CARDIFF METROPOLITAN UNIVERSITY

To evaluate cost effectiveness of online education vs onsite face-to-face education as a service proposition to increase sustainability in the private education sector in the UAE

Master of Business Administration

DISSERTATION

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Date : 25th January 2018
Acknowledgements

This research occupies a great deal of significance in my career. I would like to start with thanking the Almighty God for his blessings.

This research paper is dedicated to my late father who embodied the principle of honesty and integrity in my character and left an indelible impression in my growing years. Then thank my beloved family and husband who always stood by me as a pillar of strength whenever I was anxious with some aspects of my dissertation and work-related exigencies.

I owe my sincere gratitude to my supervisor, Professor Harry Cameron who has remained an inspiration through his meticulous approach, guided me through this dissertation. His passion towards work, commitment, and his approach for perfection, has made me create and develop the best dissertation that I could have ever produced. His ideas and words of wisdom constantly inspired me throughout this journey. I wish him good health, success and may the almighty bless him forever.

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This research has indeed made me a better person professionally, by developing my critical thinking skills, has enabled me to build good relationships and has driven me with enthusiasm towards a lifelong learning.
Abstract

As the economy evolves along with new age technologies impacting businesses, governments, societies, higher educational institutions and Universities would need to adapt and embrace online education and e-learning experiences as part of regular operations to increase their reach, visibility, and offerings by providing access to students irrespective of geographical presence. This has led to assessment of key driving factors related to learning effectiveness, changing student lifestyles, need for innovation, focus on learning outcomes and drive cost effective methods without compromising on quality, content and assess student – faculty relationships.

The research study examined some well-established theories and models and constructed subjective debates in the process developing student-friendly tools, inclusive and quality education that accommodates a range of learning experiences and styles. While the purpose of this research is to validate and review growth of ‘e-texts’, ‘personalized learning’, adaptive learning’, ‘flipped classrooms’ with firstly quality and costs; and lastly quality and efficiency.

The research involved conducting qualitative and quantitative data collection process using a mixed method strategy that supported purposive sampling techniques. The design of questionnaires and conduct of interviews for studying educational experiences by using statistical tools for validation of data collected was deployed to establish a connect with the original research objectives. The results on data analysis post using regression analysis and co-efficient correlation provided the following interesting pattern which meets the several requirements for higher education institutions to consider:

1) Cost effectiveness and affordability being a primary concern apart from creating student friendly learning tools to examine the potential of online learning by shortening the length of programs.
2) the study also discussed of how online learning would enhance international collaborations to define simplicity in the learning process which essentially means that there are issues related to conceptualization and student assessments that needs prime focus. 3) Rapid growth experienced in smart technologies using technology platforms
(AI, Robotics, Mobile App-based learning), it was found that students preferred mobile learning platform as a strong median in supporting their learning experiences.

While the use of AI as a learning analytics model seems to hold a future for further researchers to examine possibilities of along with studying how machine learning and robotic enabled teaching and facilitation process that would throw an interesting experience for future researchers to explore further studies.
**Declaration**

I declare that this dissertation is being submitted in partial fulfilment of the requirements for the degree of MBA and has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

**Lakshmi Raman**

*st20131411*

Signed

Date: 25th January 2018

**Statement 1**

This dissertation is the result of my own work and investigations, except where otherwise stated. Where correction services have been used, the extent and nature of the correction is clearly marked in a footnote(s).

Other sources are acknowledged by footnotes giving explicit references. A bibliography is appended.

**Lakshmi Raman**

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Signed

Date: 25th January 2018
**Statement 2**

I hereby give consent for my dissertation, if accepted, to be available for photocopying and for inter-library loan, for deposit in Cardiff Metropolitan University’s e-Repository, and that the title and summary may be available to outside organisations.

**Lakshmi Raman**  
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Signed  
Date: 25th January 2018
Supervisor Declaration Form

Student Name : Lakshmi Raman  
Supervisor’s Name : Harry Cameron  

I acknowledge that the above named student has regularly attended the planned meetings and actively engaged in the dissertation supervision process. They have provided regular timely draft chapters of the dissertation and followed given guidance.  

Signed: 

Date:
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List of Abbreviations
ICT – Information Communication Technology
CP – Class Participation
VR – Virtual Reality
VLE – Virtual Learning Environment
OER – Open Educational Resources
MOOC – Massive Open Online Courses
DSA – Data Science and Analytics
AI – Artificial Intelligence
VAK – Visual Auditory Kinesthetic
ML – Machine Learning
e-age – Electronic Age
Chapter 1 - Introduction

1.1 Chapter Overview
The purpose of this chapter is to provide a background of the dissertation to be carried out. This will be addressed and validated through various arguments that several peer reviewed literature, journals, government regulations and academic bodies have formulated which were referred as guidance for the chosen research topic to define the research question and authenticate the aims and objectives of the dissertation. The justification for the research will also be discussed and the methodology outlined.

As once stated by Thomas Edison “Books will soon be obsolete in public schools...our school system will be completely changed inside out” (Bleiberg, 2017)

1.2 Background to the Research
As a dedicated academic administrator being in the academic fraternity for several years, this research will provide the necessary opportunity to amplify the prioritization Business schools offers between traditional face-to-face education and effective online education (as mentioned in the topic of my research).

(Kemp and Grieve, 2017) Have stated advancements in technology, changing student lifestyles and future rate of economic growth is changing employment markets at a rapid pace globally, while digital literacy is essential for students to remain successful and therefore Universities/ Colleges must create sufficient opportunities, by evolving quickly and develop teaching methods for students to get job-ready by creating digital solutions. In a book titled “The Innovators: How a Group of Hackers, Geniuses and Geeks Created Digital revolution (Issacson, 2014) discussed the journey of innovation, technology and digital growth that featured a series of human inventions from the general purpose computer to an iPhone. This also featured the dynamic transformation through technologies impacting the ‘what’ and ‘how’ of teaching at higher education in numerous methods: “e-texts”, “flipped classrooms”, “adaptive learning”, “personalized learning”, ‘blended learning’ all of which that would be discussed in-depth through this research document. While it poses questions for teachers and rethinks future strategies, it is without a doubt that Online learning constitutes a significant part of student
experience for a greater community of University students in some nations (e.g., Ituma, 2011; Otter et al., 2013; Tucker et al., 2013). Edison almost a century ago imagined how technology could transform teachers, education technology and student-teacher interactions as authors (West and Bleiberg, 2017) argue adoption of five strategies and principles which revisits the role of classroom teaching and learning experience - 1. Technology that empowers teachers must be used in schools (e.g. Facebook or Tumbler, Twitter etc.) 2. Teachers must create lesson plans using technology (use online resources) 3. Teacher should get comfortable using open source technologies (cost savings and efficiency) 4. Student assessment and evaluations using online education portfolios (videos and live feeds) 5. Common Standards for that would facilitate the development of technologies eliminating redundancy, developing student-friendly tools through innovations that would support teachers to combat conflicting guidelines.

In a report that was presented by the scholars at the Centre for Universal Education at Brookings Institution for the International Commission of Financing Global Education Opportunity, sustainable development Goal 4, mainly was to ensure inclusive and quality education to encourage lifetime wisdom and has set out a grand ambition of education system. Unfortunately, there are quite a few gaps in knowledge and the need for innovation is essential to meet the goal, to get superior results in learning outcomes, and drive down costs. The report examined low and middle-income countries, where children are currently 100 years behind their peers, however this gap can be filled with rapid advances in technology as the workplace dynamics and the globe evolves, a broader set of competencies and added skills that would imbibe information literacy, flexibility, critical thinking and collaboration in addition to academic knowledge would be essential for every young person to attain success.

The current trend in online education is booming especially in the UAE market. Technology had a significant impact on society and propelled industries, entertainment and media world to its next level given the role of technology which remains as an inseparable part of everyone's day to day life. Hence many facets surrounding technological advancement and its integral role in the UAE economy shall be duly explored as the researcher would like to take the opportunity to examine, evaluate and analyse this study on “evaluating cost effectiveness of online education versus onsite
face-to-face education as a service proposition to increase sustainability in the private education sector in the UAE.”

The UAE shall continue to focus on Smart Learning & Services Initiatives so that they can achieve their target of **UAE 2021 Vision** plan, as Hussain Ebrahim Al Hammadi, Minister of Education mentioned at the Global Education Forum in Dubai recently of reaping maximum distance gained by modern innovations in technology, and collaborating with several stakeholders in order to ensure they expand and improve education as well as accomplish high-quality learning to meet its long-term goals. (Noor Nazzal, 2017).

Through this study an attempt would be made in comparing traditional (face-to-face) vs online education as subjective debates about an iron triangle cost and cost-effectiveness; accessibility and sustainability; quality regarding usage of technology shall be examined. As discussed in the Journal of Interactive Media in Education, 2014(2):5, pp. 1-8, (Lane, A, 2014) in the article “Placing Students at the heart of the Iron Triangle and Interaction Equivalence theorem models will need to be considered, as **Iron Triangle model** involved examining several visual models in order to discuss the specific variables across higher education systems at a sectoral and institutional levels by considering correlative relationships at various levels in the back of emergent trends promoting open education systems discussing firstly quality and costs; and lastly quality and efficiency to debate and present the universal availability of higher education at same or lesser costs without sacrificing the final outcomes. Further, the equivalence theorem model develops a collective understanding of the teaching and learning interactions which successfully studies teachers, students and educational content which can be extended to the informal setting from traditional environments. Noticeable both models discussed 0the supply side in educational systems of availability and accessibility as core elements applied to a vast group of people in the theorem, ignoring the demand side of acceptability and affordability within the models for students and learners. Highereducation.org. (2017).

This research will recognize present challenges and needs to respond and retool by researching into online and face to face modes of delivery, implementing strategies for better understanding of student's learning and teaching effectiveness within blended
education environments, notwithstanding commercial limitations and battle change-resistant cultures, as necessary research to study students learning experiences, student-faculty interactions and learning outcomes shall examine the benefits of online learning versus traditional classroom engagements for delivery of quality educational life-long learning experiences that have meant investigation and innovation are blooming at a fast pace. (Sciencedirect.com, 2017)

Anna Paolini, Director of the UNESCO Regional office and representative in the GCC, as part of her landmark note, mentioned that Arab countries should prioritise on providing access to all. - "Arab countries need to focus on key priority areas such as equitable and inclusive access to education for all, quality and relevant education and teachers, as well as education for sustainable development," (Noor Nazzal, 2017)

As per the government’s vision of UAE 2021, (Noor Nazzal, 2017), it aims to ensure UAE is turned into economic, touristic and commercial capital, as part of transitioning to a knowledge-based economy, which shall be realized by promoting innovation and research and development. To achieve a knowledge-based economy, the UAE needs to educate, nurture and retain its talent with appropriate skills and experience, while at the same time developing the TMT sectors to house innovation and productivity. Currently, there is a gap between the education and talent available, and UAE is thinking of diversifying its roles into Technology, Media and Telecommunications (TMT) sector. (Al Tamimi & Company, 2017).

Literature studies carried out previously by academicians, authors (Bernard et al., 2004; Means et al., 2009 and Farmakis and Kaulbach (2013) examined various options of distance learning programs established with signifying contexts that technologies did not differ much when considering regular face to face classroom instructions on the position of learning outcomes. With the introduction of web-based learning, and the literature (Porter, 2015; Fedynich, 2014; Shotwell, 2013) discussed it has become almost crucial to weigh and assess the efficiency and cost effectiveness associated to online and face-to-face learning. A Gallop Poll Study conducted in October 2013 (Saad, Busteed and Ogisi, 2013) that was conducted in the United States placed online education being perceived positively considering the flexibility, wider range of courses at reasonable costs.
(Mckee, T, 2017) part of the personal reflection over the 30 years study on Distance Education reviewed Online learning is currently being reflected as the ‘fifth generation' education that will transform distance education, to gain an advantage on the proficiencies and scalable dimensions of the Internet and Web. (Taylor, 2001, p. 2).

