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DISRUPTIVE BUSSINESS MODEL FOR HIGHER EDUCATION

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Department of Information Systems and Security

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This thesis is submitted in partial fulfillment of the requirements for the degree of Master of Science in Information Technology Management

Under the Supervision of Dr. Farag Sallabi

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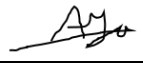
Declaration of Original Work

I, Aya Rizik Abushawish, the undersigned, a graduate student at the United Arab Emirates University (UAEU), and the author of this thesis entitled "*Disruptive Business Model for Higher Education*," hereby, solemnly declare that this thesis is my own original research work that has been done and prepared by me under the supervision of Dr. Farag Sallabi, in the College of Information Technology at UAEU. This work has not previously been presented or published or formed the basis for the award of any academic degree, diploma, or a similar title at this or any other university. Any materials borrowed from other sources (whether published or unpublished) and relied upon or included in my thesis have been properly cited and acknowledged in accordance with appropriate academic conventions. I further declare that there is no potential conflict of interest with respect to the research, data collection, authorship, presentation, and/or publication of this thesis.

Student's Signature:  Date: 13/10/2020

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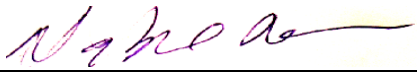
   Signature  Date 6/10/2020

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Abstract

A business model is a plan for the successful operation of a business, identifying sources of revenue, the intended customers, value proposition, key resources, activities, and financing. It describes how organizations create, deliver, and capture value. The recent developments in information and communications technology (ICT) disrupted most business models in different industries. The higher education industry is no exception, where it witnessed enormous integration of information and communications technologies. E-learning in higher education has made a tremendous shift in students' life and raised the expectations of the higher education services quality. The main objective of this thesis is to develop a disruptive business model with a value proposition that leverages the recent development in the ICT sector and helps reduce educational costs, optimize operations of educational institutions, and provide an increased number of students with an access to high quality educational services. The research work provides a comprehensive literature review on using ICT in higher education and utilizes a well know business model canvas – designed in 2010 by business theorist Osterwalder - to develop a disruptive model of higher education. Two surveys have been conducted in the empirical part of this study. The first one investigates the current application of online technologies in higher education, targeting students, faculty, and parents. The second survey evaluates the students' reactions to an e-learning course that they had taken. The results of the studies align with the value and technologies proposed by the business model. Hence, the two surveys' findings prove the validity and the unique potential of the proposed business model. The study reveals that the implementation of the new model might face substantial resistance to change because many teachers, parents, and even students do not perceive online learning as a valid alternative to traditional education. Therefore, institutions of higher education will need to conduct information campaigns to convince students, parents, and employers in the validity of the new model.

Keywords: Higher education, E-learning, Business model, Online teaching.

Title and Abstract (in Arabic)

نموذج العمل المزعزع للتعليم العالي

الملخص

نموذج الأعمال هو خطة للتشغيل الناجح للأعمال التجارية، وذلك بتحديد مصادر الإيرادات والعملاء المستهدفين، وعرض القيمة، والموارد الرئيسية، والأنشطة، وملإلإدر التمويل. نموذج الأعمال أيضاً يصف كيفية إنشاء المؤسسات للقيمة وتقديمها. لقد أدى التطور الأخير في تكنولوجيا المعلومات والاتصالات إلى زعزعة معظم نماذج الأعمال في مختلف الصناعات وقطاع التعليم العالي ليس استثناءً من ذلك، حيث شهد تكاملاً هائلاً لتكنولوجيا المعلومات والاتصالات. أحدث التعلم الإلكتروني في التعليم العالي تحولاً هائلاً في حياة الطالب ولالاعلاوقعات جودة خدمات التعليم العالي. الهدف الرئيسي من هذه الأطروحة هو تطوير نموذج عمل مزعزع والذي يسلط الضوء على التطورات الأخيرة في قطاع تكنولوجيا المعلومات والاتصالات والتي قد تساعد على تقليل التكاليف التعليمية وتحسين عمليات المؤسسات التعليمية وتزويد الطلاب بإمكانية الوصول إلى أفضل الخدمات التعليمية عالية الجودة وأن تكون متاحة إلى أكبر عدد من الطلاب. يوفر العمل البحثي مراجعة شاملة للأدبيات حول استخدام تكنولوجيا المعلومات والاتصالات في التعليم العالي ويستخدم لوحة نموذج العمل الذي صممه الباحث أوستروايلدر في عام (٢٠١٠) لتطوير نموذج مزعزع للتعليم العالي. تم إجراء استبيانين في الجزء التجريبي من هذه الدراسة. يبحث الاستبيان الأول في التطبيق الحالي للتقنيات عبر الإنترنت في التعليم العالي، ويستهدف الطلاب وأعضاء هيئة التدريس وأولياء الأمور. ويقوم الاستطلاع الثاني بتقييم ردود فعل الطلاب على الدورات التعلمية المعروضة والمسجلة إلكترونياً. تتماشى نتائج الدراسات مع القيمة والتقنيات التي اقترحها نموذج الأعمال. وبالتالي، تثبت نتائج الاستبيان صحة نموذج الأعمال المقترح وإمكاناته الفريدة. في الوقت نفسه، تؤكد الدراسة أنه في حين أن أصحاب المصلحة لديهم المهارات اللازمة للانخراط في أنشطة التعلم عبر الإنترنت، فإن تنفيذ النموذج الجديد قد يواجه مقاومة كبيرة للتغيير لأن العديد من المعلمين والآباء وحتى الطلاب لا يرون التعلم عبر الإنترنت على أنه بديل صالح للتعليم التقليدي. لذلك، ستحتاج مؤسسات التعليم العالي إلى إجراء حملات إعلامية لتوعية الطلاب وأولياء الأمور وأرباب العمل بصحة النموذج الجديد.

مفاهيم البحث الرئيسية: التعليم العالي، التعليم الإلكتروني، نموذج الأعمال، التدريس عبر الإنترنت.

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May Allah bless you all.

Dedication

To my beloved parents and family

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List of Abbreviations

eLearning	Electronic Learning
HE	Higher Education
IoT	Internet of Things
IT	Information Technology
LMS	Learning Management Systems
MOOCs	Massive Open Online Courses
TIPPSs	Trust, Identity, Privacy, Protection, Safety and Security
UAEU	United Arab Emirates University

Chapter 1: Introduction

1.1 Overview

Higher education institutions are categorized in terms of ownership, whether they are public, private, or for-profit institutions. Institutions in each of these categories differ in the way they are funded and in their business models and financial sustainability (Lapovsky, 2010). To ensure financial sustainability, many colleges and universities are responding by frequently making changes to their business models. Colleges and universities face daunting challenges to long-established business models. (Ahi, 2018). The cost of providing higher education continues to rise to put a financial burden on students; at the same time, competition among institutions of higher education in both public and private sectors is becoming more intense (Soares, Steele & Wayt, 2016). The bottom line is that the higher education industry will remain under stress until it can develop a new business model to provide quality education at an affordable price to students (Lapovsky, 2010).

In accordance with the traditional approach, institutions were advised to "stay in their lane" meaning that they should stick with their mission no matter how narrowly defined. The advice was just to execute better on what you were good at doing. Nowadays, this traditional approach is challenged by many stakeholders, and most colleges with narrowly defined mission statements recognize the need to think very seriously outside the box (Lapovsky, 2010). There are some schools that have already made significant changes to their business models and have recreated themselves as very different institutions from their beginnings (Morphew & Braxton, 2017). The available evidence provides a premise to believe that the number of such institutions will continue increasing the nearest future.

Those institutions that are not ready to undergo a global transformation try to optimize their business models with the help of operational measures. More prevalent and smaller-scale changes to the business model relative to activities to increase enrollment and net tuition revenue include changes to pricing and discounting policies; additions of new programs to increase institutional attractiveness, especially pre-professional programs; recruitment of new student populations including part-time, transfers and international students (Lapovsky, 2010). Institutions are considering resetting their prices down as the gap between the published price and the average price paid reaches 50% at private institutions. Many institutions are partnering with third-party providers to put programs online, usually using revenue share agreements that minimize risk to the institution (Hall & Dudley, 2019). These changes often take an institution beyond its originally stated mission. The majority of the institutions which have been successful in increasing their revenue stream from students have broadened their missions, and many have strayed far outside their initial lanes.

The implementation of innovative technologies is one of the most promising instruments of increasing colleges and universities' revenue streams in today's challenging environment. According to Murati and Ceka (2017), the use of tools and technologies is required in the teaching process for the successful implementation of business models in higher education. The term 'educational technology' refers to a variety of tools that help increase the effectiveness of learning as the implementation of the learning process through educational technology will provide greater opportunities for achieving contemporary teaching, but also, more efficient training of students can still easily cope with the demands and challenges of life.

There are many educational technologies that are employed by contemporary institutions of higher education in order to reduce costs and expand access to their services. A digitization of learning materials, for example, helps decrease storage costs and allows institutions to provide necessary materials to an unlimited number of students at the same time (Ahi, 2018). Augmented reality, in turn, is a unique technology that puts students into a virtual environment and encourages them to apply their skills in real-life situations (Kesim & Ozarslan, 2012). At the same time, while there are many technologies that could enhance higher education, most of them improve certain aspects of the educational process without simplifying access to educational services to most students. In contrast, massive open online courses (MOOCs) provide an effective solution to this problem (Al-Rahmi, Aldraiweesh, Yahaya & Kamin, 2018). This technology offers an uncommon path towards the disruption of higher education by transferring the majority of learning activities to online mediums.

MOOCs aim to provide free access and innovative courses that could affect the cost of university-level education and potentially disrupt the existing models of higher education (HE). The original promise of MOOCs was to open up education and provide free access to university-level education for as many students as possible (Al-Rahmi et al., 2018). In contrast to traditional university online courses, MOOCs have two key features, the first one is Open access where anyone can participate in an online course for free, and the second feature is Scalability, which means courses are designed to support an indefinite number of participants (Bralic & Divjak, 2018). The scale and open nature of MOOCs provides opportunities for expanding access to HE to all and creates a space for experimentation with online teaching and learning.

This exploration of new approaches for HE provision has generated significant interest from governments, institutions, and commercial organizations. The current value propositions for institutions to engage with MOOCs are identified as “education access, experimentation and brand extension” (Bennett & Kent, 2017). MOOCs can expand access to education for those who are interested in and extend institutions’ reach and reputation internationally. The ‘digital footprint’ of learners using the technology is captured in large data sets that can, potentially, provide useful insights into online teaching and learning with very large numbers of students at a low or minimal cost. For example, edX institutions such as MIT and Harvard use MOOCs to understand “how students learn” and “improve innovations in teaching and learning on campus” (Al-Rahmi et al., 2018). The most common revenue stream for the significant new MOOC providers is to charge fees for certificates. While edX is a not for profit MOOC platform to help universities achieve shared educational missions, in the longer term, it will need to be self-sustaining. Coursera and Udacity are examples of for-profit organizations that are developing a variety of business models. Coursera and Udacity have published commercial strategies, such as selling student information to potential employers or advertisers (Yuan & Powell, 2013). Moreover, the platforms have fee-based assignment grading, access to the social networks and discussions, an advertisement for sponsored courses, and tuition fees for credited courses (Yuan & Powell, 2013). Overall, the business model of Coursera and Udacity is changing how education is being administered to students.

The online education is viewed as a disruptive innovation. The use of technology, such as Coursera and MOOC, is changing how education is being administered. One instructor can teach over 100,000 students in a year over the

MOOC platform. Besides, the numbers are increasing daily. Higher education needs such innovation to help meet the high demand for education and minimize the cost of learning.

Coursera is among the companies that featured in Forbes' 2018 list of innovative next billion-dollar startups. The company is rated at over $1 billion (Adams, 2019). The online education provider raises more money in funding to support its business model. According to Adams (2019), Coursera is expanding to UAE through signing a deal with the Abu Dhabi School of Government. The deal entails training over 60,000 government employees in digital skills, such as artificial intelligence and data science (Adams, 2019).

Moreover, in 2019, Coursera offered 14 million master's degrees in computer science, business, and public health. The courses were covered in the University of Michigan and the University of Illinois at Urbana-Champaign (Adams, 2019). Overall, this disruptive innovative technology is taking over the traditional education model.

In terms of the cost of education, Coursera takes 40% of the tuition fee. The rate is calculated at the percentage because Coursera does not produce courses. Moreover, the company conducts affordable marketing campaigns (Adams, 2019). Through this business model, Coursera manages to administer low-cost degree programs. For example, the University of Illinois' iMBA costs $22,000 for the U.S. students compared to $75000 in tuition for an on-campus program (Adams, 2019). This data shows that innovative online degrees are 70.67% cheaper than the traditional on-campus method of learning.

The cost of education on MOOC and its counterparts, the Udacity and edEx, shows the potential of migrating to the online content delivers. Although the

traditional education system can complement the disruptive online innovation, the cost and quality of education are still expected to improve. Ideally, tuition fees consume the most significant chunk of higher education fees because students utilize electricity, water, and other resources to receive an education. Therefore, implementing a system that would reduce such overhead is an added advantage. This thesis proposes a disruptive business model for higher education that can help reduce the expenses of running university courses in the UAE and maximize content delivery.

1.2 Statement of the Problem

Higher education stakeholders need a business model that provides value for money to the students and a sustainable revenue stream for higher education institutions while maintaining a productive relationship among stakeholders.

The current business model for higher education is restrictive. A significant number of students cannot access education because of high fees. Moreover, teaching and non-teaching staff have to endure pay cuts because institutions cannot raise funds to meet their remuneration demands. Alternatively, some universities and colleges are increasing courses to boost students' enrollment and earn more money. Although these new ways seem to work, the higher education sector is not meeting its targets because learners are complaining about costly fees and huge loans after graduation.

Thus, colleges and universities should leverage emerging Information and Communications Technologies (ICT) to adapt to a business model that meets stakeholders’ needs. Through setting qualitative research, this thesis work aims at researching the possibility of having a business model that would accommodate all

the stakeholders through reducing the cost of education and meeting the needs of the teaching and non-teaching staff.

The main research goal of the study is to investigate how a disruptive business model could transform the system of higher education in a way that reduces the cost of educating and meets stakeholders' needs. The main research objectives of the thesis are as follows:

- To investigate the rationale behind the development of a disruptive model of higher education;

- To explore how massive open online classes could be integrated into the business model of institutions of higher education;

- To analyze possible effects of this business model on key stakeholders, including teachers, students, parents, and educational institutions;

- To investigate whether teachers, students, and parents are ready to embrace this new educational model;

- To explore the main enablers and barriers for this model given the current environment in the industry of higher education.

1.3 Background and Relevant Literature

Organizations, regardless of the sectors in which they operate, face a variety of new technologies that generate business opportunities and challenges (Schiavi & Behr, 2018). In this sense, several studies indicate that the changes provided by the new technologies relfect positively on the performance of the companies. Competition among companies in business ecosystems will happen not only through new products, services, or technologies but also through business models. Business model innovation is one type of innovation that has the potential to impact the

market and the competitors strongly. The essence of a business model is in deifning how the enterprise is organized to deliver value to customers.

A business model, as defined in Hedman & Kalling (2003), is a "strategic concept used in the different organizations' fields, including both traditional and electronic business fields. A business model presents the bigger picture of any organization by identifying the main elements and the interrelationship between them to enhance the organization's competitive power in the market. The author of the Business Model Canvas defines it in the following way: "It describes the relational of how an organization creates, delivers and captures value" (Gierej, 2017). Moreover, the Business Model is "a conceptual tool containing a set of objects concepts and their relationships to express the business logic of a specific firm. Therefore, it must be considered which concepts and relationships allow a simplified description and representation of what value is provided to customers, how this is done and with which financial consequences" (Osterwalder, Pigneur & Tucci 2005; Nielsen & Lund, 2014).

Managers are aware that it is not enough to incorporate emerging technologies and innovation processes into existing business models (Schiavi & Behr, 2018). In these cases, it is necessary to evaluate and re-adapt business models. Thus, the delivery of differentiated value to consumers, competitive advantage, the opening of new markets, and the obsolescence of existing business models are characteristics observed with disruptive business models in the business environment. The definitions in the literature have in common that they see sustainable business models as a modification of the conventional business model concept, with certain aspects and goals added to it (Geissdoerfer, Vladimirova & Evans, 2018).

The business model can also be viewed as a platform, which enables strategic choices to become profitable. Moreover, a business model is neither a pricing strategy, a new distribution channel, an information technology, nor a quality control scheme in the production setup. In essence, a business model is concerned with the value proposition of the company. In addition to the value proposition, a business model is supported by several parameters and characteristics; for example, such as applied distribution channels, customer relationships, pricing models, and sourcing from strategic partnerships (Osterwalder, Pigneur & Tucci 2005).

Observing the rapidly changing economic situation, companies will have to change their existing business models continually. The dynamics of the digital market determine the choice of techniques that will make quick changes in the business model as the business model is one of the three main determinants of economic efficiency (Gierej, 2017). Companies should focus on creating the most attractive value proposition for the customer, enriching the existing offer on solutions in the field of the Internet of Things (IoT). Estimates show clearly that abandonment of IoT will be associated with a high risk of collapse of the company. This is the reason why the company should act towards changing their business models to the outcome economy. IoT is developing quickly and becoming an increasingly growing topic that creates excitement and anxiety around the world. There are plenty of indications showing that the IoT will change many sectors, especially higher education institutions. Now, universities have an opportunity to lead the technical development and the innovations models for the IoT, and to build the leaders of the IoT into the future, as well as to address the TIPPSS risks which stand for Trust, Identity, Privacy, Protection, Safety, and Security related to the IoT (Aldowah et al., 2017). The Internet of Things is the connection – via the internet – of objects from

the physical world that are equipped with sensors, actuators, and communication technology. This technology is looked at by a large variety of domains, such as manufacturing, healthcare, and energy (Dijkmana, Sprenkelsa, Peetersa & Janssen, 2015).

The future of universities is not about using and employing the available technology. The performance of these organizations will largely depend on their ability to adapt to the changing needs of the future knowledge worker, the future of work, and the economy (Aldowah et al., 2017). The future is about how universities will adapt to the changing needs of the future knowledge worker, the future of work, and the economy (Aldowah et al., 2017). The IoT is not just a technology update and development within the industry. However, it can lead to expanding the change to the whole society, including higher education institutions. IoT will lead the change and reform the higher education institutions. According to Tianbo (2012), IoT will lead to changes in educational technology, reform in the education system, change in teaching, learning, experimenting, and managing university resources, among other changes. IoT allows universities to collect and exchange data and to accomplish previously impossible tasks, thus requiring new business models for a highly connected world (Jaehyeon et al., 2016). Overall, universities need to identify critical elements of their business model to create value in IoT services, enabling them to provide a better value proposition to their students.

