QATAR UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

AN EMPIRICAL INVESTIGATION OF THE IMPACT OF DIGITAL TEACHING AND LEARNING ON UNIVERSITY STUDENTS' SATISFACTION LEVELDURING COVID-19 PANDEMIC IN QATAR

BY

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ABSTRACT

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Life is changing rapidly for many reasons, which affects people's mindsets as well as their behaviour. Today, most people rely on technology on a daily basis. Furthermore, the global COVID-19 pandemic has pushed the world into a new normal that requires a greater reliance on technology, especially in the education sector. Such a shift has influenced students' attitudes and changed their expectations, which has affected the relationship between students and their universities and lecturers. Random samples were collected from students and instructors at higher education institution in Qatar. Responses of students and lecturers who were exposed to digital teaching and digital learning during COVID pandemic were included in the quantitative part of the research. This research investigates the relationship between teaching and learning digitally as well as its impact on students' satisfaction levels in higher education sectors in Qatar during the pandemic. The research provides practical and theoretical solutions that are aimed at improving the higher education sector. More precisely, the current study examines the impact of lecturers' creativity and innovativeness, attitude towards technology, and teaching skills along with students' engagement, learning motivation, ability to adapt to changes, and learning support, on students' satisfaction levels. In addition, it evaluates the mediation effect of students and lecturers' emotional intelligence on the relationship between the independent variables and students' satisfaction. The results revealed that students' engagement, ability to adapt to changes,

learning motivation, and learning support have a strongly positive and significant impact on their satisfaction.

Key words: digital learning, digital teaching, emotional intelligence, and students' satisfaction

DEDICATION

To my support system and my beloved family, thank you for being there.

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CHAPTER 1: HOW TO UNPROTECT THIS DOCUMENT

1.1.Overview

The power of the mind has developed empires, built countries, raised economies, and transformed poor societies into wealthy ones, as well as illiterate populations into literate populations. It is the primary factor behind all inventions in the world and has even reached the moon and beyond. In recent decades, several changes in human nature have transformed humans' daily lifestyles. Convincing consumers became increasingly challenging over time due to several paradigm shifts occurring around the world. Customers' expectations have grown, their needs have changed, and ensuring a satisfied customer has become the driving factor for product producers and service providers worldwide.

Rapid life changes are one of the main reasons causing changes in people's mindsets and behaviours. Technology has played a major role in accelerating the process of implementing projects, producing products, enhancing services, increasing innovativeness and sustainable inventions, and improving businesses, and the quality of outcomes. It has forced humans to get used to a faster and more complicated life. Despite the damage that technology has also caused in other areas of humans' lives, it quickly became an essential part of their lives, threatening some businesses while supporting others.

This equation of technology's pros and cons has produced a paradigm shift, where many sectors have been forced to switch completely away from the traditional approach to an approach that relies exclusively on technology to produce products and provide services. Such a shift has influenced consumers' attitudes and changed their expectations, consequently affecting the relationship between the customer and the product/service provider. This change has generated a variety of variables and aspects

not considered essential before the digital era, including emotional aspects, trust, innovativeness, and creativity (Dai et al., 2015).

Consequently, switching from traditional sales methods to rely mainly on technology—known as digitalization—has influenced all sectors and businesses. Digitalization refers to an increase in using technology to turn an existing service or product into digital options (Parviainen et al., 2017). This transformation is evident in the smart technology that has become essential in humans' lives.

Debates have emerged about digitalisation and its dominant impact on the world. Even today, some people and countries continue to resist smart technology as the way of the future. Nowadays, it is the only solution to pursue certain achievements, goals, and economic stability, and the educational sector is building its hopes on improving and achieving targeted goals through technology.

The unprecedented pandemic that faced the whole world in 2020 offered solid evidence about the importance of using technology in all aspects of life, especially in the educational sector. When the COVID-19 pandemic emerged at the beginning of 2020, it created a serious challenge that turned the world upside down. News of coronavirus spread on news channels and social media platforms. The resulting health crisis caused airports to shut down, factories to cease operations, employees to lose their jobs, and countries to go into a complete lockdown. Ultimately, remaining safe has become a daily goal for every individual.

Outside the health sector, the only businesses and organizations that consistently continued operating throughout the COVID-19 pandemic were those using digital and smart technology. Once countries and ministries announced either partial or complete lockdowns, schools, and universities that were digitally prepared switched from one-to-one teaching methods to distance learning. Such educational organizations were able

to pursue and deliver their promises because of their ability to provide education through digital teaching practices and digital learning during the pandemic.

Although digital teaching and learning were considered the ideal during the COVID-19 pandemic, these approaches also affected the quality of teaching and learning processes. The current research investigates the situation to offer solutions for improving digital teaching and learning, which affected students' satisfaction. It also examines the impact of emotional intelligence when mediating the relationship between digital teaching and learning, and students' satisfaction.

1.2. Research Aim and Objectives

The following chapter represents different arguments from previous studies and research confirming the importance of giving attention to the relationship between education service providers and their customers' satisfaction. In the current study, service providers are represented by lecturers and customers are their students. All tested variables were extracted from previous studies. However, it was discovered that there was no valid evidence confirming whether emotional intelligence plays a major role in influencing the relationship between lecturers and students during digital education (Serrat, 2017). Therefore, the present study addresses this gap by studying the impact of emotional intelligence on the relationship between digital teaching and learning variables and students' satisfaction. Consequently, this study aims to achieve the following aims and objectives.

1.2.1. Research Aim

Given the various digital transformations that currently exist, exploring additional variables and their influence on education is vital. The aim of this research study is to understand whether the emotional intelligence variable influences digital

teaching and digital learning independent variables and student satisfaction. To this end, this research includes the emotional intelligence variable as a mediation in the relationships between the independent and dependent variables.

1.2.2. Research Objectives

The research objectives are:

a. Develop a better understanding of new factors that might be essential to consider in higher education by focusing on certain skills that lecturers might need to improve and be trained on, such as lecturers' innovativeness, creativity, ability to implement digital teaching, and providing the required support to students;
b. Provide valid pieces of evidence to support students' education experience and enhance their satisfaction level during their higher education journey;
c. Propose some initiatives that might be useful to support the students during their higher education journey, such as improving their communication and emotional intelligence skills; and
d. Conduct a deeper investigation into the role of emotional intelligence that might have an impact on the teaching and learning process.

These objectives will be achieved through careful analysis of the collected responses from the targeted segments.

1.3. Research Methodology

Every research has its own style of structure and foundation, including the way data are gathered, used, and analysed (Davison, 1998), which are considered the research

philosophy. Several philosophies satisfy different data collection methods, such as pragmatism philosophy, positivism, realism, interpretivism, and post-positivism (E-International Relations, 2021).

The current study examines specific relationships covered to a certain degree in previous research. While adopting a new additional relationship believed to have an impact on other variables, thereby, generating new outcomes and conclusions. The post-positivism philosophy adopted in the current study is designed to explore new assumptions and investigations designed by the researcher (Ryan A., 2006). This approach is also used to reveal and explore the behaviour of a specific society or group of individuals using scientific evidence (Study.Com, 2015).

The current study adopts a qualitative research methodology. All survey measurements were adapted from extant literature, which consists of validated items. Surveys were distributed among the targeted samples by distributing electronic survey links through social media channels (i.e., WhatsApp, Instagram, Email, and LinkedIn). All collected data were gathered using random sampling. Of the more than 450 responses gathered, 378 responses were usable for analysis using SPSS statistics; the rest were dropped due to incompletion of the survey.

1.4. Thesis Structure

The current thesis is divided into five chapters and organised as follows. The first chapter presents a general introduction to the topic, identifying the research contribution, context, and objectives while also providing a brief explanation about the research methodology.

The second chapter presents the theoretical lens, such as the literature review of the examined variables, the conceptual model, conceptual framework, and hypothesis development based on the theoretical background.

The third chapter provides more detailed information about the methodology. The fourth chapter presents all data analysis-related information and procedures, including the study findings and outcomes.

The final chapter offers the conclusion to the thesis along with theoretical and practical implications, followed by the research conclusions, limitations, and future research topics.

1.5.Research Contribution

This research examines the impact of major teaching and learning variables that have a direct impact on students' satisfaction. It tests the implementation of these variables by applying digital teaching and learning methods and examining their influence on students' general satisfaction towards their education journey. The study is built on previous research that explores education marketing theories and their effect on the behaviour of students, as well as the influence of their satisfaction with the higher education institution. Moreover, the study illustrates and highlights the challenges that students and their lecturers have faced in higher education during the global COVID pandemic as well as the role that technology has played during this period.

Scholars have previously argued that using digital teaching and learning methods impacts both learners and educators (Henderson et al., 2015). They have also asserted that the implementation of digital teaching and learning has enhanced the quality of education, reduced the associated costs, improved research activities, and contributed to personal development (Becker et al., 2017; Gregory & Lodge, 2015; Nicolosi et al., 2018; Reis et al., 2012; Sousa & Rocha, 2019). However, in 2020, due to the unexpected pandemic, education providers and students had to rely exclusively on digital teaching and learning. The sudden change led to specific consequences, and new factors might need to be considered during the teaching and learning processes, such as emotional intelligence (EI) and its impact on both students and their lecturers.

According to existing research, lecturers with higher EI levels have stronger teaching skills and a greater ability to rely on digital teaching (Amirian & Behshad, 2016; Gita & Alireza, 2015; Serrat, 2017) as well as a better ability to manage students' emotions (Dewaele, 2019; Mérida-López et al., 2017; Talvio et al., 2016). Similarly, recent studies have revealed that students with higher EI had a greater ability to adapt to COVID changes while demonstrating higher academic performance and higher satisfaction (Buzdar et al., 2016; Chandra, 2020; Trigueros et al., 2020).

Although previous studies have investigated the impact of digital education in general, studies have not considered the variables together in a single framework. Moreover, the EI variable had not been included as a mediation in the relationships between digital teaching and learning variables and students' satisfaction. Thus, the present study combines the major variables of both digital teaching and digital learning in a single framework to study the impact of EI as a mediation between these relationships.

The design and construction of the framework were based on the literature to

explore a gap in the educational sector by using marketing theories and solutions to provide theoretical and practical implications for educational institutions. According to the customer satisfaction theory, ensuring students' satisfaction by meeting their expectations and fulfilling their needs is the main goal of education providers (Cheng et al., 2016; Razinkina, et al., 2018). Improving lecturers' teaching skills plays a major role in ensuring satisfied students (Douglas et al., 2014; Gul et al., 2019; Lewis & Abdul-Hamid, 2006; Yusoff et al., 2015).

The current study is built on seven dependent variables that directly affect students' satisfaction. Three variables relate to the independent variable of digital Teaching while the rest relate to the independent variable of digital learning. All these variables have been separately explored in past studies. The present research combines the variables to explore their influence collectively on students' satisfaction. In addition to this new framework, a new variable is added as a mediation between the independent variables and students' satisfaction. Specifically, ten dimensions are considered in this paper: digital teaching, lecturers' creativity and innovativeness, lecturers' attitude towards using technology, lecturers' skills, digital learning, students' engagement, students' readiness to adapt to changes, students' motivation, lecturers' support, and emotional intelligence.

As long as the mentioned variables are representing two main independent variables. It is deemed essential to highlight that both digital teaching and digital learning are not used interchangeably. The term digital teaching is used in this paper for referring to lecturers online/digital teaching practices. On the other hand, digital learning is used for referring to students online/digital learning practices and related matters.

This research offers practical and theoretical implications and contributions, and the

findings offer practical solutions to the education service providers, and its stakeholders. The paper expands the existing theories and knowledge on the usage of digital tools and resources and their impact on the customer. To get high-quality and more accurate results, the research focuses more on targeting a specific segment during a specific time. Therefore, only students and lecturers in Qatar who have experienced digital teaching and learning in the higher education sector during the COVID pandemic are included in the study.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

This chapter is presenting a deep discussion about the variables of the study. It also explicitly presents the theory that the discussion was built on, and how all variables were extracted to form the study. In addition, the thesis examines the relationships among three main variables: digital teaching, digital learning, and student satisfaction. This is achieved by studying seven different factors implemented in digital education that affect students' satisfaction, the quality of the perceived service, and the mediating effect of emotional intelligence on the relationships among these variables. The seven factors are lecturers' creativity and innovativeness, lecturers' attitude towards using technology, lecturers' skills, lecturers' support, students' engagement, students' readiness of adapting to changes, and students' motivation.

The present research is based on the customer satisfaction theory developed by Oliver in 1980 (Richard, 2006). The theory is also connected with other theories, such as service quality theory, which was established in 1985 by Parasuraman et al. (Souca, 2011), and customer engagement theory introduced by Bowden (2009) with the emergence of digital marketing (Harmeling et al., 2016). The conceptual model for the present study was developed by combining the theories into one model.

The current chapter introduces the theoretical background, presents the studied constructs, and summarizes efforts to improve the foundation of previous research. The chapter is divided into four sections. Concepts' background and the description of key constructs will be presented first, followed by a discussion of the theoretical framework and theories, and the association of these theories with the proposed conceptual model. By considering the information presented in the first two sections, the third section will detail the hypothesis development and the rationale behind each hypothesis. Finally,

this chapter will introduce the conceptual framework guiding the research.

2.2. Conceptual Background

2.2.1. Digital Teaching

Ten years ago, several inventions contributed to changing humans' lives. However, digitalization played a major role in transforming the strategies and practices of different industries and sectors in the market, such as using digital games and digital radio (Kanthan & Senger, 2010; Reis et al., 2012). Moreover, digitization played a major role in pandemics and global disasters, which transformed and shaped individuals' lives and the interaction between organizations and their stakeholders.

The COVID-19 pandemic is a good example of how global disasters have the power to completely transform everybody's life and force most industries around the world to rely exclusively on technology to keep the wheel spinning. Education is one industry that overcame the challenges of the COVID-19 pandemic by providing an immediate digital solution to satisfy their customers, meet their expectations, and successfully overcome the consequences of the pandemic with minimal losses.

The implementation of digital teaching and learning affected the entire educational process and deeply affected lecturers and learners (Henderson et al., 2015). Such observations and results attracted researchers to investigate and explore the pros and cons of relying on digital teaching and learning. The importance of studying the impact of using technology in education did not emerge because of the pandemic, but it has been considered as a practical solution for spreading knowledge, enhancing research, reducing costs, and contributing to personal development.

Several studies have explored the impact of digital teaching on higher

education, with some results demonstrating a positive impact and others presenting the opposite. A good number of studies published during the pandemic investigate the impact of digital teaching and learning on higher education. The results of these studies presented interesting facts about the change and the transformation that happened in the higher education sector after being forced to rely exclusively on technology and delivering education during the pandemic (Crawford et al., 2020) to maintain a certain level of student satisfaction and provide the highest quality of educational services.

The results further showed that the pandemic's impact on the higher education sector was undesirable and ultimately created a gap in the teaching and learning process, while also reducing the ability to access technical infrastructures (Marinoni et al., 2020; Ogunode, 2020). Studies have also explored the psychological impact of the pandemic on university lecturers, with results demonstrating that digital teaching created a stressful environment for lecturers in terms of time constraints, lack of knowledge of using complicated digital tools, and the capability to control their mental health during changing times (Brammer & Clark, 2020; Moralista & Oducado, 2020; Toquero, 2020).

Additional results have shown that lecturers were struggling to assess students' academic performance effectively, including tracking students' attendance and measuring their engagement during virtual classrooms (Neuwirth et al., 2020). Studies have demonstrated that the lack of lecturers' digital skills negatively affects communication with students, which will ultimately create damage in the educational process (Tejedor et al., 2020).

Although digital education positively affects the educational process, various challenges appeared when educational providers were forced to rely on it exclusively for teaching and learning purposes during the pandemic. From the perspective of the

educational institutions, providing high-quality education and meeting students' expectations have a strong relationship with students' satisfaction (Douglas et al., 2014; Gul et al., 2019; Lewis & Abdul-Hamid, 2006; Yusoff et al., 2015). In addition, building solid bonds with students relies mainly on the strength of the relationship between students and their lecturers (Claro et al., 2018). This bond was affected during the pandemic because it is related to other attributes.

Researchers have explored the impact of lecturers' skills, attitudes towards technology, and the impact of their creativity and innovativeness on students' satisfaction. However, these relationships have been explored individually, and they were not explored together as a representative of digital teaching variable. Therefore, this study seeks to explore all these independent variables together, aiming to be able to support education service providers' with practical solutions of how to enhance the digital education experience for lecturers as well as students.

Previous studies also agree on the importance of enhancing the communication channels between lecturers and students by working on improving the emotional aspect, the psychological aspect, lecturers' ability to use technology, and the virtual relationship and communication channels between lecturers and their students. Considering previous studies' results, the current research explores the relationship between three additional attributes combined to embody digital teaching and theses attributes' impact on students' satisfaction. Digital teaching will be presented in this study through lecturers' creativity and innovativeness, lecturers' attitudes towards technology, and lecturers' skills; the research will investigate whether these attributes directly affect students' satisfaction and whether emotional intelligence affects these relationships.

2.2.2. Lecturers' Creativity and Innovativeness

According to the customer satisfaction theory, students are considered essential customers in education, and satisfying them by fulfilling their needs and meeting their expectations in education is the main target of education providers (Cheng et al., 2016; Razinkina, et al., 2018). In addition to the importance of technology and provided facilities, studies have revealed that students are looking for quality in their academic lecturers, teaching methods, and skills, as well as a positive relationship with lecturers that has a direct impact on students' satisfaction (Coskun, 2014).

Previous studies have disclosed that creativity and innovativeness are essential in assessing the efficiency of the lecturers' performance (Dhaqane & Afrah, 2016), which has a direct and strong impact on both the reputation of the educational organizations and the level of students' satisfaction (Fonti & Stevancevic, 2013). Studies have also presented that lecturers' knowledge about the subjects they teach, interactions with students, lecture notes, and teaching creativity are the most important education competencies that have a strong positive relationship with students' satisfaction level, especially for pedagogical segments of students (Ganieva, et al., 2015; Long et al., 2014).

There are different perspectives on defining creativity. One perspective is creating and producing something authentic or unusual, which comes from the perspective of producing creative products (Leikin et al., 2014). Another perspective is the process, as evident in the ability to come up with several solutions for one problem in a short period (Yazgan-Sağ & Emre-Akdoğan, 2016). Wolniak and Grebski (2018) defined creativity as the ability to produce a mental vision of things that do not physically exist or have never been produced by others.

They also defined creativity as being able to visualize the subject and

understand it from new insight and distinct perspectives, while also coming up with different possibilities than others that might not be noticed or imagined (Wolniak & Grebski, 2018). Studies have shown that reaching a certain level of creativity requires a maximization and utilization of the potential to come up with something unique and genuine (Giovanni, 2016). Thus, creativity can be linked to individuals, products, and/or ideas, and improving it might strongly contribute to achieving success and reaching goals (Backhouse, 2013; MacLaren, 2012).

In light of these previous definitions of creativity in education and specifically on lecturers, it is suggested that lecturers' creativity will mostly occur in the process of teaching and/or through the new techniques and methods lecturers adopt to deliver information or create a meaningful connection with their students. The latest studies have agreed on the important role that lecturers' creativity plays in enriching the delivery of the subjects and positively influencing learners by building a co-learning communication relationship between students and lecturers (Craft et al., 2014; Long et al., 2014).

In the face-to-face teaching environment, the dimension of creative thoughts contributes to increasing students' and lecturers' self-esteem as well as students' social skills and motivation to learn (Wang & Kokotsaki, 2018). Furthermore, lecturers' creativity can be measured by lecturers' ability to build a trusting relationship with their students, which comes from the passion for the subject they are teaching, especially for pedagogies (Craft et al., 2014). Along with creativity, studies have also covered lecturers' innovativeness as a factor influencing the quality of education.

One of the flows of behavioural change model theory is the diffusion of innovation theory, which Roger developed in 1962 (Wayne, 2019); it has been deployed and subsequently used to create improvements in the education sector. The diffusion of

innovation theory defined innovation as a new object, idea, and/or practice perceived by an individual or organization with specific characteristics, such as compatibility, relative advantage, observability, complexity, and trialability (Soffer et al., 2010).

It has also been defined as the ability to introduce, apply, and share new ideas and possibilities with a group of people or within the organization (Wolniak & Grebski, 2018). From an organizational point of view, innovativeness is a frequently used measurement to measure the level of newness or creativity of the product or the way of delivering a specific service (Garcia & Calantone, 2002). It is also presented as the ability to make changes and face problems by providing creative solutions during challenging times (Hussein et al., 2014).

Throughout the years, scholars have investigated lecturers' innovativeness as one of the entrepreneurial elements, and play a major role in defining the relationship with students' satisfaction and expectations, as results have shown a very strong relationship between both elements (Hayat & Riaz, 2011; Meilani & Ginting, 2018). In addition, innovativeness and the importance of this element in teaching have been covered under the practice of using digital teaching and learning methods, where lecturers who can provide e-learning solutions are considered innovative lecturers and their students have more satisfaction (Ayub et al., 2017; Kituyi & Tusubira, 2013).

Recently, definitions of innovativeness in education have been linked to technology, where it is defined as the ability to deliver the same service and meeting or exceeding customers' expectations by using technology while maintaining the same quality of the provided service (Lowe & Alpert, 2015). By developing the unified theory of acceptance and use of technology (UTAUT), scholars have proved that lecturers' innovativeness is affecting the quality of the service provided to students and influencing their attitude as well as their performance (Al-Aish & Love, 2013;

Handoko, 2019). Furthermore, by relying on the same theory, some studies have explored that innovativeness has a positive relationship with service quality and student satisfaction during the implementation of digital teaching and learning methods (Badwelan et al., 2016; Gan & Balakrishnan, 2016; Gunasinghe et al., 2018).