It is appropriate to mention here that higher education is more susceptible to disrupting technology similar to other knowledge-centric industries like the digital and print media, journals and academic literature, music, movies, encyclopaedia. The language of communication within classrooms and subject/topic related information need no longer be supported within the confines of a college campus. The necessary improvements forged in practice of connecting remote servers hosted on the Internet to store, manage, and process data that has led to cloud computing, digital textbooks, smartphone connectivity, high quality video streaming to make available huge amounts of data and information within a networked society has pushed re-assessment of traditional and new age universities survival and sustainability.

Numerous empirical studies on MOOCs (Altbach et al.2009 and McAuley et al.2010), Distance Learning (Simonson et al.2011, p.37), Open Universities (Simonson et al.2011, pp 14-15), have been conducted to reason what is strongly professed by leaders in education & technology that ‘market oriented factors’ would transform and force Universities promoting x MOOCs, c MOOCs and quasi MOOCs propelling Stanford (Coursera), MIT (Massachusetts Institute of Technology)/Harvard (edx) and Udacity which commenced in the fall of 2011 in changing to ‘advanced teaching methods’, thereby collaborating ‘online learning’ through technology led programs, create hybrid learning platforms, develop ‘life- long learning’ models and attain a structure that encapsulates outcomes from 30 case studies (Ramirez and Burgos,2010) and capacities by 2020 to address sustainable progress (McAndrew et al.2009).

This dissertation will be extremely important as it will allow the researcher to study a qualitative analysis using the multi-method qualitative approach that will include designing close-ended and open-ended questionnaires to research the educational experiences among undergraduate and post graduate students within the researcher’s business school located in UAE. As part of the research study, respondents shall be categorized into groups to assess and identify learning outcomes resulting from online
and face-to-face programs, while assessing instructional support, group work, learner satisfaction and learning application.

Surveys will be conducted online to gather insights on course delivery effectiveness. In addition, questionnaire's will be devised to check the perceived differences in instructional quality, the researcher has critically assessed many previously published peer-reviewed journals, articles, books and white-papers within the education domain to offer and recommend qualitative research which would support in realizing the desired outcomes recognized within the current research, while the gaps would be ascertained for future researchers who might be interested in pursuing additional study on the same topic.

Depicted below in Figure 1 is the education ecosystem of online education:

![The Complete Learning Ecosystem](image_url)

**Figure 1 – The Education Ecosystem**  

However, there are three big issues that remain: 1] access, 2] affordability and 3] accountability and these are reflections of a deeper social, technological and strategic
transition which higher education is going through that refuses to consider economies of scale, similar to a labour-intensive industry, over-regulated and form structural issues which plague higher education. (Highereducation.org, 2017).

1.3 Research Aim
To ensure innovative teaching methods are being applied across all programs and improve teaching quality overall in online education.

1.4 Research Question
Can Online Education & Technology platforms serve as a game changer within the private education domains to combat traditional face-to-face teaching methods when examining costs, quality, learner satisfaction and experience?

1.5 Research Objectives
To address the research aim, the following Research Objectives have been arrived at:

- To Examine the impact of Online education as driver for disseminating knowledge in unattended markets/student profiles through cost-effective platforms as a sustainable mechanism

The European Commission [EC] as part of meeting its Europe2020 strategy has support assigned to European Institutions through communications released in 2011,2012,2013, stressing the importance of higher education in particular- as key enabler of smart, sustainable and inclusive growth by providing a policy context to provide primary evidence on the many themes of innovation within higher education by contributing on recent developments affecting the changing landscape of teaching and learning (Eprints.lse.ac.uk, 2017)

- To Explore the growing role of technology & virtualization experiences in online education and its effect on overall ethos of traditional learning process.

In November 2009, the Australian and New Zealand Virtual Worlds Working Group (VWWG) was instituted with a sole purpose to collaborate on a joint project that educators at University of New England and Charles Sturt University collaborated for a scoping study to develop & analyse an organized review and environmental analysis on the use of 3D immersive virtual worlds within Australian Universities
(Dalgarno, Lee, Carlson, Gregory, & Tynan, 2010; 2011). With over 23 contributors from 21 institutions, the researchers presented an overview of Australian Higher Education in Virtual Worlds through innovative teaching and learning to create a virtual world of learning experiences. (S. Gregory et al., 2010). This study established the essence of technology across role-plays, design, knowledge construction, lectures, virtual tours, discussion, simulations, debates, scenario-based training, moot court and play. (Lttf.ieee.org, 2017)

- To Evaluate the competitive factors that contextually places online programs on a higher ground in terms of flexibility, cost-effectiveness, self-learning applications as effective learning methods vis-à-vis face to face education

Educators are examining the method of preparing college graduates for a whole term, that would require them to adapt and change in their own personal careers as well as remain responsible citizens and have proposed developing learning situations that promote deep and integrative learning. Integrative learning and Academic motivation are inextricably connected (Schunk, Meece & Pintrich, 2014). A quote by William Butler Yeats provides an over-arching premise for this research question: “Education is not the filling of a pail, but the lighting of a fire”. The adoption of instructional technologies and e-learning tools is now a reality across many industries including engineering and education (Banday, Ahmed & Jan, 2014). Furthermore, the use of e-learning tools has had an effect on assessment of students, which is one of the goals of immersive innovative education (Tabalov, 2005).

1.6 Research Approach & Strategy

The intended research design will be descriptive as it would help provide ensure answers are provided to questions such as who, what, when, where, and how are answered to the relevant research problem. It is also to be noted that a descriptive study will not conclusively determine answers to why. Descriptive research is used to discover information about the immediate status of the phenomena and to explain "what exists" with regards to the variables or conditions in a given situation.

This dissertation will be extremely important as it will enable the researcher to conduct a qualitative and quantitative study using "mixed method" approach as the intended research design that will involve crafting close-ended and open-ended questionnaire's to
study the educational experiences among postgraduate students within the researchers business school who would be classified into two groups to assess and identify learning outcomes derived from online and face-to-face programs, while evaluating instructional support, group work, learner satisfaction and learning application. The researcher shall use "mixed methods" to refer to research in which both qualitative and quantitative methods are being employed.

In general, there are numerous measures and techniques of collecting data. The important measurement used in the mixed method researches consist of closed-ended, open-ended questionnaires, interviews and focus group. These different ways of gathering information can complement each other and hence enhance the validity and dependability of the data.

The researcher shall map the current students undergoing the MBA students who have remained exposed to both the online and face-to-face learning methodologies within the Dubai Campus. The researcher would consider ‘purposive sampling method’ as several studies have indicated of this method being popular with qualitative research, the selection of “purposive sampling” would ensure that respondents who are selected to match the purpose of study to offer original and thick information which would add necessary value to this proposed research work.

1.7 Outline of the Dissertation
The structure of this dissertation is as explained below:

1.7.1 Chapter 1 - Introduction
This chapter contained various items ranging from the study's background information to the research aim and objectives. Also, the chapter also presents the relevant research questions that attempt to address the aim and objectives of this study in a logical sequence.

1.7.2 Chapter 2 – Literature Review
This chapter shall study various case studies; peer-reviewed literature, journals, academic and technological studies to argue and debate theories, models and key construct pertinent to the established research aims and objectives. This would address
cost-effectiveness between online education over traditional face to face education, growing role of technology, self- learning applications, virtualization learning experiences and sustainable and long-term development.

1.7.3 Chapter 3 – Methodology
This chapter extremely important as it discusses the rationale on how the study would be conducted, the rationale of the research philosophy & methodology that will be used to conduct this study. Also, it also explains how data collection methods and tools adopted for data analysis should enable in research objectives being met. The relevance of ethical considerations shall be discussed in this section.

1.7.4 Chapter 4 – Findings
In this chapter, based on the data collected through structured interviews, surveys, and questionnaire's which would be administered by the researcher, as, respondent feedback shall be collated and summarized of the outcomes which shall be analysed and matched with the contextualization of arguments for each research objective to examine variances. The analysis shall be presented for each research objectives independently.

1.7.5 Chapter 5 – Conclusions and Recommendations
This chapter would demonstrate the findings from the previous chapter as the researcher, shall interrelate the findings to the debates & constructs drawn from the literature review. The researcher shall summarize an independent analysis that would critique the findings and conclusions for each research objective and overall research question

Research Limitations have been addressed along with providing necessary recommendations for future research.
1.8 Summary
This introductory chapter gained in forming a view towards the relevance of the chosen research topic by providing the necessary introduction, researched-based rationale for the research objectives and questions to engage the reader with importance and diversity of the topic while discussing its present evolving landscape. Research methodology criteria and purpose of data collection and analysis have clarified the how findings and outcome shall meet the research objectives established. Finally, a dissertation structure explains the pathway of the proposed research work.
Chapter 2 - Literature Review

2.1 Introduction

This chapter would discuss the opinions, business models, case studies, arguments, reflective thoughts presented by previous researchers, academicians, authors, and international agencies to review the growing importance of accessibility, cost-effectiveness, through connected networks of technology and its relevance on development of educational resources by drawing an extensive debate on sustainable practices, learning materials, students learning experiences whilst considering evolving student-faculty relationships and self-induced ‘learning styles’ witnessed between online and virtual learning environments versus traditional and conventional face-to-face teaching and learning methodologies.

Technology has profoundly changed societies in many ways as education experience for learners and higher education instructors who witness, classroom disruptions can no longer be considered and regarded as disengaging with technology enabling innovative ways of learning, communicating while building considerable opportunities and collaboration with massive amounts of information (books, audios, images, video) that are easily available through the internet which were undreamt in the past. This has led to Schools and Universities redesigning learning spaces to facilitate new models of education and promote technology as an enabler with classrooms, lectures and textbooks making way for innovative teaching methods (Manuguerra, 2011).

Traditional classrooms seem more vibrant with modern students armed with laptops, tablets or smartphones, blogposts, wikis, Google docs, email questions instead of regular book, as the role of the traditional teacher shifts from a ‘sage-on-stage’ model to being a ‘guide on the side’, given the ubiquity of smart devices, global presence of the internet, promoting the theme of anytime, anywhere education, leaving the choice to instructional designers to foster more interaction, as students take more responsibility for their learning and gain additional mileage provided by technology. (Manuguerra, 2011).

One of the major advancements is digital distribution, which means students can experience more personalized content and enjoy greater access to university courses. Disruption can, by definition, be viewed as negative, conjuring ideas of interruption,
disturbance, annoyance – think of the naughty child in class ruining it for everyone. The higher education industry remains no spectator to this digital sport, causing digital disruption, with comprehensive University leaders who share their views of the impact of technological change on academic careers, forcing many to rethink relationships with learners: shifting from an full time three-year experience to a lifelong relationship, where graduates shall frequently refresh knowledge and expertise via online courses, MOOC (massive online open courses), ‘flipped classrooms’, big data and adaptive learning and ‘cloud learning’ programs.