With the development of IoT, the prospective application in higher education lies in the three aspects: students' continuous evaluation, integration of current teaching platforms, and development of educational middleware. This change provides increased convenience for students and makes the teaching process more effective for instructors and professors (Gierej, 2017). The flow is connected devices,

and technology means that instructors and professors can focus on the actual learning that is more useful to the students than perform the routine task.

Besides, IoT can increase the learning experience by providing real-time and actionable insights into student performance. Moreover, through IoT technology, professors can collect data about students' performance and determine which ones need more care and attention. This data analysis also helps instructors accurately change plans and methods for future classes. Moreover, outside of the classroom, universities can use connected devices to monitor their students, staff, resources, and equipment at a reduced operating cost (Bennett & Kent, 2017). Furthermore, the growth of mobile technology and the IoT enable universities to improve the security of campuses, enhance access to information and applications at anytime from anywhere, and keep track of primary resources. IoT is changing the student learning experience besides facilities management by connecting individuals, data, and things. With IoT, universities can resolve many challenges, such as keeping track of essential resources, develop access to information, build smarter plans, and design safer campuses. IoT systems have tremendous potential to bring significant value to higher education by engaging and motivating the students and staff and increasing the learning speed (Aldowah et al., 2017). The purpose of this study was to discover the potential of IoT in higher education and how to maximize its benefits while addressing its challenges and reducing the risks involved with it.

The current educational institutions do not appreciate the structural and infrastructural tasks of the business model in a sophisticated manner, and neither have they solved them according to the suggested model (Drozdová, 2008). Simultaneously, there are many projects of information-communication technologies implementation in progress, which, after they are finished, either do not get included

in the educational process or support only the education in the individual subjects of the project participants.

Therefore, the results do not serve their purpose, and the educational process remains the same as it was before. Creating and understanding the business model leads to solving both the structural and infrastructural tasks of the institution. The infrastructure created by information-communication technologies, thus, may copy the demands and needs of basic tasks, and then a new value hierarchy of educational institutions will be gained. Thus, creating the new business model at educational institutions is becoming a matter concerning the entire institution, not just individuals.

Chapter 2: Distance Learning Classifications and Solutions

2.1 Evolution of Technology in Education

The use of technology in education has come a long way since the earliest times of human civilization (Muttappallymyalil, et al., 2016). While embarking on aids with advanced technology, people need to take full cognizance of the lessons from the past, striking a balance between embracing new methods of teaching and learning while holding on to the timeless principles of education. Thus, future educational technology can be effective tools of teaching and learning in this rapidly changing technological world and be part of a comprehensive system for lifelong education. The passing of knowledge from one generation to another - has been in existence from the earliest times of human civilization. It began in 1801, with a large piece of slate hung on the wall in a school in Scotland to provide information to a large audience at one time. The 'Hyalotype,' a transparent image of a photograph using actual black and white photographs on a glass slide that could be projected, was invented in 1851. Fast forward to the late 1800s, every classroom had a chalkboard to teach students. The chalkboard would be of either green or brown. Pocket sized calculators were produced in 1970 and later that decade they were popularly used in school. In 1977 desktop computers were introduced to schools and computer-aided instruction gained widespread acceptance in schools by the early 1980s. Microsoft office went live around 1990 (Weinberger, 2015). In 1996 the Internet and the World Wide Web began to catch on as businesses, schools, and individuals create web pages for advertising purposes. HughesNet (part of Hughes Space & Communications) began offering satellite Internet commercially, (Engel, 2013) providing an Internet connection to more people than ever before, Hotmail

also launched in 1996. In 1999 the interactive whiteboard was used in universities and schools by academics for educational material presentation purposes, In the 2000's, businesses began using eLearning to train their employees (Gogos, 2013). New and experienced workers alike now had the opportunity to improve upon their industry knowledge base and expand their skill sets. At home individuals were granted access to programs that offered them the ability to earn online degrees and enrich their lives through expanded knowledge. Cell phones, palmtops, and handheld computers, tablets, laptops, and media players are included under mobile learning devices. With the evolution of technology, students achieved competence and interested in interactive learning. The education industry has moved from distance learning to e-learning and finally to m-learning as knowledge expanded exponentially, and the demand escalated. Figure 1 shows the historical timeline of the evolution of technology in education.

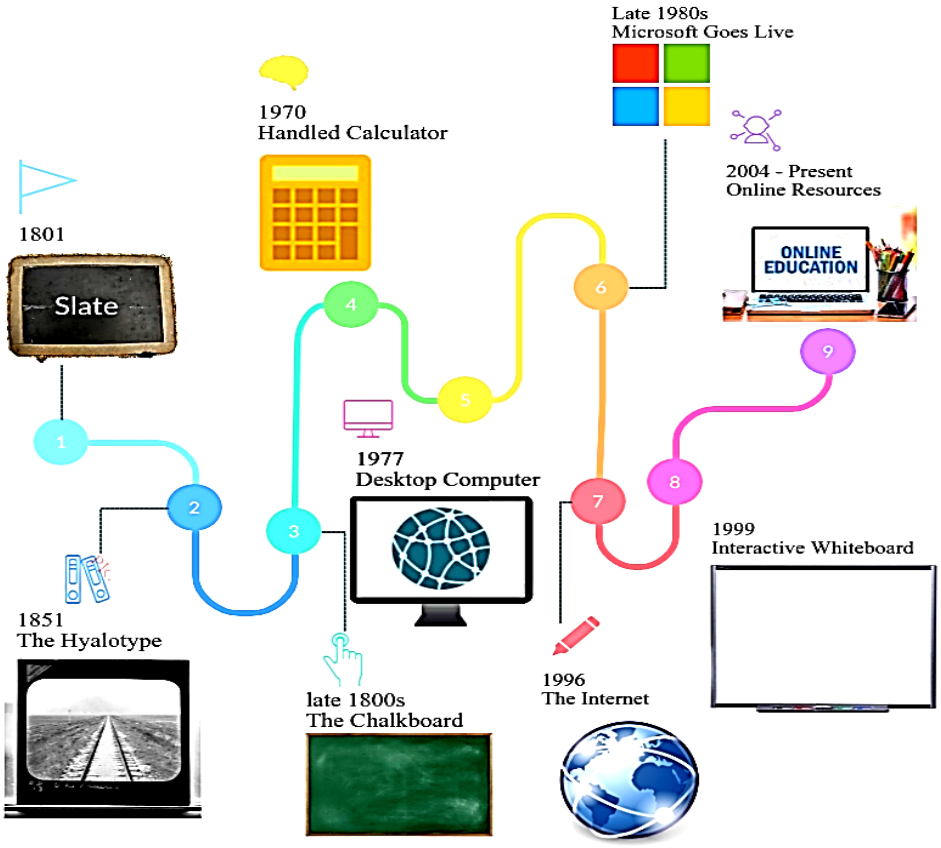

Figure 1: The sequential evolution of technology in education.

While using teaching aids with advanced technology, the lessons from the past must not be forgotten, striking a balance between embracing new methods of teaching and learning while upholding the timeless principles of education. The newer educational technology can be part of a comprehensive system for lifelong education.

2.2 Technology Adoption in Higher Education

Information Technology in higher education refers to the integration of computers and other information and communication technologies in higher educational institutions. As shown in Figure 2, when technology is implemented and applied to the teaching process, it can significantly change the traditional education. Examples of these information technologies in education include computer

technologies used to generate course materials such as word processing, presentation programs, database programs, electronic mails, websites, blogs, social networking sites, etc. Information systems used to manage various courses such as Course Management systems or Learning Management systems are another example of higher-level educational technology. Information Technologies can be used by faculties for lesson planning, electronic research purposes, for recording, presenting classes online, and students' progress tracking (John, 2015). Governments in most developing countries, especially in the Asian region, initiated many national programs to introduce computers into educational institutes (Albirini, 2006). Supplying free tablets to school students in Thailand is an example. With the help of governments, educational institutions made substantial financial investments in the field of IT so that recent educational technologies can be accessible for the next generation. In return, faculties are expected to be prepared and motivated in teaching in technology-rich environments. The aim is to use Information and Communication Technologies to improve the quality of education and teaching and learning process.

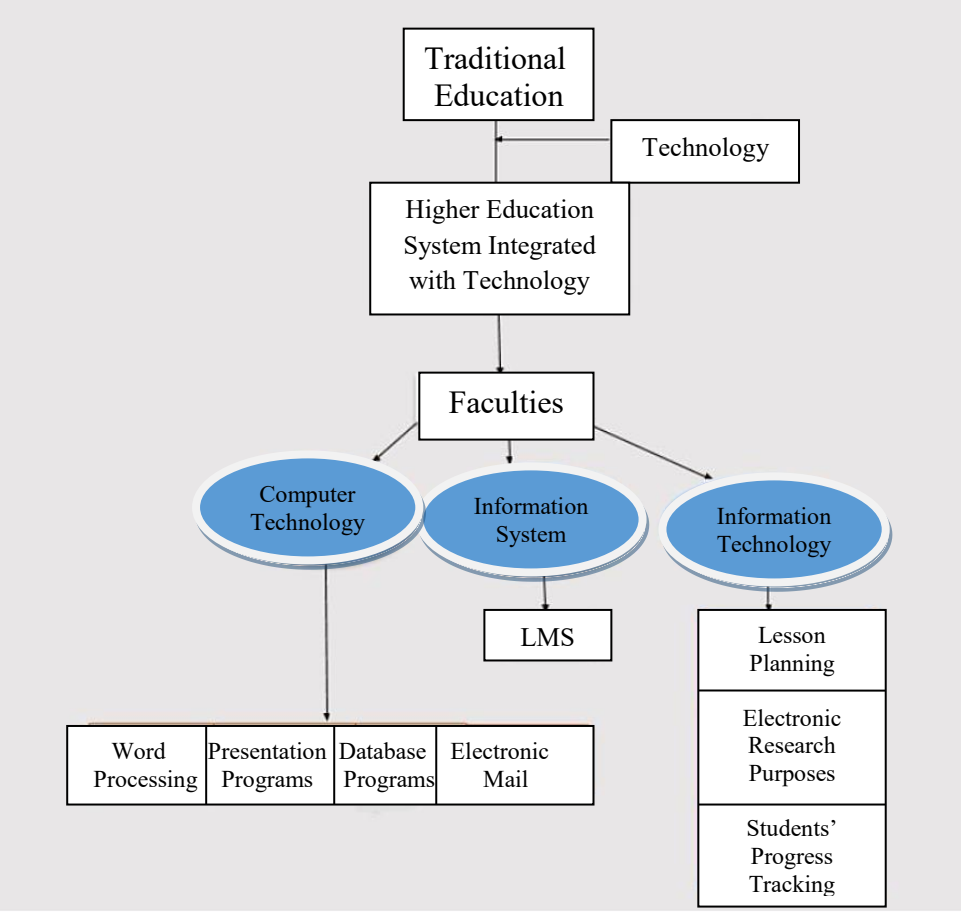

Figure 2: Technological integration in higher education.

In universities, faculties can prepare the students for a digital world by allowing them to do their projects and other works involving the use of Information Technology resources (John, 2015). These kinds of activities help the students to change the role from a passive receiver of content to an active participant and a partner of the learning process. However, there are many challenges that faculties are facing, as Institutions have spent and are spending considerable amounts of money to create Information Technology Infrastructure and online learning opportunities. In return, faculties are expected to achieve technological competence and implement better forms of teaching practices that improve the student learning experiences.

Schmidt (2002) suggested that “effectively replacing the traditional classrooms is one of the greatest challenges in placing the course on the internet.” Educational practices using information technologies should bring overall teaching and learn to a higher-level quality of online learning should be equal or higher than the quality of education in traditional classrooms. (Butler & Sellbom, 2002) has identified the major challenges to adopting technology for teaching and learning, and the paper pointed out that unreliability, poor faculty proficiency in technology, resistance to use new technologies, lack of institutional support are the major challenges for integration and use of information technology in educational environments.

2.3 Distance Learning in the Modern World

Changes in the labor market’s requirements encourage people to consider alternative forms of learning that go beyond undergoing formal degree programs at educational institutions. The popularization of distance learning is one of the key trends in this sphere. Due to their convenience and low costs, distance learning programs are becoming increasingly popular among individuals from various corners of the globe. Nowadays, approximately 67% of people use their mobile devices for accessing learning materials, and the size of the e-Learning market is predicted to reach $37.6 billion by the end of 2020 (Jasmini, 2017). Such optimistic numbers stimulate organizations to work on developing new learning concepts and integrating new solutions into their programs.

The existing literature offers many classifications of distance learning programs. In the most general view, they could be divided into synchronous and asynchronous groups. The main difference between them is connected with a degree

of freedom that learners enjoy, as the former requires strict deadlines and formal assessment systems, while the latter offers much more flexible models. Shahabadi and Uplane (2015) explain that most forms of synchronous distance learning are an online variation of formal learning, as all the specifics of the learning process remain the same except for the physical presence of students in the classroom. In turn, asynchronous learning introduces a disruptive model of education, changing the nature of the interaction between teachers and students and empowering learners to make their own inputs into the content of curriculums and the manner in which learning occurs.

Another popular concept implies distinguishing between fixed-time, open schedule, hybrid learning, and computer-based learning courses. Fixed-time online courses constitute the most popular form of online learning. They have previously determined the start and end dates (Yerby, 2017). Students are expected to use their personal data for logging in to the website and viewing educational materials. Simultaneously, they are not required to do it at a certain time because this form of online learning does not have strict schedules. The official website of the University of San Diego, which provides fixed-time online courses, clarifies that "online courses have fixed start and finish dates similar to classroom courses, but online students will have access to their classroom at any time and view their assignments, syllabus, and course resources from any computer connected to the Internet" (University of San Diego, 2019). It is important to emphasize that fixed-time online courses are not always synchronous. In particular, the format employed by the University of San Diego in 2019 is asynchronous, as students can work on their assignments at any time. The key characteristic of this format is not the matter in which learning occurs but the fact that all the courses have fixed start and end dates.

Open schedule online classes have a loose structure. Students are expected to possess substantial time management skills and be responsible, as their ability to manage their time becomes the key success factors in such programs (Sulley, 2018). In open schedule online classes, learners are given a set of materials and a submission date for their final assignment. While they can contact teachers for clarifications, it is expected that learners will handle the majority of tasks on their own. Regazzi (2015) explains that this form of distance learning is financially efficient and allows maximizing the number of learners. Therefore, open schedule online classes usually have the largest scale in the market.

Computer-based distance learning is an online variation of traditional classroom-based learning. All the activities and events that are included in this format use the instrument of synchronous learning. They resemble those activities that occur offline; however, students and teachers use online instruments, such as live chats, for communicating with each other. Reisman (2006) defines distance learning as the delivery of instruction through the Internet, emphasizing that it is a new stage in the evolution of traditional learning. From the perspective of the problem under investigation, it is important to emphasize that computer-based distance learning does not offer any new educational model and just changes the communication channels through which students and teachers can interact with each other.

Finally, hybrid learning offers a peculiar combination of synchronous and asynchronous tools. While some activities, such as lectures, may be conducted in a synchronous manner, some others may resemble the format of open schedule online classes. Simultaneously, it is important to emphasize that even though hybrid learning usually offers a relatively high level of flexibility, students do not enjoy as

much control as they do in open schedule online classes (Dziuban, Graham, Moskal, Norberg & Sicilia, 2018). As stated above, some activities in hybrid learning are synchronous; furthermore, they usually have strict deadlines for submitting their assignments. Unfortunately, many students negatively perceive hybrid learning, even if it includes face-to-face interaction with teachers (Jackson & Helms, 2008). Therefore, the search for optimal hybrid learning formats is ongoing.

While the concept of distance learning is becoming increasingly popular, its implementation is accompanied by many challenges. In particular, the literate illustrates that most students who undergo distance learning demonstrate lower academic performance than those who attend formal learning activities (Fojtik, 2018). Furthermore, most distance learning solutions suffer from such problems as the lack of a teacher's presence, low status of educational institutions that engage in distance learning, the rigidity of university regulations, the lack of faculty's support, the perception of distance learning as a low-quality education by many recruiters and managers, and the misconception about the role of distance learning activities by universities' administrators (Pant, 2014). In this situation, the task of developing new distance learning solutions becomes challenging, as they need to address a variety of problems.

The official website of UNESCO provides a detailed list of solutions related to distance learning. In particular, it includes tools in such categories as digital learning management systems, systems that are built for mobile devices, platforms for administering massive online courses, self-directed learning content, and various technologies that may enhance the distance learning experience and outcomes (UNESCO, 2019). In dependence on the needs and expectations of particular educational institutions, teachers, and students, stakeholders can select numerous

applications. For example, Skooler is a preferable option for those situations when a substantial part of a course implies interacting with various Microsoft Office programs; simultaneously, Rumie is a promising option for people from developing countries as well as for those individuals who are interested in pursuing lifelong learning opportunities rather than completing a single course (UNESCO, 2019). Due to a significant difference between these solutions, it is hard to conceptualize the phenomenon of distance learning.

2.4 Distance Learning Solutions in the United Arab Emirates

The development of distance learning in the Gulf region is not fundamentally different from the way in which this process occurs in the rest of the world. In 2013, Fraij (2013) assumed that the market of e-Learning would exceed $500 million in the Middle East by 2016. Furthermore, he predicted that the UAE would be the leading country in this niche. The UAE already had some online universities, including Hamdan Bin Mohammad e-University and University of Creative Sciences; therefore, it was justified to expect further growth in the industry (Fraij, 2013). Unfortunately, the amount of information about the scope and effectiveness of distance learning in the UAE is scarce. Ahmad, Nemeah and Mohammed (2018) argue that there are various forms of e-learning in the country, including online courses to support traditional curriculums and massive online course programs implemented on large platforms. Unfortunately, there are no official sources of data that would include the number of students enrolled in such online course programs.

The available evidence provides a premise to believe that the UAE has made significant progress in developing the system of distance learning. The Abdulla Al Ghurair Foundation for Education is known for supporting the design of modern

online learning programs in the region. In the last four years, it funded more than 200 scholarships in different countries. As shown in Figure 3, the current commitments of the organization include supporting 5,000 students in the country in preparing for college education, providing around 15,000 educational opportunities for the youth, and allocating AED 4.2 billion for the enhancement of online education in the Arab world (Abdulla Al Ghurair Foundation for Education, 2020). As a result of such initiatives, the state has substantially improved its online learning capacity. In accordance with the leader of the Foundation, "the reality is that the universities in the UAE have the infrastructure, the knowledge, the talent, the technology, the network, and the necessary inventive drive to offer online programs and degrees" (Ghurair, 2020). Such a strong capacity predetermines the increasing attention towards the concept of distance learning in the UAE, especially considering the outbreak of COVID-19.

