people in unemployment are unemployed youths. Additionally, the World Bank [6], reports that only 19 percent of college graduates and 39 percent of university graduates were employed and able to find full-time or part-time jobs.

However, tertiary-level polytechnic graduates proved to have better employability skills as 49% of the graduates were employed primarily due to the technical and applied training skills they obtained from the institutions. The unemployment rate has also been increasing over the past year primarily due to the COVID-19 outbreak.

Furthermore, students have to invest time for a number of years and thousands of dollars per semester to obtain a degree as the costs of higher educational degrees continues to increase. Unemployment leaves students in a vulnerable and susceptible state to their well-being, mentally and physically, as they have already invested a lot of time and resources that could perhaps been used for something else. Graduate unemployment, can also be seen as an indicator of higher education's ineffective and inefficient quality of education. The aforementioned, along with democratization of knowledge, market contestability, competition for funding, global mobility and the rise of digital technologies, have disrupted the current broad-based higher education business models [2][3][12]. It has been suggested by some researchers that the current traditional HEIs are under pressure from the new phase of competition they are facing, and perhaps they will no longer be the best and desired providers of education as private institutes, fellowships, Massive Open Online Courses (MOOCs) and other online educational course providers are starting to offer better quality alternatives [13]. Therefore, HEIs need to re-evaluate and re-think their current business models to remain relevant and reclaim their position as the drivers of innovation, economic development and societal wellbeing. An improved or alternate business model needs to be designed and proposed, one that makes use of digital technologies, actively engages with the community, and incorporates aspects of the SDGs as a central part of its vision and mission.

III. OBJECTIVES

The principal objective of this paper is to propose and develop a business case solution for a Malaysian University, the International Islamic University of Malaysia (IIUM), and how the university as an exemplary can correspondingly contribute to Bangladesh's low-income communities unemployed or underemployed graduate youths in order to achieve its Strategic Focus Area (SFA) goals [14] and contribute to the SDGs. The business case is developed with an emphasis on the development of a digital entrepreneurial education system accessible through digital platforms, and additionally to collaborate and evaluate contemporary issues of Bangladesh's low-middle income range communities in relation to the SDGs and to develop simple ICT or engineering solutions through student projects and to implement those solutions by actively assisting through community engagement initiatives and leveraging digital platforms and technologies to reduce hunger (SDG2), poverty (SDG1), and provide quality education (SDG4) and equal opportunities to empower both male and female youths (SDG5), to foster a society where the youth are equipped with digital entrepreneurial knowledge and skills to become entrepreneurs capable of creating decent work and helping the society to grow economically (SDG8). Additionally, this is to support IIUM in achieving the following Strategic Focus Areas (SFA), to enhance societal wellbeing (SFA3) and to create responsible research and innovation (SFA5), which simultaneously induces and allows for the nurturing of balanced IIUM graduates (SFA1) and staff (SFA2).

IV. METHODOLOGY

A design and systems thinking-process approach was adopted as the methodology of this paper to formulate and design a conceptual business model for a University of the future (UotF), with an emphasis on international collaboration and active community engagement to generate feasible solutions and appropriate digital entrepreneurial skill development learning programs leveraging on digital platforms. Design thinking is an extremely useful non-linear iterative methodology used for complex problems, centered around understanding human needs and aims to project designer's business ideas into business models and processes, while systems thinking incorporates an all-inclusive circular approach of analysis that focuses on the integration and interrelation of systems and its constituents [15][16]. The objective of this paper is not to present or report on the test results, its sole focus shall be an attempt to analyse, design, generate and validate an innovative business model alternative for a University of the Future (UotF). The final conceptual business model is designed using the following business model tools, namely, Business Model Canvas (BMC) [17], and Value Proposition Design Canvas (VPC) [18]. The Business Model Canvas allows business models to be analysed, formulated and designed through strategic management and visualization of the business's core elements, including its value proposition, customers, infrastructure, revenue streams, etc. [17]. An extensive literature review is carried out correspondingly to delineate the key forces that influences and drives the current business models of HEIs to identify the major challenges in order to provide an alternative an improved business model.

V. LITERATURE REVIEW

A. Drivers of change transforming HEIs.

Over the past two decades and especially in current times due to the COVID-19 pandemic, HEIs all over the world have been constantly undergoing and experiencing institutional and system-level transformations. HEIs have always been one of the frontiers in influencing and succeeding in bringing about extensive changes to the societies they serve, as they have acted as repositories and generators of knowledge and research, to innovate and support economic development and societal well-being [19]. However, with the rapid rise in digital technologies and the internet, HEIs have been faced with a crisis and are under pressure to go through radical changes in order to remain relevant and reclaim their position as a contributor and driver of societal change. The major drivers for change in HEIs are concerned about quality and delivery of education, sustainability, contributions to the future of societies and the planet, geopolitical issues and technological developments.

Ernst & Young [3] and many others [4][20][21] have identified five major disruptive forces and challenges, each of which stakeholders have limited control over and which are driving HEIs to change. They are enumerated and briefly explained as follows.