Several empirical studies measured the effectiveness of learning environment as a relation to learning outcomes have been examined by previous researchers to study the impact of perceived characteristics of the academic environment over approaches to learning. It is important to note on previous studies as mentioned above which addressed efficiency, content and delivery methods (O'Neill et al., 2004), however student perceptions and experiences remained neglected (Alexander,2001; Holly and Oliver, 2010; Ituna, 2011). Ramsden and Entwistle (1981). Haertela, Walberg and Heartela (1981) studied key correlations of student psychological environment of their classes and their learning environments influencing student perceptions. This has been further reinforced with views within academic instructors on the perceptions surrounding online teaching as an alternate method of delivering traditional content, but other researchers (Holley and Oliver, 2010; Ituna, 2011) might view online platform for gauging student perceptions for improving student engagement, resulting in better learning outcomes. Again, online technologies have radically changed learning and teaching environment as the advocates of online learning view it as an effective platform transcending barriers to provide increased convenience, adaptability & flexibility, cost-effective methods, tailored curriculum and customized learning scoring better over conventional face-to-face learning experience(Hackbarth, 1996; Harasim, 1990; Kaiser, 1999; Mathews, 1999). However there have been counter-arguments by authors who have found students remaining isolated within online environments, confused and frustrated (Hara and Kling, 2000), which also could impact student’s interest and liking for a subject eventually reducing learning effectiveness (Maki & Maki, Patterson and Whittaker,2000). Thus Otter et al (2013) authenticated this debate of student’s natural phenomenon in dealing with isolation, in online-only
mode of learning environment, from perceptions gathered and understanding the motivation levels of online student’s disconnected feeling from other co-students and their tutors or professors, that causes self-learning styles, backed with minimal support or sometimes no support from their tutors or professors contrary to well-placed beliefs. The experience of e-learning can differ between online courses and traditional face-to-face teaching as students when comparing the patterns of student engagement (Robinson and Hullinger, 2008). The researcher shall also as part of the intended study review existing thoughts, debates and arguments to examine two important elements – learning effectiveness and student performance – within online and traditional learning environments.

In light of the digital revolution, disruption heralds a change that may seem particularly unwelcome to those forced to uproot their traditional ways of doing things. However, it doesn’t emerge from nowhere. Disruption is driven by a convergence of forces: from the capabilities of new technologies to the changing demands of customers, or rapidly evolving practices of competitors. (Times Higher Education (THE), 2017) The editorial article discussed the significance of adopting digital and specialization, by highlighting (Davis, 2008) the shift for 'niche-digital' providers to create life-long learning relationships that deals in developing a wide spectrum of online teaching module for graduates, growth of specialized service providers and fewer comprehensive Universities in the near future but this needs more verification. As such online learning would develop specialist skills among postgraduate students, having gained several years of work experience on how technology can be a game-changer, particularly after several years of leaving their Universities. Further, the thought related to adopting Davis', ‘Melbourne Model' meant abandoning the British model, and embracing follows US Based method of training while disseminating for example law in post-graduation programs at university is Melbourne's efforts of creating life-long relationships with students. The argument, however, emphasized on Universities to focus attention between graduate & undergraduates teaching for developing critical thinking, problem-solving and imparting job-ready skills that would prepare them to face work-related challenges. As content may lack practical "real-life" application. Sooner Universities and higher education providers embrace the challenges, opportunities and possibilities as they owe it to themselves to keep pace with disruptions, these pathways promise to
open up cost-effective, cheaper, faster and more sustainable methods of accessing learning for students globally.

**Key Words** - Online Learning, Face-to- Face Training, Cost Effective, Technological Intervention, Lack of Standard Practices, Self- Learning Applications

### 2.2 Online Education – Realizing Cost Effectiveness & Sustainability

According to the UNESCO Paris Declaration on Open Education Resources (2012), which provides a narrative and essential premise that ‘everyone has a right to education”, proves as a symbolic representation on the Universal Declaration of Human Rights and several further international recommendations and agreements. This section would present the relevant theories, constructs, debates and criticisms.

The global financial crisis of 2008 and economic slowdown, witnessed extreme levels fluctuations on stock markets, followed by the stagnation in real estate market, leading to high levels of unemployment and lay-offs, which remained as major factors in declining enrolments across numerous colleges and universities, this along with higher education institutions experiencing increased costs towards adopting new technologies, refurbishing and renovating campuses, staff compensations', meant severe budgetary constraints, causing pressure on revenue generation which dwindled along with lesser grants. A further challenge in the form of massive open online courses (MOOC's) was viewed as a threat by many institutions with setting up free online college programs around the world.

It became imperative to institutions globally to embrace the changing education landscape resulting out of various internal and external factors along with volatile macro-economic condition enveloping economies to re-strategize thoughts in supporting and managing traditional education, which prompted ‘going online’ by embracing technological innovation for addressing enrolment and managing costs.
2.2.1 Conceptual Understanding between Online and Traditional Face-to-Face Programs or Courses

An online course can be defined wherein at least 80% of content is delivered without face-to-face meetings whereas traditional face-to-face setting (referred as Face 2 Face) involves modules where all the required content is delivered through conventional methods. However, an extension to this would be a hybrid module, which effectively combines the merits of traditional face-to-face with the technology used in the online module to suggest and carry opinion of authors, about 30-79% courses use hybrid methods (Allen and Seaman, 2011) discuss of web-facilitated courses, although predominantly supplementing face-to-face methods, it would still offer anywhere between 1to 29% of the course being delivered online to students using web-based technology.

Numerous studies conducted by scholars have circular opinions to understand levels of interaction occurring in an online environment that nurtures student-centred learning, promote maximum student participation and results in granular, reason-oriented, in-depth dialogues when compared to a traditional classroom settings (e.g.Karayan & Crowe, 1997; D Smith & Hardaker, 2000). McConnell (2000) compares the striking dissimilarities on interaction and instructions in the table placed below between online and traditional face-to-face learning. So there are research studies that have focused on course delivered in on-line formats, but recently there are experiments conducted on incorporating online features in traditional face to face modules (Ituma, 2011), however there is no concrete research that has been investigated on ‘blended learning' to ascertain student response, yet further studies conducted by Chen et al. 2010 reveal of increased participation in educational technologies that has the potential to improve engagement and learning for eg. Gateway et al. 2014 when relating student-centric models presented a novel integration of online and flipped classroom as an emerging trend, again if technology is used in traditional classrooms (Azizan, 2010), it provides additional learning materials, that would enhance the quality of student learning apart from positively impacting student overall competence and confidence.
### 2.2.2 Comparison between Online and Face to Face

<table>
<thead>
<tr>
<th></th>
<th>Online</th>
<th>Face to Face</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mode</strong></td>
<td>Discussion is through text, video, graphics but non-structure. However, its permanent</td>
<td>Discussions are more verbal; impact is better but it’s not permanent</td>
</tr>
<tr>
<td><strong>Group Discussion</strong></td>
<td>Group contacts are always maintained; the depth of analysis is usually increased; reflection level is high; due to ongoing reflection conversation takes better shape</td>
<td>Group meetings more standardized; discussions happen during specific times; conversations are less likely to take any form during the meeting</td>
</tr>
<tr>
<td><strong>Instructor control</strong></td>
<td>Participants may tend to ignore the instructor if the instructor is not engaging. It is imperative to get an instructor who is good and engages well.</td>
<td>Better instructor control since it’s difficult to ignore the instructor</td>
</tr>
<tr>
<td><strong>Feedback</strong></td>
<td>Feedback is always detailed on individual work; permanent record maintained; usually, feedback is delayed</td>
<td>Visual feedback is possible; however, no permanent record of feedback; immediate reactions to feedback possible</td>
</tr>
</tbody>
</table>

*Source: Adopted from McConnell (2000)*
2.2.3 OER Theory

Although there exists no single theory which can best describe the OER movement, excepting for the principle that governs openness in education, which promotes the principle of accessibility by making available educational content for anyone to access and gain knowledge at no cost.

According to the Cape Town Declaration (2007, p.xv), ‘Educators globally are contributing large repositories of educational content, learning the material on the public domain, that would be freely available for anyone to use. Teachers are striving to grow a planet where all individuals can benefit and contribute to the body of knowledge, by actively designing new pedagogy profiting learners and teachers as they construct, shape and re-imagine knowledge jointly, to reinforce an understanding of the future pathways and accordingly grow relevant skills”. This concept is neither restricted to e-Learning or distance education although a large part of OER remains technologically neutral, and accommodates a wide range of theories, so it can represent openness, eclectic contexts to refit and re-format itself theoretically across online or in conventional classrooms, as content can be printed or used in analogue formats or blended or flexible learning environments.

(Rogers,1995) Explained Diffusion theory to describe the rate of OER adaptation among educators and across non-traditional platforms, although it has not remained comprehensive and all-inclusive. Likewise (McNamara’s unpublished theses) contextualized how Complexity theory investigates and forms as a self-organizing, emergent and interaction method that has (Wiley, 2010) arguing of learning resources which should remain available free-of-charge to strengthen and clarify the purpose of OER that includes three major drivers a) the concept of no cost b) four R’s (re-use, re-distribute, revise, remix) and 3) wireless technology and media diversity. (Bates,2011) Has criticized OER to classify it as elitist and to grow as a form of cultural imperialism, but this criticism cannot be limited to OER, as content which is developed and sold by international publisher’s views OER getting increasingly adaptive and modified to suit different cultures, sensitivities and learning approaches. Again, further studies – MIT Open Course ware initiatives (Daniel, 2012) Challenges of MOOC and dropout rates (Daniel, 2012), Deskilling of Professoriate (Basu, 2012), Cheating and Plagiarism (Young, 2012a) debate on resources not truly ‘free’, although costs incurred are
negligible considering student using content shall keep paying for the same content, however with multimedia and educational games, content and process can be closely connected and yet remain interoperable.

Several empirical studies prove discussed adopting enhanced learning as a process through sharing open academic content for example Open Courseware Consortium (OCW-ITESM 2008; www.ocwconsortium.org, Carnegie Mellon University (2011; www.cmu.edu/oli) and Yale University (2011; http://oyc.yale.edu) where students being actively involved often popularly referred to as ‘active learning’ (Beneck-Rivera, Mathews, 2004; Sarason & Banbury, 2004) which typically comprises of "instructional activities that involve students in learning by doing and reflecting about what is being done" (Bonwell & Eisen,1991, p.5). Researchers have extensively investigated, learning by doing positively inclined to provide affirmative learning outcomes (Picciano,2002; Watkins, 2005). Further interactive and web-based environments along with technologies investigates the learning theory of students becoming effective participants in the knowledge building process that is often about applied and reflective activities promoting critical thinking or deep learning (Bransford, Brown, & Cocking,2000; Driscoll, 2002) and further technology tools facilitates working with ideas, as e-learning has the potential to promote better understanding, creating greater student motivation by development of simulating real-world problems (Quitadimo&Brown,2001) as it offers the necessary flexibility and convenience apart from reducing costs, and provide unit-wise pedagogical frameworks; develop standardized method of designing cost-effective content business models.(McDonald, 1999-2000;"E-learning,"2003;"The Pay-Offs,"2003). (Jite.org, 2017).
The trend of using large lecture halls by collaborating the use of interactive technologies (clickers and Purdue’s Hotseat) have been experimented to redesign courses which test a wide range of models that includes ‘flipped classrooms and has students watching videos and lectures, while class duration is substituted with active learning. This results in Just-in-time instruction wherein students receive instructions to enhance their course learning. There are several technologies which instructors have used to develop open online e-texts for supporting module (it may involve tools such as jetpack/Skyepack) to engage students, while there would be conventional face-to-face instructors who prefer working with textbook publishers and online exercises towards meeting course requirements.

- Online Videotaped lectures (Blackboard Learn, Adobe Connect, Camtasia, Captivate, Kaltura and many other software upgrades)
- Interactive Videotapes (uses Camtasia and Articulate)
Online Group Discussion (uses Blackboard Learn) and in class technology-based questions and answers (using iClickers or Hotseat).

Virtual Office hours (using Mixable, Adobe Connect, wikis and/or discussion boards)

Peer review assignments (using Gradient, Confluence and Blackboard Learn wikis)

Team/group assignments (using CATME Team Maker, Adobe Connect, Blackboard Learn and Confluence wikis)

Educational researchers are absorbed in finding practical solutions to deal with financial austerity within Universities that are investing to improve their international reputation which forms the surrounding concepts of sustainability and sustainable e-learning practices. Most empirical studies dealing with the issues on sustainability investigate the viability of integrated e-learning services, student perception on institution ranking, value for money and the return on investment which meant that while Universities improve cost-effectiveness and quality management that aims to inform policy and strategic decision making, they are exploring ways to capitalize on emerging technologies (Ifets.info, 2017).