Different theories have been used to explore the impact of both creativity and innovativeness variables on the quality of education provided. Some scholars have explored the impact of lecturers' creativity and innovativeness on students' academic performance while others have investigated their influence on students' satisfaction. In addition, studies have presented the impact of creativity on lecturers' performance and the teaching process. However, very few studies have included both elements in one variable.

Therefore, the current study will explore the impact of lecturers' creativity and innovativeness together on students' satisfaction. This study will also combine lecturers' creativity and innovativeness with two other attributes to determine the impact of digital teaching on students' satisfaction during the COVID-19 pandemic and challenging times.

2.2.3. Lecturers' Attitude Towards Technology

The usage of technology is essential in individuals' lives, regardless of their home country, background, or industry. Researchers in the educational industry are focusing on exploring the influence of using technology as they consider it an important element for delivering education. They are also interested in covering the variables and attributes related to technology usage.

The possible relationships between technology use and the attitude acquired piqued researchers' interest. In the last 21 years, the challenges lecturers have faced in

using technology in higher education have also attracted scholars' attention. Addressing the challenges is an important step for providing solutions and developing successful strategies. Many studies have examined the influence of changes and the challenges in the teaching process of higher education when using technology, and the results have shown that lecturers face several difficulties, such as the lack of available resources, technical support, digital teaching training, and materials on the principle of digital teaching as well as changes in the student body (West, 1999). As the impact of these challenges is related to lecturers' attitude towards the circumstances, it is important to understand the meaning of attitude in education and its relationship with students' satisfaction.

Attitude has been defined as the constant entities stored in the subconscious mind based on the history of past judgments based on the situation at hand (Bohner & Dickel, 2010). In addition, it is defined as the result of combined thoughts and emotions held in both the subconscious and conscious mind of an individual, where these thoughts and emotions drive the person to act or react towards things, people, situations, ideas, and/or groups (Coronel-Molina, 2014; Jain, 2014). Furthermore, studies have shown that, when lecturers have a positive attitude and emotions towards the usage of technology, they are more relaxed, which increases the level of their performance and unlocks their innovativeness and creativity to deliver qualitative teaching principles (Larbi-Apau & Moseley, 2010). They are also more skilled in creating a productive educational environment, which affects students' ability to understand, think, connect information, and learn (Al-Emran et al., 2015; Gebre et al., 2014).

Researchers have also found a strong relationship between lecturers' positive attitude and their ability to overcome challenges (McCabe & O'Connor, 2014). Studies have also demonstrated that the efficiency of a technology-enriched educational

environment is affected by lecturers' and students' attitudes, as is the extent to which they both accept changes and deal with challenges (Bohner & Dickel, 2010; Botha & Herselman, 2015; Celik & Yesilyurt, 2013). Showing a positive attitude and having a high level of understanding emotions are challenges that strongly impact the efficiency of the educational process in general and specifically during pandemics (Ogunyinka et al., 2015). They also influence students' attitudes and reactions when facing challenges as well as their relationships with their lecturers and colleagues (Mensah et al., 2013).

Lecturers' ability to understand students' emotions and how they feel during certain periods are new challenges in the digital era, which negatively affect the relationship between lecturers and their students and reduces students' level of satisfaction (Kluge & Riley, 2008; McCaughtry et al., 2006). A study conducted on Jordan's higher education in 2012 revealed that both the academic faculty and students required support and training to improve their technical skills and improve the individual online learning process (Al-Adwan & Smedley, 2012; Prescott, 2014).

In the same year, other studies relied on the UTAUT framework to discover the relationship between attitude and behaviour and the use of technology in higher education. Their results disclosed a positive relationship between attitude when using technology and the expected performance of students and lecturers (Pardamean & Susanto, 2012). Another study conducted in 2014 employed the innovation diffusion theory and technology acceptance model to consider the use of technology in teaching as an innovative tool and lecturers' attitude as a major role for the successful implementation of distance learning (Al-Alak & Alnawas, 2011; Nair & Das, 2012; Tshabalala et al., 2014).

The results of these studies suggest a positive relationship between the quality of education provided through distance learning and lecturers' attitude towards the use

of technology in the teaching process. However, these results can be generalized for communities with similar characteristics to the chosen samples. For example, the last study was implemented on a sample of university students in a developed country and considered the level of development of the country from an economic, educational, technological, and financial aspect as important aspects to consider as they both directly and indirectly affect the educational industry.

The importance of such attributes stems from their relationships with other attributes, like lecturers' creativity and innovativeness. Lecturers' attitudes towards technology also affect their skills and innovativeness level (Mohamad et al., 2015). Thus, it is important to study lecturers' attitudes towards technology in Qatar as a separate attribute and explore its impact on students' satisfaction and the digital teaching and learning process among university students during pandemics.

2.2.4. Lecturers' Skills

Scholars have classified lecturers' skills based on their abilities, where the ability to communicate with other individuals positively and with common sense is classified as a soft skill (Farlex, 2013). On the other hand, hard skills are based on one's knowledge base and include groups of abilities acquired through continuous learning, education, repetition, and practice (Kagan, 2020). Lecturers' ability to combine most of these skills affects their competencies (Polnaya et al., 2018) and students' academic performance (Muzenda, 2013; Waseel & Yusof, 2019).

A study conducted at Islamic universities in Indonesia indicated that these skills—especially lecturers' soft skills—influence lecturers' general performance (Wibowo et al., 2020). In addition, in countries where information and communication technology (ICT) is continuously improving, like Malaysia, lecturers' skills have been

shown to influence lecturers' and students' creativity and innovativeness and, consequently, students' academic performance (Ali, 2012). Such studies highlight the importance of improving lecturers' knowledge and digital skills to enhance the learning environment for students (Long et al., 2014).

Another study conducted in Jakarta presented that lecturers' hard and soft skills affect lecturers' creativity and innovativeness (Asbari et al., 2020), which is one attribute representing the digital teaching variable in this empirical study. Similar results were found in a study conducted in the United Kingdom, which presented that lecturers' soft skills are vital for improving higher education teaching and learning quality (Keow, 2019). Thus, increasing students' motivation to learn how to use digital teaching and learning strategies depends on the ability to utilize skills and adapt them to fit the digital teaching strategy.

The findings of these studies indicated that lecturers' skills affect their ability to utilize teaching tools, such as educational digital games, activities, projects, assignments, and exams, and should be compatible with the digital teaching needs and transformed to suit the digital environment (Pachauri & Yadav, 2014; Schmidt et al., 2013). Such digital teaching skills can be developed by enhancing lecturers' digital and soft skills, which impacts their ability to enhance digital communication skills with students and build a relationship with them based on trust (Mailool et al., 2020). In addition to adapting soft skills, lecturers are also required to adopt other major skills to get successful results from implementing digital teaching strategy, such as the skills of social integration and digital engaging skills with students (Geçer, 2013; Xiao & Wilkins, 2015).

The social integration between students and their lecturers nowadays depends more on social networking relationships, which can be presented through social media

platforms and online channels (Prasojo et al., 2017). Lecturers' ability to capitalize on their soft and hard skills to create social communication channels with their students was found to be effective with undergraduate students, positively affecting students' engagement, creative and critical thinking, and performance as well as lecturers' constructive methods (Buzzetto-More, 2012; de-Marcos et al., 2014; Eid & Al-Jabri, 2016; Prasojo, et al., 2017).

Working on improving skills proven to support the digital educational environment and enhance the performance of students has a strong connection to increasing students' satisfaction. To date, studies have led to the same conclusion and highlight the fact that lecturers' skills have a positive relationship with students' academic performance and satisfaction as well as, the quality of teaching and learning in the higher education sector. However, these studies were conducted in South Asian and European countries, whose higher education systems differ from those in the Gulf area. Therefore, the current study explores the relationship between lecturers' skills and students' satisfaction in the higher education system in Qatar during the implementation of digital teaching in challenging times (i.e., the COVID-19 pandemic).

2.2.5. Digital Learning

Teaching and learning are two related variables; improving either variable will enhance and improve the other. As previously mentioned, using digital tools affects both students and lecturers (Akyuz & Yavuz, 2015); lecturers' ability to use digital resources, their attitude towards using technology, and their teaching skills are all important elements affecting students' motivation to learn, and their learning experience in general (Kreijns et al., 2013). During the COVID-19 pandemic, the learning system depended completely on remote/digital learning in most educational

institutions around the world.

Digital learning means that all materials and learning contents are provided and delivered online, which students access from their homes (Staker & Horn, 2012). It has also been defined as the ability to learn by combining all available digital resources to collect and combine information from different resources and platforms (Burdick & Willis, 2011). Moreover, digital learning includes using technology and digital resources, such as the internet, DVDs, applications, wireless communication devices, and websites, to deliver instructions or materials to students who are physically separated from their lecturers (Allen & Seaman, 2017). Understanding the attributes that affect digital learning is believed to positively support the learning process.

Currently, students are becoming the centre of the education process of any successful educational organization, which means that education providers are focusing more on upgrading the knowledge and skills of their students (Shraim & Khlaif, 2010). Combining digital education with traditional education methods has a strong positive impact on students' ability to solve problems, by enhancing their critical and strategic thinking skills and building their structural knowledge (Jin & Bridges, 2014). In addition, using digital tools (e.g., digital educational games) has a positive relationship with students' satisfaction as it increases their engagement and motivation to learn, decreases their stress level, and improves their academic performance (Kanthan & Senger, 2010). Including digital media in the learning process also increases students' preparations for classes, which increases their commitment and enhances their performance and satisfaction (Alshareef, 2013; Tabor & Minch, 2013). Digital learning also impacts other aspects of learners' internal and external environments and their academic achievements as a result.

Studies have demonstrated that digital learning influences the self-confidence,

critical and analytical thinking, and truth-seeking of English as a foreign language learner in Chinese universities (Wei & Hu, 2018). Another study conducted using the technology-enhanced-learning (TEL) model among American, Australian, and United Kingdom university students indicated that digital learning increased students' interactions, monitored their progress, and increased students' engagement in classes (Davies et al., 2019; Kim et al., 2019). Meanwhile, a study conducted in developing nations (e.g., Iraq) highlighted major challenges obstructing digital learning efficiency.

However, the implementation of digital learning is challenging. The results indicated that the main challenges are the lack of technical support provided, uncertain policies, lack of students' motivation, and lack of awareness and interest among universities in Iraq (Al-Azawei et al., 2016), Canada (Tereseviciene et al., 2020), and Germany (Bond et al., 2018).

Adnan and Anwar (2020) examined Pakistani students who were forced to completely switch to digital learning. They identified negative results as the students were not emotionally ready for such a massive change. Although digital learning creates major challenges, studies have explored its benefits and impact on the motivation of students to learn, engage, expand their knowledge, and develop critical thinking, and problem-solving skills (Vasylyshyna, 2020).

All previous studies have covered major elements and specific points affecting learners' academic performance and satisfaction, such as economic insights, policies affecting education, technical support provided, and skills development. These studies have been conducted in different regions and nations of the world, including Europe, South Asian countries, developed nations, and South African countries, yet very few studies have covered digital learning and its attributes in the Gulf region.

Therefore, the present study aims to cover certain attributes and their impact on

university students' satisfaction in Qatar during the COVID-19 pandemic. Studying specific attributes (e.g., students' engagement, motivation to learn, need for lecturers' support, and readiness to adopt change) will cover the emotional intelligence aspect of students as well as its impact on their academic performance, and thus, their satisfaction.

2.2.6. Students' Engagement

Different attributes affect students' satisfaction during the learning process. As previously mentioned, students' engagement is one of these attributes, and it significantly contributes to students' satisfaction and academic performance (Alsowat, 2016; Talan & Gulsecen, 2019). Students' engagement is also considered a communication process between students and their lecturers, which can be translated in several ways, like emotional engagement, behavioural engagement, and cognitive engagement (Kucuk & Richardson, 2019). Using digital communication channels among students themselves and with their lecturers has a strong positive relationship with students' engagement (Dixson, 2010). In addition to measuring the quality of their understanding level, students' engagement improves their personalities and academic performance, which enhances their satisfaction (Gebre et al., 2014; Hyun et al., 2017).

Student engagement can be observed through different actions and forms. It has been defined as students' ability to participate in and interact with other individuals or activities related to education (Ainley, 2012; Byl & Hooper, 2013; Kahu, 2013). Students' engagement in digital learning can be identified through several actions, such as using e-libraries, engaging in social communication with their lecturers outside the online classroom, and employing networks and digital platforms to socialize with their colleagues and friends (Gilardi & Guglielmetti, 2011; Heider, 2015).

In addition, being engaged with assessments' feedback indirectly affects students' performance and satisfaction (Ada & Stansfield, 2017). Students' engagement during digital learning has been defined as the ability to interact with and gain knowledge, information, and resources from digital networks (Soria & Stebleton, 2012). Students' positive digital engagement refers to their ability to engage emotionally, cognitively, behaviourally, and socially (Lester, 2013; Reeve, 2013; Reeve & Tseng, 2011). Previous definitions of students' engagement have been extracted from the student involvement theory, which emphasizes that the more effort students put into interacting and participating, the higher their academic performance and their satisfaction (Korobova, 2012). Students' engagement and satisfaction are undoubtedly influenced by the learning method, but it is also essential to understand the nature of this relationship.

Many studies have examined the factors impacting the digital learning environment, revealing that students' engagement, lecturers' support, and students' interaction attributes, have a positive direct impact on the digital learning environment efficiency in general and students' satisfaction in particular (Gray & DiLoreto, 2016). A study conducted at one of the public universities in Selangor, Malaysia, in 2016 explored the positive relationship between students' engagement and their satisfaction during the implementation of blended learning (Mohd et al., 2016).

Another study using the learning integrated model in Russia revealed that blended learning increases students' interaction and engagement as well as their academic performance, which leads to increased satisfaction (Baranova et al., 2019). Although using e-sources for teaching and learning positively influences students' engagement, some university students still prefer blended learning over shifting completely to distance or digital learning, which affects their level of satisfaction

(Baragash & Al-Samarraie, 2018; McGuinness & Fulton, 2019). Integrating digital devices (e.g., smartphones and laptops) into the learning environment lowered students' engagement and the academic performance of students at the University of Guelph, Ontario (Witecki & Nonnecke, 2015).

The studies conducted in different parts of the world are vital and have triggered important elements of the relationship between university students' engagement and their satisfaction. However, these studies were conducted during academic years in traditional and normal situations, where universities, students, and lecturers were not obliged to use digital and distance education exclusively. Moreover, none of these studies were conducted with Gulf university students or, specifically, in Qatar due to the different external environments and circumstances, different implementation of education strategies in the mentioned countries and Qatar, and different cultures among university students.

Thus, the present study will focus on exploring the relationship between university students' engagement and their satisfaction during the COVID-19 pandemic while using digital learning methods in Qatar.

2.2.7. Students' Readiness to Adapt Changes

Thus far, the paradigm shift that has happened in the education sector during the COVID-19 pandemic has triggered new emotional barriers for students and created more challenges during the digital learning process. Most of these challenges are related to students' ability and readiness to adapt to changes and learn (Duffy, 2010). This attribute is a vital psychological element affecting not just students' satisfaction level, but also the level of their concentration and knowledge, as well as their productivity level and academic performance (Kokkelenberg & Sinha, 2010).

Students' preferences vary from one country to another and even among the same group of students themselves. Some students prefer using only specific digital tools while others prefer complete digital learning (Bujang et al., 2020); still others prefer only face-to-face learning. Fulfilling students' needs and desires will affect their satisfaction, but it is unknown to what extent their readiness to adapt to such changes in the learning process and their surrounding environment will affect their satisfaction. For a better understanding of students' readiness to adapt to changes and its relationship with students' satisfaction, it is important to understand the process of changing skills, behaviours, and values, which starts by understanding Lewin's theory that he developed in 1921.

Lewin's theory was built on two factors: the restraining force that pushes towards the current state and the driving force that pushes in the direction of the desire to change. The model consists of three stages: unfreezing (realizing the need to change), movement (moving to the new attitude), and refreezing (establishing the new attitude; Bakari et al., 2017; Hossan, 2015; Kaminski, 2011; Manchester et al., 2014). The unfreezing change is the process of changing behaviours when the issues and challenges are raised to the individual, which requires convincing the individual of the need for that change and encouraging them to make the change.

Movement, the second stage, is the process of changing to new behaviour or attitude by learning a new value, habit, or skill to be able to maintain effective operations during uncertain incidents or situations (Hussain et al., 2018). In the third stage, refreezing, the new value, habit, or skill is established to ensure that the new operating ways are sustainable and reinforced (Al-Maamari et al., 2018). Understanding the changing processes and being mindful of students' ability to adapt to any changes using their skills, behaviours, attitudes, values, and beliefs could be,

from a psychological aspect, key to supporting students during challenging times and positively influencing their skill improvement and satisfaction (Yakhina et al., 2016).

Although using technology in education is not a barrier or challenge for some students (Chun & Chaw, 2013; Rahamat et al., 2017; Rasouli et al., 2016), understanding the process of emotional changes and academic stress is vital for enhancing students' learning and social experience, as is providing them with the required support (Li et al., 2018). A recent study conducted among more than 30,000 students from 62 countries demonstrated that university students' satisfaction and readiness to adopt challenges during COVID-19 pandemic differed due to different factors, such as financial, social, and work conditions (Aristovnik et al., 2020).

These elements, as well as their health conditions and lifestyle, supported them in adapting to changes and being satisfied socially and academically (Machul et al., 2020). During the COVID-19 pandemic, the main challenge for students has not been just the usage of technology, but the psychological factors and the ability to adapt to the emotional changes (Pamela et al., 2020). Recent studies have shown that the emotional aspect was a major barrier for students' performance and satisfaction due to their ability to adapt to the emotional changes and overcome anxiety and fear while being exposed to different learning methods during the pandemic (Cao et al., 2020; Gonzalez et al., 2020; Pelly et al., 2020; Wang et al., 2020). Thus, focusing on students' emotions during the implementation of digital learning is considered essential for the present research.

2.2.8. Students' Motivation

For university students to be able to adapt to changes, they must have courage and motivation (Yilmaz, 2017). Students' motivation is an important variable that

affects their readiness to learn, satisfaction, and relationships with lecturers (Paechter et al., 2010; Ryan & Deci, 2020; Shen et al., 2015). It also deeply affects their retention, persistence, achievement, and course satisfaction due to several elements, such as students' motivation to learn (Chen & Jang, 2010).

Studies have identified two important results related to students' motivation: being able to motivate students, which requires interpersonal skills, and students' level of motivation, which affects their engagement in class and satisfaction (Bekele, 2010; Tessier et al., 2010). In addition, using digital tools and resources in education plays a role in increasing or decreasing students' motivation to learn; students using digital tools are more motivated than students exposed to traditional tools in learning (Hamzah et al., 2015; Nikou & Economides, 2016; Tseng & Walsh, 2016).

Motivation is defined as the power of the force that leads an individual to a certain satisfied behaviour (Ng, et al., 2012; Reeve, 2012). Students' motivation attribute is based on self-determination theory (SDT), which shows that students' satisfaction and interaction during digital learning depends on students' motivation (Chen & Jang, 2010). The theory offers three basic and universal human needs: the need to feel engaged or associated with others, the need to feel a sense of control, and the need to feel competent in activities and tasks (Chen & Jang, 2010). When these three needs are experienced, individuals achieve better psychological comfort and security emotions because they have reached the required satisfaction level (Deci et al., 2017; Teixeira et al., 2012). In addition, SDT addressed another insight of learners' motivation in Virtual Classrooms (VCR), which categorises motivation into three main classifications: intrinsic motivation, extrinsic motivation, and amotivation.

The first category involves doing something because of the optimal challenge it contains or because it is enjoyable and satisfying (Teixeira et al., 2012). The second

category is extrinsic motivation, which involves doing something because it leads to an independent outcome (Deci et al., 2017). Intrinsic motivation has a stronger impact on students' behaviour and academic performance (Taylor et al., 2014), which is also affected by the course design and content and the support students' get from their lecturers (Radovan & Makovec, 2015). The third category is amotivation, which is the lack of having intentions to do something or feeling the desire and need to reach somewhere (Chen & Jang, 2010).

During the implementation of a digital learning course, the design and the content are the two strongest variables affecting students' satisfaction, which has a direct relationship with the social presence that affects students' motivation to learn and the motivation to adapt to changes as a result (Barbera et al., 2013; Cate et al., 2011). In 2017, Els et al. explored satisfaction with the program students chose in their first year, which is an important element that showed a positive relationship with students' intrinsic motivation to learn (Shakurnia et al., 2015) and impacted their satisfaction with the whole e-academic experience (Rooij et al., 2018).

An important element of the course design that has a strong positive relationship with students' motivation to learn is the formative assessment, which is more connected to feelings and internal/autonomous motivation (Leenknecht et al., 2020) based on a study conducted with Dutch university students studying applied science in Holland. Another study conducted on a zoology module in Indonesia revealed that students who used the digital tool "I-Invertebrata" in their learning were more motivated than students who did not use any digital tools in the same module (Widiansyah et al., 2018). Another element influencing students' motivation to learn while studying in an English for specific purposes (ESP) module was the support students received from lecturers during the class; some students were affected by the motivation and support their

lecturers provided, which directly affected their performance while studying that module and their satisfaction in general (Dja'far et al., 2016).