1. Work/Jobs are constantly changing: Employment and employability are currently being affected and disrupted with the rise of modern technology, such as robotics, artificial intelligence and machine learning. More and more jobs are disappearing or require the assistance of tasks which are being automated using repetitive programming which offers more precise and reliable continuous work in contrast to humans.
2. The boundaries between educational industries are becoming blurred: non-traditional educational services are being offered at an increasing rate over the past few years due to an increase in technological devices, internet usage, and the democratization of knowledge and information. These educational services are becoming rivals to HEIs and are challenging their previous dominant status in teaching and learning. HEIs will now have to work closely with other industries to receive funds and develop new curricula to meet the requirements of the current change in the workplaces.
3. The evolving nature of digital technologies: Majority of consumer activities are making a digital shift and making use of the web, social media, mobile applications, etc. The learning and social behaviours of the current youth is completely different to those of the past generations as the new generation have become digital citizens. Learners and teachers are becoming empowered by digitization to create educational services.
4. The increase in international competition: International mobility and the ease of knowledge accessibility is increasing as the political, demographic, and technological aspects of governments are changing. To remain competitive and join the global rankings, HEIs will have to change traditional methods to meet students' expectations and requirements.
5. The rise of lifelong and continuous learning: As job requirements and criteria's continuously keep changing due to the rise of technological advances, there is a high demand for workforce agility and education as a continuous process. Acquiring skills solely for pursuing a specific career is no longer a stable option, and lifelong learning is becoming a necessity to be able to adapt and stay competitive in the current job market.

B. Business Models for the Universities of the future.

From the literature, there are a few papers which have proposed or attempted to envisage future models of HEIs. Barber et. al. [13], highlights five possible emerging models which are as follows, (i) the elite university: a small number of globally renowned brand universities with a stellar record, famous alumni, and a historical background, will continue to attract the most talented students, and receive prestigious research funding and grants. They will be the first to adapt and incorporate technological materials and methods to their teaching and learning methodologies. They will expand globally and establish remote campuses to deliver the same quality of education. Additionally, these universities will focus on nurturing leaders through student development programs using extra-cocurricular activities and real-world experiences. They will become an exemplary to other HEIs and will become a primary source for content and curriculum. (ii) the mass university: globally-developed content and ideas are adapted and taken advantage of universities that are capable of providing education to the growing middle class interested in obtaining a degree for better career prospects. Most of these universities will be available online or blended with the traditional universities. (iii) the niche university: private for-profit universities committed to helping students obtain a personal and professional learning experience specifically for a niche

academic category. (iv) the local university: local universities that play an essential role for the local economy and society, by developing students for skilled workforces and applied research. Examples, include medical schools, business schools, information technology institutes etc. (v) the lifelong learning mechanism: individuals who use a range of services to successfully complete a degree equivalent to that of a higher education degree without ever attending one. They could be awarded a degree based on their contributions and exceptional performance in a variety of fields for decades. Examples include successful business entrepreneurs, successful college dropouts such as Steve Jobs and Mark Zuckerberg.

Ernst and Young [3], explored and suggested four divergent higher education models based on two uncertainties, the shifting role the government has to play and the evolving demand of preferences from both the learners and employers. They are as follows: (i) The champion university: the base case scenario, where the HEIs landscape remains traditional, whereby the dominant model is broad-based teaching and research. It is a hands-on government model, whereby the government provides the primary funds and champions the university. This model is a technology integrated streamlined version of today universities. (ii) The commercial university: the likely case scenario whereby the higher education landscape has been liberalized, driven, and prioritizes free market principles. It is a hands-off government model and funding is primarily obtained from partnerships forged with industries that are invested in the system. Universities are commercially oriented, autonomous and focuses more on the quality of teaching and employability. Dual degrees i.e., on-campus degrees and digital degrees with a lower cost are made available and HEIs compete via industry linkages. (iii) The disruptor university: the alternate case scenario whereby the higher education landscape has been disrupted. Automation and artificial intelligence displace professional jobs, disrupting employment. It is a hands-off government model and promotes deregulation, universities are self-funded or privately funded. Majority of education is done through online on-demand streaming apps with the assistance of artificial intelligence mechanisms. Continuous lifelong learning is the dominant mechanism for learning and higher education becomes Education-as-a-Service (EaaS), majority of the traditional based universities disappear and only those agile and adaptive universities continue to remain. University degrees become increasingly obsolete in the market industry and diverse learning experiences are favoured. Academics are forced to become freelancers, and operate in various institutions simultaneously. (iv) The virtual university: This is the extreme case scenario whereby the higher education landscape is restructured due to artificial intelligence disrupting the job market and employment. It is an activist government model, and universities along with educational services are integrated into a tertiary sector. Teaching is prioritized over research and majority of the universities are funded by the government. Technology disrupts both the educational landscape and job market, resulting in more freelancers than full-time employees. Education is distributed through digital platforms, and as a result, digital content creators and marketing are key investments to capture value.

Other models mentioned in the literature are analogous but not as thorough as those described above. Deloitte Insights [22] suggest four models namely, the sharing university, the entrepreneurial university, the experiential university, and the partnership university. Whereas, DeLaski and Glasper [23], suggests five new emerging models for HEIs, namely the platform facilitator, the experiential curator, the total learning certifier, the workforce integrator and the specializer.