2.3 Virtual Learning Environment – Technology as an enabler

The extent of research literatures studied to investigate the effect of virtual learning environment on a student’s perception of lecture quality affecting classroom attendance, has generated interest among researchers to evaluate student learning experiences and academic performance among students for lecturers to develop academic resources. Although Virtual learning environments represent emergent learning methods and is considered as a significant discussion among education theory and practice (Weller, 2007), theoretically a well-managed VLE must cater to different learning styles and engage students learning experience in gaining the best possible education, as against an exclusive lecture-based environment that focuses heavily on auditory learners (Williams and Fardon, 2005; Vigentini, 2009). A critique to this, if VLE resources available does not meet student needs as formats and content (text files, audios, videos), it would not be considered useful. While studies suggest that student experiences are mostly based on teaching styles so (Whitworth, 2005) regarded VLE; s to tackle higher workloads and
student enrolments, however (Ofsted, 2009) observed that VLE has three forms: (one) with too much data which is comprehensive enough for students to stop attending classroom interaction (Bromage, 2003), and acquiring information related to lecture notes online by downloading studies at their place of accommodation (Boyle et al., 2008). The other two are where VLE Content is too low and therefore cannot be useful and (finally) VLE’s with just the right amount of information to guide students benefit in subject level understanding and lectures.

However, E-learning and Virtual Learning Environments are considered essential tools, by UK based higher education institutions given the exclusive franchised programs and distance learning components of promoting United Kingdom (UK) University degrees around the world and in developing economies. A case study involving two UK Universities to explore the opportunities and challenges of VLE’s which were adopted as essential tools while monitoring student experience studied the distance learning models. This has resulted in exclusive franchise programs and distance learning courses that are being favoured across a respected combination of UK based educational institutions. While there are challenges and opportunities that exist in the role of e-learning tools, VLE's continue to play an important role in delivering consistent learning experience. This tool has been extensively used for attracting expatriate students to British Universities from Asia and South East Asia, which is under threat as these continents are building their "HE Hubs" to compete with established US and UK institutions. (G-casa.com, 2017).

The growing desire among particular groups of students from emerging South Asian markets to study and acquire a degree from a British University in their home countries results in providing “rapidly increased awareness of lifelong learning, that has led to increased demand for higher education services” prompting Universities and Academic institutions to use VLE for staying competitive and cost-effective”. (Poon et al., 2004, p.374). While e-learning encourages ‘generative learning’ as opposed to ‘passive reception’, empowering the learner to access course content online, incorporating ‘real life situations’ in teaching methods delivery over distance education programs.
A table that presents four types of e-learning education system (Toth, 2006), provides an insight of the set of features used that empowers learners using VLE as a generative learning mechanism forming part of delivering distance learning and franchised degrees, while it is recommended to consider type 3 application, which constructs a student-educator communication as the learning programme would incorporate ‘real-life situation’ and deliver a consistent learning experience in virtual classroom environments, where content and syllabus can be acquired online through student co-operation to promote student-instructor communication.

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Understanding</th>
<th>Application</th>
<th>Analysis</th>
<th>Synthesis</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web pages; Web presentations; Electronic course books</td>
<td>Computer Based Training (CBT)</td>
<td>Virtual classroom; Electronic communication system – on-line (VLE)</td>
<td>Training as a combination of traditional and e-learning (blended-learning)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Original Contribution by: (Toth, 2006)

VLE has its presence felt not only across distance learning programmes but is core participant and well established across delivery of face-to-face on-site programmes as well in the UK. Stonebreaker and Hazeltin (2004), argue that VLE can accommodate a variety of needs that create hindrance to effective delivery and student learning, however that technology can still be used to support teaching by accommodating students out-of-class time offering them appropriate feedback, collaboration and flexibility of accessing teaching material at their pace and convenience to carry out discussions with peer group students via online discussions.

Another critique by Alltree and Quadri (2007) is the technical difficulties that define user experience as students undergoing e-learning by accessing texts, graphics, audio and video messages need to balance studies with employment, deal with server failure,
family commitments, leading to creating more flexible and convenient study modes, independent learning, out of class access to teaching material and staff. At the London School of Economics and Political Science (UK) and the University of Valencia (Spain) researchers Ruiz-Molina and Cuadrado – Garcia (2008) investigated the VLE ability used within learning process to evaluate the relationship strength between student participation (surfing sites, posting and reading message) as part of e-learning with final learning outcomes.

Managed Learning Environments (MLE), Virtual Learning Environment (VLE) and Computer-Mediated Communication (CMC) are extended phrases and terms frequently used for referring to a set of web-based teaching and learning tool focus to improve the learning process and student learning experiences. A perceived usefulness of the systems and a perceived ease of use underpins student acceptance to use VLE, which is rapidly growing to be an integral part of the learning and teaching and learning process. (Warse.org, 2017).

Homan and Macpherson (2005) have argued that the preparedness & level of technological development of a University would determine the type of e-learning solution which can be implemented. They identified five technological factors, which can affect learning effectiveness through VLE medium – internet accessibility, computer literacy, previous experience and skill on internet surfing, time involved to navigate the campus website/homepage. The differences in learning styles, preferences, cultural differences can affect students learning needs, where culture can be viewed as “beliefs, philosophy, observed traditions, values, perceptions and patterns of actions by individuals and groups” (Chen et al., 1999, p.220). VLE would require a different approach compared to traditional face-to-face learning as education systems and methods are culturally dependent, so students from different geographies may have differences in learning styles which have been summarized below (Stonebraker and Hazeltine, 2004).
The United Arab Emirates Government (UAE) has undertaken significant investments to develop education by prioritizing Information Communication Technologies (ICT) as a national mission, under the aegis of Ministry of Education of the UAE which in its strategy document Vision 2020 has emphasized the adoption of multimedia-based instructional materials in classroom through deployment of Interactive White Boards (IWB's), VLE's, personal laptops and I pads. The key components of VLE would essentially consider curriculum mapping, email, threaded discussions, chat, web publishing and web-based links to outside curriculum resources. Networked devices would enable greater collaboration aimed to improve the quality of instructions, develop student-centric teaching methods that would be self-directed inducing life-long learning behaviours among learners equipping them with stronger technology skills, leading to creative and experimental methods which can be used in projects, reports and presentations. (Warse.org, 2017).

2.4 Competitive Factors – Online Education Versus Traditional Face-to-Face education

“Fourth Industrial Revolution” would now be referred to the significant role of Artificial Intelligence (AI), Internet of Things, cyber-physical systems, that has prompted the Association of Asia Pacific Rim Universities which links Universities across Americas, Asia and Australasia Regions to address the current gaps in Data Science and Analytics (DSA). Key areas of debate surrounding the Fourth Industrial Revolution is partnering of global employers, university representatives, to address...
sustainability, meet knowledge and innovation requirements, develop a set of workplace-ready competencies that combines technical skills to reinforce the positions which higher-education institutions must occupy jointly with corporations, policy-thinkers across Asia Pacific for enhancing economic development and assure future of global prosperity” (Newsroom.wiley.com, 2017).

Artificial Intelligence (AI) can be defined as an area that involves several disciplines spanning across four main subjects – psychology, philosophy, mathematics and linguistics, which embodies how intelligent systems can be evolved to think, act and behave equivalent as humans or even better than humans, which essentially means that machine learning is the backbone of AI that has been growing exponentially and is becoming ubiquitous, touching our lives in unimaginable ways to introduce a driverless cars, natural language processing, speech recognition techniques, Chatbot’s which would naturally impact future employability, so the question is what do human teachers have as necessary skills in the ever changing landscape of educational technologies? (Chatbot’s Life, 2017).

![EdTech Landscape](O'Connor, 2017)

*Figure 3 – EdTech Landscape Source:* (O'Connor, 2017)
Artificial Intelligence, Robotics, Gamification and on Demand app-based learning is surely becoming all pervasive, as research studies conducted on learning technologies such as app-based learning and gamification is making its presence felt across early childhood (pre-K) to compliment cognitive and non-cognitive activities to satisfy natural curiosity and induce self-learning habits, K-12 education is about personalization to embrace disruption and adapt to students needs by offering skills, materials and necessary support for mastering concepts, Universities too are migrating to Online platform for addressing cost-effectiveness, greater access and better learning experiences, Corporate Education, with digital content proves to be engaging minds on digital literacy and mastering English Language. (O’Connor, 2017)

MOOC’s have meant larger enrolments, and therefore one of the greatest burdens on teachers is assessment of assignments, tests, quizzes particularly across several disciplines within tighter deadlines, however AI shall in the near future create capabilities to automate evaluations by developing tools to grade from short answers to essays, there are a growing number of self-correcting applications- Socarative and eClicker and self-learning websites Didacti, Moodle, Khan Academy and Netmaths. As already discussed on the role of AI in personalization and gamification across learning experiences, it is envisaged that AI is likely to play out a major role through adaptive learning that would respond to individual needs, develop tools to enable students to learn at own pace by emphasizing relevant topics not yet mastered.

Virtual Teachers and Chatbots, Predictive Analytics, Machine Learning shall be the future Facilitators and are already forming part of experiments being conducted by Georgia Institute of Technology, USA and Deakin University, Australia to prepare future ready “teaching assistants and campus facilitators” which would be powered by IBM’s Watson AI Systems.
So, would AI systems permit students to learn anywhere, anytime, the answer is probably yes as in future it would offer a plethora of innovative learning tools, services and software’s support with 24/7 continuous feedback process creatively designed to address and support student’s learning process to match working and living conditions. Intelligent learning systems have scalability of enriching learning process of students in an interactive format using augmented and virtual reality to support VAK learning styles (Nwlink.com, 2017)

The role of teachers is central to the learning process and can never be replaced by AI and Robotics; rather teachers shall embody their knowledge as AI would enable teachers to personalize learning requirements as they take on roles of design solution experts on AI-based learning systems. With AI performing routine tasks, it would allow ample time was freeing themselves, to spend time in understanding students and mentor them on essential job-ready skills.

“It is with little doubt that humans can ever be dispensed away with, given that machine learning shall assist professors while comparing learning styles of each student with millions of other students to arrive at the best approach. Artificial Intelligence shall compliment, not compete, and help us evolve as better informed, intelligent and more effective citizens. The more education transforms the better”, Joel Mokyr, Professor at North-western University.
2.5 Summary of Literature Review

The review involved studying volumes of peer reviewed journals, articles and books which revealed existing paradigms, business models, theories and evolving concepts relating to Online education vs traditional face-to-face learning methods, that is undergoing a series of transformation for both learners and teachers alike. This digital and virtual transformation is in the form of e-learning, flipped classroom, adaptive learning, e-books, videos, teaching assistants, chat bots and many more app-based learning’s that would gamify the whole process of education.

The literature review study also has thrown adequate understanding on future-ready technologies that will impact course delivery, learning approaches and learning styles of how Artificial Intelligence, Robotics, virtualization, digital learning, augmented reality representing Fourth Industrial Revolution places additional demands on Universities/Colleges to create future job-ready courses and skills, embrace innovation, charting newer learning experiences, interactive learning platforms and easier pathways to gain knowledge.

The study further reveals the following grey areas: Firstly, to address the issue of learning applications and designing blended and online instructions that consider learner's satisfaction and learning outcomes being met objectively. As has been pointed out by previous researchers, this study further recognizes the research work to be conducted for examining how various types of instructional blending would positively influence learning and learning application while checking on potentially important implications for student engagement, performance, MOOC and student attrition keeping cost effectiveness, greater accessibility and sustainability issues in mind.
Chapter 3 – Methodology

3.1 Introduction
This chapter will present and discuss the chosen research methods, design, sampling process and data collection techniques to support research questionnaire and surveys structured for strengthening the logical and academic arguments that were presented in the literature review section. Additionally, the researcher shall emphasize aspects related to validity, the reliability of the data collection to compliment applicability of the research study within UAE based learning institutions through an ethical review. (Oda.hioa.no, 2017).