The studies discussed thus far have explored and covered university students' motivation to learn and the attributes that define either the intrinsic or extrinsic motivation of students and its impact on their satisfaction. However, students' motivation to learn should be examined in greater detail in the present research for several reasons. First, not all previous elements and attributes of motivation have been explored in a completely digital environment. Second, none of the mentioned studies have been conducted in the Middle East or Gulf countries, which is an important element to be considered when the results will be generalized for higher education students in Qatar. Third, none of the previous studies considered this attribute as a representative or part of framing the digital learning variable.

Finally, students' motivation to learn was not explored with the remaining digital learning attributes used in the present study. Having said that, to strengthen the results of this research, it is vital to include this attribute within the attributes presented as the independent digital learning variable to study its relationship with university students' satisfaction throughout the implementation of digital learning in Qatar during the COVID-19 pandemic.

2.2.9. Lecturers' Support

Although students require support from administration, technicians, and peers during digital learning, they need it the most from their lecturers (Daud et al., 2015). The support lecturers provide is an important factor affects students' performance, ability to learn, ability to face learning challenges, ability to adapt to changes, and motivation (Osman et al., 2014). Researchers have demonstrated that the learning

support that students need in physical classes is different from the support required during virtual learning, especially during difficult times (Farrelly et al., 2018).

Moreover, providing the required support from lecturers will directly increase learners' level of motivation, which is required to achieve a high level of engagement and thus higher levels of satisfaction (Chen & Jang, 2010; Fryer & Bovee, 2016; Ngubane-Mokiwa & Letseka, 2015). This is due to a psychological element. Psychologists have shown that a strong positive relationship exists between students' satisfaction and their confidence, which drives students to be more confident, ready to develop new skills, and more curious to gain knowledge (Letcher & Neves, 2010).

Providing lecturers' support is essential, as well as providing emotional support is equally important for students during difficult times. When students are suddenly disconnected and kept apart from their instructors and colleagues, students need more emotional support from their lecturers to cover this communication gap. Providing students with the emotional support they need is vital to reduce their anxiety and stress (Ebrahimi et al., 2016), especially when they are surrounded by deep negative feelings such as the fear of death, their families' health, financial challenges, and loss of lifestyles.

Providing emotional support during such situations is a major element that directly impacts students' motivation to learn, academic performance, and ability to control their emotions (Ruzek et al., 2016). Such support includes creating virtual communication space between lecturers and students, being mindful of the progress and success of students, providing support when teaching via VCR and assessing students' performance, and providing the needed support when technical issues occur (Tait, 2014). Moreover, during digital learning, students' situations necessitate showing respect for their feelings so they can feel relaxed and comfortable during classes as well

as confident with the level of professionalism of their lecturers (Douglas et al., 2006; Kina & Adley, 2014; Tennant et al., 2014).

Studies conducted during the COVID-19 pandemic have identified students' and lecturers' positive impressions of digital teaching and learning (Schlenz et al., 2020). Such studies have explored the main challenges that students have faced in their digital learning. The main challenges identified are emotional aspects, social challenges, and the support received from lecturers. These three elements affect students' readiness to adapt to changes, motivation to learn, and satisfaction (Aboagye et al., 2021). In addition, lecturers' themselves had emotional and technical challenges during digital teaching, which impacts the support they provide to their students (Christian et al., 2020).

Most studies conducted before COVID-19 focused on exploring the importance of lecturers' support on students' academic performance, motivation to learn, and satisfaction, which is important. Meanwhile, studies during COVID-19 covered this attribute from an emotional aspect and agreed that understanding students' emotions and being able to deal with them effectively are important for the success of the digital education process. However, it is also important to be mindful about modifying or using new techniques that will support the process and enhance the situation.

Thus, the present study considers lecturers' support as one of the essential attributes that define the digital learning independent variable. Although studies have examined this attribute for both digital and conventional (face-to-face) learning, they have not explored it among university students in the Gulf region, specifically in Qatar. This research explores the relationship between this attribute and students' satisfaction while also considering the emotional support needed during difficult times by studying the impact of the emotional intelligence variable on these relationships.

2.2.10. Emotional Intelligence

Based on the discussion thus far, we can conclude that the success of digital teaching and learning processes depends mainly on the relationship between students and lecturers. The stronger the relationship, the more positive the outcomes are. Moreover, during stressful and unnormal situations like the COVID-19 pandemic, the understanding factor, acceptance, mindfulness, motivation to teach or learn, knowledge of using technology, emotional intelligence, patience, and other elements all play major roles in coping with the situation and overcoming various challenges. Thus, it is important to explore the extent to which these variables influence the relationships between digital teaching and students' satisfaction and between digital learning and students' satisfaction. The present study explores the impact of the emotional intelligence variable.

As previously defined, emotional intelligence describes and assesses the ability, skills, and capacity of a person to manage and deal with the emotions of others, oneself, and/or a group (Serrat, 2017). Previous studies have presented a strong positive and significant relationship between emotional intelligence and the outcomes of digital teaching. In 2015, a study of Iranian high school teachers revealed that teachers with high emotional intelligence abilities were better able to manage stress levels and emotions than others (Giti & Alireza, 2015).

In addition, lecturers with high emotional intelligence scores had high self-efficacy scores (Amirian & Behshad, 2016). Another study conducted in four different countries revealed that teachers with higher social and emotional intelligence have more skills and abilities to rely on digital teaching (Talvio et al., 2016). A greater ability to understand and manage emotions leads to a higher level of engagement among lecturers

while they are teaching (Mérida-López et al., 2017) and leads to the better ability to manage students' emotions (Dewaele, 2019). Thus, this variable affects both lecturers and students.

Studies have also revealed that emotional intelligence has a positive relationship with digital learning, which impacts students' academic performance and satisfaction as a result. A study conducted among Taiwanese college students in 2016 discovered that those with high emotional intelligence were more ready for digital learning (Buzdar et al., 2016). Another study found that students were more resilient to hostile situations when they have higher emotional intelligence (Chandra, 2020; Trigueros et al., 2020) due to their ability to manage their emotions and have a better understanding of the surrounding external environment.

Several investigations have also demonstrated a positive relationship between low emotional intelligence and high confusion among students, which leads to a decline in students' engagement during virtual classes (Arguel et al., 2017; Moreno-Fernandez et al., 2020). These studies revealed that emotional intelligence plays an essential role in enhancing students' ability to cope with problems and improve their engagement during classes.

Although the emotional intelligence variable has been explicitly explored and covered in previous research papers, very few papers have covered the impact of this variable when it is mediating the relationship between digital teaching and learning and students' satisfaction during the COVID-19 pandemic. Furthermore, no study has covered such a relationship among university students and lecturers in Qatar while including the specified attributes during a pandemic. Indeed, most studies have considered this variable using the attributes included in this study separately. For example, studies examined the relationship between emotional intelligence and

lecturers' ability to use digital tools, lecturers' creativity, students' engagement, and students' readiness to adapt to changes, but not as representatives of specific independent variables. Thus, exploring this relationship in the present study is believed to be important and is expected to lead to needed implications and practices in higher education in Qatar.

CHAPTER 3: CONCEPTUAL MODEL AND HYPOTHESIS DEVELOPMENT

3.1.Theoretical Framework

Scholars have agreed that satisfied customers lead to an increase in economic returns and customer loyalty, which leads to an increase in revenues (Gilbert & Veloutsou, 2006; Surprenant & Churchill, 1982). Forty years ago, companies started considering fulfilling their customers' needs and desires after Oliver developed the customer satisfaction theory in 1980 (Richard, 2006). This theory was developed through the disconfirmation of expectations and cognitive psychology theories (Andreassen & Lindestad, 1997), implying that customer satisfaction is a result of the perceived quality and ability to meet customers' expectations, thereby leading to enhancing the product/service image and loyal customers after their needs and desires are fulfilled (Mattsson, 2009).

The word "satisfaction" has many definitions: the act or the state of being satisfied, the pleasure that comes from such fulfilment, the fulfilment of desires, a compensation after a wrong is received or done, a feeling of being pleasant after getting what was desired, or a pleasant feeling after doing something wanted (Liu et al., 2016). Reflecting these definitions of satisfaction on customers means that a satisfied customer is a customer whose needs and desires were fulfilled, who received a product/service exactly as wanted or that exceeded expectations, and who has a pleasant and happy feeling after receiving the targeted product/service. Since the early 1980s, companies from different sectors have relied on the theory to increase their future revenues and strengthen their relationships with their customers, regardless of the sectors (Fornell et al., 1996; Fornell et al., 2006; Fu & Juan, 2016; Oktareza et al., 2020; Yoshida & James, 2010).

Nowadays, due to the dominance of technology and digitalization, customer

satisfaction varies between the services and manufacturing sectors (Mithas et al., 2005). In addition, researchers have argued that a positive relationship exists between information technology development and customer satisfaction (Sharma & Baoku, 2013). Jaywant and Benedetta (2016) confirmed that the use of online technology and online communication has a positive relationship with customer satisfaction during the delivery of online services. Moreover, overall e-service quality and customer satisfaction are significantly related through a positive relationship (Gajewska et al., 2020; Pham & Ahammad, 2017; Rita et al., 2019).

Throughout the implementation of the simple conceptual model of service quality and customer satisfaction, it has been demonstrated that service quality includes information availability, security, pricing, and time (Mariani et al., 2019; Vasić et al., 2019). A large number of studies have examined e-service quality and customer satisfaction for various sectors, such as e-commerce, sports, online shopping, tourism, hospitality, banking, and medical sectors. These studies focused on studying similar variables (e.g., time, security, service quality, information availability). However, by applying the model in the educational sector, the studied variables will change to adapt to students' needs and desires and the practices of the institutions seeking students' satisfaction during online learning in higher education.

Previous studies have covered the main variables, with interaction being one of the variables influencing students' satisfaction during distance learning (Croxton, 2014; Kuo, 2010; Muzammil et al., 2020). Sean and Nicholas showed that the motivation students get from their external environment, students' self-motivation, lecturers' support, and course design all have a positive relationship with students' satisfaction (Eom & Ashill, 2016). Meanwhile Dr Ozkan confirmed that students' motivation to learn plays a major role in students' satisfaction during online education (Kırmızı,

2015). Other studies have explored engagement's (Muzammil et al., 2020; Rios et al., 2018) and agency's relationship with students' satisfaction during online courses, but not assessment's relationships (Dziuban et al., 2015).

A 2019 study conducted a meta-analysis of findings from 1999 to 2018 related to students' satisfaction and learning achievement to compare fully online classes with other methods and understand students' satisfaction. The study revealed that five variables affect the quality of online education: students' readiness, the quality of the delivered service, lecturers' support, guidelines, and administrative standards, and the support provided to lecturers (Tsang et al., 2021; Wart et al., 2019).

When the COVID-19 pandemic emerged, service providers survived by launching and enhancing their online services. For example, manufacturing companies with established online shopping systems, where customers can order their products online, thrived. Like all other sectors, the education sector was undoubtedly affected by the pandemic. However, the pandemic consequences were difficult to predict at the time and are still unknown, creating a sudden paradigm shift. Therefore, capable educational institutions switched completely from the traditional offline to the online education strategy. Lecturers and students have been highly affected by the new normal, and reactions to the change varied among everyone.

The pandemic has raised many questions around the world: is this method successful? Are students satisfied with the provided service? Were lecturers ready for this change? To what extent has this shift affected the psychological factor of education stakeholders? Have the outcomes been satisfying? Has the academic progression of students been declining or improving? These questions and more were the main concern of education stakeholders and researchers. Many studies have been conducted since the start of the pandemic to discover ways to enhance the online education experience.

Studies during the pandemic have found that students have been satisfied with the online teaching sessions (Prasetya et al., 2020); although it was an intellectual challenge, the flexibility of lecturers and the encouragement they provided to students played a major role in students' satisfaction (Fatani, 2020). A study conducted in Egyptian universities during the COVID-19 pandemic revealed that students preferred online learning more than offline learning, and motivation, self-motivation, internet platform, and class timings all significantly affected students' satisfaction (Basuony et al., 2020).

In addition, students' engagement, lecturers' knowledge, course structure, and provided facilities (Lengetti, et al., 2021) influenced undergraduate students' satisfaction during online learning (Baber, 2020). Studies have also demonstrated that the quality of the asynchronous component of learning has had a positive relationship with students' satisfaction (Kit et al., 2021; Zeng & Wang, 2021).

On the other hand, Damijana and others have revealed that the quality of the provided service and lecturers' skills directly affect undergraduate students' satisfaction, but students' engagement and interactions were less important (Keržič et al., 2021). Meanwhile, students from Hong Kong preferred face-to-face learning compared to emergency remote learning (Giantari et al., 2021; Kit Ho et al., 2021). Likewise, socio-emotional needs were revealed to be an important factor affecting undergraduate students' satisfaction during the COVID-19 pandemic, although there is a lack of studies in this area (Quispe-Prieto et al., 2021). In addition, students' personalities and characteristics affect their satisfaction level during digital learning (Sahinidis & Tsaknis, 2021).

Moving forward, early studies during the COVID-19 pandemic suggested that several factors, such as lecturers' innovativeness and professional development for

lecturers, might have a significant influence on students' learning experience and, thus, their satisfaction (Almusharraf & Khahro, 2020). Similarly, interaction, quality, and available support affect both the students' and lecturers' satisfaction and should be considered in future studies (Nambiar, 2020). The presented theoretical background indicates the importance of conducting studies related to digital education. It also highlights the gap in the research about the major factors affecting digital teaching and learning using customer satisfaction theory. Therefore, the following section will cover the conceptual framework and the hypothesis development of the current thesis.

3.2.Digital Teaching

Recent studies have determined that, although lecturers strongly believe in the importance of using digital teaching methods, most new young lecturers between the ages of 25 and 30 struggle during the application of digital teaching and consider themselves to have poor abilities and skills when using technology (Gudmundsdottir & Hatlevik, 2018). Thus, even the current generation is struggling and facing challenges to convert their skills, thoughts, and ideas into tangible knowledge and utilize it to deliver valuable digital education, thereby indicating the need to study and investigate the challenges faced by lecturers when using digital teaching methods.

During the pandemic, nations around the world sought to keep students and lecturers safe by adapting digital teaching and online virtual educational methods, which created a paradigm shift in the educational process by implementing distance/online learning strategies. To ensure the successful implementation of this new technology-based strategy, many practices had to be adapted and prioritized. Lecturers play a major role in improving the quality of education and, thus, the success of the service provider, which means that they must put extra efforts and work into improving

and developing new skills and a new level of understanding of the whole situation. These skills are mainly related to communication and technology-using abilities, followed by raising the level of understanding to build strong virtual relationships with their students and provide them with the needed support (König et al., 2020). The impact of digital teaching as an independent variable and its attributes on students' satisfaction level will be further examined and discussed in this research through the following hypothesis:

H1. Digital teaching has a significant positive impact on students' satisfaction levels.

3.2.1. Lecturers' Creativity and Innovativeness

Both innovativeness and creativity have a strong influence on students' performance and satisfaction levels. Based on the presented definitions of innovativeness, it might be applicable that the successful usage of technology during challengeable times might be considered creative and innovative practice. One key to assessing the level of technological innovativeness is measuring the extent to which students are motivated to learn (Thakur et al., 2016) during the implementation of distance learning using a digital teaching strategy.

Scholars have recently pointed to the main activities that reflect innovativeness and creativity in teaching, such as engaging students in teamwork activities, projects and work-based learning, simulations and learning games, and distance learning, which are all indications of innovativeness in teaching that leads to high levels of students' satisfaction (Baroncelli et al., 2014). Coming up with new effective ideas and implementing them efficiently to maintain the high quality of delivering the same teaching methods used in traditional teaching using technology is one of the main challenges of modern education, and it is more challenging during global pandemics

like COVID-19.

In light of the discussion thus far, the implementation of creativity and innovativeness together is essential when using technology in teaching because it will impact students' motivation and performance. These factors will also affect students' satisfaction during digital learning. Therefore, this paper suggests that improving the creativity and innovativeness of lecturers and the way they deliver the information using digital tools will, directly and indirectly, impact the level of students' satisfaction. This research theorizes the following hypothesis:

H1.1 Lecturers' creativity and innovativeness have a significant positive impact on students' satisfaction level.

3.2.2. Lecturers' Attitude Towards Technology Use

Analysing the lecturers' emotions during the COVID-19 pandemic will help understand the direction of their attitude towards digital teaching experience. The ability to reduce the impact of external challenges such as the COVID-19 pandemic will similarly increase their creativity and innovativeness, thereby leading to an increase in students' satisfaction level. Thus, this study proposes the following hypothesis:

H1.2 Lecturers' attitude towards using technology has a significant impact on students' satisfaction levels.

3.2.3. Lecturers' Skills

Choosing lecturers' skills as one of the attributes of digital teaching is proposed to provide lecturers with a better understanding of their surrounding environment and their students' fears and challenges, which will reduce the stress they both face because

of the COVID-19 pandemic. This research proposes that combining innovativeness and creativity when delivering information, creating a healthy virtual educational environment, and focusing on enhancing previous teaching skills with the ability to use technological tools efficiently will lead to improved engagement among students, enhance their performance, and increase their level of satisfaction. This proposal leads to the following hypothesis:

H1.3 Teaching skills have a significant positive impact on students' satisfaction levels.

3.2.4. Digital Learning

Learning is an accumulative process, and qualitative learning relies on many important attributes that must be considered during the teaching and learning process. Students' satisfaction through digital learning is affected by students' engagement and the support they receive from their lecturers (Chitkushev et al., 2014). Furthermore, students' ability to use digital tools has a positive significant relationship with students' learning motivation and satisfaction level (Noroozi & Mulder, 2016). Another important aspect shown to influence students' satisfaction is the emotional and educational support lecturers provide to their students during digital learning (Davidovitch & Belichenko, 2018), which also affects students' ability to adapt to changes (Nortvig et al., 2018). To better understand the challenges and elements of digital learning that affect students' satisfaction during the COVID-19 pandemic, it is important to study each element separately.

The digital learning variable consists of different attributes that have a significant impact on students' satisfaction, such as students' engagement, students' ability to adapt to changes, students' motivation to learn, and lecturers' support. As digitalization has affected and changed the strategies of teaching, it also has changed

and transformed the learning process. In this research, all previous attributes have been chosen as independent variables to define the digital learning variable. It is also believed that digital learning has an impact on the level of students' satisfaction level, which will be analysed through the following hypothesis:

H2. Digital learning has a significant positive impact on students' satisfaction levels.

3.2.5. Students' Engagement

The latest studies have presented that students' level of satisfaction from digital learning is strongly connected to their level of engagement and contribution between the student and their surroundings. Students' engagement during digital learning is affected by different digital tools and resources. For example, studies have shown that lecturers' attitudes and behaviors are the engines of students' engagement (Zepke & Leach, 2010). In addition, using a smart whiteboard or online whiteboard increases students' performance and satisfaction (López, 2010). Such types of interaction during digital learning should also be supported by other elements, such as the students' ability to learn, adapt, and accept changes and the influence and support provided by the lecturer during their virtual classrooms (Nortvig et al., 2018). This research examines the impact of students' engagement in VCR during the COVID-19 pandemic using the following hypothesis:

H2.1 Students' engagement level has a significant positive impact on students' satisfaction level.

3.2.6. Students' Readiness to Adapt to Changes

Due to the importance of the emotional element and its impact on students' performance and satisfaction, students' ability to adapt to changes in general and specifically emotional changes will be one of the attributes of the digital learning variable. The current research will study the extent to which university students in Qatar were ready to adapt to the changes during the pandemic and the extent to which this ability influenced their satisfaction level by studying the following hypothesis:

H2.2 Students' readiness of adapting to change has a significant positive impact on students' satisfaction levels.

3.2.7. Students' Motivation

Psychologically, another factor influencing students' motivation to learn and adapt changes is having a strong belief in their goals, which means linking the purpose of learning and attaching it to students' goals and dreams (Irie, 2003; Koludrović & Ercegovac, 2014), which is also linked to students' self-esteem. This factor is influenced by many different elements, such as gender, academic performance, language, age, and confidence (Liu, 2010), which must be considered during classes and interaction. Examining the motivation level of university students during digital learning in the pandemic is essential for understanding the factors that directly influence students' satisfaction levels to improve them. As a result, the current research studies the impact of students' motivation as one of the attributes of digital learning:

H2.3 Students' learning motivation has a significant positive impact on students' satisfaction level.

3.2.8. Lecturers' Support

The support provided by lecturers can be presented in many ways. However, during the implementation of digital learning, a few elements are more significant, such as the ability of the lecturer to create a social presence within the digital learning environment (Weidlich & Bastiaens, 2017). For example, the time between the students' questions and the lecturers' responses has a direct impact on students' feelings and motivation as they might feel disconnected, ignored, or isolated. Lecturers are also expected to provide students with the needed technical support and encourage them to participate with their colleagues in group discussions to feel more connected and keep them motivated (Ronald & Sims, 1995; Wheeler, 2005; Zhai et al., 2017). This attribute is believed to strongly affect the digital learning variable and the entire educational process as a result. Moreover, studying this attribute will indicate the actual support that pedagogies need when experiencing a complete digital learning method. Therefore, the following hypothesis will be investigated:

H2.4 Learning support from lecturers has a significant positive impact on students' satisfaction levels.

3.2.9. Emotional Intelligence

Understanding the main attributes related to digital teaching and learning is important to improve the educational process and provide practical solutions to reach a high level of satisfaction among students. However, many factors mediate this relationship and affect the effectiveness of teaching, such as emotional intelligence (Hassan et al., 2015; Kassim et al., 2016; Shahid et al., 2015). Numerous studies have proposed that emotional intelligence is one of the major elements for lecturers' success, especially during the digital teaching process, as it leads to effective interactions,

increased ability of lecturers to develop their teaching skills, and consequently, students' enhanced performance (Akhmetova et al., 2014; Omid et al., 2016). Moreover, emotional intelligence affects lecturers' ability to control their emotions and maintain a productive and effective classroom (Dewaele et al., 2018; Giti & Alireza, 2015). Furthermore, researchers have found that managing lecturers' emotions has a very strong influence on their ability to adopt technology, provide the needed support for students, develop their innovativeness and creativity when delivering education, and enhance their teaching style (Arsenijević et al., 2012; Dolev & Leshem, 2016; Miyagamwala, 2015).