C. Youth Unemployment in Bangladesh.

It is universally agreed by everyone that the youths of countries worldwide are the most important resource to contribute, accelerate and bring stability to a country's economic, political and social development. The Bangladesh Bureau of Statistics (BBS) states in their Report on labour force survey 2016-17 [11] that the current unemployment rate is at about 4.2 percent and youth unemployment is at 10.6 percent, and that 79.6 percent of people in unemployment are unemployed youths and 46 percent of them are unemployed graduate youths. Additionally, BBS [11] reports that 13.4 percent of the unemployed youth had a tertiary level education and 28 percent of the unemployed youth had a secondary level education. The International Labour Organization [24] reported that at least 40 percent of the youth of Bangladesh are not in education, employment or training (NEET), of which 15 percent are young men and 62 percent are young women. Furthermore, the World Bank [6], reports that only 19 percent of college graduates and 39 percent of university graduates were employed and able to find full-time or part-time jobs, whereas the percentage of unemployed graduates were 46 percent and 39 percent respectively. However, tertiary-level polytechnic graduates proved to have better employability skills as 49% of the graduates were employed primarily due to the technical and applied training skills they obtained from the institutions. Additionally, female graduates from tertiary-level institutes, including colleges and universities are more likely to experience unemployment for more than 2 years after their graduation. The report indicates that employers are

seeking graduates with problem solving skills, ICT skills and other technical and soft skills, all of which current universities have not implemented and promoted, due to underdeveloped planning and management.

The aforesaid reports indicate a low labour force participation rate among the youth of the country. The statistics also implies that the education provided by the country is not empowering the youth with employability and entrepreneurial skill appropriate for the current industry and job market landscape. Additionally, the prevalent high number of youth unemployment indicates that Bangladesh is deprived of the profits, contributions and benefits that could be provided by the youth in the current digital era. Khatun & Saadat [5], lists the following as the general causes in Bangladesh that results in youth unemployment, namely: inadequate or insufficient job opportunities; insufficient or poor quality of education and mismatch of skills; lack and limited scope for self-employment; reduced employment prospects as a result of bribery and corruption; a lack of vocational and technical training; overpopulation; poor transportation or communication facilities; limited access to information regarding job opportunities or vacancies; mental health and drug addiction etc. To ensure that Bangladesh's economy is efficiently using all its resources and operating at full capacity, youth unemployment has to be either reduced or eliminated. To reduce the current youth unemployment rate, Bangladesh has to improve their current education system, which is currently inadequate and not aligned with the industry and needs of the job market, they should also increase the availability of internet and technology which has the capability to play a key factor in inspiring creativity and innovation due to the democratization of information. Technical and vocational training should also be updated to meet the current demands of the industries. The youths of Bangladesh should also be exposed to self-employment ideas through creative business ideas and digital entrepreneurship skills development [5][25].

D. Environment Map, Business Model Canvas and Value Proposition Canvas.

A business model is an organization's core strategy to identify the products and services they can sell, the target customers and the anticipated expenses in order to make profit [26]. Business Model Canvases (BMC) provides organizations and lean start-ups with a template to document or develop current business models. It is a visual chart with nine elements that describes the businesses motivations and how organizations are able to create, capture, and deliver

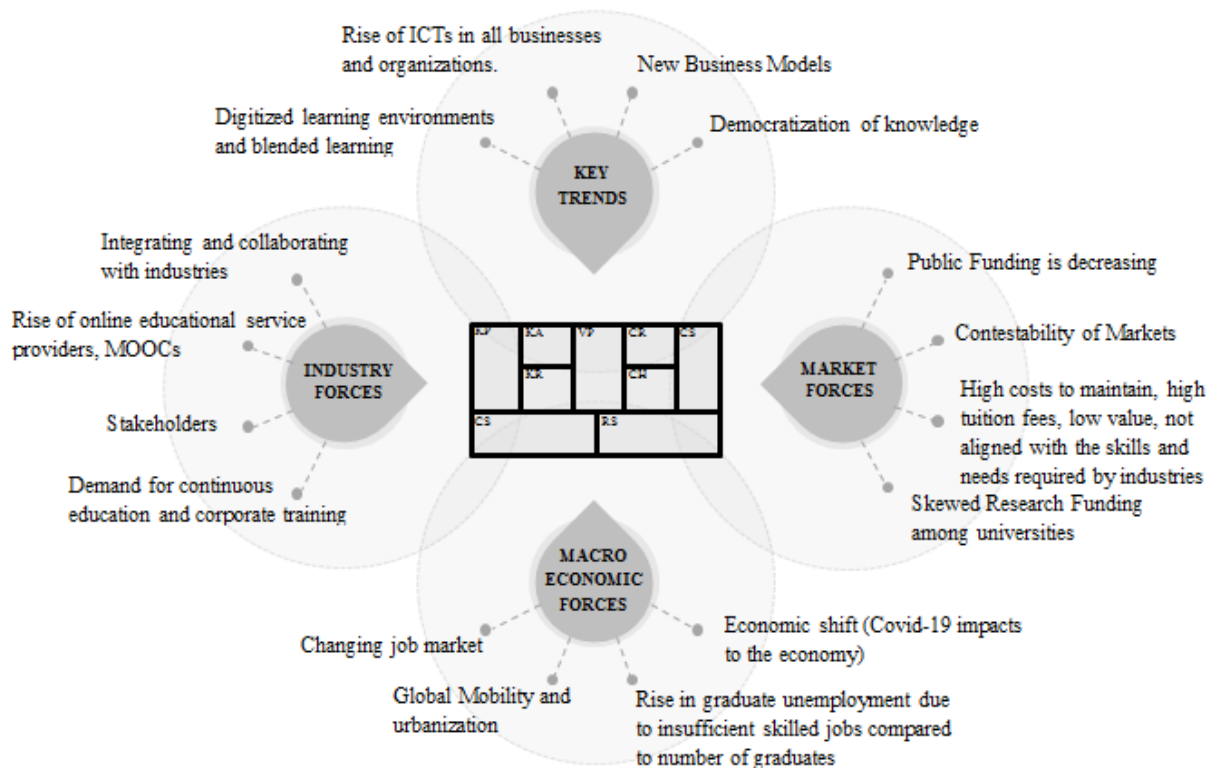


Figure 1: The external environment map of existing higher education institutes.