Saunders, Thornhill and Lewis (2009) refer to the research process as an ‘onion’, where the second layer contextualizes the research approach emanating from the research philosophies. So, while the philosophies of ‘positivism’ can be associated with various approaches similarly our research consist of inductive discovery and an inductive proof. Deductive approach is associated with developing a theory and hypothesis and building a research strategy, similarly, inductive approach involves collection of data and constructing a theory, adding significance to data analysis (Irep.ntu.ac.uk, 2017). It must be noted that inductive and deductive approaches are considered as mutually exclusive akin to interpretivism and positivism being placed as opposites Saunders, Thornhill and Lewis (2009).

As suggested by (Cohen, Manion, & Morrison, 2007; Creswell, 2014), there are three general research methodologies i.e. qualitative, quantitative and mixed methods to suggest each methodology carries ontological and epistemological assumptions Tandfonline.com. (2017).

Quantitative researchers lean towards employing measurement tools, experiments and statistical techniques to evaluate research questions, while qualitative researchers adopt observations, interviews, and content analysis. The mixed research represents the “middle ground” as it combines the elements of quantitative and qualitative research approaches (e.g., data collection and analysis, addresses qualitative and quantitative designs and interpretation techniques) to gain a comprehensive understanding (Johnson et al., 2007, p.123).
A mixed research method will include the researcher considering the following i) check and arrive if a mixed research method is possible ii) justify and determine the combination of methods iii) data collection plan iv) design questionnaire v) collect data vi) perform data analysis vii) construct a report. Although these steps are not ingrained in stone, it can serve as guidance when adopting mixed method research (Creswell, 2012).

3.2 Research Design
(Hong & Espelage, 2011) while studying the differences between qualitative and quantitative mixed method research, stated the two stages, owing to the varieties in the types of data. This has been so, owing to quantitative data being obtained through surveys or other measurement methods, while qualitative data are generally collected through interviews, focus groups and observations. The intended research design will involve crafting close-ended and open-ended questionnaire’s, surveys to study the educational experiences, course delivery effectiveness among postgraduate students pursuing the MBA program within the researchers business school located in Dubai Campus, UAE, as respondents would be classified into two groups to assess and identify learning outcomes derived from online and face-to-face programs, while evaluating instructional support, group work, learner satisfaction and learning application.

3.3 Research Method and Methodologies
Most research studies involve authors adopting a systematic method of investigating the different variables, thereby contributing to a knowledge gap (Ghauri & Gronhaug, 2002). Almost all research articles are represented by methods (Dai, Swanson, & Cheng, 2011; Hart, Smith, Swars, & Smith, 2009), state the outcomes based on data analysis, likewise this dissertation research shall rely on chosen methodology and method.

It is therefore necessary to distinguish the concepts of methodology and method. (Bogdan & Bilken, 2007, p.35) discussed methodology which was a combination of general, logical and theoretical perspectives of a research study, whereas research method constituted specific strategies, procedures, techniques of data analysis to interpret the results (Bogdan & Bilken, 2007; Lincoln & Guba, 1985; Merriam, 2002).
There are three main objectives of combining qualitative and quantitative research designs a) cross validation/triangulation b) complimentary or associated viewpoints; and c) developing/building on…to suggest that mixed research methods offer a definitive understanding than just relying and using either qualitative or quantitative methods. (Files.eric.ed.gov, 2017)

The researcher has adopted Mixed Research Method which mostly embraces as per (Johnson, Onwuegbuzi, & Turner, 2007; p. 125) denotes a ‘pragmatism in the middle”, as the core primary research paradigm.

3.4 Research Paradigm and Philosophies

The position is justified by the researcher as the study would offer permissibility in combining multiple epistemological perspectives, as qualitative and quantitative methods are linked to ‘positivism’ and ‘interpretivism’ research philosophies as per the diagram presented below (Ticehurst and Veal, 2000, p.19).

![Image of Approaches and Methodologies](source)

**Figure 5 Approaches and Methodologies – Ticehurst and Veal (2000, P19)**

*Source - Irep.ntu.ac.uk. (2017)*

3.5 Research Process

A fundamental concept surrounding a well- designed mixed method research includes collecting and analysing qualitative (close- ended) and qualitative (open- ended) data. This supports and validates the research rationale for this study. Saunders et al (2009) necessitated the rigor and validity of understanding vital element impacting the purposiveness of research philosophy that develops the conceptual framework dealing with “research onion”.

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Lakshmi Raman - st20131411
3.6 Data Source
To gather relevant secondary data, journals, articles, books, prominent web-based data resources likewise Google Scholar, ProQuest, EBSCO, HBR, QAA-UK reports along with the University Library resources shall be referred. Primary sources of obtaining data through the first-hand questionnaire distributed to a group of postgraduate participants pursuing global management education full time as well part-time executive education in an age bracket from 24-30 years. Respondents had exposure to the online mode of learning along with regular face to face learning. The questionnaire included 19 questions other than their demographic profile, focusing mainly on the respondent's personal view and experience with online learning.

3.7 Sample Size Analysis and Considerations
An important parallel is where purposive sampling considers data saturation, that involves researcher to continue building an enormous understanding by continuing to sample till no new insightful information or data is sought. Sample size within this research would consider data saturation According to, (Glass & Strauss,1967) the concept of saturation fits into qualitative studies for achieving appropriate sample size. Again, ethnographic studies suggest 30-50 respondents (Morse, 1994), while grounded theories recommend 30-50 interviews, however (Creswell, 1998) advocates only 20-30 interviews.

In order to bring in credibility and reliability, the researcher will consider a sample size of 30 of which student population would be 10 MBA students (out of a total of approximate 600 students), while the external faculty will comprise of 5 staff and the rest 10 participants will be administrative staff. In addition, the researcher will be having a focus group discussion comprising of 5 Global MBA students.

Data will be analysed through utilization of statistical tools essentially regression analysis and co-efficient co-relation along with representing the outcomes as pie charts, graphs, tables which largely categorize under descriptive statistics

3.8 Data Collection
The researcher studied literature that demonstrated an understanding of the empirical nature of research to suggest that qualitative and quantitative research depends on the depth of data which is often more vital than achieving number driven research
3.8.1 Quantitative Data Analysis
Physically Questionnaire circulated to 120 respondents, received 109 respondent's opinions, but, finally 100 got retained for analysis as part of quantitative data collection methods.

3.8.2 Qualitative Data Analysis
As a part of the qualitative data analysis formal interview was carried out with ten participants to get a perspective towards their online mode of learning, and the way technology is transforming their learning, course content and learning resources.

Data is being analyzed through utilization of statistical tools using excel, and a Pearson's statistical software, i.e., PH Stat-3, essentially regression analysis and co-efficient co-relation to establish a relationship between dependent and independent data along with representing the outcomes as pie charts, graphs, tables which mostly categorize under descriptive statistics. The researcher will ensure validity and reliability by gathering data using questionnaires; surveys and interviews while the results subject to statistical analysis.

3.8.3 Scale and dimension
Quantitative Analysis: The questionnaire statements structured according to the Likert scale: 5- the most important, 4- somewhat important, 3- neutral, 2- less important, 1- the least important. The questionnaire distribution process lasted from Nov 2017 to Jan 6, 2018 primarily in Dubai Academic City.

3.9 Data analysis
Data Analysis will involve analyzing data which can be termed as ‘qualitative and quantitative data collection phase (Pcmh.ahrq.gov, 2017) that would involve an ‘explorative’ sequential design in collecting, analyzing the information through questionnaires, online surveys and interviews forming part of primary research, to
measure “course content”, “learning resources”, “faculty and instructional support”, “role of technology” and “learner satisfaction”.

Data will be analyzed through utilization of statistical tools using excel, and a Pearson's statistical software, i.e., PH Stat-3, essentially regression analysis and co-efficient correlation along with representing the outcomes as pie charts, graphs, tables which largely categorize under descriptive statistics. The researcher will ensure validity and reliability by gathering data using questionnaires; surveys and interviews while the results subject to statistical analysis.

3.9.1 The output of Linear Regression Analysis

PHStat generates few tables of output for linear regression; three main tables are shown in analysis from linear regression procedure, assuming no violation of assumptions. The first table shows a Model Summary table which provides necessary statistics, i.e., R and $R^2$ values. The R represents the simple correlation which denotes a degree of correlation whereas the $R^2$ value, i.e., the coefficient of determination indicates how much of the total variation in the dependent variable, this too helps in data validation. The adjusted R is a modified version of coefficient of determination that has been adjusted for the number of predictors in the model. The second table is the ANOVA, which reports how well the relation fits the data. “Sig” indicate the statistical significance of the regression model if $p < 0.05$, which is less than 0.05, and indicates that, overall, regression, model statistically significant.

The Coefficients table provides us with the necessary information to predict the relationship statistically significant to the model. Moving from left-to-right, presented with the observed t-value moreover, the statistical significance (p-value). When, $p < .05$ (level of Significance 5%) therefore, it can be concluded that the population means are statistically significantly different. If $p > .05$, the difference between the sample-estimated population mean and the comparison population mean would not be statistically significantly different.
3.10 Validity and Reliability
The current research work would handle large data of non-numerical information being interpreted to combine human behaviour that regards subjectivity, but is considered essential and inevitable, which would require phenomenological interpretations to suggest that validity within qualitative research defines 'correctness and accuracy' of methodologies, design, sampling and data analysis. Reliability is often referred with data consistency and accuracy, stability which endows the researcher to adopt the same or comparable methods consistently to arrive and obtain the same results under quantitative studies. One of the key factors the researcher needs to be aware of is 'Error' as one of the multiple factors than can affect data validity and reliability, so higher the 'Error' lesser would accurate and truthful would be the results, which would motivate the researcher to plan and implement this study with utmost caution.

The reliability of the model can be evaluated utilizing the figures of Cronbach’s alpha. This parameter acts as a lower-bound estimate of the reliability of the collected data. A Cronbach’s alpha value of more than 0.7 is viewed as reliable (Hair et al., 2012). Cronbach’s alpha is used to determine reliability of the model fit. Values above 0.6 denote a good level of reliability.

3.11 Ethical Considerations
Students, staff and external stakeholders who participated in this student have done so voluntarily. Each participant was spoken to by personally by the researcher and they filled the participant information sheet (as enclosed in Appendix A of the dissertation towards the end). The researcher explained the purpose of the research and that it is only for academic reasons and they are free to withdraw at any point of time.

Participants were assured many a times that their contributions to this research would remain confidential at all times.

The Ethics committee of Cardiff Metropolitan University approved this study as per number 2016D5501.
3.12 Conclusion and Summary of Research Methodology

This chapter discussed the design of research work that included an understanding between methods and methodologies along with the several strategies that will be deployed for the designing questionnaires and administering surveys for examining mixed method research, involving qualitative and quantitative research design. Whereas the sampling process and data analysis tools would attempt to establish an understanding between traditional and online teaching whilst evaluating learning experiences, cost effectiveness, role of technology and the current challenges associated with student engagement, motivation and learner satisfaction.

The questionnaire design largely considered Research Objectives established therefore, the outcomes & responses could be mapped and compared with relevant literature as the overall response rate was 83% with 120 respondents participating in the intended process.

Therefore, the researcher adopted two main approaches in this research study – Deductive and Inductive. While deductive approach normally considers an existing theory which would be put to test, it would commence by formulating a hypothesis and conclude with confirming or rejecting the hypothesis. Deductive approach on the other hand generally requires quantitative analysis. Likewise, Inductive approach generally entails to developing a new theory from data collection process. Research questions are used to evaluate a situation or theory that would mostly involve qualitative analysis.