Although studies have shown a relationship between emotional intelligence and students' satisfaction, recent studies still have not completely revealed the actual attributes of digital teaching that are strongly influenced by emotional intelligence and directly affect students' satisfaction. This research focuses on studying lecturers' ability to combine and utilize their mental skills and coordinate their emotions to design and build a healthy digital educational environment and reach a certain level of students' satisfaction during challenging times. Thus, the hypothesis for this dimension is:

H3. Emotional intelligence mediates the relationship between digital teaching and students' satisfaction level.

As emotional intelligence affects the digital teaching process, there is no doubt that this factor also influences the digital learning process. Studies have revealed a strong relationship between emotional intelligence and students' motivation and readiness for learning, which is also related to students' performance and achievements (Fida et al., 2018; Kolachina, 2014; Ranasinghe et al., 2017). In addition, a strong positive relationship exists between students' emotional intelligence and their motivation to learn and communicate digitally (Buzdar et al., 2016; Malinauskas et al.,

2018). Students' ability to communicate with their lecturers and colleagues is strongly influenced by emotional intelligence, and it directly affects persistence and learning satisfaction (Kong et al., 2012; Song, 2020). Moreover, emotional intelligence is linked to many different elements, like the ability to regulate and use emotions, the appraisal of others' emotions, and the appraisal of self-emotions (Arguel et al., 2017; Buzdar et al., 2016; Picard, 2002). The more students can control their emotions, the more they can concentrate and the less stress and anxiety they experience (Butt, 2014; Cazan & Năstasă, 2015), which leads to a higher engagement level, higher academic performance, and achievements, and higher satisfaction (Nasir & Masrur, 2010; Sanchez-Ruiz et al., 2013; Walsh et al., 2014).

It is essential to study the impact of this element on both digital teaching and digital learning as well as its impact on students' satisfaction. The research also focuses on studying students' ability to control their emotions and improve their ability and learning skills by experiencing digital learning. It also examines the extent to which it influences their performance and satisfaction. Thus, the following hypothesis is studied: **H4.** Emotional intelligence mediates the relationship between digital learning and students' satisfaction level.

3.3.Conceptual Model

Several researchers have investigated the relationship between provided education services and students' satisfaction, focusing on quality, student–lecturer interaction, motivation, and other factors. However, to date, the studies have not covered all the factors affecting the mentioned relationship. Moreover, no study has been conducted on the higher education sector in Qatar. Therefore, the current research explores the impact of the suggested factors on students' satisfaction. In addition, other factors are

examined to reveal if they influence students' satisfaction to support the education sector and the future of the digital generation.

The underlying conceptual model includes the dependent variables (i.e., digital teaching and digital learning) and their sub-variables that might directly or indirectly affect the independent variable (i.e., students' satisfaction). It also shows the mediating variable (i.e., emotional intelligence) and its possible contribution in influencing the relationships between the presented variables and students' satisfaction.

Conceptual Model

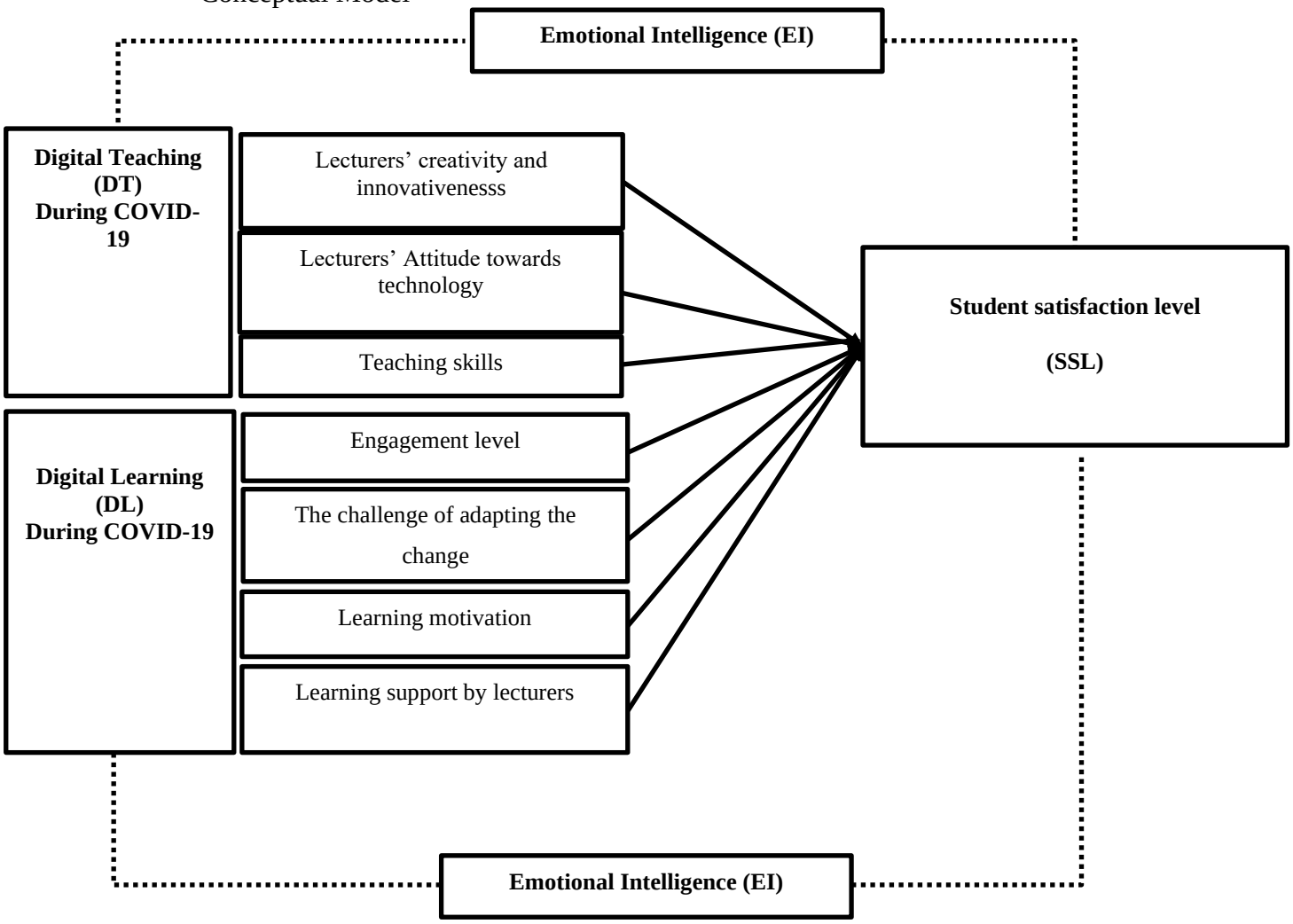

Figure 1. Conceptual Model

CHAPTER 4: METHODOLOGY

4.1. Introduction

The study is conducted in Qatar and it is targeting higher education institutions located in the country. Therefore, it is essential to introduce the general educational cultural of the country. Qatar has a diverse educational cultural environment, where higher education opportunities are open for both local and international students. Although the mother language is Arabic, most of higher education institutions are delivering education in English language, and following the British or American curriculum.

Around 34 higher education institutions are providing higher education and focusing on a diversified 366 majors and programmes offered for both genders (Ministry of Education and Higher Education in Qatar, 2021). The institutions are listed under for categories are following:

1. Public higher education institutions
2. Military higher education institutions
3. Qatar foundation universities
4. Private higher education institutions

Thus, higher education in Qatar is a rich environment for academic researchers to explore and provide academic solutions for higher education institutions. Therefore, the presented research is focusing and targeting these institutions.

The literature review chapter discussed the theoretical background of the related constructs that serve as the foundation for developing the research hypotheses. The current chapter presents the type of research and the information related to the research methodology. It also explains the methods used to explore the hypothesized relationships. The section starts by discussing the research type, followed by

measurements and the questionnaire design. The research context and geographic setting will be discussed as well, followed by the sampling and data analysis methods.

4.2. Research Type

The current thesis examines the relationship among (1) lecturers' creativity and innovativeness, (2) lecturers' attitude towards technology, (3) lecturers' skills, (4) students' engagement level, (5) the challenge of adapting changes, (6) learning motivation, and (7) learning support from lecturers, as well as the influence of these variables on students' satisfaction. Furthermore, it examines the mediation effect of emotional intelligence on each of these relationships. Therefore, the research approach is a positivist approach that is mainly quantitative (Gable, 1994).

As the study is guided by a theoretical and conceptual framework that explores the relationships between the independent variable and each dependent variable, the implemented research is a quantitative research design based on quantitative data. Quantitative research investigates the relationship between variables by testing the impact produced from one variable on the other through statistical results and conclusion (Allatafa, 2021). Quantitative and survey-based research is characterised as a systematic investigation by gathering quantifiable data and statistically analysing these gathered data using sampling methods that aim to provide an accurate measurement (QuestoinPro, 2021). This study adopted a survey design built on a theoretical background, as presented in the previous chapter. This approach relies on collecting data from large samples, which emphasises the quantitative analysis collected through different methods, such as interviews, published statistics, and questionnaires (Gable, 1994; Owens, 2002).

4.2.1. Measurements and Questionnaire Design

Two questionnaires were developed and deployed based on the literature reviewed within this research. The foundation of both surveys was derived from pre-existing scales and previously conducted studies. Surveys were reviewed by the researcher and approved by the supervisor of the research, subject to minor changes and modifications that serve the purpose of the research. The final edition of the surveys was created using the SurveyMonkey survey tool. Surveys were distributed online by sharing the survey link through social media platforms and sharing the QR code to the survey link.

Two targeted segments received the survey: lecturers and students. The lecturers' survey consisted of five sections. The first section looked at lecturers' creativity and innovativeness by examining six items to explore the extent to which lecturers are mindful and if it affects the independent variable or not. The second section explored their attitude towards technology and the extent to which they engage with digital tools in teaching. This section contained seven items. The third section investigated their teaching skills based on six items. The fourth section explored lecturers' emotional intelligence during classes, in general, using seven items. The last section gathered demographic and general information (e.g., age, recruiting status, gender, major, mode of delivery, country of origin). The survey included 36 items in total, requiring an estimated 15–20 minutes to complete.

The student survey consisted of 49 items in seven sections that required 15–20 minutes to complete. The first section (six items) explored students' engagement during online classes and their interaction with their lecturers and colleagues. The second

section (five items) investigated the psychological challenges that students face when adapting to changes. The third section (six items) focused on students' motivation during digital learning experiences. The fourth section (six items) highlighted the impact of lecturers' support provided during digital learning experiences. The fifth section (10 items) studied students' satisfaction after being exposed to digital learning experiences. Section six (six items) explored students' emotional intelligence levels in general. Finally, section seven (10 items) collected participants' demographic and background information (e.g., age, studying status, gender, major, mode of delivery, country of origin).

Based on the study variables and the proposed hypotheses, Table 1 summarises the variables, variable items, and sources.

Table 1. Measurements and Sources

No.	Hypothesis	Variable	Items	Source
1	Lecturers' creativity and innovativeness has a significant positive impact on students' satisfaction level.	Lecturers' creativity and innovativeness (Independent variable)	○ I am engaged in creative type work on a regular daily basis ○ Creative ideas pop in my head without even thinking about them ○ I always wait for a flash of inspiration before I start working ○ I believe that unconscious processes facilitate creative work ○ I am able to use many ideas that usually occur in my dreams and apply them in teaching ○ I am always thinking about how to do everyday things differently	(Kumar & Holman, 1997) & (Dalya, Frenso, & Rehm, 2021)
2	Lecturers' attitude towards using technology has a significant impact on students' satisfaction level.	Lecturers attitude towards technology (Independent variable)	○ I use websites to supplement my teaching ○ I enjoy using digital tools for teaching ○ I feel comfortable using digital tools for teaching ○ I think computers are difficult to use ○ I believe that it is important for me to learn how to use digital tools ○ I believe that using digital tools can make learning more interesting ○ A digital-based teaching material is a valuable tool for lecturers	(Sari, Suryani, Rochsantiningsih, & Suharno, 2017)

Table 1. Measurements and Sources

3	Teaching skills has a significant positive impact on students' satisfaction level.	Lecturers' teaching skills (Independent variable)	○ In my class, students have opportunities to judge for themselves whether they are right or wrong ○ My students are encouraged to do different things with that they have learned in class ○ I encourage students who have frustration to take it as part of the learning process ○ I help my students to draw lessons from their own failure ○ I take in consideration the external environment my students are surrounded by ○ I provide opportunities for collaboration and team work at least several times per month	(Junus, Santoso, Putra, Gandhi, & Siswantining, 2021) & (IEA, 2013)
4	Emotional intelligence is mediating the relationship between digital teaching and students' satisfaction level.	Lecturers' emotional intelligence (Mediator)	○ I am always able to see things from the other person's viewpoint ○ I like to listen to people carefully ○ I am generally able to prioritise important activities at work and get on with them ○ When I am being 'emotional' I am aware of this ○ I usually recognise when I am stressed ○ I am good at adapting and mixing with a variety of people ○ I can sometimes see things from others' point of view	(Ngah, Jusoff, & Rahman, 2009), (Elias & Tobias, 2018), (Sterrett, 2000), (Emotional Intelligence Questionnaire), (NHS)

Table 1. Measurements and Sources

5	Student's engagement level has a significant positive impact on students' satisfaction level	Students' engagement (Independent variable)	○ By using digital tools for learning, the opportunity of interaction with my lecturers was enhanced ○ By using digital tools for learning, the opportunity of interaction with my colleagues was enhanced ○ I only study seriously what's taken in class or in the course outlines ○ I generally restrict my study to what is required from me as I think it is unnecessary to do anything extra ○ I come to most classes with questions in mind that I want answering ○ Explaining the material to my group improved my understanding of it	(Buelow, Barry, & Rich, 2018) & (Nocua, et al., 2021)
6	Students' readiness of adapting change has a significant positive impact on students' satisfaction level.	Students' readiness to adapt changes (Independent variable)	○ I find it easy to break my habits and adapt a new one ○ Switching from studying in the classroom to study from a digital screen did not impact the way I feel towards learning ○ I do not prefer to change the channel I use to communicate with my friends ○ I do not prefer to change the channel I use to communicate with my lecturers ○ I need a long time to accept the change happens in my life	(Kamaruzaman, Sulaiman, & Shaid, 2021)

Table 1. Measurements and Sources

7	students' learning motivation has a significant positive impact on students' satisfaction level.	Students' learning motivation (Independent variable)	○ Using digital tools for learning encourages me to continue learning by myself ○ Using digital tools for learning encourages me to learn more and spend more time studying ○ I often choose topics I will learn something from, even if they require more work ○ Even when I do poorly during an assessment, I try to learn from my mistakes ○ When I prepare an assignment, I try to put other information from projects and other resources ○ I always try to understand what others are saying even if it does not make any sense	(Lee, Song, & Hong, 2019)
8	learning support by lecturers has a significant positive impact on students' satisfaction level	Learning support by lecturers (Independent variable)	○ Lecturers encourage us to think in different directions even if some of the ideas may not work ○ Our lecturers give us time to explore thinking in different ways ○ When we have questions to ask, lecturers listen to them carefully ○ Our lecturers do not mind us trying out our own ideas and deviating from what they have shown us ○ Our lecturers take in consideration the external environment that we are surrounded by us as students ○ I get encouragement from lecturers when I experience failure to find other possible solutions	(QuestionPro, 2021)

Table 1. Measurements and Sources

9	Emotional intelligence is mediating the relationship between digital learning and students' satisfaction level	Students' emotional intelligence (Mediator)	○ I would like to have a better relationship with my lecturer ○ Expressing my emotions with words is not a problem for me ○ I often find it difficult to see things from another person's viewpoint ○ I often find it difficult to stand up for my rights ○ I am usually able to influence the way other people feel ○ I am usually able to find ways to control my emotions when I want to	(Elias & Tobias, 2018), (Sterrett, 2000), (Emotional Intelligence Questionnaire), (NHS)
10		Students' satisfaction (Dependent variable)	○ My university/college supports me through the way it implements digital learning ○ I am satisfied with digital learning ○ Digital learning enables learners to be exposed to different learning style ○ I think lecturers' application of digital learning helps me improve my learning skills ○ I hope lecturers of my modules continue to use digital tools in teaching ○ Our lecturers' Encourage us to Participate in class discussions ○ I am satisfied with the adequate access to the lecturers' online counselling ○ I am satisfied with the easy access to students' digital tools	(Claremore, 2013), (Douglas, Douglas, & Barnes, 2006)

			○ I am satisfied with the e-library materials provided by my university/college (e.g. books, journals, etc.) ○ I am satisfied with the length of time given to complete my assignments
11	Digital teaching has a significant positive impact on students' satisfaction level	Digital teaching (Independent variable)	
12	Digital learning has a significant positive impact on students' satisfaction level	Digital learning (Independent variable)	

4.3. Research Context and Geographic Setting

The research units are lecturers and students from higher education institutions and those exposed to digital teaching and learning in Qatar. According to the Planning and Statistics Authority of Qatar (2019), the total number of universities and colleges grew by 3% in the 2017-2018 academic year. The total number of enrolments for face-to-face higher education reached 34,000 students from both genders in the same academic year (Planning and Statistics Authority, 2019). However, in the 2019–2020 academic year, due to the pandemic, Qatar switched to digital learning (Bensaid, 2020).

The online self-administered surveys were developed and distributed among participants. Data were collected in the absence of the researcher, which is efficient for deep topics and new sensitive variables (Nanes & Haim, 2021). An electronic version of the surveys was created using the SurveyMonkey platform, which is one of the global leaders in the survey industry that focuses on market research and customer experience (SurveyMonkey, 2021). Surveys links were distributed through popular social media platforms in Qatar, such as Instagram, WhatsApp, LinkedIn, and Twitter. In addition, links were sent via email, and QR codes were printed and distributed among higher education institutions in Qatar.

4.4. Sampling

This study targeted two samples: (1) male and female lecturers exposed to digital teaching during the COVID-19 pandemic in Qatar and (2) male and female undergraduate students exposed to digital learning during the COVID-19 pandemic in Qatar. Data were collected using random sampling techniques during online links distribution. This method was chosen to give an equal opportunity to everyone in the population to participate without being biased (Hayes, 2021). Participation consent was

acquired before starting participation. All respondents agreed that their participation was voluntary and that they reserved the right to withdraw at any time without consequences. Furthermore, the researcher's contact details were provided to all participants in case any support or further details and information were required.

Ultimately, 530 responses were gathered from both students and lecturers. However, 213 responses were excluded due to incomplete responses or because respondents continued with face-to-face learning rather than digital/online learning. The remaining valid sample size was 204 for students and 107 for lecturers. According to previous studies, this number of responses is satisfactory (Bullen, 2021), as it falls between the minimum and the maximum number of adequate sample sizes (Bullen, 2021).

4.5. Data Analysis Methods

All data were exported to the Statistical Package for Social Science (SPSS) from the SurveyMonkey database. The data were coded and subsequently revised before conducting the statistical analysis. The procedures consisted of three main data analyses: reliability analysis, descriptive data analysis, and regression analysis. To analyse the respondents' profiles, demographic variables were converted into frequencies and calculated accordingly. Likewise, to calculate the reliability of explored variables, the coefficient/Cronbach's α test was implemented. Furthermore, a linear regression analysis was used to analyse the predicted value of each dependent variable on students' satisfaction. A multiple regression analysis was used to analyse the predicted value of more than two dependent variables on students' satisfaction. The mediating effect of emotional intelligence was calculated using hierarchical multiple regression.

Baron and Kenny's (1986) recommendations that were developed and used from that tine to the present, were considered when calculating the mediating effect. According to these researchers, the mediator has an impact on the independent variable if the relationship between the dependent variable and the mediator is significant, there is a significant relationship between the dependent and the independent variable, both relationships are controlled, and the significant relationship between the dependent and independent variables no longer exists (Kim, 2016). The following chapter provides more detailed descriptions of the implemented data analysis.

CHAPTER 5: DATA ANALYSIS AND FINDINGS

5.1. Introduction

The current chapter presents a detailed statistical analysis and introduces the study findings. The chapter is divided into four sections, where the first section presents the descriptive analysis that includes frequencies of sample demographic variables and characteristics. The second section presents the reliability analysis, which is essential for testing the validity of the items and declining which is the most relevant or parsimonious item to consider. This section relies on using the Cronbach's Alpha reliability test and item-to-total correlation. The third section introduces the regression analysis to test the hypotheses effects as well as the mediation effect. Each of these sections will be divided into two sub-sections: lecturers data analysis and students' data analysis. Finally, summary of all the statistics is concluded in section four.

5.2. Descriptive Statistics

This section analyses the demographic data for both lecturers' and students' samples. This analysis includes analysing the frequencies of students' sample for their gender, age, educational degree, and registration status whereas the demographic and sample characteristics for lecturers' sample will be based on gender, age, and educational degree. Although the total number of respondents for both samples was 530, 153 responses will be excluded from the analysis for the following reasons:

1. Some student participants were not exposed to digital learning during the COVID pandemic
2. Other students were not based in Qatar, and they were not enrolled in universities under the Ministry of Education and Higher Education of the state of Qatar;

3. Some lecturers participated in the survey, but they answered (no) to the question "Are you a lecturer?"; they also did not provide contact details to check if they answered no by mistake; and
4. Other lecturers who participated in the study were not exposed to digital teaching during COVID.