value [17]. Before proposing a conceptual BMC an Environment Map (EM) as illustrated in Figure 1, is modelled using the information obtained from the literature review and from [17][27]. The external environment map allows a business

organization to understand the context and capture the main external market forces that are capable of having impacts on their business. The EM allows new associations to be created, patterns to be discovered which could eventually lead to redesigning existing models, and is divided into the following four categories, namely, (i) key trends; (ii) market forces; (iii) macro-economic forces; and (iv) industry forces. The Business Model Canvas (BMC), is a visual canvas template consisting of nine building blocks of the business model which is used to describe an organization's (i) offerings: value propositions, (ii) infrastructure: key activities, key resources and partner network, (iii) customers: customer segments, channels, customer relationships and (iv) finances: the organization's cost structure and revenue streams [17]. The Value Proposition Canvas (VPC) is a canvas template that help's business organizations create, acknowledge and improve value that is deliverable and communicable to their customers, and is composed of (i) a customer profile, which allows organizations to clarify the customers understanding, (ii) a value map, where the organization describes how they intend to create and improve value for the customers [18].

E. Information Technology and the SDGs.

On September 2015, members of the United Nations adopted the 2030 agenda which included seventeen interlinked goals which are meant to be a blueprint for the world in order to create a better and more sustainable future by tackling a wide range of social, environmental and economic issues [28]. The SDGs framework is a far more ambitious and renewed form of the Millennium Development Goals (MDGs) and consists of a list of bold objectives, including the eradication of poverty, universal health coverage, education for everyone, gender equality and fostering an economically sustainable planet. Five years have passed since its initiation and only ten years remain to achieve the seventeen goals. Global poverty and child mortality rates have decreased since 2015, however, with the current global pandemic of COVID-19, progress of the SDGs has been halted and, in some cases, fallen back off track, for example the world was already off track to eradicate poverty by 2030, and due to the COVID-19 pandemic, global poverty increased for the first time in decades as 71 million people were pushed to extreme poverty in 2020 [29]. Current reduction in poverty, hunger, climate change etc. are slowing down and veering off track of the 2030 goal. In a state to reinvigorate and recover the SDGs, the United Nations have launched the Decade of Action plan to accelerate the pace and deliver the SDGs in within the next ten years. The Decade of Action plan includes global mobilization, an insistence of urgency and ambition, and to use technology and other investments to boost ideas into solutions.

Information and Communications Technology (ICT), especially the capabilities of digital connectivity and mobile technology has been playing a significant role and have caused profound effects on societies all around the world. It has democratized the knowledge economy and has created numerous possibilities, economic developments and innovations. Therefore, ICTs can act as a catalytic driver to accelerate the realization of the SDGs and to get out from the current stage it finds itself in. In fact, the COVID-19 pandemic has highlighted and demonstrated how necessary and fundamental digital technologies are to the economy of societies. It has brought awareness to the capabilities of a digitally enabled world, where everyone is capable of using mobile networks and digital platforms to communicate and access life-enhancing services. ICTs are capable of enhancing capabilities to evaluate methods, creating numerous opportunities, and assisting in providing access to resources for developing and low-middle income countries. ICTs can reduce poverty by providing mobile access to different financial services, as well as using digital applications and other platforms to distribute resource to poverty areas and encourage entrepreneurship (e.g. Qualcomm's Village Phone Microfranchising Program in Indonesia and Hapino Mobile Money Hubs in Philippines), reduce hunger by providing agriculture solutions, updates and forecasts to enhance and increase the productivity of rural businesses (e.g. Qualcomm's wireless solution for fisheries in Kenya and India), improve good health and well-being by providing digital platforms that provide health information that allows for doctor and patient interaction (e.g. develop solutions to assist pregnant women in rural areas to reduce infant deaths), provide quality education by providing learning solutions using digital platforms (e.g. Cheap online educational degrees and resources), gender equality and empowerment through equal access to digital technologies, creating awareness and promoting equal entrepreneurship. ICTs can also be used to create smart management systems for water hygiene and cleanliness, smart greener climate monitoring and forecasting systems, promote digital entrepreneurship and e-commerce, smart solutions for efficient energy usage, leverage the use of Internet of things (IoTs) to create smart and intelligent systems for organizations and public transport systems and much more.