The research study adopted both Inductive & deductive research approaches to evaluate descriptive information obtained through discussions and interviews with students, administrative staff and teaching faculties. Deductive approach has been used to analyse quantitative data collated through survey.
Chapter 4 - Research Findings

4.1 Introduction
The chapter below presents data and findings based on Quantitative and Qualitative approach to add necessary dimensions and relate the outcomes with the discussions. Further the outline of the questionnaire was structured to encourage maximum participation as interviews were also simultaneously administered to review the current understanding on a feasible educational approach between choosing a dedicated online education platform versus continuing traditional face to face classroom experiences. The data threw interesting results given the profile of respondents that were made up of students, administrators, and faculty. Data was subsequently analysed using statistical tools to validate and add credibility to the overall findings.

4.2 Quantitative Analysis: Findings and discussions
Causal relationships were tested using data collected from 109 respondents perusing higher education and exposed to online mode of learning as well, and identified between variables identified of research based on their level of significance (using the t-value table for significance), all most of these relations were accepted, and their impacts are in the range from moderate to very high. Predominately relations were to understand cost-effectiveness, sustainability, and technology-based learning environment. The analyses of the individual causal relationship are presented below.

**Significance levels**

<table>
<thead>
<tr>
<th>Level of significance</th>
<th>Significance</th>
<th>t-value</th>
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<tbody>
<tr>
<td></td>
<td>p&lt;0.1</td>
<td>1.65</td>
</tr>
<tr>
<td></td>
<td>p&lt;0.05</td>
<td>1.96</td>
</tr>
<tr>
<td></td>
<td>p&lt;0.01</td>
<td>2.59</td>
</tr>
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</table>
RO 1- To Examine the impact of Online education as driver for disseminating knowledge in unattended markets/student profiles through cost-effective platforms as a sustainable mechanism.

With increasing focus on online education the accessibility of online education reflects the mission statements of increasing number of higher education institutions providing a more significant number of people with professional training and education, because of broader reach and affordability. To understand about its cost-effectiveness and sustainable model five questions were asked with a focus on affordability, student-friendly learning, the potential of online education to reduce the length (shorter time to complete education). Lastly, interactiveness and information quality were other such issues.

Key Findings:

a) Offer affordability meeting individual learning needs
b) It is very student friendly
c) It will help to shorten the length learning process
d) Help to promote greater student participation and interaction
e) Available information is of good quality.

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Average</th>
<th>St. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offer affordability meeting individual learning needs</td>
<td>4.12</td>
<td>0.81</td>
</tr>
<tr>
<td>It is very student friendly</td>
<td>4.09</td>
<td>0.79</td>
</tr>
<tr>
<td>It will help to shorten the length learning process</td>
<td>4.03</td>
<td>0.82</td>
</tr>
<tr>
<td>Available information is of good quality.</td>
<td>4.00</td>
<td>0.97</td>
</tr>
<tr>
<td>Help to promote greater student participation and interaction</td>
<td>3.95</td>
<td>0.85</td>
</tr>
</tbody>
</table>
Regression analysis results show a model with $R^2 = 0.6352$, showing a reasonably good correlation as cost-effective and affordability came very strong with ($t$-Stat 3.6989, $p$-value 0.004). Variables such as student-friendly learning and potential of shortening length were other variables got strongly supported with ($t$-Stat 2.2214, $p=0.0289$) and ($t$-Stat 2.4196, $p=0.0175$) respectively. There was a mixed opinion on quality content which led to a weaker relation with ($t$-Stat 1.2601, $p=0.2108$). Lastly, interactive mode of learning came out as a skepticism leading to the relation with ($t$-Stat 0.9547, $p=0.3422$).

<table>
<thead>
<tr>
<th>Regression Statistics</th>
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<tbody>
<tr>
<td>Multiple R</td>
</tr>
<tr>
<td>R Square</td>
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<tr>
<td>Adjusted R Square</td>
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<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>Observations</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>ANOVA</th>
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<tbody>
<tr>
<td>df</td>
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<tr>
<td>---------------</td>
</tr>
<tr>
<td>Regression</td>
</tr>
<tr>
<td>Residual</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
</tr>
<tr>
<td>Affordable</td>
</tr>
<tr>
<td>Student friendly</td>
</tr>
<tr>
<td>Shorten length</td>
</tr>
<tr>
<td>Interactive</td>
</tr>
<tr>
<td>Info Quality</td>
</tr>
</tbody>
</table>
RO 2 - To explore the growing role of technology & virtualization experiences in online education and its effect on overall ethos of traditional learning process.

To understand how technology has enhanced learning in higher education. Four questions were asked Under this category to understand how technology has helped students to grasp concepts, conceptualize learning, created simplicity in their learning process. Lastly, technology has developed a team-player attitude among the students rather than individualistic behavior.

Key Findings:

a) Increasing a sense of community with the instructor and fellow students
b) Help one to grasp the concepts well.
c) Help one to get better grades
d) Learning becomes very accessible-simplicity
e) Allows spending time thinking and conceptualizing

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Average</th>
<th>St. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing one’s sense of community with the instructor and fellow students</td>
<td>4.09</td>
<td>0.83</td>
</tr>
<tr>
<td>Help to grasp the concepts well</td>
<td>4.00</td>
<td>0.82</td>
</tr>
<tr>
<td>Help one to get better grades</td>
<td>3.92</td>
<td>0.84</td>
</tr>
<tr>
<td>Learning becomes very accessible-simplicity</td>
<td>4.02</td>
<td>0.83</td>
</tr>
<tr>
<td>Allows to spend time thinking and conceptualizing.</td>
<td>3.93</td>
<td>0.99</td>
</tr>
</tbody>
</table>

Regression analysis results show a model with \( R^2 = 0.548 \) though collaboration and simplicity got strongly supported with \( (t-\text{Stat } 3.9116, p\text{-value } 0.0002 \) and \( t\text{-Stat } 2.8156, p=0.0059 \)) respectively. During qualitative discussion with the focus group, online learning would enhance more international collaboration and will also create simplicity in the learning process moving online education. Issues like the ability to grasp,
conceptualization the learning and aid in securing higher grades though being most essential factors got weakly supported.

<table>
<thead>
<tr>
<th>Regression Statistics</th>
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</thead>
<tbody>
<tr>
<td>Multiple R</td>
</tr>
<tr>
<td>R Square</td>
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<tr>
<td>Adjusted R Square</td>
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<tr>
<td>Standard Error</td>
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<td>Observations</td>
</tr>
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**ANOVA**

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<th>MS</th>
<th>F</th>
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<td>Regression</td>
<td>5</td>
<td>36.2324</td>
<td>7.2465</td>
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<td>Residual</td>
<td>94</td>
<td>30.7676</td>
<td>0.3273</td>
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<tr>
<td>Total</td>
<td>99</td>
<td>67.0000</td>
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**Standard Coefficients**

<table>
<thead>
<tr>
<th></th>
<th>Intercept</th>
<th>Collaboration</th>
<th>Grasp Concepts</th>
<th>Simplicity</th>
<th>Better Grades</th>
<th>Conceptualization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Error</td>
<td>0.4406</td>
<td>0.3819</td>
<td>0.0921</td>
<td>0.3199</td>
<td>0.0199</td>
<td>0.0455</td>
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</table>

**RO 3:** To Evaluate the competitive factors that contextually places online programs on a higher ground in terms of flexibility, cost-effectiveness, self-learning applications as effective learning methods vis-à-vis face to face education

Technology as innovation has diffused to various innovative ideas, and one of them is the social network. People have adopted the whole idea of technology and thus soon recognized social network as one crucial part of their lives. Secondly, mobile devices
have become an integral part of our lives. Understanding use of mobile and social networking as platform six questions was asked to investigate how social networking, mobile application tool, YouTube, Machine learning, Robotics, and Artificial Intelligence as a platform would further educational experiences through supportive learning analytics.

**Key Findings:**

a) Learning at one’s own pace at a time convenient  

b) Social media can be a useful tool to use for educational purposes  

c) Mobile learning platform will support learning  

d) Help to assess performance (AI-Learning analytics)  

e) Platform like YouTube help in learning  

f) Prefer more automation (ML/ Robotics)

<table>
<thead>
<tr>
<th>Attributes</th>
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<tr>
<td>Learning at one’s own pace at a time convenient</td>
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<td>Social media can be a useful tool to use for educational purposes</td>
<td>4.01</td>
<td>0.822598</td>
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<td>Mobile learning platform will support learning</td>
<td>4.08</td>
<td>0.850668</td>
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<td>Help to assess performance (AI-Learning analytics)</td>
<td>4.03</td>
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</tr>
<tr>
<td>Platform like YouTube help in learning</td>
<td>3.91</td>
<td>0.892788</td>
</tr>
<tr>
<td>Prefer more automation (ML/ Robotics)</td>
<td>3.97</td>
<td>0.810225</td>
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Regression analysis results show a weak model with $R^2 = 0.6626$; this platform will bring ease and comfort in learning got strongly supported with ($t$-Stat 2.0335 and $p$-value 0.0449). Mobile technology will create flexibility and handy in the learning
process and got strongly supported \((t\text{-Stat } 3.3304 \text{ and } p\text{-value } 0.0012)\). Youtube again came as an active medium of learning also the use of artificial intelligence as a learning analytics act as a good judgment on how much content they have understood were strongly supported with \((t\text{-Stat } 2.2921, p\text{-value } 0.023996 \text{ and } t\text{-Stat } 2.25575, p\text{-value } 0.02643)\) respectively. However, contrary to these social media platform and use of machine learning, robotics got weekly supported \((t\text{-Stat } 0.9703 \text{ and } p\text{-value } 0.3344)\) and \((t\text{-Stat } 1.2227 \text{ and } p\text{-value } 0.2227)\).

\[
\text{Regression Statistics}
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<td>Observations</td>
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\[
\text{ANOVA}
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<td>Df</td>
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<td>Residual</td>
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<td>Total</td>
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<td>68.5100</td>
<td></td>
</tr>
</tbody>
</table>

\[
\text{Standard Coefficients}
\]

<table>
<thead>
<tr>
<th></th>
<th>Coefficients</th>
<th>Standard Error</th>
<th>t Stat</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
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<td>0.3263</td>
<td>-0.3868</td>
<td>0.6998</td>
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<td>Ease and Comfort</td>
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<td>0.1240</td>
<td>2.0335</td>
<td>0.0449</td>
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<td>Mobile platform</td>
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<td>3.3305</td>
<td>0.0012</td>
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<td>Social Media</td>
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<tr>
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<td>0.0964</td>
<td>0.9703</td>
<td>0.3344</td>
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<tr>
<td>YouTube</td>
<td>0.0753</td>
<td>0.0785</td>
<td>0.9592</td>
<td>0.3400</td>
</tr>
<tr>
<td>AI (LA)</td>
<td>0.2164</td>
<td>0.0959</td>
<td>2.2558</td>
<td>0.0264</td>
</tr>
</tbody>
</table>
4.3 Qualitative Discussion

During the interview phase as a part of qualitative discussion, the researcher interviewed 10 participants. The researcher made it clear that this is purely for the purpose of academic study. Some of the interviews were recorded with participant’s consent. Where the participant was not comfortable recording the session, a one on one meeting (without recording) was conducted.

The researcher asked a few questions based on the questionnaire which was responded by the participants. These were participants who were exposed to both face to face and online learning and by and large they showed positive reaction to online education. The points of discussion revolved around the following parameters:

- **Face to face vs online education**
  The participants felt that given the economic climate of UAE, there are very few enrolments in face to face programs. Given this challenge the school must look at online education in a very big way which enhances student learning experience as well.

- **Gaming Technology / Virtual reality for online education**
  Participants were quite receptive to new technology and considering the advancement of technology, participants overall felt that the school must invest in intelligent technology platforms to make the programs future ready, which would create a competitive edge and allow international collaboration by involving knowledgable faculty’s and greater diversity to the student community.