All these groups were excluded, and responses were carefully filtered before being considered for data analysis. The obtained sample size for students is 274, and lecturers' sample size was 106 respondents.

5.2.1. Respondents' Characteristics

In the current study, three items under the demographic sections were considered from the lecturers' sample: gender, age, and educational degree. The study focuses on studying the behaviour and attitude of lecturers through their teaching experience during the pandemic. Both male and female genders were included in the study. The considered lecturers' age was 25 and above, and they had to have a bachelor's degree or higher.

5.2.1.1. Lecturers' Characteristics

a. Lecturers Gender Distribution

The gender distribution graph shows that the lecturers' sample comprises 58.88% male and 41.12% female (see Figure 2. Lecturer Gender Distribution).

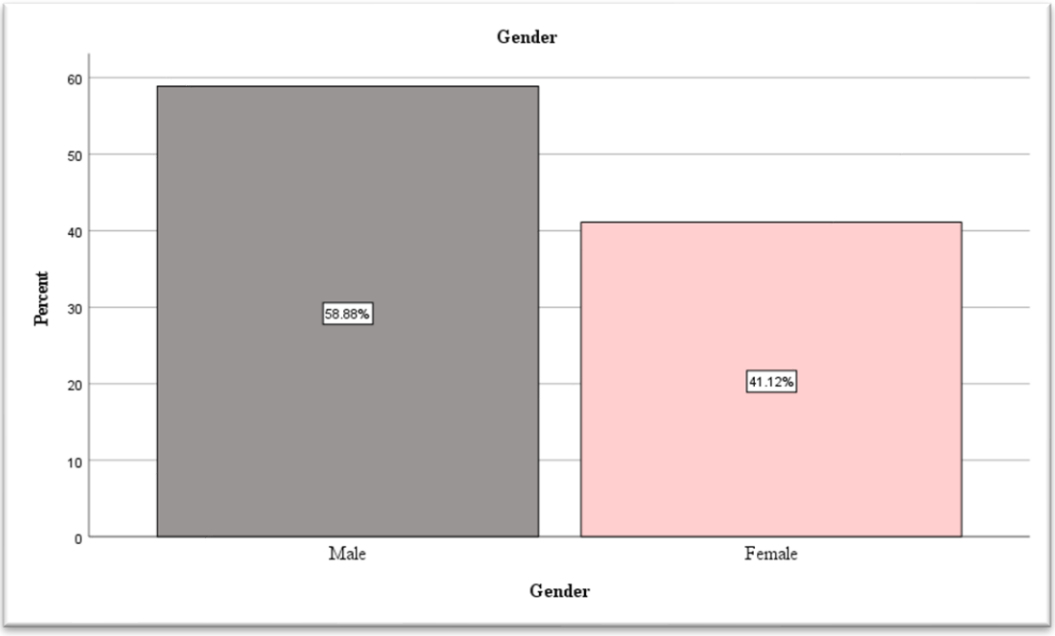

Figure 2. Lecturer Gender Distribution

b. Lecturers Education Distribution

In this study, four education categories of lecturing were considered: bachelor, master, doctorate, and professor degree. Among these participants, 41.1% were masters'

degrees holders, 29.9% bachelors' holders, 20.6% doctorial (Ph.D.) holders, and 8.4% were professors (see Figure 3. Lecturer Education Distribution)

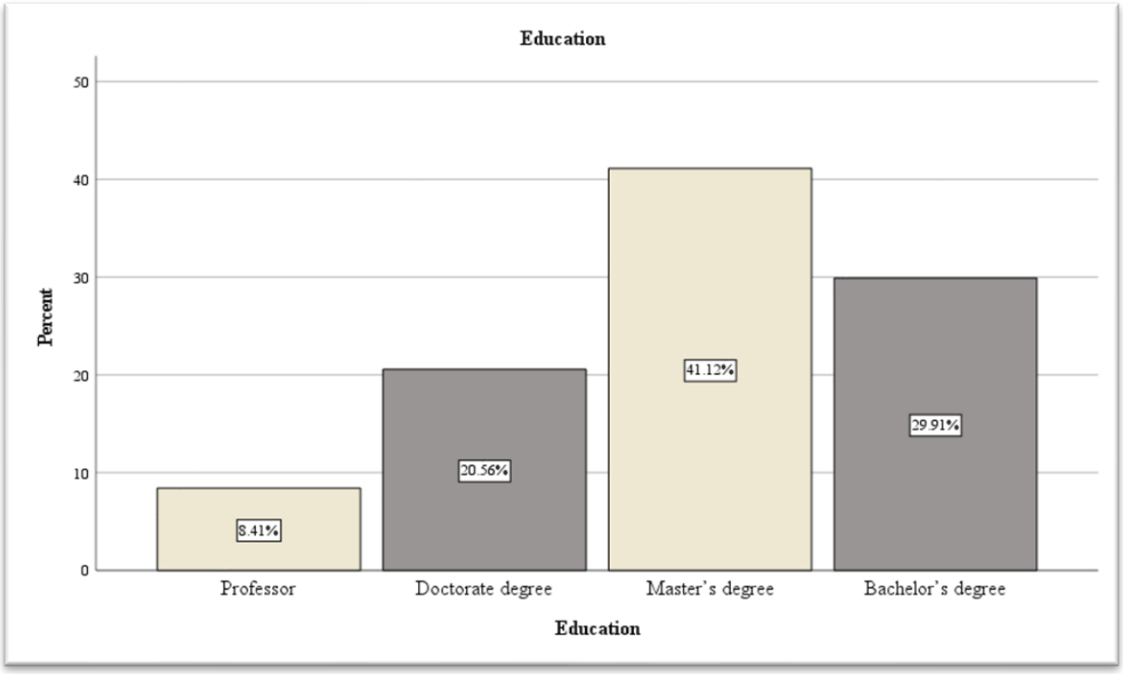

Figure 3. Lecturer Education Distribution

c. Lecturers Age Distribution

According to the age distribution graph (see Figure 4. Lecturer Age Disribution) 37.4% of participants were falling between age category (35-39) years, 31.8% were between 30 and 34, lecturers who were falling in age category (40-44) years were presenting

21.5% of the participants, 3.7% were above 50 years, and 2.8% were between (25-29) years and (45-50) years.

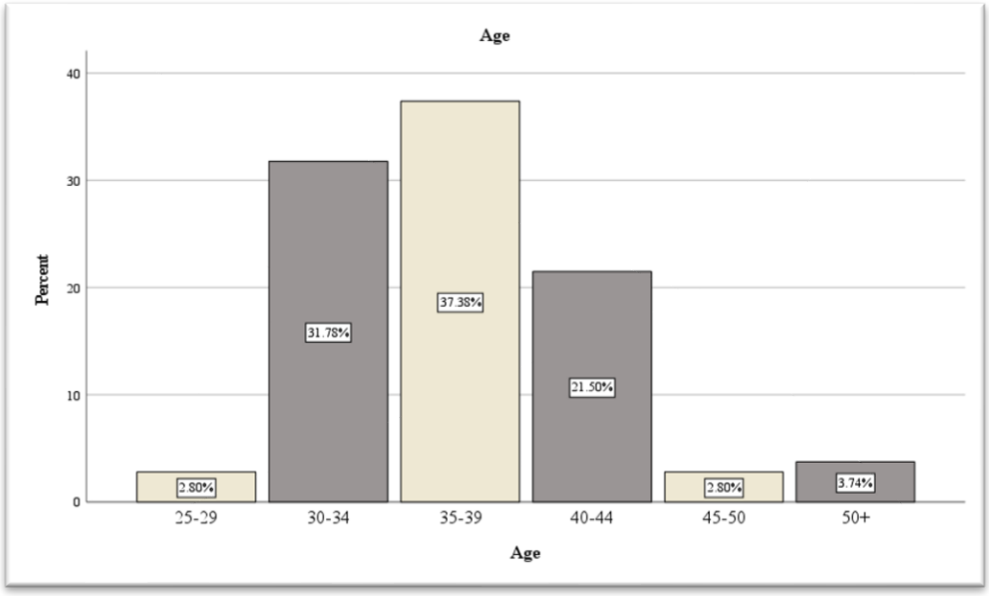

Figure 4. Lecturer Age Disribution

d. Lecturers Gender-Age & Education Distribution

As per the results of gender – (age & education) distribution graphs, most lecturer participants were male who are falling in the age range (35-29) years old. Followed by a female between (30-34) years old, and a male between (40-44) years. Most of the respondents were master's degree holders, and the least category was formed by professors. However, doctorate holders from males were much higher than female participants who are holding the same degree (see Figure 5. Lecturer Gender-Age Distribution & Figure 6. Lecturer Gender-Education Distribution).

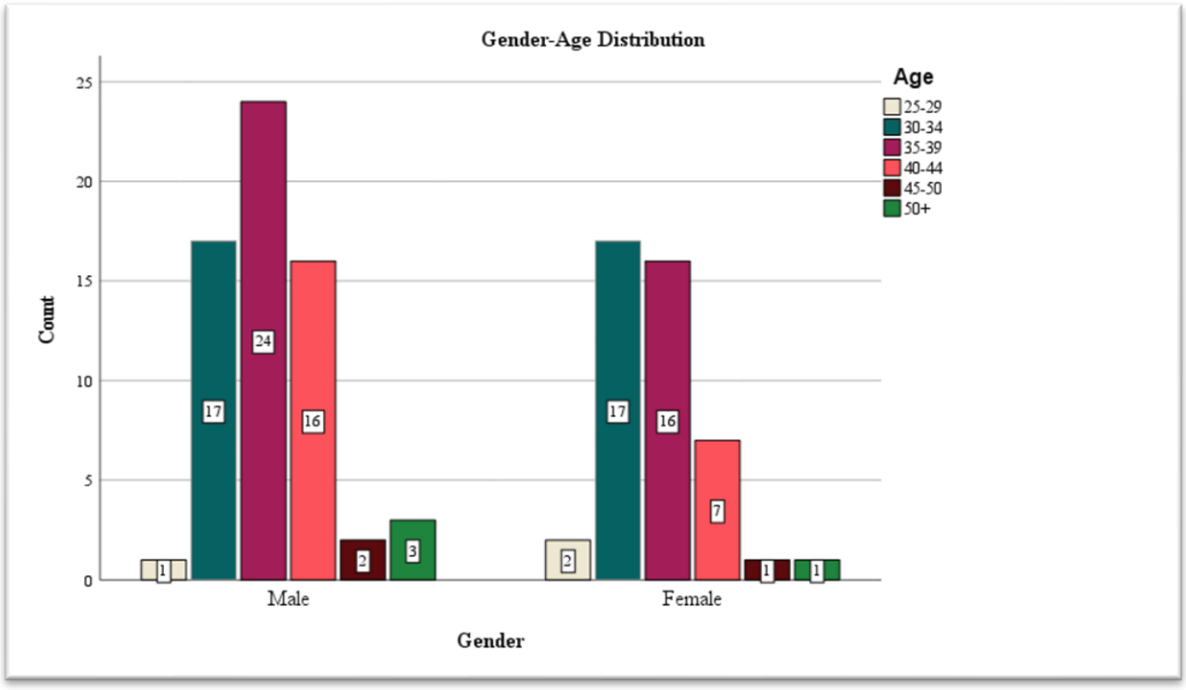

Figure 5. Lecturer Gender-Age Distribution

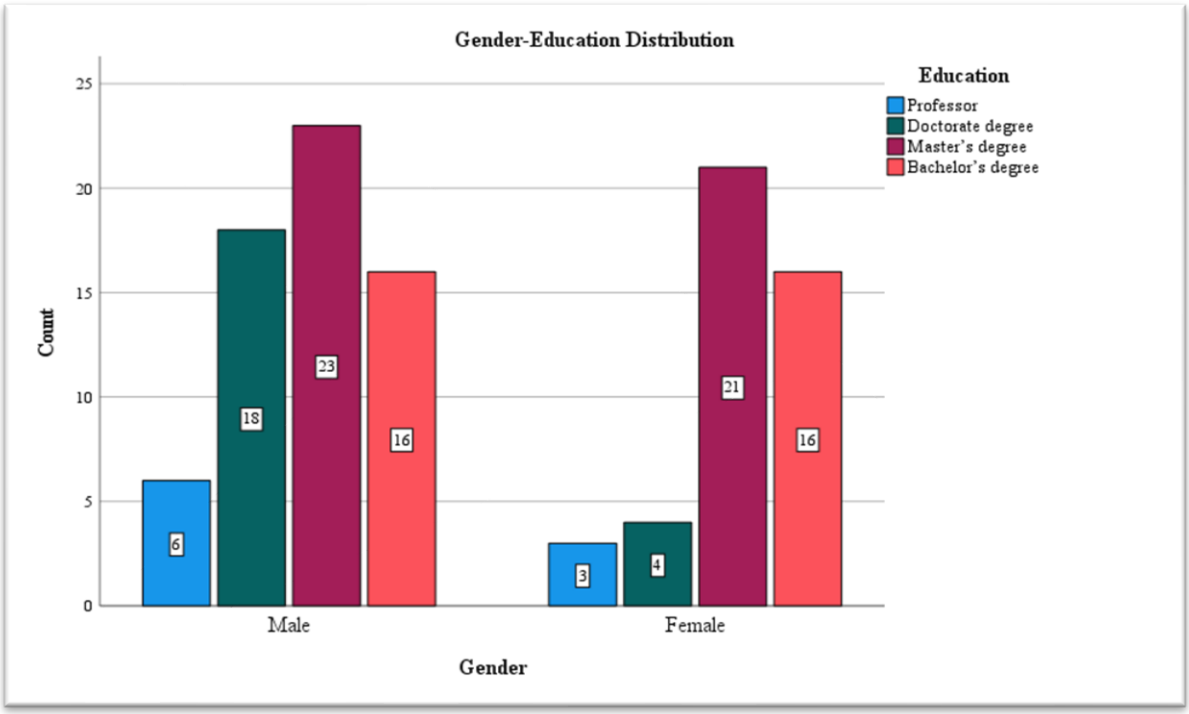

Figure 6. Lecturer Gender-Education Distribution

5.2.1.2.Students' Characteristics

a. Students Gender Distribution

The gender distribution graph of students shows that 64.7% of the sample are female students, and 35.3% are male students' participants (see Figure 7. Student Gender Distribution).

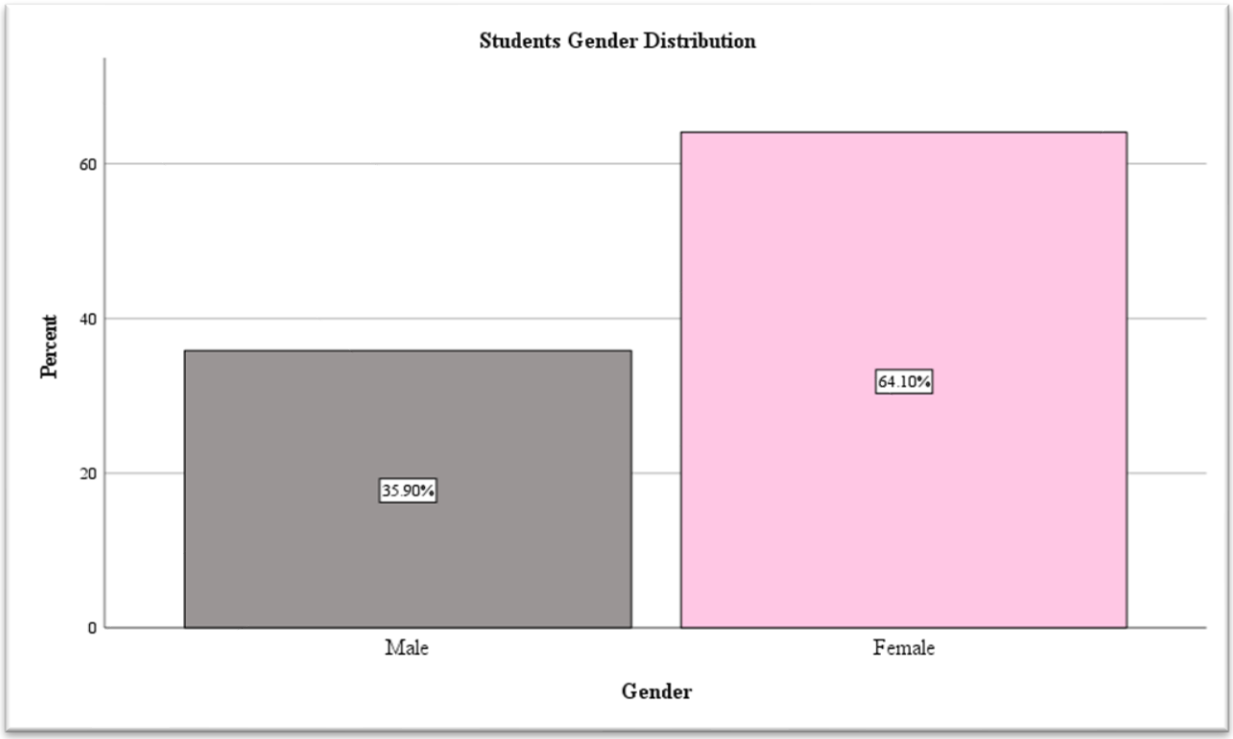

Figure 7. Student Gender Distribution

b. Students Education Distribution

The following figure presents that majority of participants were currently studying for their bachelor's degree, which is forming 71.6% of the sample. Students who were bachelor's holders are forming 15.7% of the sample, where this category refers to students who graduated and got their bachelor's during COVID pandemic. On

the other hand, 9.8% of participants were masters' students, and 2.9% were doctorate students (see Figure 8. Student Education Distribution).

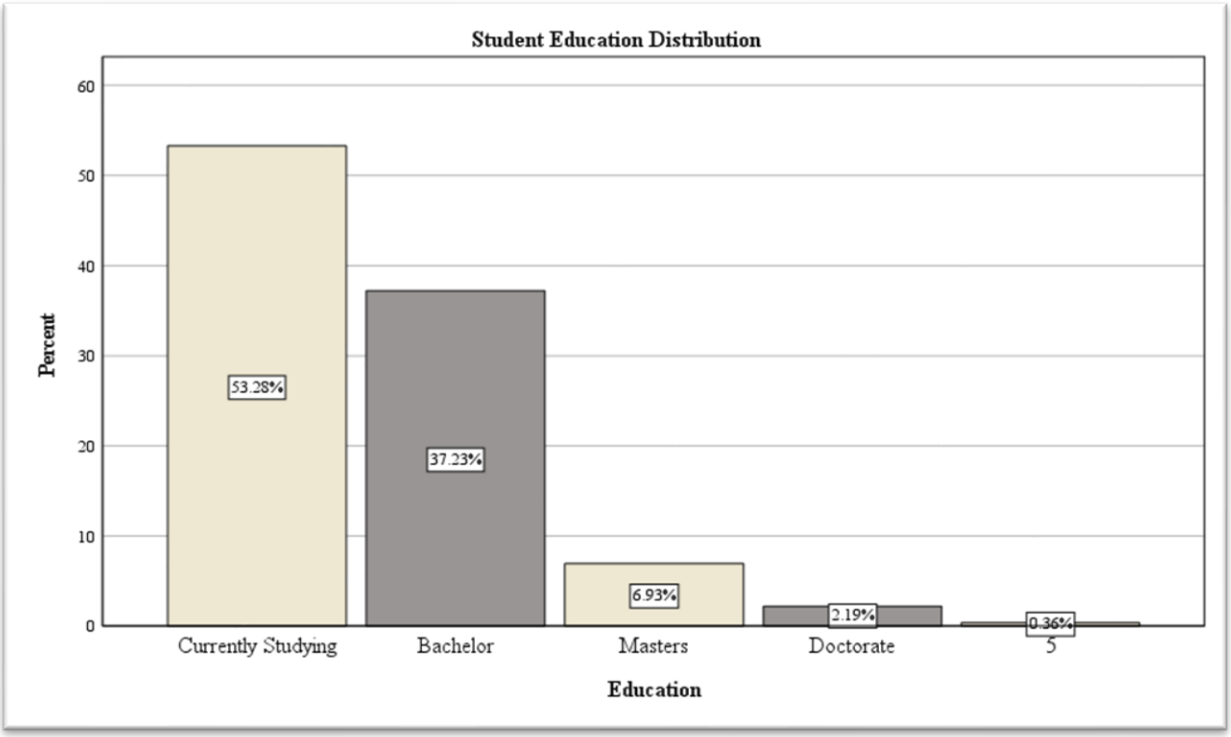

Figure 8. Student Education Distribution

c. Student Age Distribution

The students' age distribution shows that 62.3% are students who are falling in the range of (18-22) years old, and 26.5% are students who are falling within the range of (23-29) years old. Students who are above 30 years old were forming 11.3% of the age distribution of students (see Figure 9. Student Age Distribution).