F. Higher education, community engagement and the SDGs.

HEIs can act as living labs as well as an engine to bring about transformations and deliver solutions to the SDGs, by working with the students, faculties, staffs, stakeholders, and the alumni. They can achieve this by integrating and aligning their academic missions with the SDGs [30]. Higher education's engagement with the SDGs will additionally

bring great benefits to it, they will be able to demonstrate their relevance and impact as well as provide SDGs related education, build new partnerships with industries to obtain new funding streams, and promote a globally aware and responsible attitude. They can provide students with the motivation, knowledge and skill to understand, tackle, and address the SDGs through learning and teaching, providing expertise to implement SDG solutions, mobilizing and empowering the youth through student volunteer activities, innovative and entrepreneurship programs, and through the delivery of capacity building programs. HEIs can develop quality courses online regarding the SDGs and how to address and develop solutions to the seventeen goals. In fact, the SDGs Academy currently has created 31 graduate-level courses on sustainable development which can be freely audited by everyone around the world on edx.org, a massive open online course (MOOC) provider. Higher education, through extensive research and activities can collaborate with companies for research and deliver, monitor and evaluate innovative solutions in the areas for sustainable agriculture, consumption and vaccine development, and reinforce community and public engagement and participation. [8][31]. For example, the University of Manchester's Amrita Live-in-Labs where scientific and engineering research is carried out to produce practical and social benefit solutions for India. To reduce poverty and health issues including respiratory problems, a smokeless stove for cooking was designed and implemented by students who volunteered to go and install the system in an Indian village. To provide quality education, strategies to educate children in mathematics were implemented and the university has awarded several scholarships to students from disadvantaged backgrounds. They have also produced four percent of the SDGs related research in the country and collaborated with The Works to support unemployed people get back into work. The university has also supported gifted professionals from Uganda, Rwanda, Tanzania and Ethiopia to address the SDGs through their master's programs and collaborated with 17 universities to develop innovative solutions for renewable energy, water and to improve dams [32].

VI. PROPOSED CONCEPTUAL BUSINESS MODEL

A. *The Initial Business Model – BMC and VPC*

A preliminary Business Model, using the Business Model Canvas (BMC) and Value Proposition Canvas (VPC), was designed and formulated for the existing dominant broad-based teaching and research higher education system. As mentioned in the methodology, a design and systems-thinking approach was used to establish the current Business Model of HEIs. The requirements determination of the model was addressed and carried out during the literature review process and once the Environment Map (EV) was established. The initial Business Model - BMC and VPC, were then validated, modified, and adjusted accordingly to include the Bangladesh's low-middle income communities, their unemployed graduate youths, and the different methods HEIs will administer and deliver their services and solutions. This validated Business Model was then supported through surveys implemented online by twenty unemployed Bangladeshi graduates.

B. *The Validated Business Model – BMC and VPC*

The outcomes of the validation process indicates the following: majority of the participants agreed that HEIs should incorporate both knowledge learning and industry related learning in their courses to provide students with a better understanding of the current work in industries to boost their employability skills; they also agreed that HEIs should play an important role in accelerating the SDGs, and that current issues in low-middle income communities can be alleviated through research and solutions provided by projects done by students or universities or through collaborations with industries. The participants also agreed that in today's technological and digital connectivity age, digital entrepreneurship skills training and coaching is necessary for everyone, as it provides individuals with an alternate option to create start-up businesses if employment for desired jobs are not available or as an additional income source. They also agreed that the current tuition fees are outrageous and that transitioning to digital platforms to offer cheaper courses would benefit a lot of youths from low-middle income families. The final validated BMC is as shown in Table 1. Each of the nine building blocks of the validated BMC are briefly discussed next.

a) **Customer Segments**

The customer segments section of the canvas defines the various organizations and groups of people the Malaysian UoTf aims to serve and reach out to. This is the central section of the business model canvas and essential for its success. The customer segments are the unemployed or underemployed graduate youths from disadvantaged socio-economic backgrounds and low-middle income families, governments, and industries.

b) Value Proposition

The value proposition section of the canvas describes the services and products that the university delivers that are of value and satisfies the needs and expectations of the different customer segments. They include producing balanced graduates who are knowledgeable in various academic fields aligned with the community's and industry's needs, who are responsible and possess digital entrepreneurial knowledge and skills to create jobs. Freemium-based courses and scholarships for students and unemployed graduate youths from Bangladesh's low-middle income communities. Providing ICT and engineering solutions through student projects and researches for issues commonly found in low-middle income communities (e.g. ICT solutions for agriculture, health tracking and monitoring, clean water solutions, etc.). The principal goal is to provide current and relevant education and solutions to reduce unemployment which helps to reduce poverty and hunger. Educated with digital entrepreneurial skills, youths possess better employability skills for industry jobs as the country is currently transitioning into a digital country. Furthermore, the youths are capable of creating their own businesses and scaling them up to create more job opportunities for other members of the community and government.

c) Channels

The channels section of the canvas mentions what platforms and methods the university uses to reach out and communicate with its various customer segments in order to deliver its value propositions. It is basically the interface between the university and its customers. The main channels of the university are through direct face-to-face meetings, using digital platforms, through partnerships and the alumni chapter.

d) Customer Relationships

The customer relationships section of the canvas describes the different types of relationships established between the various customer segments and the university. To connect and sustain relationships with the customer segments and stay relevant, the university delivers on campus face-to-face courses, courses through digital platforms including digital entrepreneurial courses, through coaching, mentorship, partnerships and the alumni chapter/association workshops.