- **Cost effectiveness**
  All participants felt that the course fees for the program should be much lower compared to a regular face to face learning atleast initially when the school is trying to create a niche’ segment. Also the programs the school must offer should enhance job ready skills apart from shortening the length of the programs to generate interest for life-long learning.

- **Flexibility and Adaptability**
  The responses from participants were to create module and programs which would lead to increased attendance in classes at a time convenient to them. Programs should be structured in such a way that they run at a time slots which can remain accessible to any and all students around the world. Most of the working professionals who enroll as students for post graduate and professional
certifications will require that flexibility there by adapting to the online education.

It was also evident during the discussion that the participants were quite receptive to new technology and were flexible to this approach. Most of the participants felt, if the school is making a complete shift to online education, they must bear in mind that the technology should be cutting edge. The school should set up a virtual lab and a future ready classroom which should focus on technology.

The study further revealed during the open space sessions with a group of participants who got exposed to both, i.e., face to face learning and online mode of delivery also showed online learning have acceptability with a bit of skepticism. While the student requirement on quality of content defining learning experiences remained neglected (Alexander, 2001; Holly and Oliver, 2010; Ituna, 2011). Ramsden and Entwistle (1981). Haertela, Walberg and Heartela (1981) studied key correlations of student psychological environment of their classes and their learning environments influencing student perceptions.

The study reinforced views within academic instructors and recommends on the changing perceptions surrounding online teaching as an alternate method of delivering traditional content, while other researchers (Holley and Oliver, 2010; Ituna, 2011) might view online platform for gauging student perceptions for improving student engagement, resulting in better learning outcomes. According to (Coppola, Hiltz, & Rotter, 2002; Kupczynski et al, 2010) there have been vigorous debates of instructors to develop content when ensuring response to question, observing student behavior online and engaging on providing necessary discussions with certain student who may need special attention, guidance and developing appropriate response to online posts that addresses the findings of this objective.

The studies in chapter 2 presented opinions of Otter et al (2013) which authenticated debate of student’s natural phenomenon in dealing with isolation, in online-only mode of learning environment, from perceptions gathered and understanding the motivation levels of online student’s disconnected feeling from other co-students and their tutors or
professors, that causes self- learning styles, backed with minimal support or sometimes no support from their tutors or professors contrary to well- placed beliefs.

While innovation in higher education will be an ongoing process for years to come, it is paramount that higher education institutions begin immediately as not only does it allow for a learning experience catered specifically to the minds of a current generation of students, but without it, places them at a disadvantage. The disadvantages come from a world that is becoming increasingly global, one that opens the playing field to graduates from all around the world even with an increase in the scope and range from where to choose.

It came as a somewhat common belief online education can be applied efficiently to existing but more specifically to ‘new’ target groups in both the undergraduate and postgraduate segments. Amongst other resources, these target groups require tailored, flexible and individual learning pathways, more accessible lifelong learning program and the opportunity to keep abreast of rapidly developing fields.

The discussions during the open space sessions also showed that although technology can be a distracting and reduce creativity among students thereby diminishing the learning process, the advantages significantly outweigh the disadvantages if used with an ideal balance with the human interface. This was validated through several experiments conducted on incorporating online features in traditional face to face modules (Ituma, 2011). Again Gateway et al. 2014 when relating student-centric models who presented a novel integration of online and flipped classroom as an emerging trend, to suggest if technology is used in traditional classrooms (Azizan,2010), it provides additional learning materials, that would enhance the quality of student learning apart from positively impacting student overall competence and confidence.

Referring to the first innovation attribute i.e. social media tools – Facebook/ Instagram/ LinkedIn is perceived to eliminate the long-standing gaps generation social media provides education accessibility to the disadvantaged but skepticism about use as an ideal learning platform when applied to higher education. With the advances in technology, mobile phone now grants convenient access to online learning platform,
thus encourages a convenient learning platform. This supports and validates views of intelligent learning systems having scalability of enriching learning process of students in an interactive digital format using augmented and virtual reality to support VAK learning styles (Nwlink.com, 2017).

Literature presented on learning theory investigates students becoming effective participants in the knowledge building process. Students feel online platform provides an opportunity to learn in an easy and comfortable environment, flexibility, cost-effectiveness, an opportunity to revisit the learning help to retain learning better. Quantitative analysis of data collected during the survey with experienced participants also gave a similar sense of the importance of technology in the learning process, self-learning at a time convenient and a cost-effective option to get learning is well accepted and an increasing inclination towards online learning environment. It helps to promote critical thinking, further got examined that technology tools facilitate ideas since e-learning as a tool has the potential to promote better understanding, creating greater student motivation and develop simulating real-world issues.

It was evident during the research that there was some amount of scepticism in the students adapting to an online mode to those who were exposed to face to face learning. However, the instructors felt and recommended that it will take some amount of time in changing ones perception around online education and the school must try venturing into it. The studies conducted related well to augment a better view of Universities, higher academic institutions and business schools in the near term to embrace on adapting to build cost-effective and efficient learning and teaching systems. Finally, we could observe a similar pattern between collected literature, our quantitative analysis and also synchronise with inputs received from face to face interaction with student and instructor. Online learning will enhance its visibility, widen its reach to the mass of students and working professionals across different parts of globe irrespective of time or region to prove the correlation of cost-effectiveness and affordability being a major consideration in student decision-making.
4.4 Focus Group:

Of the 5 respondents, 3 had agreed to further participate in a focus group. However due to their time schedule only one participant was able to make it for the focus group. Due to the low response rate and limitation of time, this part of the research was unable to be followed.
Chapter 5 – Conclusions and Recommendations

5.1 Introduction
This chapter will conclude and analyze the outcomes of the research as exhibited in Chapter 4 – Research Findings. Based on the several literatures reviewed to examine and compare traditional face to face verses online learning and present the opportunities for universities and colleges to develop and analyze methods of adopting innovative teaching and learning by embracing the essence of technology developing learning situations and instructional technologies with a goal of creating immersive learning experiences.

5.2 Conclusions of the Research study
The methodology adopted for conducting this study remained beneficial in identifying several attributes to compare benefits of online learning, mobile learning, cost effectiveness and affordability and the need to shorted the length of programs has a major step in redefining future educational offerings. The researcher had envisaged to access more qualitative data to gain a broader perspective on checking of effectiveness of learning outcomes, examine student centered learning environments, to compare how blended learning is perceived by students.

5.2.1 Research Objectives
- To Examine the impact of Online education as driver for disseminating knowledge in unattended markets/student profiles through cost-effective platforms as a sustainable mechanism
- To Explore the growing role of technology & virtualization experiences in online education and its effect on overall ethos of traditional learning process.
- To Evaluate the competitive factors that contextually places online programs on a higher ground in terms of flexibility, cost-effectiveness, self-learning applications as effective learning methods vis-à-vis face to face education

The study presented on learning theory investigates students becoming effective participants in the knowledge building process that is applied and helps promoting critical thinking. It has further been examined that technology tools facilitates ideas
since e-learning as a tool has the potential to promote better understanding, creating greater student motivation and develop simulating real-world issues.

It was evident during the research that there was some amount of skepticism in the students adopting to an online mode to those who were exposed to face to face learning. However the instructors felt and recommended that it will take some amount of time in changing ones perception around online education and the school must try venturing into it.

The studies conducted related well to augment a better view for Universities, higher academic institutions and business schools in the near term to embrace on adapting to build a cost-effective and efficient learning and teaching systems, which would rank high on affordability as the experience of growing number of students rejected programs despite the quality and reputations of institutions based on price and other related educational costs along with other supportive costs. Further assessment of responses provided a natural framework to examine the significance of staying cost effective as reflections within the researcher’s business school that witnessed a higher pattern of student enrolments and student response rate for online programs across its global campuses which offered not only traditional undergraduate and post graduate programs, but across specific professional skill based programs to enhance its visibility, widen its reach to mass of students and working professionals across different parts of globe irrespective of time or region to prove the correlation of cost-effectiveness and affordability being a major consideration in student decision-making.

Indeed the changing times has proven that educational institutions must realize the power of information technology while the ‘e’-age has proven to facilitate learning through videos, sound and text format which have been considered a need of the hour to promote ‘life-long and life-wide learning’ and also deal with the a larger group of individuals in the economy who end up losing livelihoods owing to lack of domain specific knowledge or updated qualifications as organizational demands for qualified personnel is on the rise. It was found at the researcher’s business school that learners often preferred to choose some parts of the course content or structured program to save on time rather than participate in a whole program, whilst deciding what was most crucial and relevant to learn and spend for. Most important was a self-directed learning
of online learning resources by a number of students and working professional which again proves the efficiency aspect for the e-learner too. Accordingly, content needs to be customized and tailor-made to increase the speed of knowledge transfer, the benefits are quite obvious, apart from offering flexibility. Universities and particularly the researcher business school is contributing to furthering the learning process by enhancing the productivity of the society.

What was also found is replication of learning material and knowledge across several technology platforms costs a huge amount of money, rather if sharing learning resources can customize facilitation and restructure curriculum based on learning styles to serve the evolving needs of business climate and higher education institutions, then it can lead to doubling reach of the institution in unattended markets too, while serving physically disabled students too. The variables of learner satisfaction, faculty engagement, quality of content, student engagement and the effectiveness of delivery, shortened length or duration of learning were the several variables which were considered to relate how cost-effective approach and designing student friendly learning materials have been strongly addressed, to support findings of the first research objective. The drawback of this research study also contextualized that extent of development related to ICT enabled services, state of the economy, national educational policies and intellectual infrastructure along with financial and operational ability to scale up investments by Universities, identify training opportunities for faculties on an ongoing basis within higher education institutions would remain essential to support the growth cost effective and affordable learning methods.

While innovation in higher education will be an ongoing process for years to come, it is paramount that higher education institutions begin immediately as not only does it allow for a learning experience catered specifically to the minds of a current generation of students, but without it, places them at a disadvantage. The disadvantages come from a world that is becoming increasingly global, one that opens the playing field to graduates from all around the world even with an increase in the scope and range from where to choose.

This is where virtual classrooms would serve as a better learning platform through the process of synchronous web conferencing that would involve students and faculty
members learn, deliver, participate and forge relationships by communicating using web-cams and headsets. The several interactions within the study revealed that students across undergraduate and post-graduate streams remaining upbeat on the development of setting up campus. Several online educational tools which are currently being studied by the researcher’s business school, of which web-conferencing appears to remain profitable for both students and faculty members. However, some faculty members who remained sceptical of using this platform for future interaction given that the researcher’s business school is considering of setting up a Virtual University involved the primal fears and anxieties of the relevant skills required, since most were adept in managing traditional face-to-face classrooms, but remained unsure on the relevant skills required to keep student engaged and offer similar support in a virtual environment. Through experiential virtual classrooms using web-conferencing platforms facilitators were identified by faculties to breakdown module and deliver session by hosting live classroom where students participated and immediately developed a strong sense of community which meets the second research objective of this study. Again, using different media tools - immediately impacted positive student engagement and created stronger teacher-student relationship that added simplicity and collaborative learning process. While the researcher’s business school is trying to explore to enhance to improve student connectedness, peer support groups and facilitate role-plays to help students grasp concepts, aim to secure higher grades and consider offer training and support through this live classroom for realizing better student outcomes.

Referring to the first innovation attribute i.e. social media tools – Facebook/ Instagram/ LinkedIn is perceived to eliminate the long-standing gaps generation social media provides education accessibility to the disadvantaged but skepticism about use as an ideal learning platform when applied to higher education. Further a larger group of students were of the opinion on how mobile applications and hand held devices could support learning videos through popular apps such as Vdownload, given that a sizeable group owned twitter accounts, which meets the third research objective that proved cost effective and an alternate learning method beating down online learning approaches as student can learn at their own pace anywhere and at anytime, can keep replaying content within the campus and posting on social media platform to gain feedback and more views.
Learning institutions would need to adapt quickly to the aspects related to digital content, artificial intelligence, by adapting to disrupting technologies to support the language of communication and knowledge dissemination, which promotes borderless educational experiences.