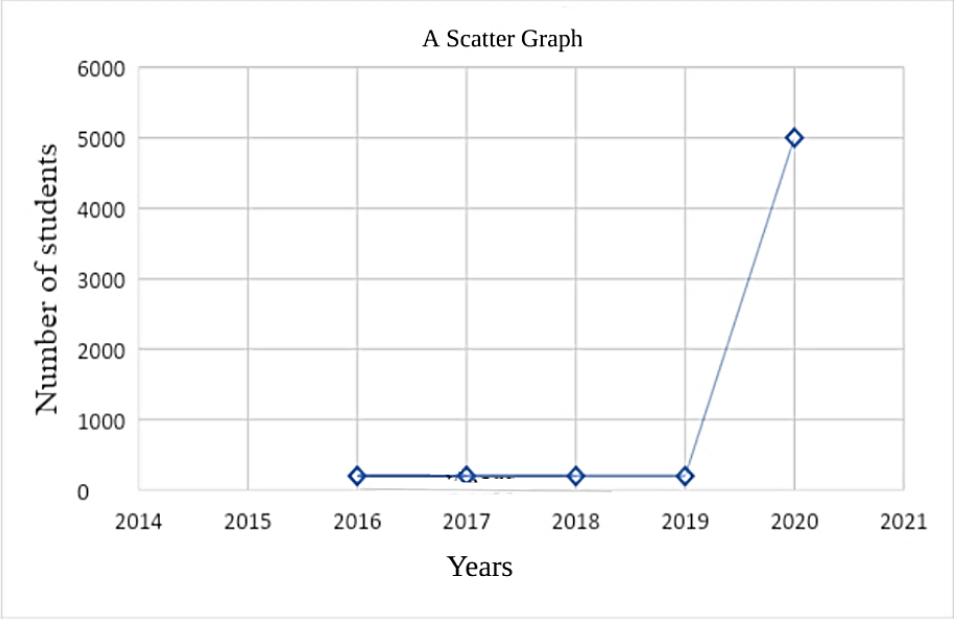

Figure 3: Student enrollment to modern online learning programs.

Due to the need to conduct a temporary shift to online education, the government has recently composed a list of accepted platforms that could be used by UAE educational institutions for the purposes of distance learning. In particular, the Ministry of Education of UAE has introduced 13 global educational platforms that rely on artificial intelligence techniques to provide multiple educational options for students during the distance learning process. The platforms include all study materials and curriculum applied by the ministry, along with other educational systems applied in schools, in addition to the advanced educational solutions offered by the Ministry's platform through its portal, which includes thousands of interactive educational clips (Jamal, 2020). Such platforms adopted by the ministry of education in UAE are "School, McGraw Hill, Oxford University Press, College Board, Code dot or cde.org, Matific, Alef, Twig platform, Ynmo, Nahla and Nahal, Bookclip, Lernetech, and Microsoft Teams." All of them have their own specifications. For instance, McGaw Hill provides learning solutions for science and mathematics while Oxford University Press focuses on the acquisition of knowledge and development of skills that are required for passing specific international exams, While Alef platform provides a learning journey aimed to help students develop crucial problem-solving skills by including thought-provoking real-life questions. The ministry has developed a special distance learning platform specialized for students with special needs, the platform is called 'Ynmo' which means 'grow,' it provides them with one on one therapeutic lessons that are appropriate for developing their skills. In addition, Lernetech educational solutions provide more than 14,000 interactive educational materials for students that enhance their experience within the distance learning system. In this situation, it seems justified to assume that the concept of online learning in the UAE is expected to reach the stage of maturity in the nearest future.

Chapter 3: Disruptive Higher Education Business Model

3.1 An Overview

Business model is a strategic concept used in different organizations fields, including both traditional and electronic business fields. It presents the big picture of any business by identifying the main elements in it and the interrelationship between them to enhance the organization's competitive power in the market. Business model, as defined in (Hedman & Kalling, 2003), “it describes the relational of how an organization creates, delivers, and captures value.” To identify the business model in-depth as mentioned in (Osterwalder, Pigneur & Tucci, 2005), it is “a conceptual tool containing a set of objects, concepts and their relationships with the objective to express the business logic of a specific firm.” The business model consists of four interlinked components, including customer value proposition, profit formula, key resources, and key processes (Osterwalder & Pigneur, 2010). The organization should identify a reliable customer value proposition considering high customer value and lower cost. The profit formula is the blueprint of the customer value proposition. It defines how an organization creates value for itself while providing value to its customer. Key resources are the main assets used to make the business model works properly and meet its purposes while key processes include the operational and managerial processes that contribute to the success of delivering the organization. The business model has a well-defined canvas model that helps and facilitates the identification of the key components. It includes nine building blocks that build the main four components, and they include customer segments, value proposition, channels, customer relationships, revenue streams, key resources, key activities, key partners, and cost structure (Osterwalder & Pigneur, 2010). The

success of an organization's business model depends on the clarity of identifying these components.

The rapid development of globalization and the increasing pace of the scientific and technological progress are disrupting the current business models in higher education. In order to adapt to new requirements of the external environment, educational institutions are trying to adjust their business models. The current chapter will present a detailed discussion of recent trends related to this process. The pivotal concern in this research lies in higher education business models. This part will discuss and describe the current and the future of business models in higher education.

3.2 The Current Business Model in Higher Education

The concept of business models in higher education is closely connected with the ownership type of a specific college or university. Nonetheless, most institutions, except for private and for-profit organizations, rely on state funding and gifts as important sources of operating budgets (Ahi, 2018). Tuition is known as an unreliable source of income, as the number of students who apply to a certain university might substantially vary. In this situation, a traditional business model of two-year and four-year colleges and universities is often based on the use of such sources of funding as donations from individuals and private organizations, state budgets, and endowments in addition to tuition (Soares, Steele & Wayt, 2016). Simultaneously, it is important to emphasize that each institution has its own unique business model depending on the industry in which its graduates are usually employed, the perceived status of a university or college, its size, and many other factors.

The Great Recession became a crucial event for the higher education systems in many countries, as governments reconsidered their support and funding of educational institutions. For example, in the United States, the state funding for higher education reduced by 28% during the period between 2008 and 2013 (Lapovsky, 2014a). In this situation, many institutions started experiencing problems with liquidity. These problems made many of them reconsider their business models, addressing such issues as pricing, discounting, access to enrollment, operational efficiency, and the use of online programs (Lapovsky, 2014b). All these factors are crucial from the perspective of the problem under investigation.

University business models have changed considerably. These changes are in part due to the emergence of the knowledge-based economy, whereby universities are now considered to be a core element of regional development. Business models in higher education are in a constant state of transition, as mentioned in (Miller, Mcadam & Mcadam, 2014) whereby knowledge transfer and innovation processes within universities can be considered as evolving into 'open innovation' processes.

A detailed analysis of the existing literature helped identity two business models that are now often offered as an alternative to the traditional higher education model that was discussed above. The first alternative model introduces employer-funded programs. Training programs launched and administered by large corporations are now becoming a viable option for many people who are interested in acquiring job-related skills in a number of areas (Costntino, Fortson, Liuzzi, Harris & Blair, 2019). Apprenticeship projects initiated by such enterprises can be a promising business model in the system of higher education because they do not require substantial costs from students, thus addressing the problem of affordability, which inhibits the development of universal higher education. At the moment, it is barely

possible to imagine a situation in which an enterprise-funded training program could replace the courses from Harvard or Oxford; nonetheless, the available evidence provides a premise to believe that they might become a promising alternative to many courses that are offered by less prestigious institutions.

The second option concerning the choice of a new business model is the transformation of tuition that would pay students based on learning outcomes rather than on the amount of their sitting time. The new system introduced by Kenzie Academy exemplifies such a strategy. This institution offers its one-year training courses in coding and design without any tuition costs; simultaneously, students must agree to allocate 17.5% of their income in the next four years to the institution (Kenzie Academy, 2020). Similarly, as shown in Figure 4, the concept of employer-based education, such an option of higher education is promising because it makes education affordable to everyone.

Today business models take a variety of forms, including physical, digital, and hybrid versions. (Tian & Martin, 2014). These reflect the increasingly complex relationships between people, products and services, existing market conditions, and value (both tangible and intangible). In Australia, the most notable shift in the composition of university business models has been a realignment to accommodate the vibrant demand for places from international students. Including welcome adjustments to their cost and revenue components. In practice, this has meant that the longer established institutions have traded on their generally attractive campus locations, the reputation of their teaching and research staff, and the quality of their networks and collaborative relationships. According to Tian and Martin (2014), the current operations of both long-established and newer institutions involve providing services for both local and international students. For local students, institutions

provide teaching and training, spaces (lecture theatres, Labs, etc.); technologies, and all necessary teaching and learning facilities, e.g., LMS (Learning Management System) and student services, they also provide quality control e.g., degree design; course design and developments. For international students, students enroll directly in overseas universities (no intermediary involved); they can enroll in collaborative programs at home universities. Also, they can enroll in offshore programs operated by overseas universities.

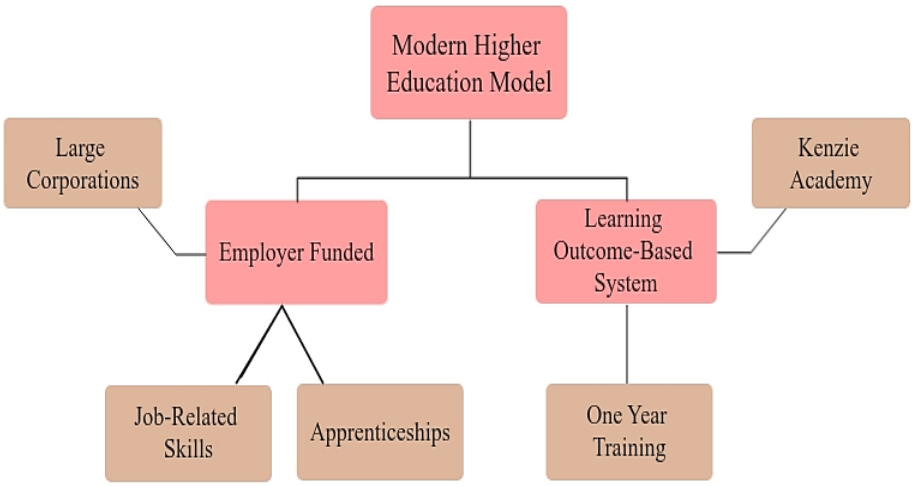

Figure 4: A conceptual model of the modern higher educational system.

3.3 Disruptive Higher Education Business Model Canvas

The discussion above showed that there are many opportunities for institutions of higher education concerning the development of disruptive business models. At the same time, the majority of models developed by these organizations address only separate aspects of the problem and do not offer systematic changes in the entire model. For instance, the model offered by Kenzie Academy (2020) addresses only the aspect of cost structure and does not introduce any changes to the

customer segments targeted by the company and key learning resource and activities. In a similar manner, models based on employer funded initiatives do not clarify how an institution could improve learning activities and align them with the new customer segments. In general, it seems justified to claim that the majority of disruptive initiatives in higher education are fragmentary and inconsistent and, thus, cannot be duplicated by other organizations. It is necessary to design a model that would address all the relevant aspects of higher education and meet the expectations of all the relevant stakeholders, including students, their parents, teachers, administrators of educational institutions, and employers.

This section presents a disruptive higher education business model that can be considered as a viable alternative to the existing business model in higher education. It illustrates the main features of a model that could reshape the system of higher education towards increased affordability, improved quality of educational services, and a reduced gap between the expectations of employers and the skills and knowledge of graduates. The discussion will be based on the business model canvas designed by Osterwalder and Pigneur (2010). This concept identifies nine components of a business model, including "customer segments, value propositions, customer channels, customer relationships, revenue streams, key activities, key resources, key partners, and a cost structure" (Osterwalder & Pigneur, 2010). For the purposes of this study, it is important to explore the nine elements of a new disruptive model of higher education as shown in Figure 5.

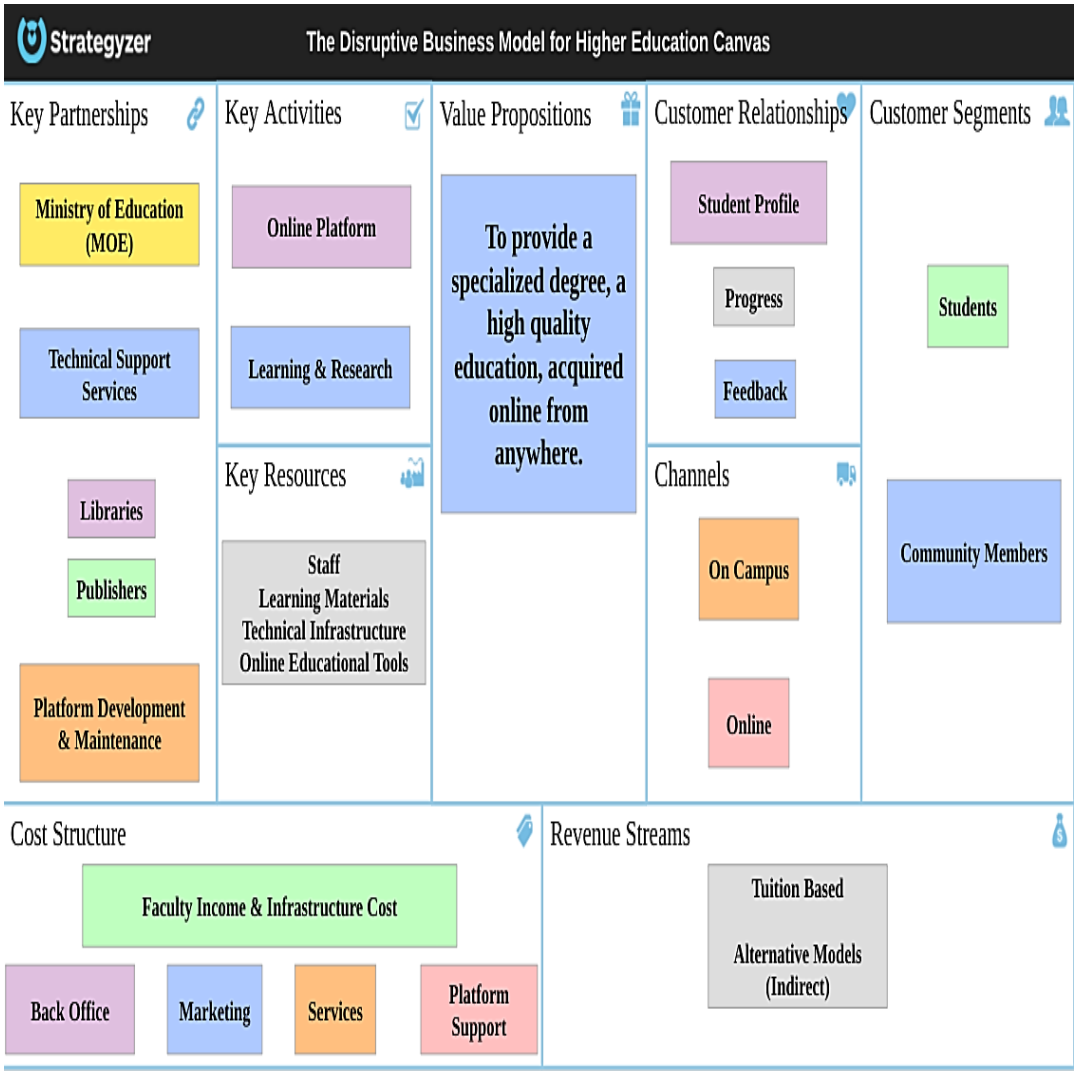

Figure 5: The Disruptive Higher Education Business Model Canvas.

3.3.1 Customer Segment

The system of higher education serves individuals who seek skill development and are interested in obtaining higher qualifications in the desired specialty. An effective disruptive model of higher education is supposed to expand the target audience of higher education. Most other disruptive business models offer only narrow customer segments. For instance, employed funded initiatives apparently focus exclusively on future interns or employees of a company, while learning outcome-based systems are applicable only to those customers who seek

education in some practical niches that could be quickly converted into a job position. Unfortunately, none of these models exhaustively discusses their target audience. The model developed by Osterwalder & Pigneur (2010) allows paying more attention to this issue. It helps elucidate in detail what customer groups will be affected by the new model and even draw a student profile.

The customer segment in the proposed business model for higher education includes all kinds of students, including the ones who live overseas as well as those who cannot afford educational expenses, as well as community members which include faculty members, administration and guardians. The matters of affordability and geographic coverage are known as critical expectations from a new system of higher education (McCowan, 2016). In order to meet these criteria, a system should be flexible, offering educational services at varying pricing levels. As a result of the proposed model, any person with access to the Internet could send an application without the need to spend a substantial amount of money on tuition.

In general, the target audience of institutions operating using the new business model is supposed to be much larger than the target audience of the contemporary universities and colleges. First, the target audience will involve individuals from low-income households, including those people who cannot afford tuition at most universities. A new/disruptive business model will significantly attract a large number of students, which, in turn, will help reduce tuition costs. Second, organizations will have a chance to attract applicants from other countries. The number of people who study online is increasing dramatically; however, the lack of universities' commitment to developing online education constraints the popularity of online courses (Ghilay, 2017). The available evidence provides a premise to believe that the application of the disruptive business model could help overcome

these two barriers, thus essentially expanding the customer segment of higher education.

A shift to the disruptive business model of higher education will not result in a complete transformation of the existing target audience of higher educational institutions, a substantial part of their customers will still consist of individuals who pay tuition in exchange for the acquisition of skills and knowledge. These individuals will represent various countries and demographic groups. Due to their ability to pay for their education, they will be asked to pay for the next semester or the next academic year upfront. The main part of these students will consist of those individuals who are traditional customers of colleges and universities that use the "traditional" business model. Their decision to study at institutions with the disruptive business model should be mainly based on either the geographic factor or high perceived quality of educational services at these organizations.

As it is known, the matter of affordability is currently one of the most important challenges faced by the system of higher education. Institutions that operate on the basis of the disruptive business model will have to address this issue in order to expand their customer groups. A low price of tuition might be one of the ways to achieve this goal; however, some individuals will not be able to afford tuition even in case if its price is significantly reduced. In order to cover this target audience, institutions will need to develop alternative instruments of revenue generation, such as taking a percentage of students' future earnings.