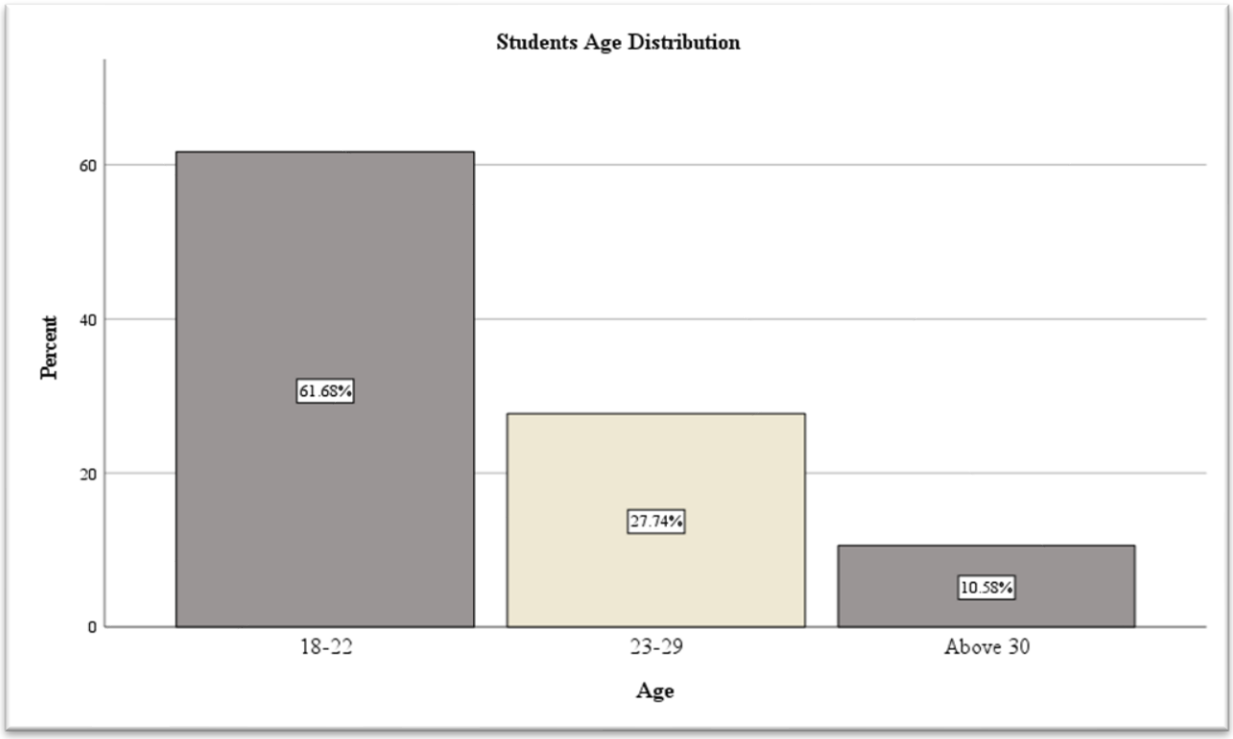

Figure 9. Student Age Distribution

d. Students Gender- (Age & Education) Distribution

As presented below in students distribution figures, the majority of the students' sample was female who is between the age range (18-22) years old, and currently studying for their bachelor's degree. However, male students who were holding master's degrees and falling in the age between (23-29) years old were higher than female students who were holding the same degree. Additionally, there is a shortage of doctorate holders' students who participated in the study from both genders, where the total participants were 6 students above 30 years old (see Figure 10. Student Gender-Age Distribution & Figure 11. Student Gender-Education Distribution).

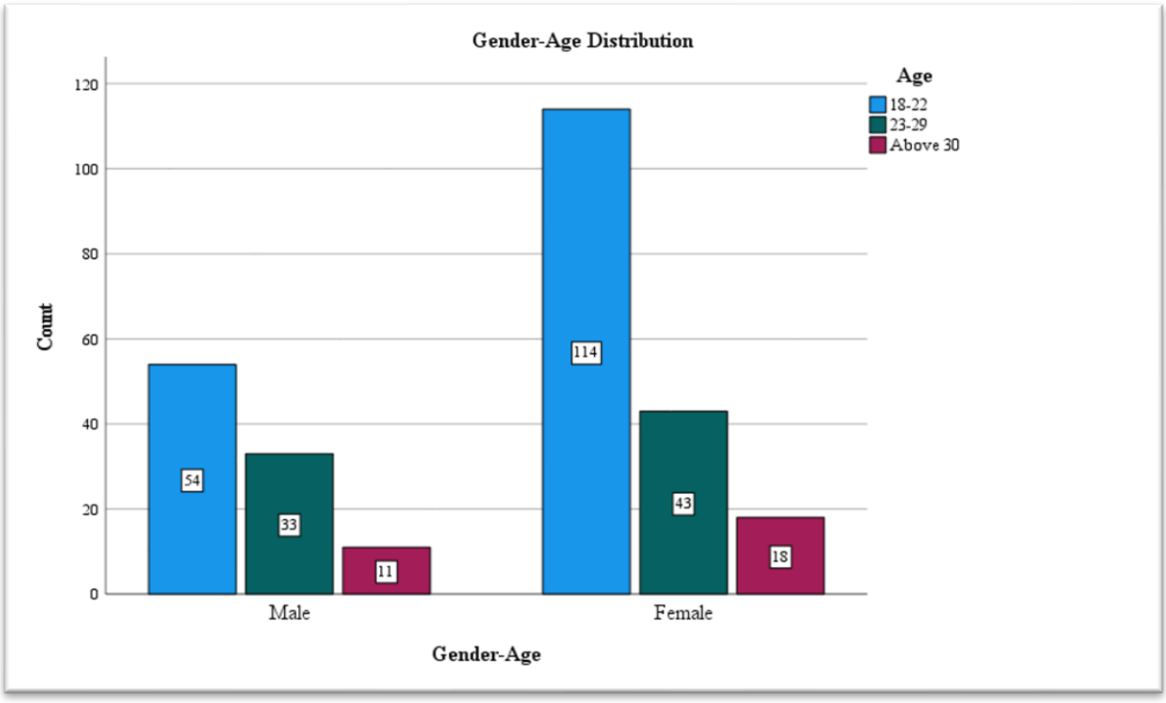

Figure 10. Student Gender-Age Distribution

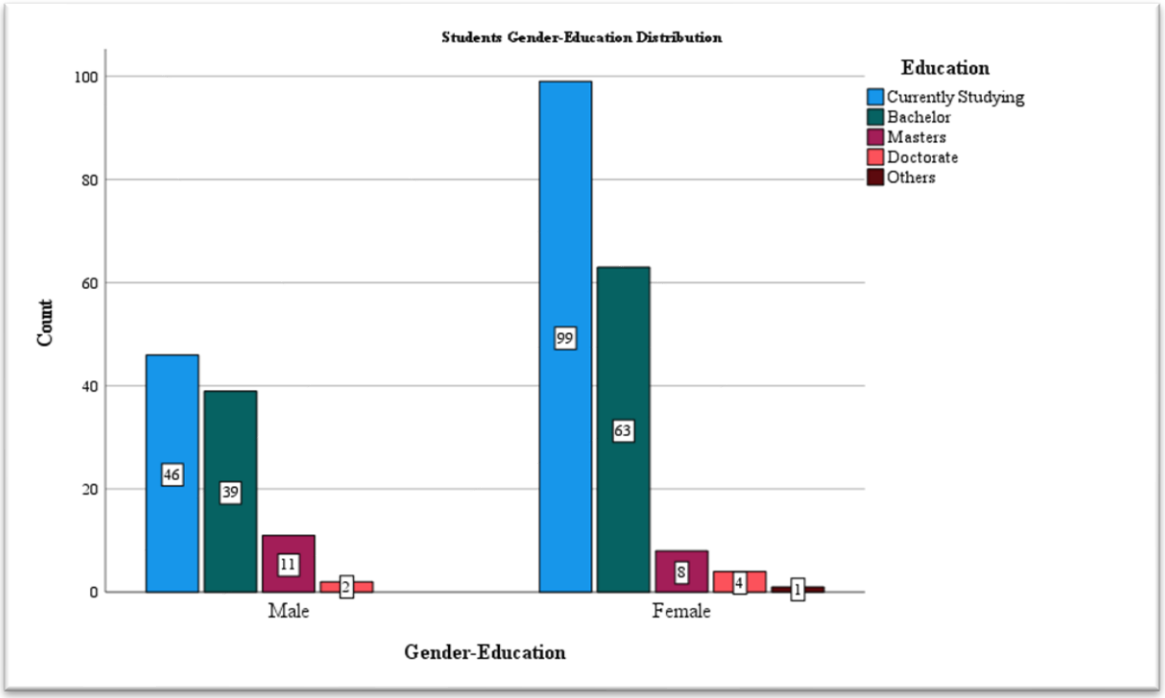

Figure 11. Student Gender-Education Distribution

5.2.2. Descriptive Analysis of the Study Contracts

The descriptive analysis allows exploring respondents' general perception of all composite variables in the study. The tables below represent the mean and the standard deviation of each variable of both digital teaching and digital learning main variables. The mean of the digital teaching constructs is between (2.16) and (3.76), whereas the std. deviation is between (0.527) and (0.890).

a. Digital Teaching Mean & Standard Deviation

Table 2. Digital Teaching Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
MeanLCI	107	1	4	2.30	.527
MeanLAT	107	1	4	2.16	.674
MeanLTS	107	1	4	2.28	.655
MeanLEI	107	1	3	2.18	.586
MeanSS	106	1	5	3.76	.890
Valid N (listwise)	160				

b. Digital Learning Mean & Standard Deviation

On the other hand, the means of constructs of digital learning are between (3.31) and (3.5), and the std. deviation is between (0.638) and (0.849). These results show that descriptive tests are somewhat similar.

Table 3. Digital Learning Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
MeanSE	274	1	5	3.39	.827
MeanSCAC	273	2	5	3.31	.739
MeanSLM	274	2	5	3.84	.638
MeanLSL	272	1	5	3.69	.849
MeanSEI	271	1.83	5.00	3.5154	.58309
MeanSS	271	1	5	3.71	.849
Valid N (listwise)	269				

5.2.2.1.Digital Teaching Descriptive Analysis

The mean of the first variable (lecturers' creativity and innovativeness) was 2.3, which means that a majority of participants agreed that they have a certain level of teaching creativity and innovativeness. The standard deviation (SD) was 0.527, which means that participants have a similar opinion. The mean of lecturers' attitude towards using technology was 2.16, indicating that the majority of participants agreed that they have a positive attitude towards using technology during teaching. The SD was 0.674, which means that participants shared similar opinion (see Table 2. Digital Teaching Descriptive Statistics).

Looking at the mean of lecturers' teaching skills, which equalled to 2.28, it shows that most lecturers agreed that they have strong teaching skills and they always encourage students positively. The SD of this component was 0.655, which means that participants share a similar opinion. The mean of the last variable (lecturers' emotional intelligence) was 2.18, indicating that participating lecturers agreed that they have a certain level of EI. The SD of this component was 0.586, shows that participants have

a similar opinion (see Table 2. Digital Teaching Descriptive Statistics).

5.2.2.2.Digital learning descriptive analysis

The first component representing this variable is students' engagement, the mean of which was 3.39, indicating that participating students somewhat disagree that blended and online learning increases their engagement while studying. The mean of the second factor, students' ability to adapt changes was 3.31, suggesting that students who participated are neutral regarding this component. On the other hand, the mean of students' learning motivation is 3.84, showing that participating students somewhat agreed that they are motivated to learn (see Table 3. Digital Learning Descriptive Statistics).

Similarly, the mean of students learning support was 3.69, indicating that participating students somewhat agreed that they were getting the required support from their lecturers when studying. The last component was students' emotional intelligence, with a mean of 3.5, which shows that participating students somewhat agreed that they have a certain level of EI. The SD of all these components was between 0.58 and 0.849, which is less than one, meaning that participants have a similar opinion (see Table 3. Digital Learning Descriptive Statistics).

5.3.Reliability Analysis

The reliability analysis is used to explore the correlation between items that represent a variable. This process is essential to assure the consistency of measures, which reflects the internal consistency of the overall survey (Zach, 2021; Prion, 2013). Several types of statistics can be used to assess the reliability of the variables. However, in this research, the internal consistency of the surveys will be examined through

exploring Cronbach Alpha and the item-to-total correlation statistics.

Cronbach Alpha coefficient will allow us to indicate the degree of measuring a single variable through a set of items of the survey (Quansah, 2017), which is considered as an acceptable degree of reliability if it falls between 0.6 or above (Ursachi, et al., 2015; Mohamad, et al., 2015). In addition, responses of each item were examined for both samples through item-to-total correlation to assess the internal consistency of the items that represents a single variable (Beaton & Katz, 2005;Yu, etal., 2016; Subramanian & Chinnarani, 2020). This calculation will support in excluding problematic variables, and include the strong ones, which impacts the internal consistency.

5.3.1. Lecturers' Sample Reliability Analysis

Item (1): Lecturers Creativity and Innovativeness (LCI):

Table 4. Lecturer Creativity & Innovativeness Items

Item number	Question	Included/Excluded
LCI1	I am engaged in creative type work on a regular daily basis	Excluded
LCI2	Creative ideas pop in my head without even thinking about them	Excluded
LCI3	I always wait for a flash of inspiration before I start working	Excluded
LCI4	I believe that unconscious processes facilitate creative work	Excluded
LCI5	I am able to use many ideas that usually occur in my dreams and apply them in teaching	Excluded
LCI6	I am always thinking about how to do everyday things differently	Excluded

Tables underneath present that items of lecturers' creativity and innovativeness are not internally consistent. Cronbach Alpha is way below 0.6, even by excluding the third item Alpha will be 0.357, which is also below 0.6. Therefore, the whole variable will be excluded from the statistics of the current study.

Table 5. LCI Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.297	.298	6

Table 6. LCI Item-to-total Correlation

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
I am engaged in creative type work on a regular daily basis	11.89	6.950	.099	.201	.282
Creative ideas pop in my head without even thinking about them	11.44	6.871	.061	.136	.314
I always wait for a flash of inspiration before I start working	11.43	7.436	-.030	.102	.375
I believe that unconscious processes facilitate creative work	11.48	6.931	.068	.059	.306
I am able to use many ideas that usually occur in my dreams and apply them in teaching	11.32	5.615	.294	.140	.120
I am always thinking about how to do everyday things differently	11.56	5.815	.334	.204	.106

Item (2): Lecturers Attitude Towards using Technology (LAT):

Table 7. Lecturer Attitude Towards Using Technology

Item number	Question	Included/Excluded
LAT1	I use websites to supplement my teaching	Included
LAT2	I enjoy using digital tools for teaching	Included
LAT3	I feel comfortable using digital tools for teaching	Included
LAT4	I think computers are difficult to use	Excluded
LAT5	I believe that it is important for me to learn how to use digital tools	Included
LAT6	I believe that using digital tools can make learning more interesting	Included
LAT7	A digital-based teaching material is a valuable tool for lecturers	Included

The Cronbach Alpha of the current variable is 0.718, which represents an acceptable level of internal consistency and item-to-total correlation. Thus, all items are included in the statistics of the study.

Table 8. LAT Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.718	.719	6

Table 9. Item-to-total Correlation

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
I use websites to supplement my teaching	10.79	12.410	.397	.169	.696
I enjoy using digital tools for teaching	10.81	11.474	.515	.365	.659

Table 9. Item-to-total Correlation

I feel comfortable using digital tools for teaching	10.79	12.014	.409	.218	.693
I believe that it is important for me to learn how to use digital tools	10.79	12.623	.374	.181	.702
I believe that using digital tools can make learning more interesting	10.77	11.860	.490	.322	.668
A digital-based teaching material is a valuable tool for lecturers	10.77	11.690	.525	.347	.658

Item (3): Lecturers Teaching Skills (LTS)

Table 10. Lecturer Teaching Skills Items

Item number	Question	Included/Excluded
LTS1	In my class, students have opportunities to judge for themselves whether they are right or wrong	Excluded
LTS2	My students are encouraged to do different things with that they have learned in class	Included
LTS3	I encourage students who have frustration to take it as part of the learning process	Included
LTS4	I help my students to draw lessons from their own failure	Included
LTS5	I take in consideration the external environment my students are surrounded by	Included
LTS6	I provide opportunities for collaboration and team work at least several times per month	Included

The internal consistency of this variable after excluding the first item, is within an acceptable Cronbach Alpha degree 0.602. Thus, only 5 items are going to be included in the statistics of lecturers' teaching skills variable.

Table 11. LTS Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.602	.604	5

Table 12. LTS Item-to-total Correlation

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
My students are encouraged to do different things with that they have learned in class	9.16	7.305	.400	.170	.524
I encourage students who have frustration to take it as part of the learning process	9.06	7.544	.375	.156	.538
I help my students to draw lessons from their own failure	9.10	7.621	.306	.106	.575
I take in consideration the external environment my students are surrounded by	9.02	7.641	.315	.119	.569
I provide opportunities for collaboration and team work at least several times per month	9.20	7.574	.394	.180	.529

Item (4): Lecturers Emotional Intelligence (LEI)

Table 13. Lecturer Emotional Intelligence Items

Item number	Question	Included/Excluded
LEI1	I am always able to see things from the other person's viewpoint	Included
LEI2	I like to listen to people carefully	Included
LEI3	I am generally able to prioritise important activities at work and get on with them	Included
LEI4	When I am being 'emotional' I am aware of this	Included
LEI5	I usually recognise when I am stressed	Included

Table 13. Lecturer Emotional Intelligence Items

LEI6	I am good at adapting and mixing with a variety of people	Included
LEI7	I can sometimes see things from others' point of view	Included

Reliability statistics of these items has a Cronbach Alpha of 0.667, which is an acceptable degree of internal consistency, and all items will be included.

Table 14. LEI Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.667	.670	7

Table 15. LEI Item-to-total Correlation

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
I am always able to see things from the other person's viewpoint	13.16	13.493	.359	.161	.637
I like to listen to people carefully	13.26	12.931	.389	.192	.628
I am generally able to prioritise important activities at work and get on with them	13.07	13.156	.347	.202	.640
When I am being 'emotional' I am aware of this	12.90	13.169	.319	.144	.649
I usually recognise when I am stressed	13.13	12.775	.400	.203	.625
I am good at adapting and mixing with a variety of people	12.92	12.946	.363	.232	.636
I can sometimes see things from others' point of view	13.14	12.820	.464	.240	.608

5.3.1.1.Students' Sample Reliability Analysis:

Item (1): Students Engagement (SE)

Table 16. Student Engagement Items

Item number	Question	Included/Excluded
SE1	By using digital tools for learning, the opportunity of interaction with my lecturers was enhanced	Included
SE2	By using digital tools for learning, the opportunity of interaction with my colleagues was enhanced	Included
SE3	I only study seriously what's taken in class or in the course outlines	Included
SE4	I generally restrict my study to what is required from me as I think it is unnecessary to do anything extra	Included
SE5	I come to most classes with questions in mind that I want answering	Excluded
SE6	Explaining the material to my group improved my understanding of it	Excluded

The Cronbach Alpha of this variable represents an acceptable degree of consistency, where alpha is equal to 0.639 degree after excluding the last two items.

Table 17. SE Relaibility Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.639	.635	4

Table 18. SE Item-to-total Correlation

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
By using digital tools for learning, the opportunity of interaction with my lecturers was enhanced	10.07	6.101	.539	.597	.477
By using digital tools for learning, the opportunity of interaction with my colleagues was enhanced	10.33	5.930	.554	.596	.463
I only study seriously what's taken in class or in the course outlines	9.87	7.980	.332	.169	.625
I generally restrict my study to what is required from me as I think it is unnecessary to do anything extra	10.38	7.577	.274	.159	.671

Item (2): Students Challenges to Adapt Changes (SCAC)

Table 19. Student Challenges of Adapting Changes Items

Item number	Question	Included/Excluded
SCAC1	I find it easy to break my habits and adapt a new one	Included
SCAC2	Switching from studying in the classroom to study from a digital screen did not impact the way I feel towards learning	Included
SCAC3	I do not prefer to change the channel I use to communicate with my friends	Included
SCAC4	I do not prefer to change the channel I use to communicate with my lecturers	Included
SCAC5	I need longer to accept changes happening in my life	Excluded

Results below show that the whole variable must be excluded from the statistics of the currently study. This is due to Alpha degree that is below 0.6. Therefore, the variable will not be considered in the current study.

Table 20. SCAC Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.545	.561	5

Table 21. SCAC Item-to-total Correlation

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
I find it easy to break my habits and adapt a new one	13.21	9.504	.134	.161	.585
Switching from studying in the classroom to study from a digital screen did not impact the way I feel towards learning	13.70	7.762	.268	.169	.524
I do not prefer to change the channel I use to communicate with my friends	12.95	7.898	.457	.489	.405
I do not prefer to change the channel I use to communicate with my lecturers	12.85	7.846	.482	.526	.392
I need long time to accept the change happens in my life	13.23	8.739	.260	.192	.517

Item (3): Students Learning Motivation (SLM)

Table 22. Students Learning Motivation

Item number	Question	Included/Excluded
SLM1	Using digital tools for learning encourages me to continue learning by myself	Included
SLM2	Using digital tools for learning encourages me to learn more and spend more time studying	Included

Table 22. Students Learning Support

SLM3	I often choose topics where I will learn something from, even if they require more work	Included
SLM4	Even when I do poorly during an assessment, I try to learn from my mistakes	Included
SLM5	When I prepare an assignment, I try to put other information from projects and other resources	Included
SLM6	I always try to understand what others are saying even if it does not make any sense	Included

The student learning motivation variable has an internal consistency degree between items exceeding 0.6, where alpha is equal to 0.698 and it is an acceptable level to be considered. Thus, all items will be included in the statistics of this study.