The outcome of this research objectives also matches the new thinking within the UAE economy as per its Vision 2021 program drafted for enhancing quality of education that promotes a culture of learning through digital education which will further promote technology integration, effective use of technology through e-reading and e-resources with a view on creating better learning experiences that promotes critical thinking, problem solving abilities and lead digital citizenship in the years ahead.

5.4 Limitations of Research
This research acknowledges that a significant limitation was the lack of support in the data collection process from the focus groups identified for the purposes of gathering data in spite of numerous follow up, not yielding the necessary response. The lack of interest among student who used to regularly remain engaged with extra workload on assignment submission, did not help the cause of conducting focus group interviews. Hence the sample size of interviews is far lower than the anticipated number who could be added necessary credibility and reliability to the research. Further to this, given the sensitivity attached to the information that was presented, most of the management staff and members from the academic council were vary to share the confidential information and offer necessary guidance to this entire dissertation.

5.5 Opportunities for future research / Recommendations
Technology today is disrupting education globally resulting in transformative experiences of the way people communicate with each other. It will also re-define, how the next generation students would be exposed to future learning methods, as online learning will become the mainstream trend. Most business schools and Universities are investing heavily to maximize their visibility while experimenting with, online education systems that is usually a one-way communication where faculty lectures and facilitates the interactions with students remaining a passive audience. Using ‘smarter’ technology, it is envisaged that peer learning will improve significantly in online education to address class participation (CP) improves. Students are likely to remain
attracted to any face to face classes as technologies are integrated in creating and delivering better learning experiences. More and more schools will then prefer online education since there is less investment at their end. It would also lead to retaining and attracting the best faculty across the world by creating innovative teaching models.

The future holds great expectation with Technology today is disrupting education. We can see how technology is changing in the way people communicate with each other. Technology is changing how next generation students of the future will learn where online learning will be the trend. Currently in most schools, online education is usually a one-way communication where faculty lecture the students. Using technology, peer learning will improve in online education where class participation (CP) improves. Students can participate more like any face to face classes by integrating technologies thereby creating better learning experiences. More and more schools will then prefer online education since there is less investment at their end. They can attract the best faculty across the world creating innovating teaching model.

Finally, with the emergence of Virtual Reality labs, researchers in the future can how Big Data can be new brought into regular estimation of building effective learning strategies that would further lead to better cost-effective experience of being exposed to educational content and introduce Virtual Facilitators and Learning Environments. Technology companies and Data scientists are busy testing Augmented Reality, 3D Animations and Simulated Environments are increasing being used by Universities to adopt and motivate ‘blended learning’, track and assess student progress, while empowering students to take control of self-learning.

While the emergence of machine learning, artificial intelligence and robotic process automation the focus would remain on developing “Smart Content”, “Intelligent Tutoring Systems” with Woolf, et.al (2013) suggesting the following five impact areas that artificial intelligence could influence – 1) guide for each student 2) embracing skills required to survive in the current environment 3) learning by interactive data methods 4) access for anywhere/ any place/ any time and 5) promote life-long learning experiences. However contrary to popular belief the research study demonstrated a weak correlation justifying additional research in the years ahead to benefit societies and learning institutions.
References


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Lakshmi Raman - st20131411


Appendices

Appendix A - Participant Information Sheet

PARTICIPATION INFORMATION SHEET

Project Summary
The purpose of this project is to evaluate cost effectiveness of online education Vs onsite face-to-face education as a service proposition to increase sustainability in the private education sector in the UAE.

While the research is for exploring the possibility of launching online and virtual undergraduate programs. It is essentially meant for generating ‘interest’ at levels of decision makers, management team who would find it ‘meaningful’ and ‘purpose-oriented’.

Why have you been asked to Participate
You have been asked to participate because I would like to have your view on the project and I think you fit the profile of the population that is being researched. In addition, you are the target population and use technology and online education on a day a day basis.

Your participation is entirely voluntary and you may withdraw at any time. You would be sensitized about this project through email communication as it would comprise largely of students and academic/administrative staff. In the capacity and position of a researcher, the ‘data outcomes’ would be shared to demonstrate the benefit of conducting this research.

You can email or meet me in person as well if you so desire.

Data Gathering
Data Gathering will involve Interviews / Focus groups. And this would take a month within the Campus periphery

Why is your feedback important and what is your benefit in participating:
Your feedback is important given the aim and purpose of the project.
Aim: To ensure innovative teaching methods are being applied across all programs and improve teaching quality overall in online education

Purpose:
Examine the impact of Online education as driver for disseminating knowledge in unattended markets/student profiles through cost-effective platforms as a sustainable mechanism
Explore the growing role of technology & virtualization experiences in online education and its effect on overall ethos of traditional learning process.
Evaluate the competitive factors that contextually places online programs on a higher ground in terms of flexibility, cost-effectiveness, self-learning applications as effective learning methods vis-à-vis face to face education

Benefit to you is Flexibility, Cost Effective Platforms, Learning Experience, Innovation and being involved in the project.

Risk factors
The research involves the completion of a questionnaire and participation in interview and this might be used later for analysis. Am not seeking to collect any sensitive data but the one that you are comfortable sharing – you are free to omit the questions that you would not like to fill. I do not think that there are any significant risks associated with this study. However, if you decide to join the study you can change your mind and stop at any time, you do not have to give a reason why. Your decision will be respected. There are absolutely no penalties if you do not wish to participate at a later date and time. Should you take part in this study, rest assured that your identity will be protected.

Privacy Protection
All the information provided by you would be treated with utmost confidentiality to generate trust and necessary co-operation.

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET TO KEEP
If you require any further information about this project then please contact:
Lakshmi Raman, Cardiff Metropolitan University Student
Cardiff Metropolitan University email: st20131411@outlook.cardiffmet.ac.uk
Appendix B – Participant Consent Form

CONSENT FORM

Reference Number:
Participant name:
Title of Project: “To evaluate cost effectiveness of online education Vs onsite face-to-face education as a service proposition to increase sustainability in the private education sector in the UAE”
Name of Researcher: Lakshmi Raman
Phone number of the Researcher: +971565416363

Participant is requested to complete the below questions.

1. I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

3. I agree to participate in the above survey. My response shall be based on experience and data availability.

4. I agree to the interview being audio/video recorded.

____________________________
Signature of Participant

___________________
Date
Appendix C - Questionnaire

QUESTIONNAIRE

To evaluate cost effectiveness of online education Vs onsite face-to-face education as a service proposition to increase sustainability in the private education sector in the UAE.”

I work with xxx as a Registrar and I am now a student at Cardiff School of Management, Cardiff Metropolitan University’s MBA programme. The aim of my research is to ensure innovative teaching methods are being applied across all programs and improve teaching quality overall in online education. I request you to complete each question by either putting your answer in the space provided or by ticking the appropriate response. The questionnaire will not take you more than 10 minutes and submission will be taken as voluntary informed consent. All your responses are confidential and will only be used for the purposes of this research. Thank you in advance for taking the time to complete this survey.

Research Questionnaire
Instructions: Please complete the following questions to reflect your opinions as accurately as possible and to answer factual questions to the best of your knowledge.

The Business School is striving hard to improve the overall student ‘learning experiences’ by embracing technology platforms across its Programs within its global campus and in particular its Dubai Campus as part its sustainable practices.

In this endeavor, the management is keen on comparing the faculty engagement, curriculum development and design specifications that would promote 1] ease of understanding 2] create satisfying learning environments 3] use technology / mobile application methods for simplifying module concepts & judge between current classroom learning methods and future online learning platforms as medium of disseminating knowledge.

Please share Program Detail : __________________________ [ EMBA- Undergraduate/ GMBA - MGB]
Enrolled in : ____________ [2014/2015/2016]
Studying in : _______________ [1st year/ 2nd year]

Select the most suitable option that shall suit your response.
RO 1- Can Online Education prove to be ‘Cost Effective” and a “Sustainable Model”

1. The School of Management is currently thinking rolling out Online Programs by using current technological platforms from the next Academic Year to benefit current students & new admissions across various programs. Do you think this would prove beneficial?


2. Given the current reach advancement of technology and its utility across industries, which factors must the School of Management consider across different management programs that is currently being offered

   a] have differential fees structure b] adopt intelligent technology platforms c] shorten the duration of the program d] develop simpler lecture notes which are easy to understand.

3. Future Learning will become more interactive and student-friendly. Do you agree with this statement.

   a] Yes b] if No, why_______________________________________________

4. Rate your current learning experience when attending a Classroom Lecture Versus Online Interaction?

   a] depends on module b] faculty knowledge c] length of lecture d] activities and case study oriented e] all the above

5. As the School plans to adopt sustainable learning practices. Which factors do you think would keep students interested and engaged

   a] diversifying into newer markets b] cater to wide variety of student profiles globally c] drive cost downwards across program to be competitive and relevant d] create dedicated online program delivery mechanism.

RO 2 - Creating Technology based learning program & Virtual Campus

6. As a Business School we are planning to launch virtual learning campus to meet growing demand in this space. Would the school succeed in Dubai - UAE?

   a] Yes b] if No, give reasons______________________________________________

7. Would you expect learning in the future through a live faculty in the classroom or by a recorded session for any module – combination of both

   a] Yes b] if No, give reasons______________________________________________
8. Which mode of learning – technology platform oriented or virtual shall your preferred learning style in the next Academic Year
   a) Technology but with human interface  b] Humanoid or Robotics c) Others
   If others please specify : __________________________ human interface will be a value add

9. For which programs do you think must the School retain Traditional Face to Face Programs in the future?
   a] Undergraduate program   b] Post Graduate program

10. Students would earn better grades and great satisfaction when learning through technology based platforms, that are programmed for differently paced learners.

RO 3 - Competition, Education Technology Trends are driving flexibility and self-learning applications

11. New age Self Learning Applications has been a pulling crowds through Social Media and Mobile Technology Application platforms. What do you think should our School focus on
    a) Design a Mobile Self Learning Application for student b) Get on to You Tube
    c) Use Social Media Tools – Facebook/ Instagram/ LinkedIn for uploading content. d] all the above

12. It would be better for the School to design programs that allows students flexibility to study either through Self Learning Methods or through Online Platform for earning relevant degrees.

13. Should we dedicate a part of our Campus for experimentation of learning process through Machine Learning/ Artificial Intelligence/ Robotics Process Automation.
    a] Yes  b) if No, give reasons __________________________

14. Adapting to new age-technology infrastructure would mean significant capital expenditure. Should the school be increasing the program costs for breaking even.
    a] Yes  b) if No, give reasons __________________________

15. Post implementing an effective technology platform, would it be difficult / challenging for the school to promote traditional face-to-face learning programs at existing fee structure
    a] Yes  b) if No, give reasons __________________________

Thank you for your time and sharing your thoughts
Appendix D – Focus Group

Focus Group number : xxx
Duration of the interview : 30 minutes

Welcome everyone. To introduce myself, I work with xxx as a Registrar and I am now a student at Cardiff School of Management, Cardiff Metropolitan University’s MBA programme. The aim of my research is to ensure innovative teaching methods are being applied across all programs and improve teaching quality overall in online education.

I would like to have a meaningful discussion around some of the questions that I think you can help in my research. Thank you for making time to meet me.

Before we begin I request you to sign a copy of the consent form. I would also be recording this session. Hope that is fine with you all.

1) Given the current reach in advancement of technology and its utility across industries, which factors must the School of Management consider across different management programs that is currently being offered?

2) Why do you think online education will be better than a face to face education?

3) Which subjects do you think cannot be taught online and why do you think so?

4) Suggest methods by which the School should consider to evolve Sustainable Teaching & Learning practices

5) What technology do you think the school should invest on should they go for online education?

Thank you for your time and I enjoyed our session today.

Ethics Committee Approval Number: 2016D5501

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