3.3.2 Value Proposition

The value proposition of the proposed business model is to provide a specialized degree, a high-quality educational experience, acquired online and from

anywhere. In this sphere, the model is substantially different from other disruptive business models, such as the learning outcome-based and employed-funded initiatives, because those models do not put a strong emphasis on the online domain Like any other educational system, a proposed disruptive model of higher education could help individuals improve their skills and knowledge and become proficient in certain fields, which could enhance their position and advantages in the labor market. From the perspective of value propositions, the new business model will have two important advantages. First, it will ensure a high degree of specialization. The new business model is expected to provide a specialized degree and a high-quality educational experience that could be acquired online from anywhere. Students will be able to customize their transcripts and, therefore, get a specialized degree with the help of online learning and a credible framework, such as Abet. A customized degree will simplify the process of finding high-paid jobs for graduates.

The second aspect of the value proposition is connected with the fact that educational services will be available to a substantial number of potential customers, regardless of their financial well-being and a geographic location. The key challenge in this sphere is to maintain a high quality of services. Unfortunately, there is a popular opinion that the use of disruptive models in higher education undermines the validity of degrees issued by an institution (Armstrong, 2011). Therefore, it is critically important to ensure that the introduction of blended learning instruments does not reduce the perceived quality of education.

3.3.3 Customer Channels

A disruptive model of higher education can use a variety of customer channels, such as e-mail, mobile phones, digital applications, websites, and social

media. At the same time, the proposed model implies enabling a higher educational degrees-based online system that would act as an intermediary between universities and students all around the world. At the moment, there is no such global platform, even though there are many websites offering online education, such as Coursera, Khan Academy, Academic Earth, Alison, and many others (Bosschieter, 2016). None of other models discussed in the previous chapter could enable the creation of such intermediary, as all of them implied reforming only the business model of a separate institution. In contrast, the current project encourages global transformations in the entire system of higher education. In order to empower the new disrupted model of higher education to revolutionize the educational system, it is of paramount importance to create a single platform that would accumulate the courses from all the leading universities, providing reliable and trusted channels that would link customers to educational institutions.

3.3.4 Customer Relationships

The issue of customer relationships is one of the most challenging matters in the disruptive higher educational model because teachers and students rarely interact with each other face-to-face during blended learning courses. Therefore, a new model must use a variety of effective instruments to make students feel that they are engaged in the learning process. The aspect of customer relationships is not mentioned in any other business models discussed in the previous chapter of this thesis. For instance, it is not prioritized in employed-funded models, as their authors expect that an ability to access high quality educational services would motivate students to engage in productive relations with teachers.

The current model differs from other projects by its emphasis on customer relations. It relies on such mechanisms as managing students' course expectations, creating clear assignment tutorials, uploading video biographies of teachers, sharing relevant personal experiences of a teacher on a regular basis, ensuring that teachers take an interest in students' lives, regularly collecting data from both students and teachers, and increasing students' engagements via personalized video feedback and video calls. All these tools were characterized by Martin (2019) as effective technique for building relationships with students in a virtual classroom. Therefore, these recommendations are applicable to the concept of a disruptive model of higher education.

3.3.5 Revenue Stream

It is barely possible to formulate a single concept of revenue generation that would be applicable to any institution that uses a disruptive model of higher education. In the most general view, possible models of revenue generation for such organizations could be divided into the advertising, subscription, tuition, and brokerage fee subcategories (Mendling, Neumann, Pinterits & Simon, 2005). The tuition-based model is the basic approach towards revenue generation that allows educational institutions to earn money from tuition payments. The model of advertising offers a chance for some individuals who cannot afford tuition payments to learn for free or at a reduced price but be exposed to advertising. A brokerage fee concept entails targeting lifelong learners who could choose specific programs and courses from a heterogeneous set of different options. In other words, a person could pay for a three-week course or a two-year program independence on his or her needs. Finally, the subscription model allows users to subscribe to a platform on which they

could engage in various learning activities and access different materials in exchange for a monthly or an annual price. Mendling et al. (2005) recommend organizations combine these models so that institutions could enlarge their revenues by targeting the maximum percentage of the target audience, and the same recommendation could also be inferred from the arguments laid out by Thelin (2017). Therefore, it seems justified to conclude that a disruptive model of higher education should offer flexible revenue streams that would incorporate the elements of all these four models.

In most situations, the revenue streams of educational institutions will be divided into the tuition-based and alternative models. Those individuals who can afford tuition will pay for their education in a similar manner with the way in which it occurs in traditional universities and colleges. Those persons who cannot afford tuition will be forced to use some other option available to them. Each institution will have its own set of payment options, including those discussed in the previous paragraphs. In addition, organizations may also offer their students an opportunity to study for free in exchange for giving a percentage of their future earnings to an institution.

The revenue streams offered by the new business model are diverse, which makes it superior as compared to the employer-funded and learning outcome-based models. Those systems rely on only one source of revenues, which may be inconvenient for certain individuals. In contrast, the current model provides higher education institutions with an opportunity to offer various models for different customer segments. Eventually, this approach is expected to ensure that institutions could attract an increased number of students.

3.3.6 Key Activities

The use of a disruptive business model of higher education could help substantially increase the number of key activities. In addition to traditional lectures, seminars, group discussions, written assignments, oral speeches, and final coursework or thesis, such model may also include online masterclasses, forums, interviews with experts, online tests, online communication with a tutor, and many other activities (Rao, 2011). With the help of a disruptive model, the system of higher education can offer customized solutions that are selected on the basis of a sensory system preferred by specific students, the amount of available time, costs, and many other factors. In general, an increased set of activities could make higher education much more flexible. In turn, this advantage is expected to improve the quality of educational services.

In the most general view, the key activities of institutions that operate on the basis of the disruptive business model of higher education could be divided into several groups in accordance with the categories shown in the Table 1 below.

Table 1: Groups of Key Activities of the Proposed Business Model.

Group	Activity
Offline Learning	Seminars, lectures, tests, exams
Online Learning	Seminars, lectures, tests, exams
Peer-to-peer online learning	Discussions, forums, focus groups
Interaction with experts	Interviews, master classes
Vis-à-vis interaction between a teacher and a student via e-mail, phone	No Examples
Homework study	No Examples
Thesis writing	No Examples

3.3.7 Key Resources

The list of key resources shown in Table 2 supported by a disruptive business model of higher education should be composed separately for each institution. At the same time, there are two important criteria that have to be met during this process. First, all the institutions must use a single higher educational degrees-based online system. Second, they should choose learning resources from the list of accepted solutions that being approved by the Ministry of Education of a country in which an institution operates. For instance, in case of the United Arab Emirates, organizations should use only those solutions that have been approved by the government, such as "School, McGraw Hill, Oxford University Press, College Board, Code dot or cde.org, Matific and Alef, Twig platform, Ynmo grow, and Nahla platform And Nahal, Bookclip, Lernetech, and Microsoft Teams" (Jamal, 2020). This way, organizations will minimize the chance that some technical errors or other shortcomings of learning resources and solutions will undermine the quality of services that they provide.

Such a narrow choice of resources illustrates a difference between the proposed business model and those systems that have been discussed above. At the same time, while these restrictions create limitations for the model, they also help systematize its application and ensure its consistency. Moreover, institutions will be also safeguarded from possible problems related to technical flaws of unreliable platforms and software. This advantage could be barely found in learning outcome-based and employer-funded models.

Table 2: List of Key Resources for the Proposed Business Model.

Key Resources	Examples
Staff	Managers, academic staff, support and maintenance staff, IT specialists, administrative staff, accountants, financial analysts, HRM managers, marketers
Learning Materials	Curriculums, textbooks, learning plans and strategies, sets of recommended teaching techniques, detailed plans for each learning activity
Technical Infrastructure	Computers, software, Internet connection, microphones, and other equipment that is required for establishing and maintaining a stable Internet connection
Offices and auditoriums	No Examples
Stationery	No Examples

3.3.8 Key Partnerships

Naturally, the success of a disruptive model of higher education is impossible without the support of partners. Abramenka (2015) explains that this support is required for overcoming a popular stereotype that unconventional education is incapable of providing "valid" degrees and teaching skills that are valued by employers. The efforts of multiple stakeholders are required for enabling the success of the proposed model.

Unfortunately, this aspect is not adequately discussed in regard to most disruptive educational model, such as employer-funded and learning outcome-based ones. In contrast, the model by Osterwalder and Pigneur (2010) allows investigating and explaining how strategic partnerships could help institutions ensure that the model translates into high quality educational services.

The available evidence provides a premise to believe that it is important to coordinate the efforts of educational institutions, non-government organizations, such as Abdulla Al Ghurair Foundation for Education, government authorities, influencers, IT developers, and employers. The need for such coordination is a popular recommendation that is often mentioned in the literature in regard to the future of online education (Dabbagh, Mara & Howland, 2018). It is of paramount importance to conduct a set of information campaigns promoting the idea of disruptive higher education within the public. While the government and educational institutions explain the benefits of the new strategy, employers could display their commitment to hiring people who graduate from institutions that operate on the basis of this disruptive model.

3.3.9 Cost Structure

Finally, the last component of the proposed disruptive business model is the cost structure. The study by Mendling et al. (2005) argues that the traditional components of cost structures at educational institutions that use a disruptive business model include such expenditures as personnel, technical infrastructure, office infrastructure, travel, training, consumables, communication, and promotions. In general, an organization operating on the basis of the new model could save substantial amounts of money on rent, as it would not need such large spaces as a traditional educational institution. Since rent, maintenance, and other related expenditures usually are a major component of a cost structure of any educational institution, such an advantage could be an important benefit for an organization (Estermann & Claeys-Kulik, 2013). Simultaneously, all the other expenditures are likely to remain at the same level or even increase.

From the perspective of cost structure, the proposed model is more beneficial for institutions than employed-funded and learning outcome-based ones. Both these systems rely on future earnings that will be obtained either as a percentage of students' salaries or as their work inputs; however, their costs are similar or even higher than those of "traditional" higher education institutions. By postponing their revenues, organizations expose themselves to increased risks related to delayed or missed payments; furthermore, it also becomes harder to accumulate and invest cash into the development of infrastructure and other strategic projects. The cost per student is higher in case of both these models because they do not transfer all the learning activities to the online domain. The proposed business model seems to be more suitable from this perspective, as it provides diversified revenues and reduces costs by introducing online learning activities and learning resources.

Chapter 4: Methodology

This chapter describes the research methodology applied during the study. It covers details about the research approach, the research design, and the advantages and disadvantages of the research technique chosen. Moreover, this chapter covers how the data was collected and analyzed. It also explains the ethical aspects of this methodology and concludes with a brief explanation of the limitations of this research design. The participants were chosen from the target industry (higher education). Moreover, the results were analyzed statistically through graphs and charts.

4.1 Research Approach

A quantitative methodology is implemented in this study. In theory, a qualitative approach could have been also used; however, after thorough consideration, it was decided to select a quantitative one. A qualitative research is a social action that stresses how people interpret and make sense of their experiences to understand individual's social reality. Researchers often use interviews, journals, classroom observations, diaries, surveys, and interviews (Mohajan, 2018). The data collected can be interpreted using visual, textual material, and oral history (Mohajan, 2018). Moreover, this technique explains how and why a particular social phenomenon, the program operates, as it does in a particular context (Mohajan, 2018). At the same time, a qualitative research usually focuses on general patterns and is unable to provide detailed answers to research questions pertaining to specific indicators and parameters. Moreover, it would be very hard to compare the perspectives of students, teachers, and parents in case of using a qualitative approach.

In contrast, a quantitative methodology will allow collecting data on the use of online technologies in the educational technologies and their perception by relevant stakeholder groups.

4.2 Research Methods

This research implemented the quantitative approach. Therefore, the data collected were numeric. The quantitative research strategy is particularly helpful for this research, as it allowed retrieving information on a variety of useful parameters, such as the number of teachers who use online technologies in the classroom and the perceptions of online learning by students. Tools, such as bar graphs and pie charts, were used to interpret and visualize the data collected. Through this research design, the data collected has helped investigate the research problem and develop meaningful recommendations.

The surveys were implemented to help in collecting data for this research. Surveys aim at making inferences about a specific sample from a population. This design contrasts with a census that makes observations from an entire population. A population describes a group of objects in the world the research targets (Hua, 2016). Objects in a population can include individuals, families, university students, patients suffering from a specific disease, or people sharing nationality, ethnicity, or cultural heritage (Hua, 2016). Thus, for this survey, the survey aimed at university students, administrators, faculty members, and parents from the UAE. The sample population represents the primary stakeholders of higher education.

Google forms were used to implement the questionnaires and then distributed to the sample population (students, teachers, parents, faculty members, and university administrators. The following advantages state the reasons for using this data collection methodology:

- Easy to construct: one needs to develop questions and direct to the sample population (Hua, 2016).
- Reusability: questionnaires from other studies are freely available and can be adapted for use (Hua, 2016).
- Portability: questionnaires can be distributed online for the sample population to access and answer (Hua, 2016). For example, for this research, the survey questions were distributed over Google forms, which can be shared through emails, Facebook, Twitter, and other social medial platforms.
- Data analysis: the data collected can be analyzed and processed efficiently than spoken data, which must be recorded and transcribed for analysis (Hua, 2016).

The sample population was chosen from five universities based in UAE, these universities include Alain University of Science and Technology, Ajman University, Khawarizmi International College, United Arab Emirates University, and Abu Dhabi University. The faculty's email addresses were collected through their university websites. So, the surveys were distributed to the faculty members by email. The students' emails were provided by the College of Graduate Studies. However, compared with students and faculty, parents were the least percentage. The survey was distributed on WhatsApp so that it reaches to parents of students who are in school.

4.3 Design of the Questionnaires

The questionnaires include open and closed-ended questions. The open-ended questionnaires are meant to encourage a full, meaningful answer using a participant's knowledge or experience. The opposite is a closed-ended question where the answer should short and direct. Often, a closed-ended question can have a yes or no answer,

while an open-ended question expects an expounded explanation containing details about objective and subjective feelings (Saunders, Lewis & Thornhill, 2012). In the first survey, the participants were asked closed-ended questions. The second survey and the third survey contained a mixture of both open and closed questions.

The use of more closed-ended questionnaires was preferred in this research. It was intended to improve the quality of the answers received. For example, when asking about the Internet speed, the participants were expected to rate as fast, average, or slow. Thus, the closed-ended question helps to receive the expected response that is believed to be accurate (Novikov & Novikov, 2013). Moreover, the participants were teased to give additional information in closed-ended questions when asking a closed-ended question at the end. For example, an open-ended question is concluded with a "why" question as shown in this question:

Would you prefer to take this course online or in the classroom? Why?

The "why" question expects participants' explanation of the closed-ended question. Mixing both the open and closed-ended questions encourages a rational answer and avoids artificial responses.

4.4 Methods of Data Analysis

The analysis of the data in the questionnaires was conducted by simply calculating the number of respondents who have given specific answers to certain questions. No statistical instruments were used in data analysis, as the measurement of correlations between variables was not within the scope of the study. In addition, charts were used to visualize the data. Pie charts and bar graphs are vital in analyzing and presenting the surveys' results in an understandable format (Novikov, 2013). One can identify specific trends on a graph better than tables. Thus, using the bar graph increased the value of this study's analysis. The pie charts also improved the

visualization and made it easier for the research to present the participants' contrasting views in percentages.

4.5 Ethical Consideration

Ethics should be considered when participating in collecting user data and opinions. Although, private information were not collected in this research, such as names and contact data, the ethics of data collection was adhered to. Ethics involves the dynamisms of determining what is wrong or right (Hand, 2018). In this research, the participants in the survey had informed consent. The users were informed of each questionnaire, the reason for collecting it, and how the data will be used. Therefore, they were aware of the risks involved and the consequences of their decisions. Thus, they participated in the research voluntarily.

The anonymity and confidentiality of the participants were respected. Therefore, the participants were informed not to write their names or any personal details on the questionnaires. Moreover, responsibility was taken for protecting any confidential information disclosed in the paper. In this study, the utilitarian theory of focusing on the best interest of all involved is of value is followed. Applying the utilitarian principle helped in ensuring users' identity is protected to avoid harm.

4.6 Problems and Limitations

There were some difficulties encountered while conducting the research. Firstly, the challenge of recruiting a sufficient number of participants. A database was created of the prospective individuals who can participate in the study. Although the process required time and energy, the majority of the invitations to participate in the study were rejected. Consequently, the procedure became tedious and frustrating.

Secondly, time and cost were restrictive. The cost of conducting other methodologies of data collection could be higher than for questionnaires. For example, implementation focus groups and participant observation can be time-consuming and costly than questionnaires. Money and time are required to implement several data-collecting methodologies.

The methodology chosen had several limitations. Firstly, the sample size was small. Therefore, the data collected and findings could not be extrapolated to a broader scale. Hence, the generalizability of the results is questionable. Secondly, the time for conducting this research was limited. More time is required to reach out to a large sample population and gather adequate responses. Thirdly, an interpretive approach was used, which was determined by the nature and objectives of the research (Pham, 2018). Interpretive approach works with the philosophy of humans to make sense of their subjective environments and attach a meaning to the conclusion (Pham, 2018). Thus, it is believed that students, parents, and university instructors and administrators can provide the best interpretation of the education system (Pham, 2018). Thus, this research is biased because the connection between variables is analyzed according to the basis of the analytical and judgmental expertise in the academic arena.

Chapter 5: Survey Results and Analysis

The empirical part of this thesis implied carrying out two surveys to investigate the potential of a disruptive business model of higher education to succeed in the UAE. The first survey aimed to collect data on the integration of the Internet in higher education from students, teachers, and parents. This information was crucial for determining whether key stakeholders in the UAE are ready to launch the new model of higher education.

5.1 The Data from Students

Almost 49% of the study's respondents as shown in Figure 6 were students, including 72.9% of females and 27.1% of males (Figure 7). Such a high percentage of females in the sample is natural, as it harmonizes with the recent trends of the popularization of women's education in the United Arab Emirates (Ridge, 2009). Participants of the research included individuals studying at Bachelor's, Master's, and Ph.D. programs; furthermore, they represented ten different colleges of the United Arab Emirates University. In general, the demographic characteristics of respondents illustrate that the survey managed to collect data from students who represent various groups, thus contributing to the validity and reliability of the study's findings.

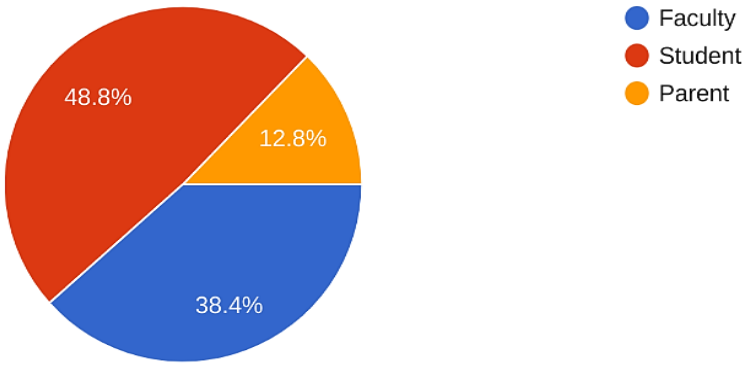

Figure 6: Participants roles.