Table 23. SLM Reliability Statistics

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.698	.690	6

Table 24. SLM Item-to-total Correlation

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Using digital tools for learning encourages me to continue learning by myself	19.26	10.601	.438	.474	.655
Using digital tools for learning encourages me to learn more and spend more time studying	19.51	9.599	.508	.516	.630
I often choose topics where I will learn something from, even if they require more work	19.33	9.446	.587	.363	.600
Even when I do poorly during an assessment, I try to learn from my mistakes	18.87	10.757	.512	.333	.635

Table 24. SLM Item-to-total Correlation

When I prepare an assignment, I try to put other information from projects and other resources	19.07	13.130	.117	.104	.740
I always try to understand what others are saying even if it does not make any sense	19.03	11.138	.420	.272	.661

Item (4): Learning Support by Lecturers (LSL)

Table 25. Student Learning Support Items

Item number	Question	Included/Excluded
LSL1	Lecturers encourage us to think in different directions even if some of the ideas may not work	Included
LSL2	Our lecturers give us time to explore thinking in different ways	Included
LSL3	When we have questions to ask, lecturers listen to them carefully	Included
LSL4	Our lecturers do not mind us trying out our own ideas and deviating from what they have shown us	Included
LSL5	Our lecturers take in consideration the external environment that we are surrounded by us as students	Included
LSL6	I get encouragement from lecturers when I experience failure to find other possible solutions	Included

The current variable shows an excellent Alpha degree equal to 0.886, which represents high internal consistency between the items of the learning support provided by lecturers. Thus, all items will be included.

Table 26. LSL Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.886	.886	6

Table 27. LSL Item-to-total Correlation

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Lecturers encourage us to think in different directions even if some of the ideas may not work	18.29	18.607	.709	.572	.865
Our lecturers give us time to explore thinking in different ways	18.50	18.066	.746	.612	.858
When we have questions to ask, lecturers listen to them carefully	18.26	18.221	.749	.564	.858
Our lecturers do not mind us trying out our own ideas and deviating from what they have shown us	18.51	19.107	.612	.381	.880
Our lecturers take in consideration the external environment that we are surrounded by us as students	18.64	18.180	.697	.496	.866
I get encouragement from lecturers when I experience failure to find other possible solutions	18.57	18.431	.686	.489	.868

Item (5): Students Satisfaction (SS)

Table 28. Student Satisfaction Items

Item number	Question	Included/Excluded
SS1	My university/college supports me through the way it implements digital learning	Included
SS2	I am satisfied with digital learning	Included
SS3	Digital learning enables learners to be exposed to different learning style	Included

Table 28. Student Satisfaction Items

SS4	I hope lecturers of my modules continue to use digital tools in teaching	Included
SS5	Our lecturers' Encourage us to Participate in class discussions	Included
SS6	I am satisfied with the adequate access to the lecturers' online counselling	Included
SS7	I am satisfied with the easy access to students' digital tools	Included
SS8	I am satisfied with the e-library materials provided by my university/college (e.g. books, journals, etc.)	Included
SS9	I am satisfied with the length of time given to complete my assignments	Included

Similarly, the student satisfaction variable internal consistency degree between items equals to 0.877, which an excellent degree. Therefore, all items will be included in the statistics.

Table 29. SS Reliability Statistics

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.877	.879	9

Table 30. SS Item-to-total Correlation

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
My university/college supports me through the way it implements digital learning	29.67	49.267	.508	.306	.873
I am satisfied with digital learning	29.86	44.299	.683	.628	.858
Digital learning enables learners to be exposed to different learning style	29.66	44.358	.755	.652	.852

Table 30. SS Item-to-total Correlation

I hope lecturers of my modules continue to use digital tools in teaching	29.73	46.003	.638	.580	.862
Our lecturers' Encourage us to Participate in class discussions	29.56	49.218	.529	.355	.872
I am satisfied with the adequate access to the lecturers' online counselling	29.61	45.840	.739	.591	.854
I am satisfied with the easy access to students' digital tools	29.46	46.494	.705	.559	.857
I am satisfied with the e-library materials provided by my university/college (e.g. books, journals, etc.)	29.60	47.182	.616	.442	.864
I am satisfied with the length of time given to complete my assignments	29.89	48.933	.430	.242	.882

Item (6): Student Emotional Intelligence (SEI)

Table 31. Student Emotional Intelligence Items

Item number	Question	Included/Excluded
SEI1	I would like to have a better relationship with my lecturer	Excluded
SEI2	Expressing my emotions with words is not a problem for me	Excluded
SEI3	I often find it difficult to see things from another person's viewpoint	Excluded
SEI4	I often find it difficult to stand up for my rights	Excluded
SEI5	I am usually able to influence the way other people feel	Excluded
SEI6	I am usually able to find ways to control my emotions when I want to	Excluded

However, the internal consistency of the items of students' emotional intelligence variable is questionable and weak, where alpha is equal to 0.595 even after removing the problematic items. Thus, the whole variable will be excluded from the

statistics of the current study.

Table 32. SEI Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.595	.597	2

Table 33. SEI Item-to-total Correlation

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
I am usually able to influence the way other people feel	3.77	1.138	.426	.181	.
I am usually able to find ways to control my emotions when I want to	3.65	.916	.426	.181	.

5.4. Regression Analysis

This section analyses and estimates the relationship between the dependent variable (student satisfaction) and independent variables from digital teaching variables, which are lecturers' creativity and innovativeness, attitude towards technology, and teaching skills. Moreover, the relationship with the dependent variable and digital learning variables; students' engagement, ability to adapt changes, learning motivation, and learning support. These relationships will be estimated by analysing the results of the regression coefficient analysis. This test allows estimating how strongly each independent variable is affecting students' satisfaction through looking into the ANOVA and Coefficient statistics summaries.

Regression analysis is a set of statistical methods that are used to conduct the relationship between independent variables and the dependent variables that are believed to affect the independent variable (Sykes, 1993; Liang & Zeger, 1993). There are three types of regression analysis; linear regression, multiple linear regression, and nonlinear regression. The first is used to examine the relationship between an independent variable and a dependent variable, the second is used to assess the relationship between a dependent variable and several independent variables, and the third is used to examine the relationship between nonlinear variables (Kenton, 2021; CFI, 2021). In this research, the regression method that will be used is the multiple regression analysis, using ANOVA calculation through SPSS software.

The general multiple regression formula is:

$$\boldsymbol{Y = b0 + b1X1 + b2X2 + b…etc. + bkXk + \epsilon}$$

The elements of this formula are explained in the table underneath

Table 34. Regression Equation

Element	Representation
Y	Dependent variable
X1, X2…Xk	Independent variables
B0	Intercept
β 1-k	Beta coefficient
ϵ	Residual (error)

The beta coefficient (β) is an indication for the average degree of the dependent variable changes when the independent variable changes. The negative β sign shows a decrease average amount to the dependent variable. However, a positive β sign shows an increase to the dependent variable direction when the independent variable changes.

Moreover, linear regression analysis and ANOVA statistics will be conducted

through SPSS. The test allows to get several important statistics such as the F-test, t-test, and R-squared. R-square is testing the degree of significance of the model, where F-test tests the significance of the R-square of the regression model. Additionally, the t-test results are used for testing to what extent the hypotheses/assumption is applicable to reflect on a population (Hayes, T-Test, 2021).

5.4.1. Digital Teaching Regression Analysis

In the current research, the literature presented that digital teaching, and its independent variables are playing major role in influencing students' satisfaction. The total accepted and valid responses from lecturers was 106 responses, whereas students' responses exceeded this number. Therefore, since all students were taught by the lecturers who participated in this study, a random 106 responses were picked from students' survey and added as an independent variable to lecturers' database.

There are important values present in the tables below that are required to be interpreted to understand the relationships between the dependent variable "Students' Satisfaction" and the independent variables of digital teaching: lecturers' creativity and innovativeness, lecturers' ability to use technology, and lecturers' teaching skills.

The hypotheses of these variables are:

- H1: Digital teaching has a significant positive impact on students' satisfaction level
- H1.1: Lecturers' creativity and innovativeness has a significant positive impact on students' satisfaction level
- H1.2: Lecturers' attitude towards using technology has a significant positive impact on students' satisfaction level

- H1.3: Lecturers' teaching skills has a significant positive impact on students' satisfaction level

Table 35. DT Accepting/Rejecting Hypotheses

Hypothesis	Regression Weight	Beta coefficient	R-square	F	T-value	P-value	Supporting Hypotheses
H1.1	LCT-SS	-.226	0.31	1.099	-1.285	.202	No
H1.2	LAT-SS	.278	0.31	1.099	1.418	.159	No
H1.3	LTS-SS	-.126	0.31	1.099	-0.618	.538	No

The first thing that is important to check is, the significance of the variables relationships, and results are showing that all independent variables have a significance degree greater than 0.05, which means that the relationships are not significant. Results indicate that all hypotheses will be rejected. Thus, H1 will also be rejected as a result.

Table 36. DT Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.177[a]	.031	.003	.888	.031	1.099	3	102	.353

a. Predictors: (Constant), MeanLTS, MeanLCI, MeanLAT

Table 37. DT ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.603	3	.868	1.099	.353[b]
	Residual	80.520	102	.789		
	Total	83.123	105			

a. Dependent Variable: MeanSS
b. Predictors: (Constant), MeanLTS, MeanLCI, MeanLAT

Table 38. DT Coefficient

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	3.965	.432		9.184	<.001	3.109	4.821
	MeanLCI	-.226	.176	-.134	-1.285	.202	-.574	.123
	MeanLAT	.278	.196	.211	1.418	.159	-.111	.666
	MeanLTS	-.126	.203	-.092	-.618	.538	-.529	.278

a. Dependent Variable: MeanSS

5.4.2. Digital Learning Regression Analysis

In the current research, the literature presented that digital learning, and its independent variables are playing major role in influencing students' satisfaction. The total accepted and valid responses from students was 274 responses.

There are important values present in the tables below that are required to be interpreted to understand the relationships between the dependent variable "Students' Satisfaction" and the independent variables of digital learning: students' engagement, students' readiness to adapt changes, students' learning motivation, learning support by lecturers.

The hypotheses of these variables are:

- H2: Digital learning has a significant positive impact on students' satisfaction level
- H2.1: Students' engagement level has a significant positive impact on students' satisfaction level
- H2.2: Students' readiness to adapt changes has a significant positive impact on students' satisfaction level
- H2.3: Students learning motivation has a significant positive impact on students' satisfaction level
- H2.4: Learning support by lecturers has a significant positive impact on students' satisfaction level

Table 39. DL Accepting/Rejecting Hypotheses

Hypothesis	Regression Weight	Beta coefficient	R-square	F	T-value	P-value	Hypothesis supported
H2.1	SEL-SS	0.05	0.559	84.1	6.457	<0.001	Yes
H2.2	SCAC-SS	0.056	0.559	84.1	2.145	0.03	Yes
H2.3	SLM-SS	0.063	0.559	84.1	5.524	<0.001	Yes
H2.4	LSL-SS	0.046	0.559	84.1	7.663	<0.001	Yes

All the hypotheses of digital learning have an α (p-value) lower than 0.05 significant degree, which is strong evidence to reject the null hypotheses of the digital learning and its independent variables. The table above gives strong indications to accept and approve all the mentioned hypotheses.

Results show that the change in the independent variables, have a positive significant impact on students' satisfaction. Also, independent variables predict 55.9% of the variance in students' satisfaction (see Table 40. DL Model Summary, Table 41. DL ANOVA, and Table 42. DL Coefficient).

Table 40. DL Model Summary

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.748[a]	.559	.553	.568	.559	84.100	4	265	<.001

a. Predictors: (Constant), MeanLSL, MeanSE, MeanSLM, MeanSCAC

Table 41. DL ANOVA

ANOVA[a]						
	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	108.655	4	27.164	84.100	<.001[b]
	Residual	85.594	265	.323		
	Total	194.249	269			

a. Dependent Variable: MeanSS

b. Predictors: (Constant), MeanLSL, MeanSE, MeanSLM, MeanSCAC

Table 42. DL Coefficient

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.397	.240		-1.653	.100	-.869	.076
	MeanSE	.321	.050	.311	6.457	<.001	.223	.418
	MeanSCAC	.120	.056	.103	2.145	.033	.010	.229
	MeanSLM	.346	.063	.259	5.524	<.001	.223	.469
	MeanLSL	.351	.046	.351	7.663	<.001	.261	.442

a. Dependent Variable: MeanSS

5.5. Pearson Correlation

Correlation coefficient (r) formula is an indicator about the strength of the relationship between two variables. The results of correlation statistics can be equal to zero, 1, or -1 (Statistics How To, 2021). These results mean:

Table 43. Pearson Correlation

Correlation Coefficient	Indication
R= 0	This result is an indication that the change in one variable, does not affect the other variable.
R= 1	This result indicates that there is a strong relationship between two variables. It means; if one variable increases, the other variable increases and vice versa.
R= -1	This correlation results indicates that there a strong negative relationship between two variables. It means; if one variable increases, the other variable decreases. Similarly, if a variable decreases, the other variable increases.

The correlation coefficient was calculated only for included variables of supported hypotheses of digital learning. The following tables present the statistical results of correlations between the dependent variable students' satisfaction, and

other included dependent variables of digital learning.

5.5.1. Engagement and Satisfaction Correlation

The table below is presenting a correlation coefficient r=0.541, which means that there is a moderate strong and positive relationship between students' engagement and their satisfaction. Additionally, statistics are showing a significant correlation at the 0.01 level (see Table 44. SE & SS Correlation).

Table 44. SE & SS Correlation

Correlations

		MeanSE	MeanSS
MeanSE	Pearson Correlation	1	.541**
	Sig. (2-tailed)		<.001
	N	274	271
MeanSS	Pearson Correlation	.541**	1
	Sig. (2-tailed)	<.001	
	N	271	271

**. Correlation is significant at the 0.01 level (2-tailed).

5.5.2. Challenges to Adapt Changes and Satisfaction Correlation

Similarly, there is a moderate positive and significant correlation between students challenges in adapting changes and their satisfaction. This indicates that; the more students are able to adapt to changes, the higher their satisfaction will be during their digital learning (see Table 45. SCAC & SS Correlation).

Table 45. SCAC & SS Correlation

Correlations

		MeanSCAC	MeanSS
MeanSCAC	Pearson Correlation	1	.445**
	Sig. (2-tailed)		<.001
	N	273	270
MeanSS	Pearson Correlation	.445**	1
	Sig. (2-tailed)	<.001	
	N	270	271

**. Correlation is significant at the 0.01 level (2-tailed).

5.5.3. Learning Motivation and Satisfaction Correlation

Statistics also indicate that there is a moderately strong positive and significant relationship between learning motivation of students and their satisfaction level. This result indicates that the higher the learning motivation factor of students, the more they are satisfied (see Table 46. SLM & SS Correlation).

Table 46. SLM & SS Correlation

Correlations

		MeanSLM	MeanSS
MeanSLM	Pearson Correlation	1	.544**
	Sig. (2-tailed)		<.001
	N	274	271
MeanSS	Pearson Correlation	.544**	1
	Sig. (2-tailed)	<.001	
	N	271	271

**. Correlation is significant at the 0.01 level (2-tailed).

5.5.4. Learning Support and Satisfaction Correlation

Finally, correlation statistics also show that there is a moderately strong positive and significant relationship between the learning support provided by

lecturers and students' satisfaction (see Table 47. LSL & SS Correlation).

Table 47. LSL & SS Correlation

Correlations

		MeanLSL	MeanSS
MeanLSL	Pearson Correlation	1	.578**
	Sig. (2-tailed)		<.001
	N	272	271
MeanSS	Pearson Correlation	.578**	1
	Sig. (2-tailed)	<.001	
	N	271	271

**. Correlation is significant at the 0.01 level (2-tailed).

5.6.Mediation Analysis

The literature review supported that emotional intelligence is playing a major role on students satisfaction and their educational experience in general. Most of studies who supported this argument were conducted in countries other than Qatar and the Gulf region. Reliability statistics did not give a good indication to include any of the items of students emotional intelligence variables. There are several elements that might affected this result such as the cultural barriers, and the awareness of emotional intelligence in Qatar among students. These two elements are very important to consider for future studies related to similar topic.

Because the knowledge and the culture of EI among university students is limited, and due to the reasons mentioned previously, it is interesting to explore the results of mediation analysis to get an indication and an example that can be used in future studies.

Therefore, this section will examine and estimate the effect of the mediation on the relationship between the independent variable (digital learning) and the dependent variable (students' satisfaction). The estimated model below shows that the mediator

(emotional intelligence) is mediating the relationship between digital learning and students' satisfaction.

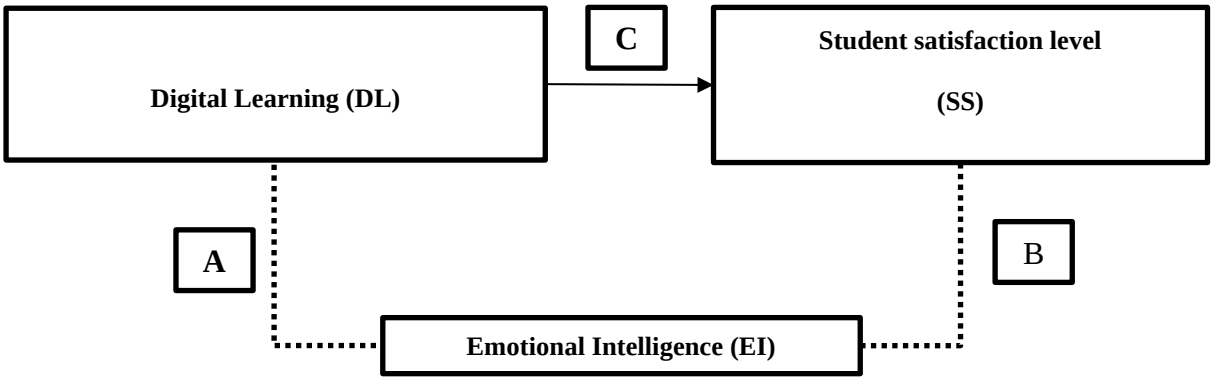

Figure 12. Mediation Model

Several steps will be taken to estimate the relationships of the model:

1. Relationship (C) represents the direct affect between DL and SS using Bivariate Regression.
2. The relationship (A) represents the direct effect of DL and EI, which will be estimated using Bivariate Regression.
3. Relationship (B) will be estimated through the multiple regression, where DL and EI will represent the independent variables, and SS the dependent variable.
4. This step will be estimating and testing the indirect effect for statistical significance, which will be estimated through Sobel test.

From the statistics in the previous section, it was concluded that DL has a positive and significant relationship with students' satisfaction. However, the results of step 2 shows that there is no significant relationship between DL and EI. Accordingly,

steps 3 and 4 will not be conducted. Therefore, there is no mediating effect of emotional intelligence on students' satisfaction, and this results in rejecting hypothesis

H3: Emotional intelligence is mediating the relationship between digital learning and students' satisfaction level.

5.7.Discussion and findings

The current study proposed 11 hypotheses. For testing the hypothesised relationships, regression analysis was conducted. As presented underneath, 5 hypotheses presenting digital teaching variable, lecturers' creativity and innovativeness, lecturers' attitude towards using technology, teaching skills, and emotional intelligence were proposed to have a significant and positive relationship with students' satisfaction as the following:

- H1: Digital teaching has a significant positive impact on students' satisfaction level
- H1.1: Lecturers' creativity and innovativeness has a significant positive impact on students' satisfaction level.
- H1.2: Lecturers' attitude towards using technology has a significant impact on students' satisfaction level.
- H1.3: Teaching skills has a significant positive impact on students' satisfaction level.
- H3: Emotional intelligence is mediating the relationship between digital teaching and students' satisfaction level.

All these hypotheses were rejected and eliminated from the proposed model of the study. Moreover, 6 digital learning variables were proposed to have a significant and positive relationship with students' satisfaction dependent variable. These variables

were digital learning, students' engagement, readiness to adapt changes, learning motivation, learning support, and emotional intelligence. The following hypotheses were proposed:

- H2: Digital learning has a significant positive impact on students' satisfaction level.
- H2.1: Student's engagement level has a significant positive impact on students' satisfaction level.
- H2.2: students' readiness of adapting change has a significant positive impact on students' satisfaction level.
- H2.3: students' learning motivation has a significant positive impact on students' satisfaction level.
- H2.4: learning support by lecturers has a significant positive impact on students' satisfaction level.
- H4: Emotional intelligence is mediating the relationship between digital learning and students' satisfaction level.

Results presented that all these hypotheses were accepted, except H4.

5.8.Conclusion of Statistical Analysis

All previous results confirm that the null hypotheses of the digital teaching variables are accepted, which means that all assumptions of these variables will be rejected. However, the digital learning null hypotheses are all rejected, which means that the assumptions are all accepted and valid. In addition, the emotional intelligence variables of both students and lecturers were not reliable, which indicates that this item is excluded, and further analytical statistics such as regression analysis and mediation analysis will not be valid. These results propose that the new accepted and valid model of this study is as the following.

CHAPTER 6: CONCLUSIONS, LIMITATIONS, IMPLICATIONS, AND FUTURE RESEARCH

6.1. Introduction

This chapter presents the conclusions of the study. The first section introduces the theoretical and empirical implications. The second section presents the limitations of the study, whereas the third section suggests some topics for future research. Finally, the conclusion is provided at the end of this chapter.

6.2.Theoretical and Managerial Implications

This section presents the theoretical and managerial implications. As presented in the literature review, previous studies explored the impact of certain variables on students' satisfaction. The current research examined the positive and significant collective impact of combining students' engagement, students' motivation, and the learning support students receive throughout their online and digital education during the pandemic. The findings of this study benefit researchers and offer practical implications and contributions by explaining the impact of the presented variables on students' satisfaction and how these variables influencing the education sector.

The presented research and its findings are contributing and benefitting researchers in several dimensions as the following. Researchers who are interested in the same topic and believe in its importance do not have to start from the scratch, exploring the excluded variables in the right way will give new results and will add additional value. In addition, this research is providing new insights for researches, especially when researchers build on the current topic and explore additional and deeper variables. Moreover, the literature discussed several gaps and challenges related to digital teaching and digital learning. This study covered one of the gaps and researchers can

consider covering more gaps through future academic researches, which will support the educational sector and will improve the digital education.