e) Revenue Streams

The revenue streams section of the canvas represents the money the university generates from the various customer segments. Majority of the revenue streams money acquired will be used to cover the various costs required by the university to operate, implement and maintain its key resources and activities. The main revenue streams are through student's tuition fees, scholarships, grants and funds from the government and industries, through donations and through the freemium based online digital entrepreneurial courses.

f) Key Resources

The key resources section of the canvas describes the universities principal assets which are required to ensure that the value propositions are delivered to the various customer segments. The key resources include qualified, committed and dedicated lecturers, staff, and administrative staff, the teaching infrastructure and its facilities, the alumni, course content databases, as well as robust digital platforms and technologies to deliver online courses.

g) Key Activities

The key activities section of the canvas describes the most important activities that the university must perform in order to continue operating and accomplish its value proposition offers towards its customer segments. The key activities of the university include developing relevant course content aligned with the job industries, develop the online digital entrepreneurial teaching and learning programs including mentorship and coaching, analyse current issues in low-middle income communities and carry out responsible and quality research development and innovation, community engagement and to create and strengthen partnerships with the government, industries and business communities.

h) Key Partners

The key partner section of the canvas describes different network of partners and suppliers that the university collaborates with and maintains in order to receive funds and assistance to continue operation and deliver its value propositions to the customer segments. The key partners of the university include local and international universities collaborating together to do research and community engagement programs, local and international industries to receive funds, grants, and key

insight to the work requirements of the current job market, outsourcers to assist in the key activities, local and international alumni chapters to support and assist in executing community engagement workshops and collaborating with Bangladesh's Ministry of Education and Ministry of Labour and Employment to better understand the needs of the unemployed graduate youths and current state and requirements of the industries to improve employability.

i) Cost Structure

The cost structure section of the canvas describes and list all the major costs incurred by the university to function, operate and deliver its value propositions to its customer segments. The costs structure includes the costs of executing, maintain and enhancing each of the key activities and key resources.

Table 1: Validated Business Model Canvas (BMC)










Key Partners  <ul style="list-style-type: none"> Universities (local and international) Industries (local and international) Alumni chapter (local and international) Outsourcers Donors/NGOs Bangladesh Ministry of Education and Ministry of Labour and Employment 	Key Activities  <ul style="list-style-type: none"> Develop course content Develop online teaching and learning programs: university courses, specialized courses focusing on humanizing, and digital entrepreneurial courses. Coaching & mentoring Responsible quality research, development and innovation to produce quality solutions through community engagement. Partnership/donor management. Sponsored/voluntary community engagement. 	Value Propositions  <ul style="list-style-type: none"> Produce balanced, knowledgeable, responsible and entrepreneurially minded graduates. Provide wide range of academic programs aligned with current community and industry needs. Lifelong learning and community engagement. Cheap freemium-based, scholarships, and humanized/balanced digital entrepreneurial education. Provide ICT and Engineering solutions through student projects and research, for agriculture, health tracking and monitoring, etc. 	Customer Relationships  <ul style="list-style-type: none"> Face-to-face on campus Digital Platforms: online courses (MOOC), online community forums, social media. Coaching & mentoring Partnerships Alumni association/chapter 	Customer Segments  <ul style="list-style-type: none"> Bangladesh's low-middle income communities and their unemployed or underemployed youths Industries and the business community Government
Key Resources  <ul style="list-style-type: none"> Qualified and committed Teachers & Staff Dedicated administrative staff. Teaching infrastructure and Facilities Alumni Course Content Database Robust digital platform technologies 		Channels  <ul style="list-style-type: none"> Digital Platform Partnership Face-to-face Alumni chapter 		
Cost Structure  <ul style="list-style-type: none"> Costs for Key Resource Costs for Key Activities Costs for maintenance of infrastructure and digital platforms 		Revenue Streams  <ul style="list-style-type: none"> Student's tuition fees Scholarships, Sponsorships and Grants Freemium based system Donations 		

Table 2: Validated Value Proposition Canvas (VPC)

Customer Segment	Customer Profile			Value Map		
	Jobs-to-Do	Pains	Gains	Products and Services	Pain Relievers	Gain Creators
Bangladesh's Low-middle income communities' unemployed youths	Acquire knowledge, skills, creativity and ethical values. Create decent jobs. Seek Jobs to earn a living. Contribute to the wellbeing and economy of the community.	Tuition fees are too expensive to pursue additional/different degree. No jobs due to pandemic and overpopulation. Not enough skills to create jobs. Have to do odd jobs to get by (underemployed) Financial constraints.	Cheap/free online-based digital entrepreneurial courses. Industry and job-market related course training. Better and increased opportunities to get employed or become self-employed. Contribute to the community by creating jobs and opportunities.	Industry and job-market related course training. Humanized education. Cheap courses including a select few free courses. Experienced industry professional mentorship and coaching. Accredited certification.	Cheap courses including a select few free courses. Gain industry-based knowledge and skill. Scholarships/financial aids.	Industry-based and academic professional education. Employability and entrepreneurial skills to create jobs. Blended lifelong learning and community engagement Financial aids/Scholarships. Soft skills and networking.