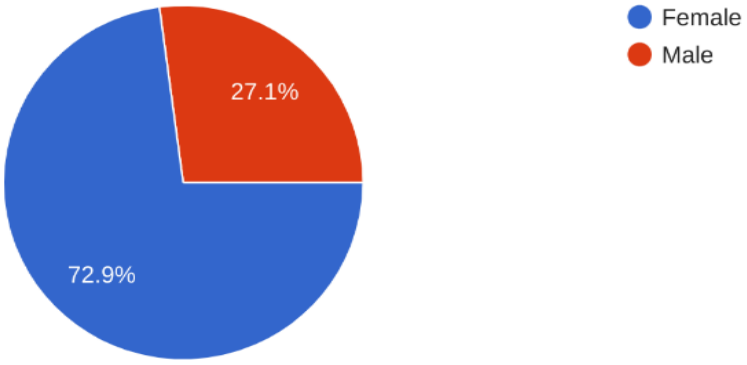

Figure 7: Gender percentage of participants.

As shown in Figure 8, only 8.6% of students attend universities' courses with the help of blended learning systems, and none of them is acquiring a degree through exclusively online education. This finding harmonizes with the dominant opinion that the popularity of online education in the UAE is still low (Alkaabi, Albion & Redmond, 2016). At the same time, interestingly, the Internet proficiency of most students allows them to engage in e-learning. In particular, in Figure 9, almost 90% of them have significant Internet usage skills, 98.3% (Figure 10) have access to the Internet at home, and 96.6% (Figure 11) have internet connection in the classroom. In other words, from the perspective of technical infrastructure, it seems that students

are prepared for the online education's expansion. Some aspects of online education are already present, as more than 60% (Figure 12) of learners use the Internet on a regular or occasional basis to communicate with their instructors, and 96.6% of them sometimes use Internet technologies in the classroom. The numbers above illustrate that the process of launching online education has already started and even achieved significant progress in the country.

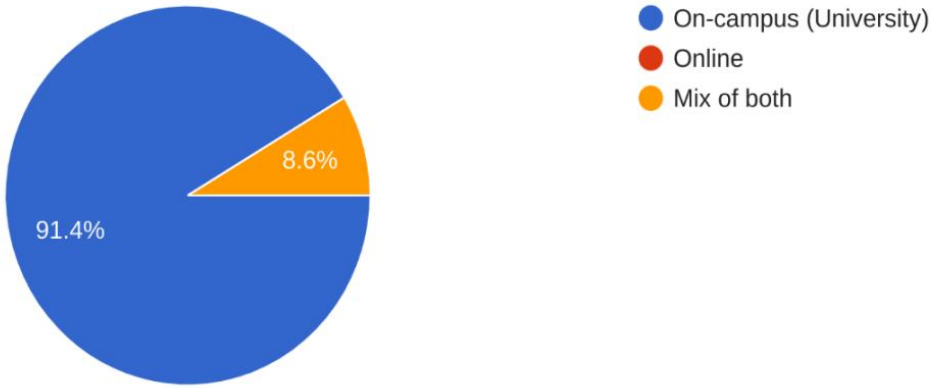

Figure 8: Student preferences of acquiring a degree.

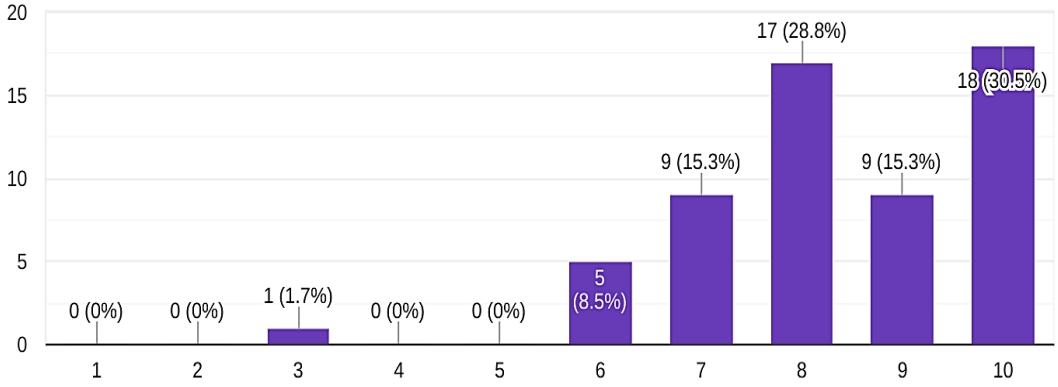

Figure 9: Internet skills percentage.

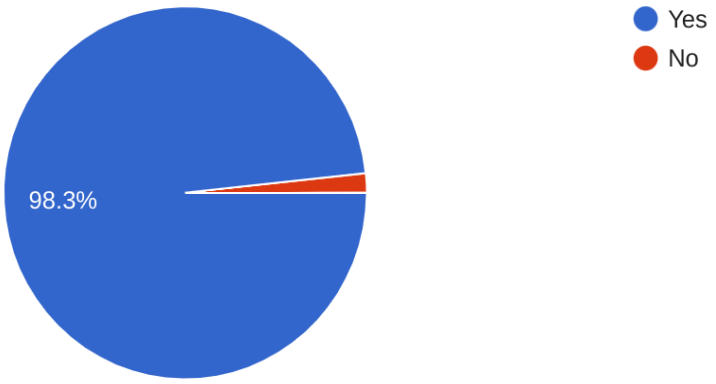

Figure 10: Internet availability at home.

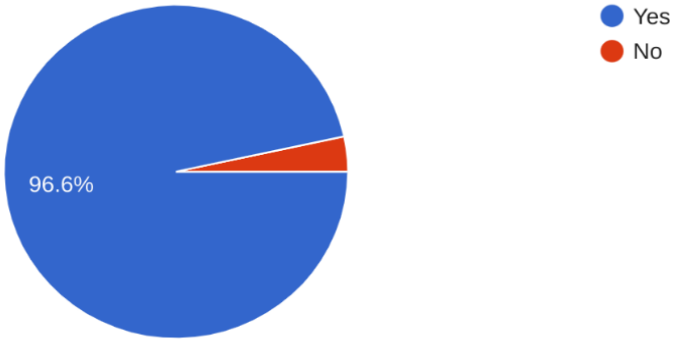

Figure 11: Internet availability in the classroom.

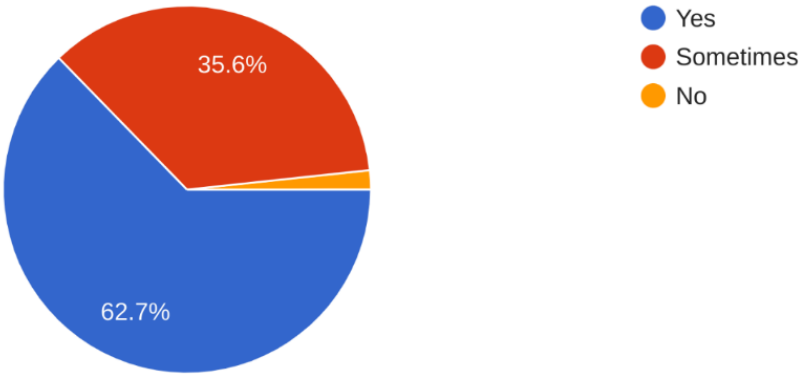

Figure 12: Student use of Internet to communicate with instructors.

At the same time, despite these promising signs, around a third of students are barely ready for the full-scale implementation of blended learning systems. In Figure

13, 30.5% do not use social media for downloading or sharing content, 30.5% do not utilize online libraries, as shown in Figure 14, 24.1% have never used cloud technologies in the learning process, and 61% (Figure 15) have never been introduced to online courses by an instructor. It is also vital to emphasize that more than half of the sample does not have a fast Internet connection (Figure 16), which might be a significant problem in the implementation of blended learning.

In general, the survey's results illustrate that a further expansion of online learning might meet a substantial resistance to change among around a quarter of students, which is cited in the literature as one of the most disturbing barriers to the implementation of e-learning activities (Gillett-Swan, 2017). In this situation, it seems justified to claim that while some UAE institutions might be ready for launching blended learning systems, they are likely to face essential obstacles during this process. The full-scale adoption of the proposed business model is barely possible at the moment given the numbers discussed above. At the same time, it might be possible to gradually expand the use of online instruments in the system of higher education, thus gradually preparing stakeholders for the application of the disruptive model.

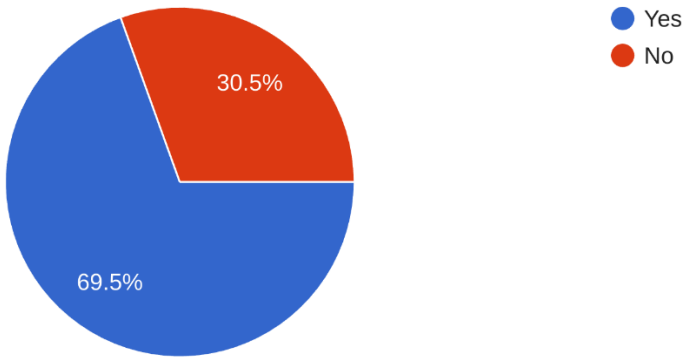

Figure 13: Social media use for downloading/sharing course content.

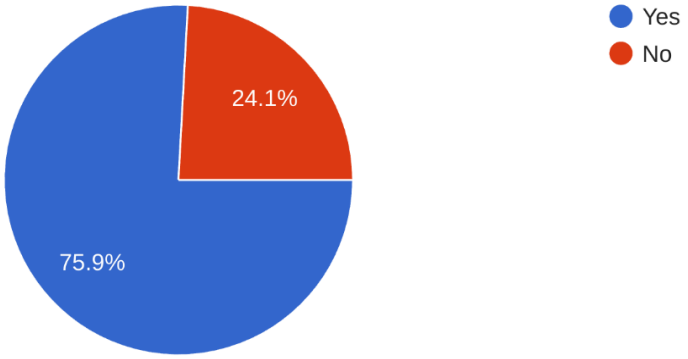

Figure 14: Cloud technologies use for downloading/sharing course content.

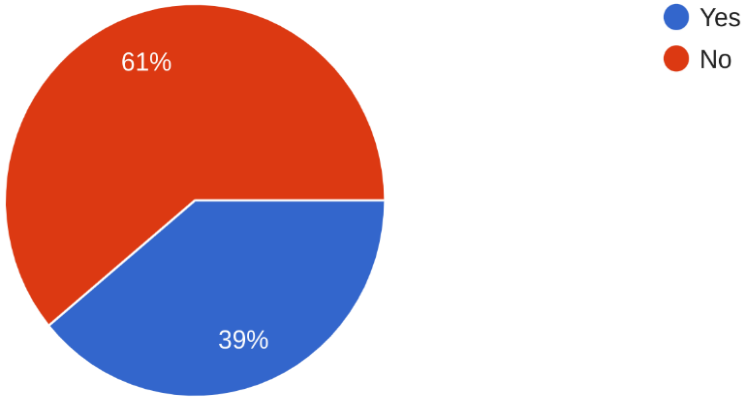

Figure 15: Instructors introducing online courses to students.

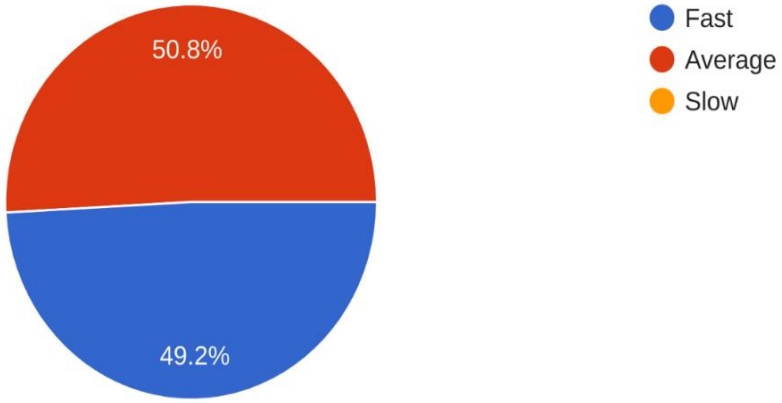

Figure 16: Internet speed.

An analysis of students' perceptions illustrates that most of them enthusiastically perceive the idea of embracing online education. Particularly, in Figures 17 and 18 - respectively - 98.3% and 96.6% of them are under the opinion

that the Internet can improve academic performance and facilitate the learning journey, respectively. Simultaneously, interestingly, 67.8% of them do not agree with the appeal to make all the lectures and courses online (Figure 19). Apparently, popular misconceptions of e-learning, which were discussed in previous chapters of the thesis, are behind this regularity. From the perspective of the problem under investigation, it is very important to emphasize that a major part of those people who are not willing to attend online learning activities without any offline events have a fragmentary understanding of the concept of online learning. As shown in Figure 20, 55.9% of the sample cannot decide for themselves whether they support the implementation of online courses, which points at a high level of uncertainty concerning this matter. In a similar manner as displayed in Figure 21, 35.6% of the survey's respondents are not sure whether acquiring a Bachelor's, Master's, or Ph.D. degree through an online university may be a viable option.

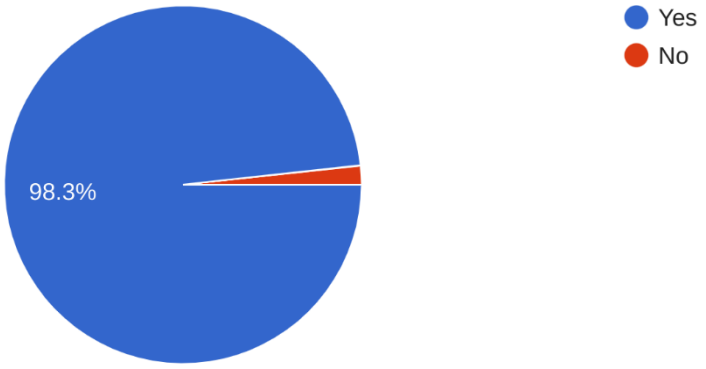

Figure 17: Student opinion on whether the Internet improves academic performance.

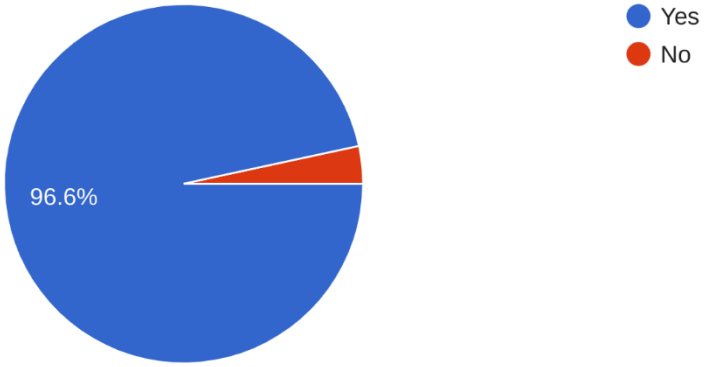

Figure 18: Student opinion on whether the Internet facilitates the learning journey at the university.

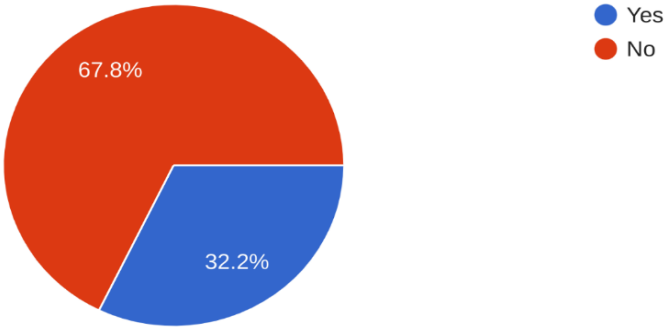

Figure 19: Student appeal on making courses online.

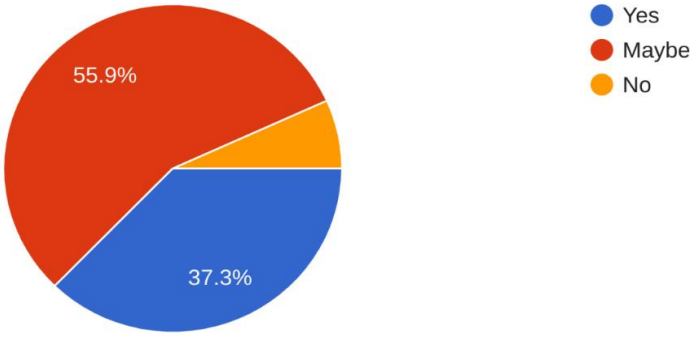

Figure 20: Student support of eLearning.

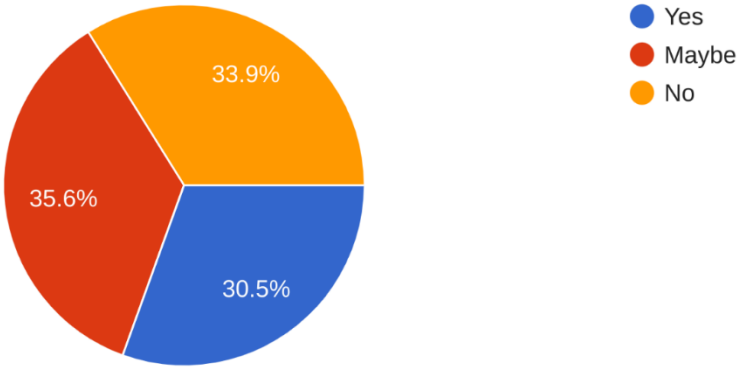

Figure 21: Student support of acquiring a degree through eLearning.

While many students are skeptical regarding the concept of online education, 96.6% of them would be interested in customizing their learning plan (Figure 22). The fact that in the Figure 23, 72.9% of the sample prefer offline courses over online training explains why students rarely consider online education as an instrument of such customization. The idea of a disruptive educational model, therefore, may look too radical to them. Nonetheless, the substantial interest of these individuals in customizing their learning plan is indicative of the potential of the proposed disruptive business model, as specialization is supposed to be one of its key advantages.