Furthermore, the research revealed that there are four combined variables forming the independent variable digital learning, and these variables are significantly affecting students' satisfaction. The current study highlights the importance of focusing on the studied variables and their influence on students' satisfaction. Although the data rejected the relationship between students' satisfaction and some other variables, a research gap remains in this area; more studies should be conducted to fill this gap. This exposed a new lens of considering digital learning and the variables defining it. The established conceptual model of the present study can be further replicated and expanded by researchers. In addition, the model can be utilized in different contexts within the realm of digital learning, digital teaching and students' satisfaction theory used from a marketing lens.

Unlike other studies, the current study focused on the main higher education learning variables, combining them into one model rather than studying them separately. It also focused on a group of students suddenly exposed to digital education under challenging circumstances. Achieving students' satisfaction during challenging environments and circumstances is a major concern of managerial and marketing decision-makers in the education sector. Hence, this study provides practical solutions for marketers and managers in the higher education sector. One important element to consider during online learning is maintaining a high engagement level during the online class by providing engaging discussion and online activities.

In addition, it is important to train lecturers to keep the motivation element activated throughout the education journey for all students during an online class by using digital tools. One way to complement this need is to develop new activities and motivational

techniques that are appropriate for digital learning and online education. Several online applications and quick educational exercises can be considered part of the provided education service. Indeed, managers and CEOs of higher education should always consider providing the required support to lecturers that will directly affect the level of support lecturers provide to students. Creating and providing a healthy and positive environment for students will lead to students' satisfaction.

Moreover, this study discovered that educational organisations can still provide certain services that support in achieving high satisfaction levels during challengeable circumstances. One of the suggested practical implementations is to focus on and invest in initiatives that increase students' engagement and motivation. Investing in these elements will strengthen relationships with students and allow for long-term relationships with their lecturers. Additionally, the findings of the research advising for the following implications:

- Each educational institution is advised to establish a student wellbeing and success department inside the university. This department should be responsible for enhancing and improving the mental health of university students. Offering such services to university students allows them to improve their academic progression and results with students satisfaction.
- Findings presented the importance of the ability to adapt changes, engagement, and motivation. These variables are all combined under the personal development umbrella. Offering personal development subjects and include them in the syllabus in the first two semesters for university students is highly recommended to build the required skills that are leading to students satisfaction
- Both previous suggested examples leads to another suggestion, which is related to managerial and strategic decisions of educational institutions. It is suggested

to these institutions to amend their strategic plans and follow “students centric” model, where the student is going to be the centre of each decision and practice of the institution. When educational institutions follow this model, the main goal to achieve will be graduating happy and successful educated individuals, which means satisfied students.

Furthermore, these results reveal that students’ ability to adapt to challenges is one of the important elements that influence their satisfaction. Additional mental health and personal development trainings are suggested to be included in students’ daily schedules throughout their educational journey. Online seminars and workshops, and awareness campaigns on universities social media channels may play major role in enhancing students’ personal skills and mental health.

Finally, the learning support provided by lecturers is also important to enhance students’ learning abilities throughout digital learning experience. Enhancing lecturers’ teaching skills and communication might dramatically enhance students’ satisfaction and academic progression. Such improvement in lecturers learning support abilities can be achieved through providing lecturers with online training and workshops that touch on students’ wellbeing and success. Such courses and training might also have a positive impact on enhancing lecturers’ innovativeness and creativity throughout their digital teaching experience.

6.3. Limitations

The present study has different limitations that highlight opportunities for future studies. The first limitation was the segment of the study. The study focused on students attending local universities in Qatar to understand their digital learning experiences. Limiting the study to this segment restricted the possibility of getting more responses

from lecturers and students outside Qatar, which might have produced different results and supported the remaining rejected hypotheses.

Second, the study was restricted to participants who experienced digital learning during the COVID-19 pandemic. This restriction played a major role in limiting the number of participants and the number of collected responses, which had an impact on the sample size. Opening the study to participants who have experienced digital learning during their education journey before the pandemic would have increased the sample size, and produced more accurate results.

Third, reaching out to lecturers from universities based in Qatar was challenging and influenced the number of responses collected from lecturers as well as the results due to the limited sample size. This limitation was also influenced by the limited time responses were collected through. Increasing the duration might have played a role in reaching higher number of responses of lecturers.

The fourth restriction was the pandemic itself. This research was conducted during the ongoing pandemic, making getting access to participants difficult. In addition, getting permissions to access students from different universities was restricted. All data were collected through online interactions between the researcher and universities. In addition, the time was limited, and approvals for collecting data took a long time, which affected the final sample size.

Furthermore, students' awareness of the importance of conducting research was low, which created a challenge for convincing students to participate in the study. Once they realized that participation was voluntary and they would not get bonus grades or rewards for their participation, the sample size was further limited, as was the seriousness of students who participated. Around 200 responses had to be excluded due to incomplete responses or random answers.

The study hypothesised that students' challenges and readiness to adapt to changes impact students' satisfaction. This point is considered the sixth limitation in this study and has two different impacts. First, including this variable in lecturers' survey could have supported the hypothesis as lecturers would have different perspectives on how to assess students' ability to adapt to changes as they dealt with their students before and during the pandemic. Perhaps considering this point would give more accurate results as lecturers can compare the progress of students before and during the implementation of online classes. Second, using a different set of valid questions to assess this element might have supported the argument and provided more accurate results.

Furthermore, as presented in the statistics and data analysis section, EI statistics were not significant, which was due to several limitations; EI in general a new term brought to the middle east by public speakers, coaches/mentors, and personal development professionals. A successful exploration for this variable among educational institutions in Qatar/Middle East countries in general needs to be approached through a different direction, which became a main limitation in this study. Considering this limitation the questions used to assess this variable needs more attention and perhaps to be collected from EI certified professionals. Considering these limitations in future researches suggested in the coming paragraphs believed to give accurate results and support EI hypotheses.

Moreover, the study hypothesised the emotional intelligence variable as an intermediary in the relationship between digital learning/digital teaching and students' satisfaction. Perhaps considering emotional intelligence as one of the independent variables representing digital learning would support the hypothesis and show a significant and positive/negative relationship with students' satisfaction.

Another limitation was the lecturers' survey, which did not include a section related

to students' satisfaction, which had a major impact on rejecting all hypotheses related to digital teaching. Therefore, the suggested model was rejected and amended accordingly.

Finally, the study was conducted in Qatar, where the mother language of most students is Arabic. However, the language of the distributed survey was English only. Perhaps creating an Arabic version of the students' survey would give more accurate results and a better understanding of the questions from students' perspective.

All these limitations create opportunities for conducting further studies and narrowing down gaps, as will be discussed in the following section.

6.4. Future Studies

Future studies could focus on studying emotional intelligence as one of the independent variables representing digital teaching and digital learning, instead of considering it as an intermediary between relationships. In addition, future studies could also include more international universities in addition to the universities based in Qatar. Opening the segment to have more various responses could support the gathering of different results and different opinions and perspectives, which could give different results and information.

The current study did not include all variables that could possibly affect students' satisfaction. Including additional variables like trust, resilience, commitment, mindset, and personality type might show that they play major roles in affecting students' satisfaction. Such hypotheses might give marketers and decision-makers different perspectives to consider improving higher education. Finally, the study did not include students' academic progress in the study. Perhaps including this variable and combining it with emotional intelligence would give different results and perspectives.

6.5.Conclusion

Overall, results of this research covered one of the gaps of digital learning in Qatar during COVID pandemic. Conducting deeper studies around the rejected assumptions is a very good opportunity for future research. Previous studies introduced in the literature review presented that the EI levels of students and their lecturers has an impact on students' satisfaction. It also presented that digital teaching variables are playing major role in affecting the satisfaction of their students. However, due to the reasons and analysis that was covered previously, the statistics of this study did not confirm this conclusion.

Considering the suggested future studies and reconducting the current research questionnaires with the suggested amendment, is vital and might change the whole result. Especially that nowadays there are lot of digital actions that can be taken to improve the experience of higher education, not just in Qatar but in the GCC and the Middle East in general. Contemplating and seriously including emotional intelligence, and mental health elements in digital education, might enhance the experience of both students and their lecturers.

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Appendix

Appendix A: Questionnaire

Questionnaire (1) – Lecturers' questionnaire

"An Empirical Investigation of the Impact of Digital Teaching and Learning on University Students' Satisfaction Level During COVID-19 Pandemic in Qatar".

Dear Participant,

You are invited to participate in a survey to support the study titled "***An Empirical Investigation of the Impact of Digital Teaching and Learning on University Students' Satisfaction Level During COVID-19 Pandemic in Qatar*"**. This study is being conducted by Jenan Abu-Shaikha, a graduate student from Qatar University - College of Business and Economics, for an MSc degree.

This research aims to study the relationship between digital teaching and digital learning attributes and students' satisfaction during the challengeable times of the COVID-19 pandemic in Qatar. Moreover, the study aims to discover the impact of emotional intelligence on this relationship, which will allow educational institutions to implement practical solutions that can enhance the educational process and increase the satisfaction levels among its students.

In the present study and for this survey, you will be asked few questions. The duration of filling the survey will last for about **15-20 minutes only**. Moreover, the total sample size is projected to be between **(200-250)** responses.

Please note that your response will be included in this study only:

- If you were exposed to online teaching and learning experience in Qatar during COVID
- If the teaching language is in English language.

If you are not meeting the above-mentioned criteria, please note that your participation will be appreciated but your response will not be included in this study.

Your participation is voluntary and there is no direct benefit for participating in this study. The unwillingness to participate in the study and/or withdrawal from the study will not in any way interfere with the student-instructor relationship or affect student's course grades assessment. Similarly, participation in the study will not in any way interfere with the student-instructor relationship or affect students' course grades assessment.

The study is approved by the Qatar University Institutional Review Board (QU-IRB). If you have any question related to ethical compliance of the study, you may contact them at QU-IRB@qu.edu.qa

There are no risks linked with participating in this research/survey, and the survey does not collect any identifying information of any participant. All information collected in the survey will support the education industry and will be only used for research purposes.

If you have any questions regarding the survey or the research in general and if you wish to get a copy of your responses, please contact Jenan Abu-Shaikha at **ja1003698@student.qu.edu.qa** or Professor Hatem El-Gohary at **helgohary@qu.edu.qa**.

By submitting and completing this survey, you are indicating your full informed consent in this study and your participation is much appreciated. (Please tick the following box if you agree).

☐I have clearly read and understood all the instructions and I agree to participate in the study.

Research Team:

Student Name: Jenan Abu-Shaikha, Master candidate, Qatar University

Project Supervisor (PI):

- Professor Hatem El-Gohary,
- Department of Management and Marketing, Qatar University
- Email: **helgohary@qu.edu.qa**
- Phone: 0097444037146

Please click on the survey link below:

This survey and its contents and findings are confidential and are the sole responsibility of the individual who is conducting the survey.

Section (1): Lecturers' creativity and innovativeness

From the scale below, please indicate the number that reflects your opinion for the following statements.

Statement	***Strongly Agree***	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***
Scale	***1***	***2***	***3***	***4***	***5***
1. I am engaged in creative type work on a regular daily basis					
2. Creative ideas pop in my head without even thinking about them					
3. I always wait for a flash of inspiration before I start working					
4. I believe that unconscious processes facilitate creative work					
5. I am able to use many ideas that usually occur in my dreams and apply them in teaching					
6. I am always thinking about how to do everyday things differently					

Section (2): Lecturers' attitude towards technology

From the scale below, please indicate the number that reflects your opinion for the following statements.

Statement	***Strongly Agree***	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***
Scale	***1***	***2***	***3***	***4***	***5***
1. I use websites to supplement my teaching					

2. I enjoy using digital tools for teaching					
3. I feel comfortable using digital tools for teaching					
4. I think computers are difficult to use					
5. I believe that it is important for me to learn how to use digital tools					
6. I believe that using digital tools can make learning more interesting					
7. A digital-based teaching material is a valuable tool for lecturers					

Section (3): Lecturers' teaching skills

From the scale below, please indicate the number that reflects your opinion for the following statements.

Statement	***Strongly Agree***	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***
Scale	***1***	***2***	***3***	***4***	***5***
1. In my class, students have opportunities to judge for themselves whether they are right or wrong					
2. My students are encouraged to do different things with that they have learned in class					
3. I encourage students who have frustration to take it as part of the learning process					
4. I help my students to draw lessons from their own failure					
5. I take in consideration the external environment my students are surrounded by					
6. I provide opportunities for collaboration and team work at least several times per month					

Section (4): Lecturers' Emotional Intelligence

From the scale below, please indicate the number that reflects your opinion for the following statements.

Statement	***Strongly Agree***	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***

Scale	***1***	***2***	***3***	***4***	***5***
1. I am always able to see things from the other person's viewpoint					
2. I like to listen to people carefully					
3. I am generally able to prioritise important activities at work and get on with them					
4. When I am being 'emotional' I am aware of this					
5. I usually recognise when I am stressed					
6. I am good at adapting and mixing with a variety of people					
7. I can sometimes see things from others' point of view					

<u>Section (5):</u> Demographics and Background information

Please answer the following questions

Statement	***Choices***				
1. Please indicate your gender	☐Male	☐Female			
2. What is your employment status as a lecturer?	☐Part-time	☐Full-time			
3. What is the highest level of formal education you have completed?	☐Professor				
	☐Doctorate degree				
	☐Master's degree				
	☐Bachelor's degree				
4. Please select the category that includes your age	☐25-29	☐30-34	☐35-39	☐40-44	☐45-50

5. Your Country of origin	_____				
6. Please indicate your major	_____				
7. Please indicate your institution delivery mode before COVID-19 pandemic?	☐Traditional delivery mode: offline				
	☐ Blended learning delivery mode: offline (in person) and virtual classes				
	☐ Completely online delivery mode: virtual classes				
8. Please indicate your institution delivery mode during COVID-19 pandemic?	☐ Traditional delivery mode: offline				
	☐ Blended learning delivery mode: offline (in person) and virtual classes				
	☐ Completely online delivery mode: virtual classes				
9. Do you have any further comments on modes of delivery? Please add	_____				

Questionnaire (2) – Students' questionnaire

"An Empirical Investigation of the Impact of Digital Teaching and Learning on University Students' Satisfaction Level During COVID-19 Pandemic in Qatar".

Dear Participant,

You are invited to participate in a survey to support the study titled "***An Empirical Investigation of the Impact of Digital Teaching and Learning on University Students' Satisfaction Level During COVID-19 Pandemic in Qatar*"**. This study is being conducted by Jenan Abu-Shaikha, a graduate student from Qatar University - College of Business and Economics, for an MSc degree.

This research aims to study the relationship between digital teaching and digital learning attributes and students' satisfaction during the challengeable times of the COVID-19 pandemic in Qatar. Moreover, the study aims to discover the impact of emotional intelligence on this relationship, which will allow educational institutions to implement practical solutions that can enhance the educational process and increase the satisfaction levels among its students.

In the present study and for this survey, you will be asked few questions. The duration of filling the survey will last for about **15-20 minutes only**. Moreover, the total sample size is projected to be between **(200-250)** responses.

Please note that your response will be included in this study only:

- If you were exposed to online teaching and learning experience in Qatar during COVID
- If the studying language is in English language.
- If your age is 18 years old and above.

If you are not meeting the above-mentioned criteria, please note that your participation will be appreciated but your response will not be included in this study.

Your participation is voluntary and there is no direct benefit for participating in this study. The unwillingness to participate in the study and/or withdrawal from the study will not in any way interfere with the student-instructor relationship or affect student's course grades assessment. Similarly, participation in the study will not in any way interfere with the student-instructor relationship or affect students' course grades assessment.

The study is approved by the Qatar University Institutional Review Board (QU-IRB). If you have any question related to ethical compliance of the study, you may contact them at QU-IRB@qu.edu.qa

There are no risks linked with participating in this research/survey, and the survey does not collect any identifying information of any participant. All information collected in the survey will support the education industry and will be only used for research purposes.

If you have any questions regarding the survey or the research in general and if you wish to get a copy of your responses, please contact Jenan Abu-Shaikha at **ja1003698@student.qu.edu.qa** or Professor Hatem El-Gohary at **helgohary@qu.edu.qa**.

By submitting and completing this survey, you are indicating your full informed consent in this study and your participation is much appreciated. (Please tick the following box if you agree).

☐I have clearly read and understood all the instructions and I agree to participate in the study.

Research Team:

Student Name: Jenan Abu-Shaikha, Master candidate, Qatar University

Project Supervisor (PI):

- Professor Hatem El-Gohary,
- Department of Management and Marketing, Qatar University
- Email: **helgohary@qu.edu.qa**
- Phone: 0097444037146

Please click on the survey link below:

This survey and its contents and findings are confidential and are the sole responsibility of the individual who is conducting the survey.

Section (1): Students' Engagement Level

From the scale below, please indicate the number that reflects your opinion for the following statements.

Statement	***Strongly Agree***	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***
Scale	***5***	***4***	***3***	***2***	***1***
7. By using digital tools for learning, the opportunity of interaction with my lecturers was enhanced					
8. By using digital tools for learning, the opportunity of interaction with my colleagues was enhanced					
9. I only study seriously what's taken in class or in the course outlines					
10. I generally restrict my study to what is required from me as I think it is unnecessary to do anything extra					
11. I come to most classes with questions in mind that I want answering					
12. Explaining the material to my group improved my understanding of it					

Section (2): The Challenge of Adapting Changes

From the scale below, please indicate the number that reflects your opinion for the following statements.

Statement	***Strongly Agree***	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***
Scale	***5***	***4***	***3***	***2***	***1***
1. I find it easy to break my habits and adapt a new one					
2. Switching from studying in the classroom to study from a digital screen did not impact the way I feel towards learning					
3. I do not prefer to change the channel I use to communicate with my friends					
4. I do not prefer to change the channel I use to communicate with my lecturers					
5. I need long time to accept the change happens in my life					

Section (3): Students' learning motivation

From the scale below, please indicate the number that reflects your opinion for the following statements.

Statement	***Strongly Agree***	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***
Scale	***5***	***4***	***3***	***2***	***1***
1. Using digital tools for learning encourages me to continue learning by myself					
2. Using digital tools for learning encourages me to learn more and spend more time studying					

3. I often choose topics where I will learn something from, even if they require more work					
4. Even when I do poorly during an assessment, I try to learn from my mistakes					
5. When I prepare an assignment, I try to put other information from projects and other resources					
6. I always try to understand what others are saying even if it does not make any sense					

<u>Section (4):</u> Learning support by lecturers

From the scale below, please indicate the number that reflects your opinion for the following statements.

Statement	***Strongly Agree***	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***
Scale	***5***	***4***	***3***	***2***	***1***
1. Lecturers encourage us to think in different directions even if some of the ideas may not work					
2. Our lecturers give us time to explore thinking in different ways					
3. When we have questions to ask, lecturers listen to them carefully					
4. Our lecturers do not mind us trying out our own ideas and deviating from what they have shown us					
5. Our lecturers take in consideration the external environment that we are surrounded by us as students					

6. I get encouragement from lecturers when I experience failure to find other possible solutions					

Section (5): Students' satisfaction

From the scale below, please indicate the number that reflects your opinion for the following statements.

Statement	***Strongly Agree***	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***
Scale	***5***	***4***	***3***	***2***	***1***
1. My university/college supports me through the way it implements digital learning					
2. I am satisfied with digital learning					
3. Digital learning enables learners to be exposed to different learning style					
4. I hope lecturers of my modules continue to use digital tools in teaching					
5. Our lecturers' Encourage us to Participate in class discussions					
6. I am satisfied with the adequate access to the lecturers' online counselling					
7. I am satisfied with the easy access to students' digital tools					
8. I am satisfied with the e-library materials provided by my university/college (e.g. books, journals, etc.)					
9. I am satisfied with the length of time given to complete my assignments					

Section (6): Emotional intelligence

From the scale below, please indicate the number that reflects your opinion for the following statements.

Statement	***Strongly Agree***	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***
Scale	***5***	***4***	***3***	***2***	***1***
1. I would like to have a better relationship with my lecturer					
2. Expressing my emotions with words is not a problem for me					
3. I often find it difficult to see things from another person's viewpoint					
4. I often find it difficult to stand up for my rights					
5. I am usually able to influence the way other people feel					
6. I am usually able to find ways to control my emotions when I want to					

<u>Section (7):</u> Demographics and Background information

Please answer the following questions

Statement	***Choices***	
10. Please indicate your gender	☐Male	☐Female
11. As a student, what is your current registration status at your college/university?	☐Part-time	☐Full-time
12. What is the highest level of formal education you have completed?	☐Doctorate degree	
	☐Master's degree	
	☐Bachelor's degree	
	☐Currently studying (Bachelor)	

13. Please select the category that includes your age	☐18-22	☐23-29	☐above 30
14. Your Country of origin	_____		
15. Please mention your university (optional)	_____		
16. Please indicate your major	_____		
17. Please indicate your institution delivery mode before COVID pandemic?	☐Traditional delivery mode: offline		
	☐ Blended learning delivery mode: offline (in person) and virtual classes		
	☐ Completely online delivery mode: virtual classes		
18. Please indicate your institution delivery mode during COVID pandemic?	☐ Traditional delivery mode: offline		
	☐ Blended learning delivery mode: offline (in person) and virtual classes		
	☐ Completely online delivery mode: virtual classes		
19. Do you have any further comments on modes of delivery? Please add	_____		