Government	Provide education for everyone. Create jobs. Provide financial assistance. Provide funds and grants.	Unable to provide education to everyone. Unable to create jobs for everyone. Lack of quality decision making. Not enough skilled job creators. Not enough leaders and motivators.	More balanced and educated people. More jobs. Balanced and dedicated leaders.	Higher education partnering and integrating with industries to deliver courses and programs that provides skills for employment and job creation. Courses provided on digital platforms. Collaborating with diverse students form different countries. Community engagement through quadruple helix model framework. Talented, and dedicated academia for quality mentorship.	Cheaper courses including a select few free courses. Scholarships/financial aids. Provide industry-based knowledge and entrepreneurial skills. More people capable of creating jobs. More balanced and dedicated leaders. Community engagement.	Partnership with government for funds and grants. Industry-based and academic professional education. Employability and entrepreneurial skills. Financial aids/Scholarships. Soft skills and networking.
Industry and the business community	Provide more jobs. Form partnerships and support universities. Executive education by industry professionals. Provide funding. Improve by contributing to the economy.	Not enough industry-skilled people to recruit. Not enough solutions to improve industries production and services.	More balanced industry-skilled people. Research, development and innovative solutions.	Provide quality research and innovative solutions. Talented, dedicated and committed researchers. Provide balanced industry-skilled people.	Provide industry-based knowledge and entrepreneurial skilled students. Research, development and innovations provided to industries.	Partnership with industries for funds and grants. Partnership with industry-based and academic professional for executive education. Employability and entrepreneurial skills. Financial aids/Scholarships.
Bangladesh's Low-middle income communities	Create jobs. Help the community's economy. Raise balanced healthy, educated and ethical youths.	Unable to create jobs due to lack of entrepreneurial and ICT skills. Unable to maintain stable income to support families. Unable to provide education for the youths due to poverty. Unable to implement solutions to improve quality of work and health of individuals in the community.	ICT solutions to reduce poverty and hunger. More jobs created. Humanized, balanced, educated youths. Reduced poverty and hunger.	Provide quality research and innovative solutions. Talented, dedicated and committed researchers and students. Provide balanced industry-skilled people. Community engagement.	Quality research and innovative solutions provided. (E.g., provide ICT or engineering solutions to agriculture issues, health of pregnant women and children issues, clean water issues etc.) Cheap courses including a select few free courses. Gain industry-based knowledge and skill. Scholarships/financial aids.	Partnership with industries and governments for funds and grants. Partnership with industry-based and academic professional for executive education. Employability and entrepreneurial skills. Financial aids/Scholarships.

C. The Validated Value Proposition Canvas (VPC)

A value proposition canvas was then designed and formulated to ensure that the product and services provided by the university corresponded to the values and need of the customer segments. The VPC is made up of two building blocks, the customer segment's profile and the university's value propositions. The customer profile is divided into three sections, gains which are the benefits that the customer needs and expects, pains which are the negative aspects that the customer experiences in trying to accomplish the jobs, and customer jobs which are the tasks the customers are trying to accomplish. The value map is also divided into three sections, gain creators which are the services and products that creates value and gain for the customers, pain relievers which describe how customer pains are alleviated due to the product and services offered, and products and services which are the list of products and services the university offers to create gain and relieve the pains of the customer. The proposed VPC of each customer segment is tabulated in Table 2.

VII. CONCLUSION

This paper presented and proposed a conceptual Business Model Canvas (BMC) and Value Proposition Canvas (VPC) for a Malaysian University-of-the-Future (UotF) that aspires to embark on a transformation to redesign its business model in order to thrive, contribute and stay relevant in the digital, sustainable development goals (SDGs) and post-COVID era. To reduce unemployment and empower Bangladesh's unemployed and underemployed graduate youths with digital entrepreneurial skills, the UotF should provide cheaper and freemium-based online courses/programs aligned and relevant with the existing and future needs of the industry and job market as well as the nation's goals. Furthermore, to assist and accelerate the SDGs the university can collaborate with local and international governments, industries, and communities to carry out community engagement programs to analyse and develop simple innovative ICT or engineering solutions to solve simple issues that Bangladesh's low-middle income communities are currently facing, focusing primarily on job creation and poverty reduction. The business model presented in this paper can be adopted and benchmarked by other higher education institutions willing to undergo the necessary transformations to stay relevant and to assist and accelerate the pace in delivering and accomplishing the SDGs within the next ten years.

Future works includes the preparation of a project and change management plan to develop and implement either a digital entrepreneurial education system using digital platforms or to develop ICT or engineering solutions and implement them through community engagement or a combination of both. Additionally, it would be beneficial to provide reports on the results and outcomes of the execution of the BMC and VPC to assess the capability, agility and validity should any other HEIs choose to implement them.