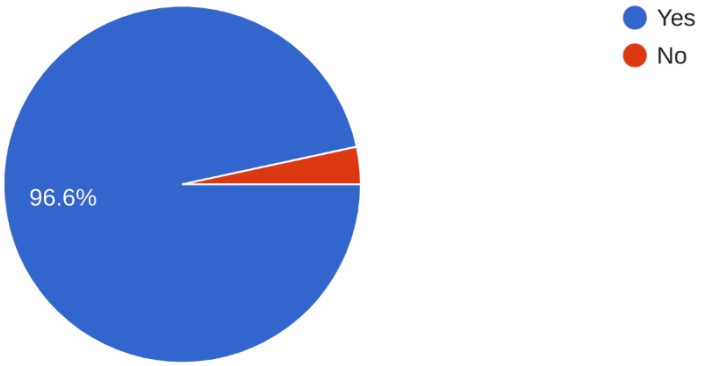

Figure 22: Student interest in customizing their learning plan.

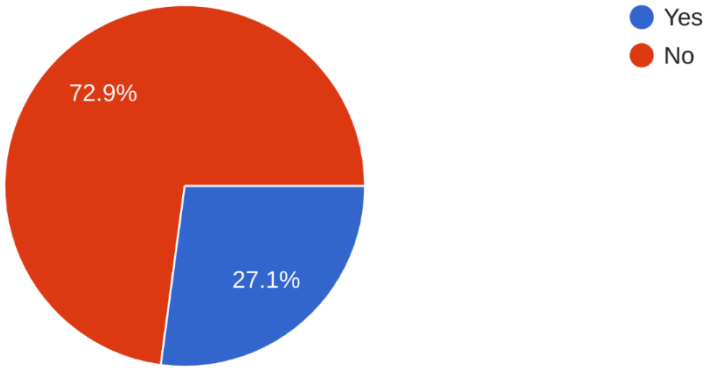

Figure 23: Student preferring going to a physical university over a virtual one.

5.2 The Data from Faculty

An analysis of the questionnaires filled out by faculty members illustrates that they represent various demographic groups and teach at different colleges. More than 95% of them claim to have significant Internet usage skills (Figure 24). The overwhelming majority of these people already use the Internet to communicate with other professors and students, and 95.8% of the sample has an Internet access inside classrooms (Figure 25). As shown in Figure 26, 87.5% of teachers benefit from the use of the Internet in course development, and 85.4% of them have made the material that they are teaching available online (Figure 27). At the same time, it seems justified to claim that a degree to which the Internet is integrated into the daily work of the faculty is still moderate, as only 43.8% of them regularly utilize the internet and online technologies in their classrooms (Figure 28). Only 2.1% of the sample reported a low speed of the Internet connection. From this perspective, teachers' responses harmonize with the opinions of students.

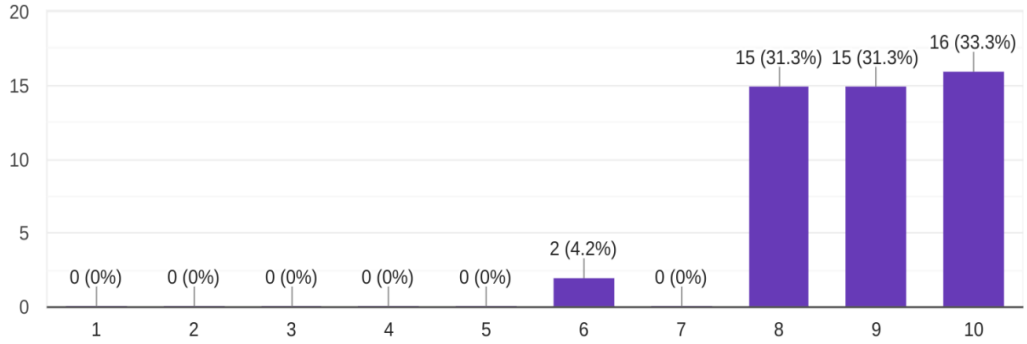

Figure 24: Faculty's internet skills.

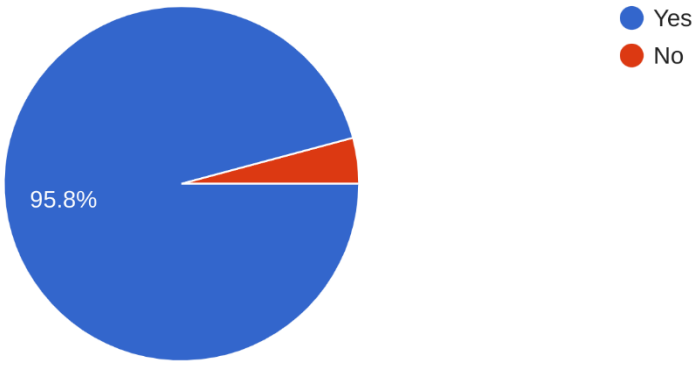

Figure 25: Internet availability inside the classroom.

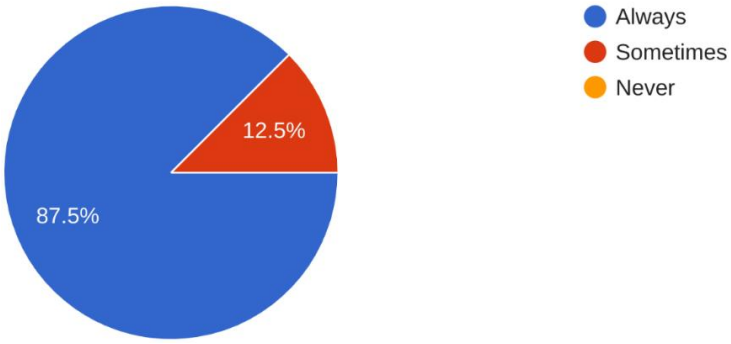

Figure 26: Faculty use of internet in course development.

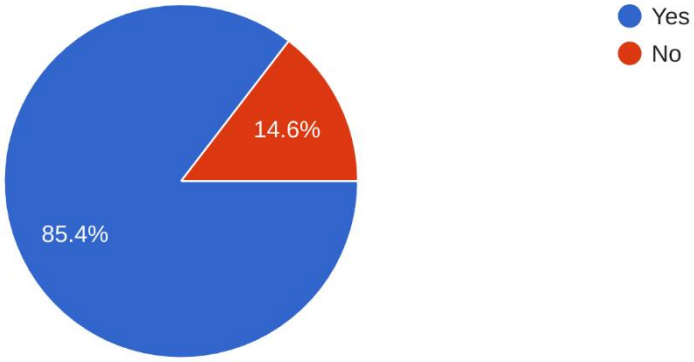

Figure 27: Percentage of material made available online.

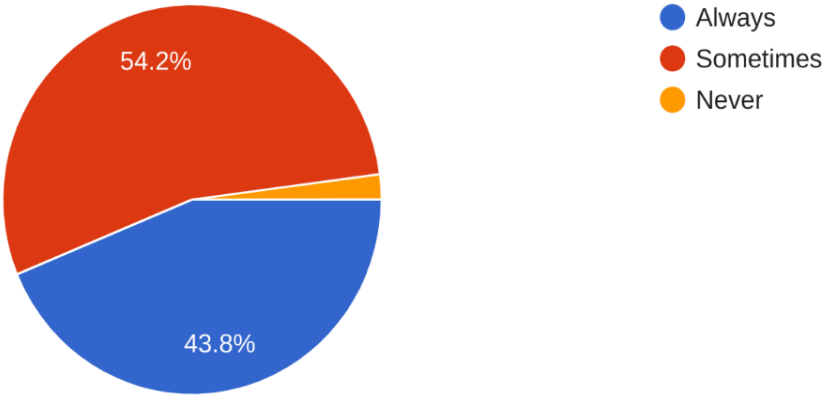

Figure 28: Internet utilization in the classroom.

All these numbers show that the Internet has already become an integral part of the learning process. Nevertheless, despite this trend, most teachers have not incorporated any elements of online learning into their curriculums. Only 18.8% of them have taught at least one course online (Figure 29). There is no agreement among these teachers concerning the optimal platform for administering online education. As shown in Figure 30, and in dependence on the needs of a particular course or learning activity, they may use Zoom, Skype, YouTube, WiziIQ, and social media. At the same time, there is no information concerning the incorporation of those learning resources that have been discussed in regard to the proposed business model, which is definitely a disturbing sign from the perspective of its applicability.

Interestingly, social media are considered by most teachers as unreliable platforms; as a result, only 36.4% of them share learning content in social networks as shown in Figure 31.

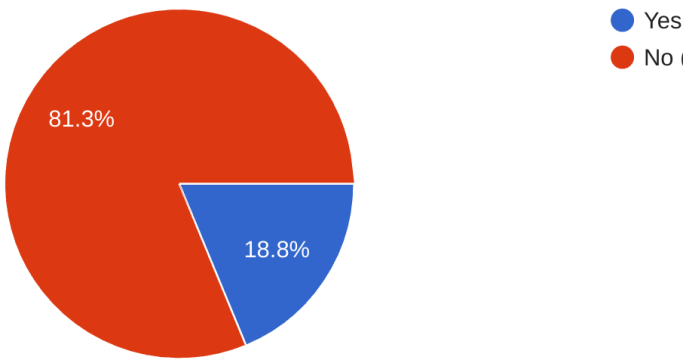

Figure 29: Percentage of faculty teaching online courses.

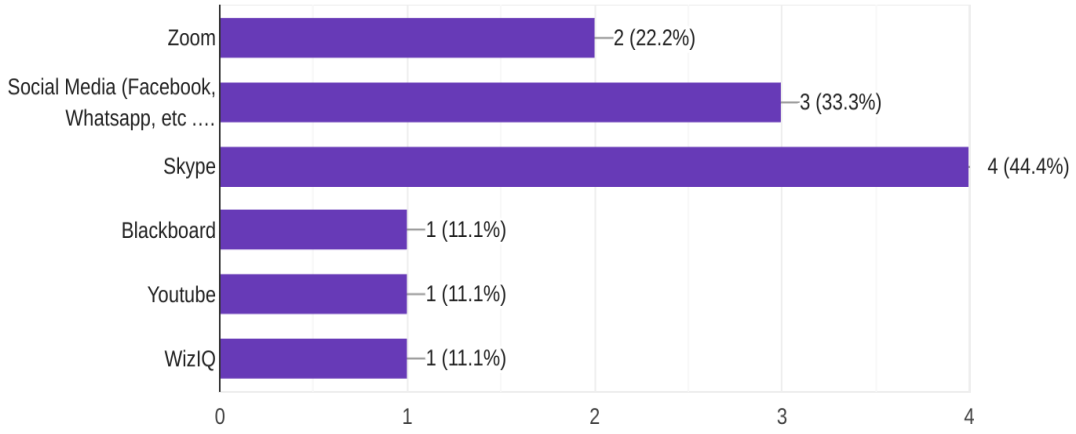

Figure 30: Online technologies used to deliver learning content.

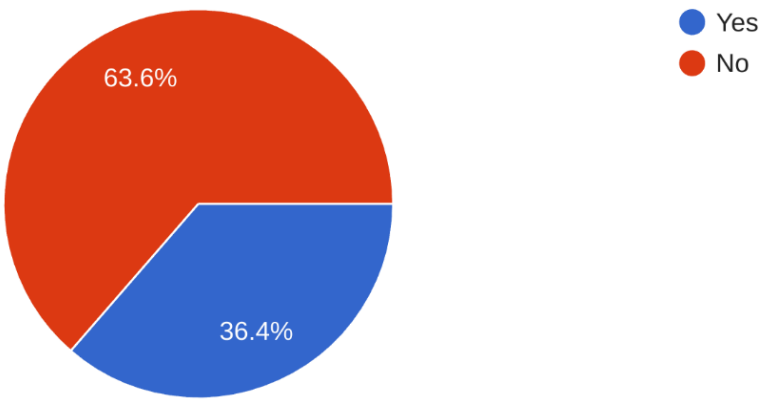

Figure 31: Sharing percentage of content using online platforms.

An analysis of the survey's results illustrates that the majority of instructors do not use all the advantages of online technologies. In particular, while more than 79% and 63% (Figures 32 and 33) of the sample employ some elements of cloud technologies and online libraries respectively, the popularity of student response tools and discussion boards is low. In general, it seems justified to claim that most members of the faculty regard the Internet as a helpful mechanism that can supplement traditional learning and provide effective solutions for solving some specific problems, such as recording students' attendance. Simultaneously, the potential of online technologies to revolutionize the system of higher education is barely recognized by respondents. Only 12.5% of them agree that online courses may be more effective than offline learning activities, and less than 40% of the sample is willing to deliver an online course. These numbers harmonize with a popular concern that a substantial number of teachers might not be prepared for teaching their courses online. In Figure 34, the fact that only 16.7% of teachers are open to the idea of supporting the acquisition of Bachelor, Masters, and Ph.D. degrees through an online university confirms this trend. Apparently, most teachers are not psychologically prepared for the implementation of a disruptive model of higher education.

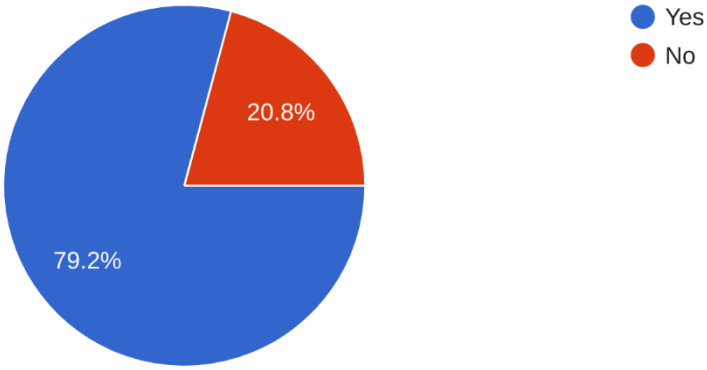

Figure 32: Percentage of faculty usage of online library.

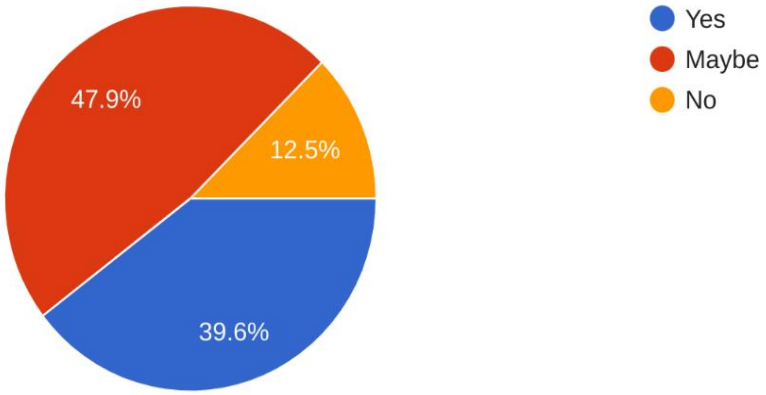

Figure 33: Percentage of faculty willing to deliver online courses.

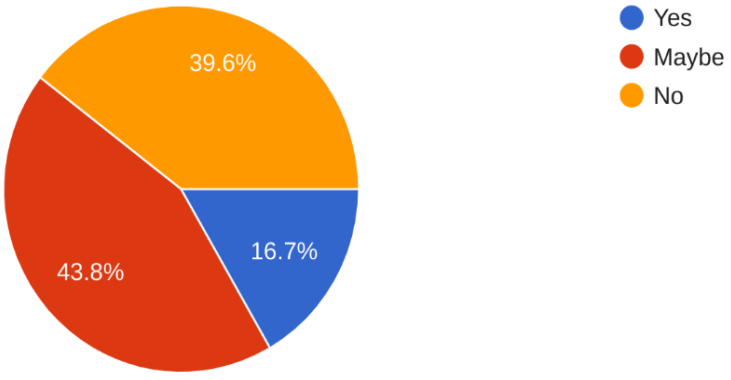

Figure 34: Faculty's support of acquiring a degree through eLearning.

5.3 The Data from Parents

While all the parents have an Internet connection at home, the level of Internet fluency among them is much lower than among students and teachers. More than a third of the sample argues that their skills in using the Internet are average (Figure 35). From the perspective of the problem under investigation, it is very important to emphasize that the majority of parents regularly utilize online technologies for communicating with their children and teachers (Figures 36 & 37). All the parents who took part in the survey support the idea of using the Internet in education (Figure 38), and 73.3% of them point out that their children already employ online technologies in their studies (Figure 39). In general, parents seem to display more positive attitudes towards the integration of the Internet into the learning process than the faculty. Only 20% of parents would not support their children in acquiring a university degree online (Figure 40). Moreover, as shown in Figure 41, 46.7% of them would prefer online courses over the option of sending their children to a university. Unfortunately, it is not clear whether they consider online courses as a superior form of education or they support online education because it would allow them being closer to their children.

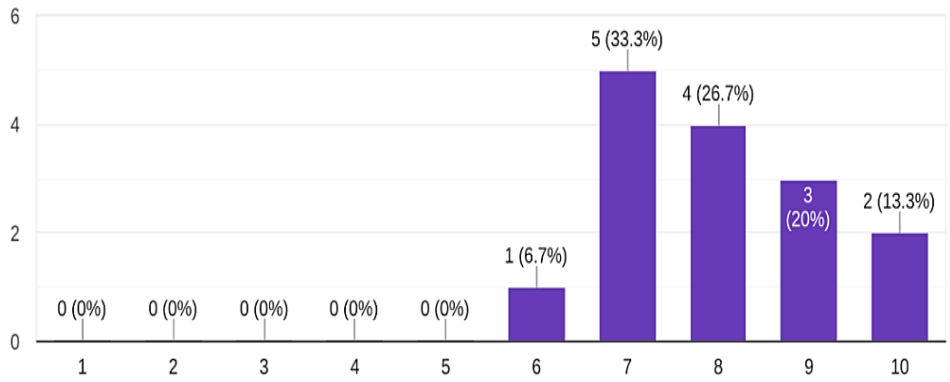

Figure 35: Parents internet skills.

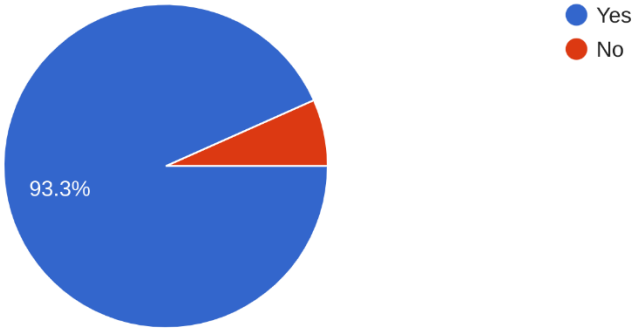

Figure 36: Percentage of parents using the internet to communicate with their children.

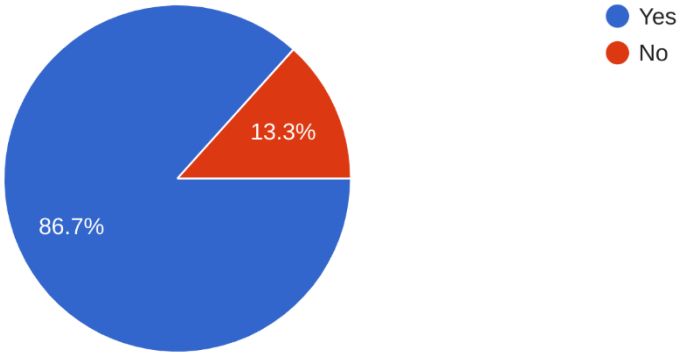

Figure 37: Percentage of parents using the internet to communicate with teachers.

Figure 38: Parents opinion on using the internet in education.

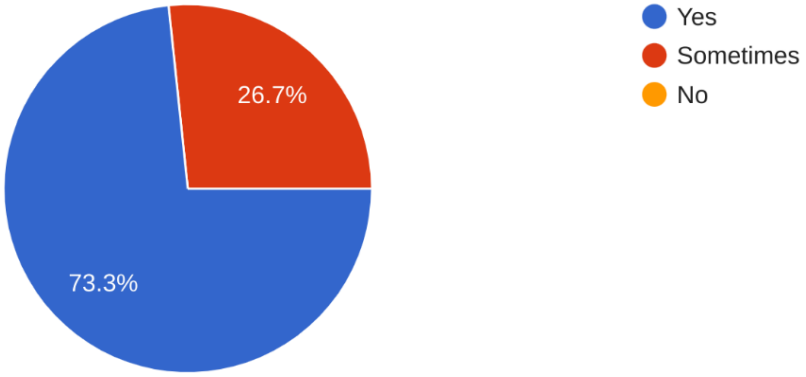

Figure 39: Percent of students use online technologies in their studies.

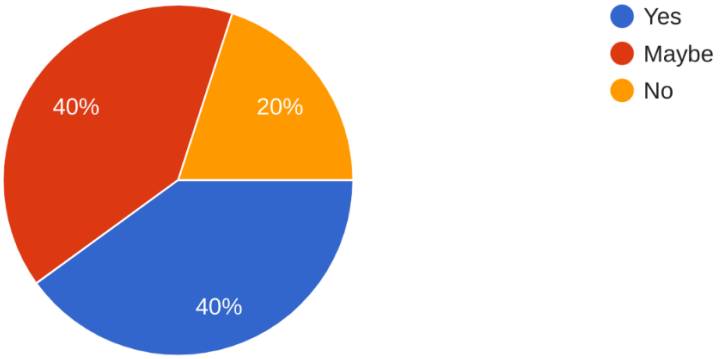

Figure 40: Parents support of acquiring a degree through eLearning for their children.

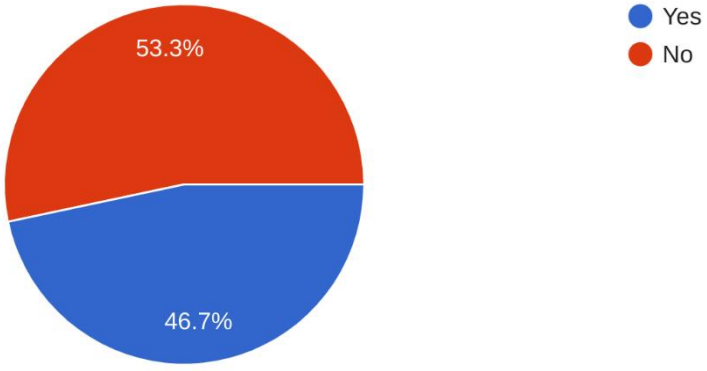

Figure 41: Percentage of whether parents prefer online courses over sending children to a physical university.

5.4 Discussion

In general, results of the study showed that students, teachers, and even parents are fluent in the use of Internet technologies. They have an access to a reliable Internet connection and are aware of how online technologies could be used in education. The Internet is already integrated into the educational process. At the same time, the results of the survey showed that most stakeholders perceive it as a set of instruments that could be used for supporting the existing teaching techniques and common learning activities. The same conclusion could be also found in several other studies (Rao, 2011; Dabbag et al., 2018). While stakeholders recognize the potential of online technologies to simplify and facilitate the learning process, most of them do not agree that the Internet can revolutionize the system of higher education. This factor illustrates that stakeholders are currently not ready for embracing the disruptive model of higher education discussed above.

Interestingly, students and parents seem to be much more enthusiastic about the future of online education and online degrees than teachers. The survey confirmed a popular finding concerning a substantial resistance to change regarding online learning within the academic staff (Ahmad et al., 2018). While most teachers are aware of the benefits that the Internet can bring to the learning process, they are not ready to fully embrace online technologies. This problem is often cited as a significant barrier to the integration of online technologies into the system of higher education (Dabbagh et al., 2018). Apparently, it is necessary to conduct a set of information campaigns and training courses for teachers in order to overcome this obstacle.

Chapter 6: Post-Course Evaluation of E-Learning

6.1 Presentation of Results

The second survey carried out in this study was dedicated to the evaluation of participants' reactions to the e-learning course that they had taken. Surprisingly, in Figure 42, only 23.5% of the sample fully understood the assignments of the course and its structure. Such a low number indicates that online learning is still an uncommon instrument for many students in the United Arab Emirates. The same statement could also be found in the studies by Alkaabi et al. (2016). Simultaneously, despite the fact that the Internet is still not fully integrated into the learning process, it seems that stakeholders have already established some general standards related to the use of online technologies in higher education. In particular, it can be inferred from the respondents' responses that it is common to use social media for downloading and sharing content, utilize Skype and Facebook for communication, and employ cloud technologies for uploading and retrieving content.

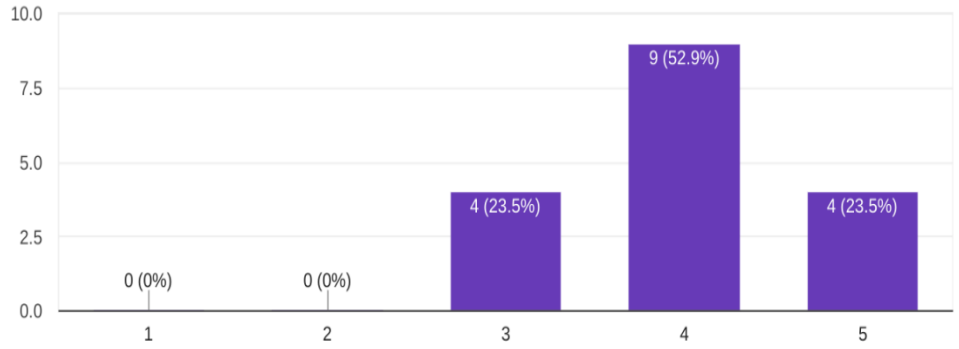

Figure 42: Percentage of students understanding the assignments and the structure of the online course.

The results of the survey show that the performance of the online learning course was questionable. The perceived relevance of the course's description, the

confidence level for completing the knowledge or skills presented, the amount of materials covered, and the quality of examples presented in the e-learning course received the highest mark by only 35.3%, 11.8%, 37.5%, and 17.6% of the sample respectively (Figures 43, 44, 45 and 46). Simultaneously, none of the participants displayed negative attitudes toward the course. Most of them have given higher than average marks to the program, thus confirming that the Internet has a promising potential in the industry of higher education.

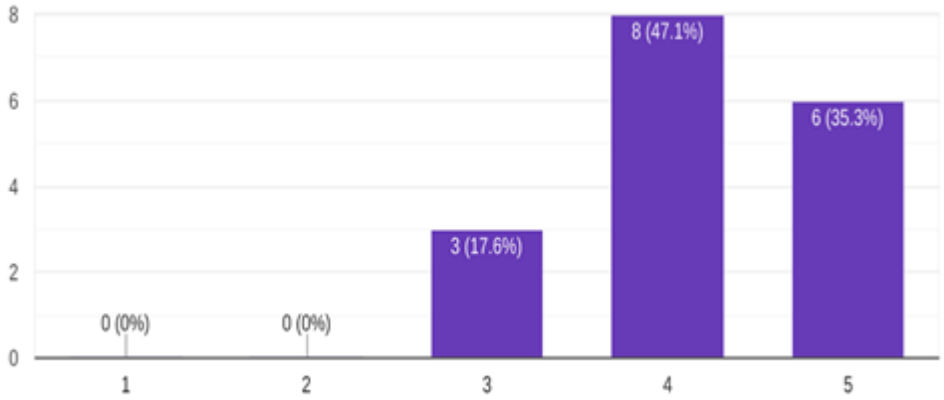

Figure 43: Relevance to the course description rate.

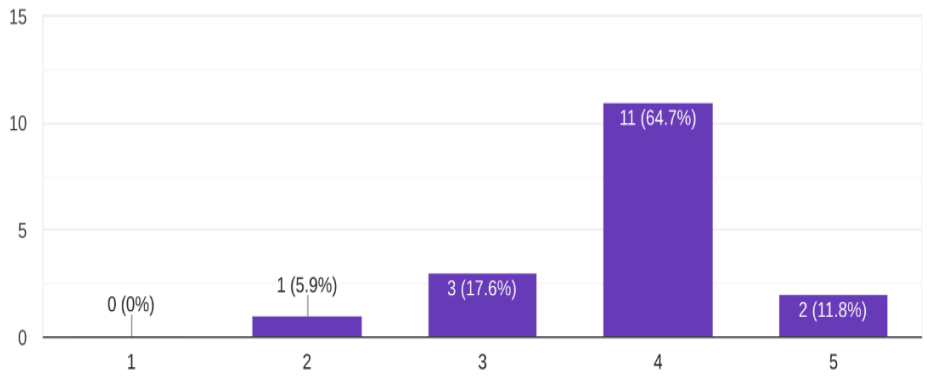

Figure 44: Confidence level for completing the knowledge or skill presented.

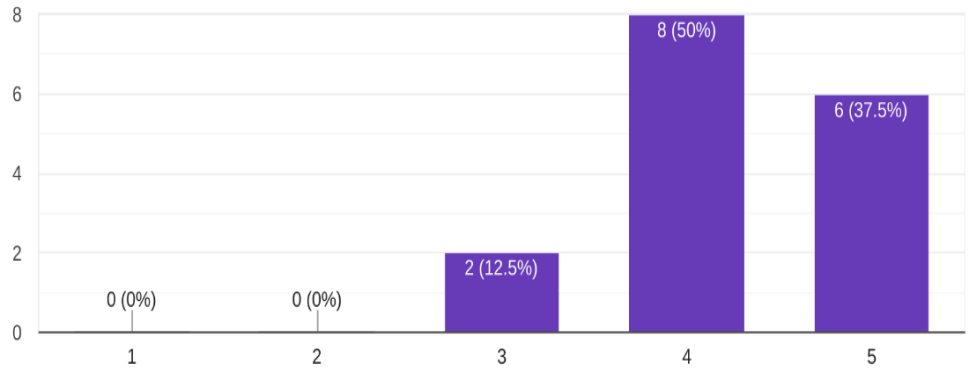

Figure 45: The amount of material covered rate.

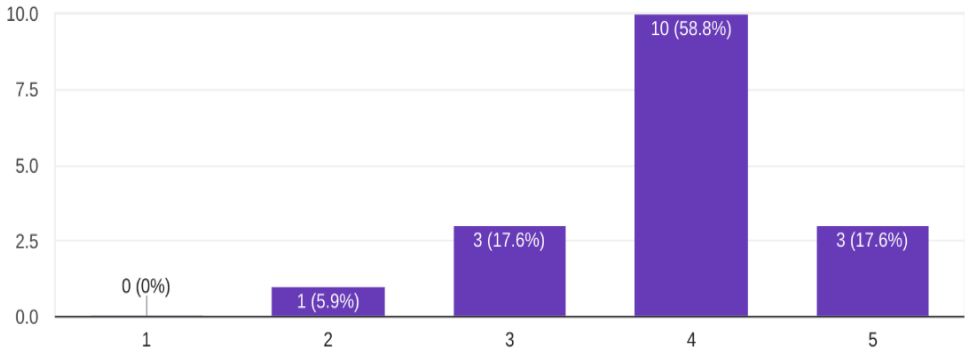

Figure 46: Quality of the examples presented in the e-learning rate.

It is important to emphasize that while the acquisition of skills and knowledge related to the e-learning course received mixed perceptions from the respondents, most of them enjoyed this form of learning. In particular, 76.5% of students who took part in this survey have positively rated their enjoyment of the course (Figure 47). This number looks especially high, considering a significant workload reported by 94.1% of students. The results of the survey confirm a popular opinion that online technologies make the learning process more interesting and engaging for students (Armstrong, 2011). Unfortunately, it is currently unclear how and to what extent this effect might translate into academic performance. Moreover,

these results do not suggest that students are ready to embrace a new learning environment that would include exclusively online activities and resources.

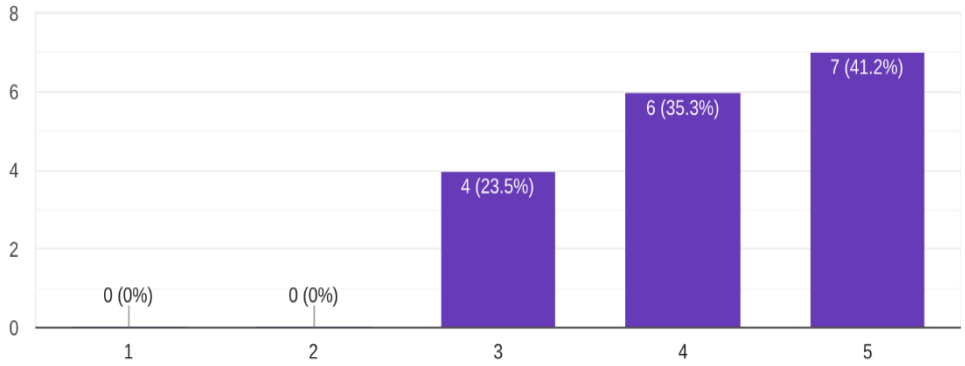

Figure 47: Student rate of the enjoyment of the online course.

In accordance with many students, the availability of video and audio instructions and an opportunity to access learning materials from any place were the key advantages of the e-learning course. Simultaneously, the lack of resources at the university was reported as the main barrier to the program's success. Learners positively perceived the content's arrangement but reported mixed perceptions of the adequacy with which this content had explained the knowledge, skills, and concepts presented in the curriculum. Interestingly, around a third of learners were not satisfied with the quality of final exams and complained that some questions included in final tests were irrelevant or misleading. When answering open-ended questions on this matter, most students agreed that reducing the ambiguity of exams' questions should be a key priority in this sphere.

It can be inferred from the quantitative data collected in this study that the completion of an e-learning course is a complex process that depends on the unique skills, knowledge, expectations, and resources of a particular learner. Even though all the participants of the survey took part in the same e-learning course, they reported

spending different amounts of time on the same learning activities. While some of them have completed the entire course in 60 hours, others managed to carry out all the required activities in only 20 hours. This important finding illustrates the unique advantages of the concept of e-learning, as it allows individuals to choose their own pace of learning (Ghilay, 2017). This way, each person is able to learn at a convenient speed that is optimal for comprehending the materials.

From the aesthetical perspective, the design of the course was evaluated as acceptable. As shown in Figure 48, 82% of the sample were satisfied with the clarity of the text and fonts and visual design used in the course. Simultaneously, in Figure 49, the quality of photography and animations has not received high marks from the respondents. Only 18.8% of the sample fully agreed that the animations were not adequately designed and used in the course (Figure 50). Similar results were also observed in regard to multimedia. 44% of students were not satisfied with the amount of multimedia in the program (Figure 51), while the quality of multimedia was positively evaluated by only 69% of respondents as shown in Figure 52.

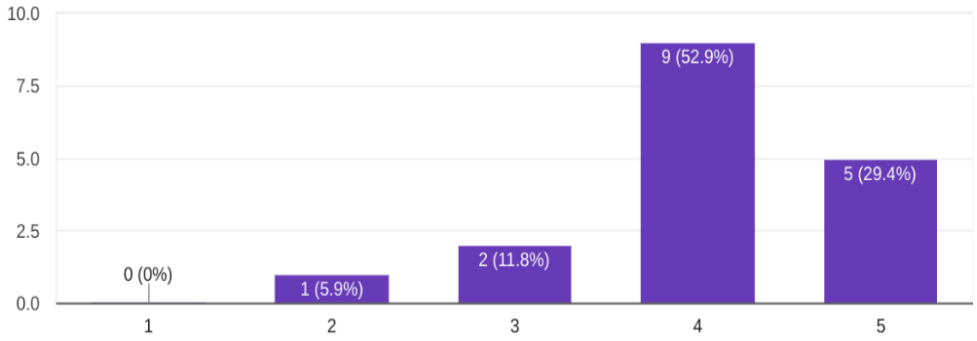

Figure 48: Student rate of the overall visual design of the course content and materials.

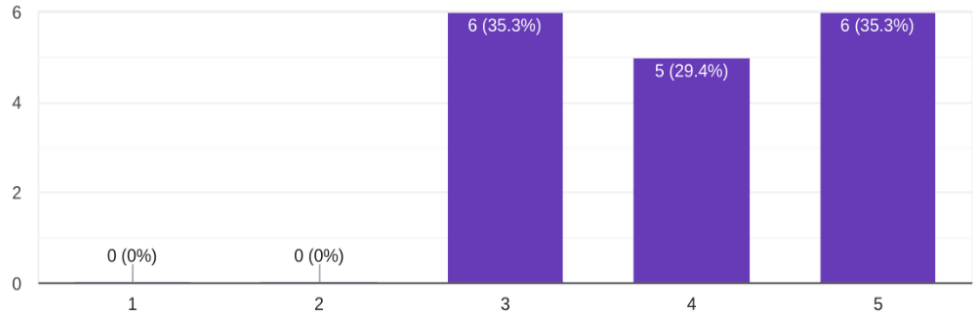

Figure 49: Student rate of the quality of the photography used in the course.

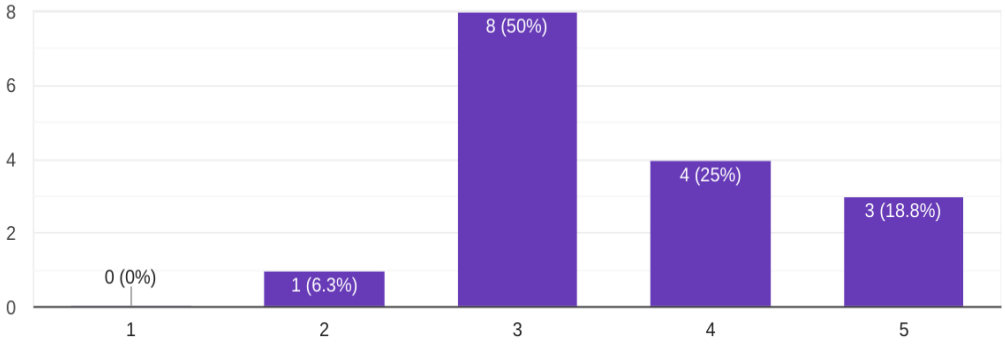

Figure 50: Student rate of the use of animations in the course content.