REFERENCES

- [1] Knight, B. (2017). *Rethinking poverty: what makes a good society*. Bristol: Policy Press.
- [2] Ernst & Young (2012). *Universities of the future*. Ernst & Young Australia.
- [3] Ernst & Young (2018). *Can the universities of today lead learning for tomorrow? The University of the Future*. Ernst & Young. EYGM Limited. Australia
- [4] Arthur D. Little. (2016). *The future of higher education, Transforming the students of tomorrow*. The Arthur D. Little Research Institute.
- [5] Khatun, F., & Saadat, S. Y. (2020). *Youth employment in Bangladesh: Creating opportunities - reaping dividends*. Singapore: Palgrave Macmillan.
- [6] The World Bank. (2019). *Bangladesh Development Update. Tertiary Education and Job Skills*. The World Bank Office, Dhaka.
- [7] APPA. (2013). *The Rising Cost of Higher Education*. APPA Thought Leaders 2013. Distributed by ERIC Clearinghouse.
- [8] SDSN. (2018). *Getting Started with the SDGS in Universities, Sustainable Development Solutions Network (SDSN)*. Australia/Pacific.
- [9] Leal Filho, W., Shiel, C., Paço, A., Mifsud, M., Ávila, L. V., Brandli, L. L., Molthan-Hill, P., Pace, P., Azeiteiro, U. M., Vargas, V. R., & Caeiro, S. (2019). Sustainable Development Goals and sustainability teaching at universities: Falling behind or getting ahead of the pack? *Journal of Cleaner Production*, 232, 285–294.
- [10] Hwang, Y. (2017). What Is the Cause of Graduates' Unemployment? Focus on Individual Concerns and Perspectives. *Journal of Educational Issues*, 3(2), 1.
- [11] BBS. (2018). *Report on labour force survey (LFS) 2016-17*. Dhaka: Bangladesh Bureau of Statistics.
- [12] Ibrahim, I and Dahlan, A. R. A (2016). *Designing Business Models Options for University-of-the-Future*. 4th IEEE International Colloquium on Information Science and Technology (CiSt), 600-603.
- [13] Barber, M., Donnelly, K., Rizvi, S., and Summers, L. (2013). *An avalanche is coming*, Institute for Public Policy Research, London, UK. Retrieved November 27, 2020, from [https://www.insidehighered.com/sites/default/server_files/files/FINAL%20Embargoed%20Avalanche%20Paper%20130306%20\(1\).pdf](https://www.insidehighered.com/sites/default/server_files/files/FINAL%20Embargoed%20Avalanche%20Paper%20130306%20(1).pdf)

- [14] OSIC IIUM. (2020). IIUM Roadmap 2.0, 2019-2020, Whole Institution Transformation. Office for Strategy and Institutional Change (OSIC). IIUM. Retrieved November 27, 2020, from https://photos.iium.edu.my/publication/roadmap3_2/roadmap-v3/assets/common/downloads/publication.pdf?uni=022e1c7a253450cc2741b0b2b5a7571b
- [15] Lewrick, M., Link, P., & Leifer, L. (2020). *The design thinking toolbox a guide to mastering the most popular and valuable innovation methods*. Hoboken, NJ: Wiley.
- [16] Müller-Roterberg, C. (2018). *Handbook of Design Thinking Tips & Tools for how to design thinking*. Middletown, DE.
- [17] Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: A handbook for visionaries, game changers, and challengers*. Hoboken, NJ: Wiley.
- [18] Osterwalder, A., Smith, A., Bernarda, G., & Pigneur, Y. (2014). *Value proposition design*. Hoboken: Wiley.
- [19] Crow, M. (2014). What is the role of universities in global development? World Bank Blogs. Retrieved November 27, 2020, from <https://blogs.worldbank.org/education/what-role-universities-global-development>
- [20] Maxwell, N., & Gallagher, S. (2020). Drivers for Change in Higher Education. *New Directions for Community Colleges*, 2020(189), 9–22. doi:10.1002/cc.20394
- [21] Singh, S. (2012). *New mega trends Implications for our future lives*. Basingstoke: Palgrave Macmillan.
- [22] Deloitte Insights. (2018). *The future(s) of public higher education. How state universities can survive—and thrive—in a new era*. Deloitte Center for Higher Education Excellence. Deloitte Insights.
- [23] DeLaski, K., Glasper, R. (2019). *The learner Revolution, How Colleges Can Thrive in a New Skill and Competencies Marketplace*. Education Design Lab. Washington, DC.
- [24] ILO. (2016). *Statistical Report of the Decent Work Deca de 2006-2015: Asia-Pacific and the Arab States*, Bangkok: International Labour Organization (ILO).
- [25] Ahmed, S.S., & Khan, M.K. (2015) *Employment and unemployment situation in Bangladesh: a dismal picture of development*. Biennial Conference of the Bangladeshi Economic Association, Dhaka
- [26] Kopp, C. (2020, August 29). *Understanding Business Models*. Retrieved December 06, 2020, from <https://www.investopedia.com/terms/b/businessmodel.asp>
- [27] Dahlan, A.R.A., Ibrahim, J., Jalaldeen, M.R.M. and El Mohajir, M. (2020). Redesign "University of the Future" Conceptual Business Model: Sustainability and Staying Relevant in the Digital Age, *Journal of Information Systems and Digital Technologies*, Vol.2, No.1, P.47
- [28] United Nations. (2017). *Resolution adopted by the General Assembly on 6 July 2017, Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development*. United Nations General Assembly.
- [29] United Nations. (2020). *Sustainable Development Goals Report 2020*. United Nations Department for Economic and Social Affairs S.I.: United Nations.
- [30] Purcell, W. M., Henriksen, H., & Spengler, J. D. (2019). Universities as the engine of transformational sustainability toward delivering the sustainable development goals. *International Journal of Sustainability in Higher Education*, 20(8), 1343–1357.
- [31] Mori Junior, R., Fien, J., & Horne, R. (2019). Implementing the UN SDGs in Universities: Challenges, Opportunities, and Lessons Learned. *Sustainability: The Journal of Record*, 12(2), 129–133.
- [32] The University of Manchester. (2019). *The University of Manchester: Sustainable Development Goals*. Office for Social Responsibility. The University of Manchester. Oxford.