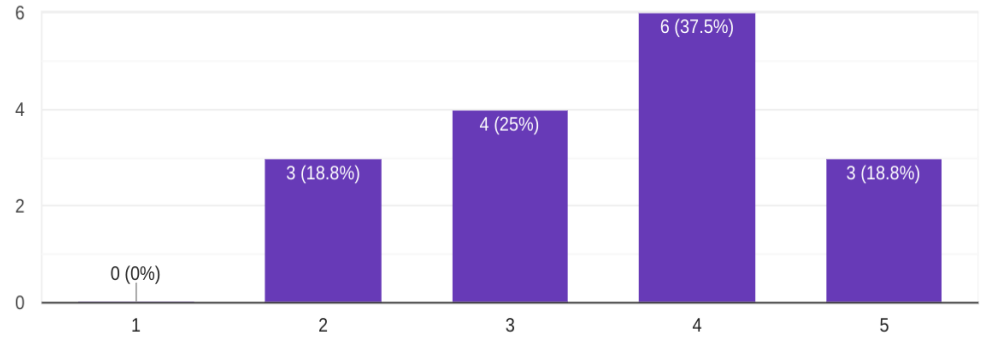

Figure 51: Student rate of the amount of multimedia used in the course.

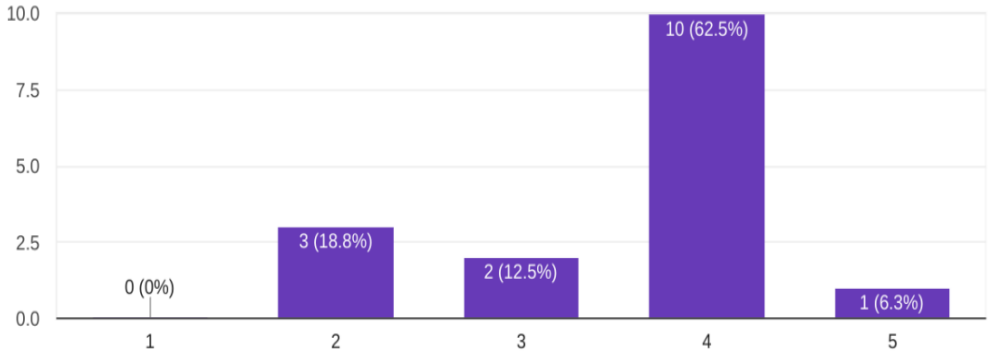

Figure 52: Student rate of the quality of multimedia used in the course.

The overwhelming majority of students used external websites, and all of them were engaged in some form of group activities with other learners. The perceived effectiveness of the course seems to be high. In particular, all the students agreed that the learning activities helped them better understand the subject, while most of them revealed that online case studies improved their comprehension of the content. In addition to the evident advantages of the e-learning course, the survey also found some flows inherent to its design. The feeling of isolation reported by many students seems to be the most disturbing factor. In Figure 53, 56.3% of the sample were concerned about the insufficient interaction with other virtual students, and 78.7% of them reported the feeling of isolation as shown in Figure 54. The academic literature indicates that this factor is one of the key obstacles to the further expansion of online education (Gillett-Swan, 2017). At the same time, it is important to emphasize that none of the respondents argued that this feeling was crucial, which provides a premise to assume that changes in the design of the e-learning course might address this problem.

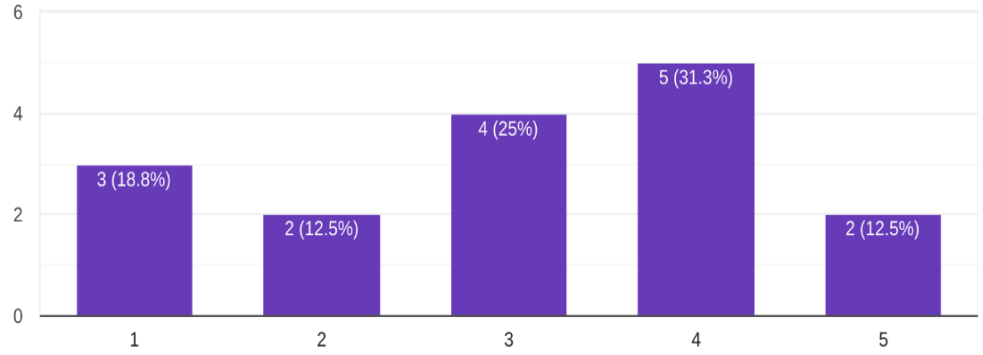

Figure 53: Student rate of their opportunity to interact with other students virtually.

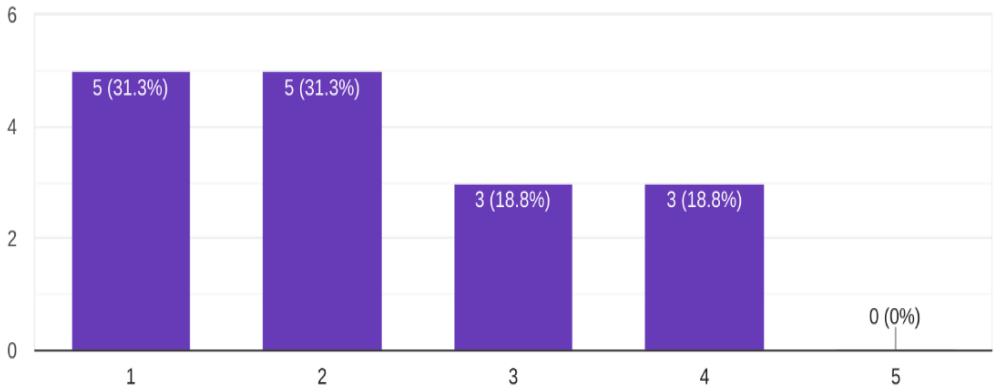

Figure 54: Student rate of the isolation they felt from other students.

The perceived technical quality of the e-learning course, the pace of its advancement, and students' confidence about their knowledge on the subject received high marks from the survey's participants. Around a quarter of them were not satisfied with the availability of technical support; however, this problem was barely evident for other students. Unfortunately, the survey did not provide a substantial amount of information on the ways to improve the e-learning course, but that can be taken into consideration in future studies. Students' responses on this matter were inconsistent and revolved around different issues, such as the need to use new voice Dictaphones, the importance of a good Internet connection, and the necessity of introducing more group activities.

6.2 Discussion

The results of the survey demonstrated the unique potential of e-learning. The data show that most learners enthusiastically perceive the idea of engaging in an online learning course, although some of them encountered certain technical problems when accessing online materials and participating in online activities. Moreover, optimistic trends were reported both for the process of learning and for learning outcomes, although the survey did not retrieve quantitative metrics concerning students' academic performance. In general, the results of this study illustrated that an e-learning course might be a viable alternative to a traditional educational program. It allows learners to study at their own pace, access learning materials at a convenient time, and engage in group or individual activities independence on individual preferences. One of the most important findings of this research is related to the fact that students from the second survey, who had actually participated in the e-learning course, reported much better perceptions of online educational technologies than participants of the first survey. This regularity might be explained by the fact that persons who are engaged in e-learning activities are likely to change their attitude towards this instrument after recognizing the benefits of this mechanism and its applications in the learning environment.

At the same time, it is important to emphasize that the survey revealed several barriers to the integration of online technologies into the learning process. First, around 25% of students are not ready to accept e-learning activities due to the technical difficulties associated with online learning. In order to acquire skills and knowledge from such courses, they require technical assistance from the staff. Apparently, a university and a teacher must create clear guidelines and tutorials that would help students access learning materials, engage in online activities, and

complete tasks (Fojtik, 2018). Second, the number and intensity of group discussions and other forms of group learning in the curriculum were insufficient. All the students who took part in the survey positively evaluated the effectiveness of group discussions; however, apparently, the number of these activities was insufficient. Such a conclusion can be made based on the fact that many individuals reported the feeling of isolation. By increasing the number and intensity of group activities, designers of e-learning courses could substantially increase their effectiveness.

Third, the availability of learning materials remains a critical problem for e-learning courses. Many students from the survey complained that they could not find and access the required resources. The same problem was also reported by participants of the previous survey. The academic literature argues that the unavailability of learning resources and materials is among the key challenges related to the expansion of online education (Abramenka, 2015). Due to the lack of commitment to the development of this form of learning, universities and colleges rarely manage to digitize all their resources and make them available for students. While it might seem that institutions can easily address this problem, successful implementation of such a digitization campaign would require substantial efforts from the staff and the maintenance of reliable servers.

Finally, the last barrier revealed by the survey is frequent technical problems. Several students shared their unpleasant experiences with the e-learning course, explaining that disruptions of the electricity and the Internet connection undermined the material's comprehension. Naturally, any institution that considers e-learning as an important priority should ensure that backup generators, additional Internet networks, and other pertinent instruments prevent the emergence of such scenarios.

Chapter 7: Conclusion and Future Work

The thesis illustrated that the emergence of new information and communication technologies would have a considerable impact on the current higher education business models and contribute to the formation of disruptive business models that align with the higher education stakeholders' expectations. At the moment, the majority of universities and colleges use a traditional business model that is based on tuitions, state funding, and gifts. All these sources are unstable, which makes it very hard for most institutions to forecast their budgets and create long-term development strategies. As a result, they are forced to reduce salaries for the academic staff and cut other expenditures, which negatively influences the quality of the educational services that they provide. All the factors above illustrate the inefficiency of the current business model used in higher education. Furthermore, it also contributes to the unavailability of higher education for most individuals due to the geographic factor and high tuitions.

The current thesis proposes a disruptive business model of higher education that has the potential to address both these problems. It is based on the integration of online technologies into the learning process and uses blended instruments of teaching in order to cover the maximum number of customers. The model is based on the canvas offered by Osterwalder and Pigneur (2010) and allows integrating all the relevant aspects of the operations of institutions of higher education into a consistent framework and align them with the needs and expectations of pertinent stakeholders. Institutions that follow this model will promote the highest degree of customization in their courses, which will allow students to acquire specialized skills and knowledge that are necessary for working in their specific sector or niche. Due to a

shift to online learning, universities and colleges will be able to reduce their expenses and, as a result, improve work conditions for the academic staff and make courses more affordable. Moreover, this model will also support the concept of the free education that is based on alternative revenue streams, such as advertising or a percentage of a student's future salary.

Results of the two surveys carried out in the study illustrate that students, teachers, and parents in the United Arab Emirates are ready for the implementation of such a disruptive model. They are proficient in the use of Internet technologies in learning; moreover, online instruments have already become an unalienable part of most courses at UAE institutions of higher education. At the moment, most stakeholders do not perceive online learning as a viable alternative to traditional courses. At the same time, it seems that those students who pass at least one online learning program start displaying a positive attitude towards the future of such a form of studying. In other words, high resistance to change that is currently observed in the UAE in regard to the embracement of online learning may be rather explained by the low level of stakeholders' awareness of the specifics and benefits of this instrument than with their unwillingness to embrace this innovation.

In order to apply the new disruptive model of higher education, it is of paramount importance to ensure the stable work of electrical equipment and a fast Internet connection. Moreover, institutions are also recommended to digitize their learning resources, create detailed tutorials for students and teachers, and conduct training courses for teachers on the use of technical instruments in online learning. It is also of paramount importance to continue collecting data from all the relevant stakeholders in order to determine an optimal design of an educational process that would be suitable for all concerned parties. The available evidence provides a

premise to believe that by following these recommendations, institutions will have a chance to contribute to a shift in the public opinion on e-learning and show that Internet technologies can revolutionize the system of higher education by making it affordable to a broad group of individuals and customizing it to the needs and requirements of each learner.

Since the educational service is provided directly to students, future work will focus solely on students of higher education as they are the primary customer segment of the proposed business model. A framework of the business model should be identified. The framework should provide a strategy for higher education that allows students to customize and accredit their learning plan. This can be achieved by exploring the existing frameworks like Abet, which provides accreditation to per program. Then to create a specialized framework for the proposed business model that's main objective is to provide accreditation per student.

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Appendix

Questionnaires for the surveys used in this study.

Table 3: The Integration of the Internet in Higher Education Survey.

Section Title	Question
Students	Gender/Program of study/College
	How do you attend university courses?
	How do you rate your Internet usage skills?
	Do you use the Internet to communicate with your instructors?
	Do you have Internet access at home?
	Do you have Internet access in the classroom?
	How often do you use the Internet in your studies/researches?
	Generally, how do you describe the Internet speed available to you?
	Is the material you're taking in the university available online?
	Have you ever taken online courses?
	If yes, please select which online course tool you used.
	Do you use social media to download/share course content?
	Do you use cloud technologies (Shared drive, one drive, etc) to download/share course content?
	Have instructors ever introduced you to online courses?
	Do you use discussion boards?
	Do you use an online library?
	Does the Internet greatly improve the academic performance?
	Does the Internet facilitate the learning journey at the university?
	Do you think all lectures/courses should be online?
	Can the Internet be easily and effectively implemented in Higher Education?
	Do you support taking online courses?

Section Title	Question
Students	Do you support acquiring a bachelor's, Master's, or Ph.D. degree through an online university?
	Are you satisfied with your current course plan/course list?
	Do you wish to be able to customize your course plan (Ex: Being able to choose subjects that are in your interest of learning and you result with a customized transcript upon graduating)
	Do you prefer taking online courses over a physical classroom?
Faculty	Gender/Program of study/College
	Years of teaching experience
	How do you deliver your courses?
	How do you rate your Internet usage skills?
	Do you use the Internet to communicate with other professors?
	Do you use the Internet to communicate with students?
	Do you have Internet access inside classrooms?
	How often do you use the Internet in your course development?
	How often do you use the internet in your office?
	How often do you use the internet in your classrooms?
	Do you use the Internet to post information, opinions or student work?
	Is the material you're teaching in the university available online?
	Generally, how do you describe the Internet connection speed available to you?
	Have you ever taught a course online?
	If yes, please select which online course tool you used.
	Do you use social media to share course content?
	Do you use cloud technologies? (Shared drive, one drive, etc) to share course content?
	How do you track students' progress?
	Did you invite other teachers to deliver a course online for your students?
	Do you use discussion boards?
	Do you use student response tools?

Section Title	Question
Faculty	If yes, what student response tools do you use?
	Do you use an online library?
	How do you record students' attendance?
	Does the Internet make educational delivery more effective?
	Does the Internet help in preparing course materials for my students?
	Does the Internet facilitate my teaching process at the university?
	Do you think that courses are better taught online?
	Can the Internet be easily and effectively implemented in Higher Education?
	Are you willing to deliver an online course to university students?
	Do you support students acquiring a bachelor's, Master or Ph.D. degree through an online university?
	Do you prefer teaching courses online over teaching in a physical classroom?
Parents	Gender
	Highest level of study
	Is there Internet access at home?
	How long is the Internet available at home?
	How do you rate your skills in using the Internet?
	Do you use the Internet to communicate with your children?
	Do you use the Internet to communicate with your children's teachers?
	Do your children have access to the Internet at home?
	Do your children use the Internet for their studies (Researches, Homeworks, etc ..)?
	What is your opinion on using the Internet in Education?
	Do you support having your children acquire a university degree online?
	Do you prefer online courses over sending your children to the university?

Table 4: Post-Course Evaluation for E-Learning.

Section Title	Question
Course Expectations	Rate your understanding of course expectations and assignments.
	Did the course cover the content you were expecting? Why or why not?
	What topics would you have liked to see addressed that were not covered?
Course Structure and Content	Please select which e-learning tool you used.
	Do you use social media to download/share course content?
	Do you use cloud technologies (Shared drive, one drive, etc) to download/share course content?
	Rate your understanding of the course structure.
	Rate the relevance to the course description.
	Rate your confidence level for completing the knowledge or skill presented.
	Rate the amount of material covered.
	Rate the quality of the examples presented in the e-learning.
	Rate the availability of the instructor via email, social media, or online discussion.
	Rate your enjoyment of the course.
	Rate the course workload.
	What are the strengths and weaknesses of this e-learning course?
	What part of the e-learning course did you find most useful and interesting?
	Was the content arranged in a clear and logical way? Why or why not?
	Did the content adequately explain the knowledge, skills, and concepts it presented?
Assessment	Rate the relevance of assignments, quizzes, and tests.
	Rate the quality of the questions asked in the exams.
	How could the exams be improved?
	Did the practice questions make good learning tools?

Section Title	**Question**
Timing	How much time did you spend on this e-learning course?
	How many hours did you spend completing activities related to the course?
	Was the amount of time it took to complete this course appropriate? Why or why not?
Visual Design	Rate the overall visual design of the course content and materials.
	Rate the clarity of the text and fonts in this course.
	Rate the quality of the photography used in the course.
	Rate the use of animations in the course content.
Multimedia	Rate the amount of multimedia used in the course.
	Rate the quality of multimedia used in the course.
	Rate the quality of voice used in the course.
Interactivity	Rate the amount of opportunities for interactive learning.
	Was the interactivity suitable for the content? Why or why not?
	If you did some group work, did you enjoy working with your group?
	Did you utilize any links to external websites?
	Did any of the activities help you gain a clearer understanding of the subject?
	Did case studies and scenarios help you gain a clearer understanding of the content?
	Rate your opportunity to interact with other virtual students.
	Rate how isolated you felt from other students.
	Rate how much you missed direct, in-person interaction with other students.

Section Title	**Question**
Overall Experience	Rate the pace at which the e-learning course advanced.
	Rate the technical quality of the course materials.
	Rate how confident you feel about your knowledge on the subject.
	Rate the availability of technical support.
	Identify three important concepts or ideas that you learned in this course.
	Identify three ways to improve this e-learning course.
	Make two suggestions to improve understanding of the course content.
	Would you prefer to take this course online or in the classroom? Why?
	Based on this experience, would you take another e-learning course? Why or why not?
	Did you encounter any technical problems during the course? If yes, elaborate.
Connectivity	How do you rate your Internet usage skills?
	Do you use the Internet to communicate with your instructors?
	Do you have Internet access at home?
	Do you have Internet access in the classroom?
	How often do you use the Internet in the classroom?
	How often do you use the Internet in your studies/researches?
	Generally, how do you describe the Internet speed available to you?
	Is the material you're taking in the university available online?