SATISFACTION OF HIGH EDUCATION STUDENTS WITH BLACKBOARD LEARNING SYSTEM DURING COVID-19

YASSER ABDULLAH MOHSEN ALYADUMI

IŞIK ÜNİVERSİTESİ

NİSAN, 2022

SATISFACTION OF HIGH EDUCATION STUDENTS WITH BLACKBOARD LEARNING SYSTEM DURING COVID-19

YASSER ABDULLAH MOHSEN ALYADUMI

M.B.A. Program, IŞIK University, 2022

Submitted to the Graduate School of Social Sciences
in partial fulfillment of the requirements for the degree of
Master of Business Administration

IŞIK UNIVERSITY
APRIL, 2022

IŞIK UNIVERSITY
SCHOOL OF GRADUATE STUDIES

SATISFACTION OF HIGH EDUCATION STUDENTS WITH BLACKBOARD LEARNING SYSTEM DURING COVID-19

YASSER ABDULLAH MOHSEN ALYADUMI

APPROVED BY:

Asist. Prof. Pınar AKSEKİ (Thesis Supervisor)	Işık University
Assoc. Prof. Dr. Yeşim Pınar SOYKUT SARICA	Işık University
Asist. Prof. Kemal Özkan YILMAZ	Kültür University

APPROVAL DATE:

* "6689 Sayılı Kişisel Verilerin Korunması Kanunu Hükümlerine Göre Çevrimiçi Yayın Dosyasında Bulunan Kişisel Veriler Ve Islak İmzalar Silinmiştir."

SATISFACTION OF HIGH EDUCATION STUDENTS WITH BLACKBOARD LEARNING SYSTEM DURING COVID-19

ABSTRACT

With the advent of the novel COVID-19 disease, the world has become facing an extraordinary situation that has changed the course of normal human life upside down and pushed them towards compulsory, recent technology-based alternative solutions, educational life is an integral part of that. The higher education institutions in Turkey rushed from the first moments to avoid the disruption of education process, and transformed into the full-fledged online learning system. Therefore, the current study addressed aims to investigate 'How satisfied with the transformation to Blackboard Learning System BLS for high education students, Istanbul-Turkey, during COVID-19 disease period 2020 are' through a comparison of undergraduate and postgraduate students' perceptions via thirty items divided into six axes, which are included in a single model. An online questionnaire survey sent through BLS itself and WhatsApp was filled out by a total of 294 student respondents, wherein afterwards an inferential and descriptive study with quantitative approach has been employed for analyzing their perceptions. The findings are indicative that the Usefulness, Engagement, Communication and Ease of Use, Self-efficacy, and Challenges axes respectively have a statistically significant effect on students' perceptions concerning satisfaction with the BLS. As the Usefulness and Engagement axes have the highest contribution to students' satisfaction with the BLS, unlike, the Challenges axis has the least contribution. It can be reported that the transformation into BLS during COVID-19 disease period is satisfactory for higher education students. With superiority of postgraduate students' perceptions, in terms of Self-efficacy, Communication and Ease of Use and Challenges axes, along with a clear supremacy of the postgraduate students' perceptions over the Overall axes level. Moreover, all demographic dimensions except gender, place of the living, the kind of device preferred and the willingness in using BLS in the future, influence the

undergraduate and postgraduate students' perceptions. An ease of use and communication, increased self-efficacy, flexibility, availability, accessibility, transferability, affordability, interactivity, saving-time moderately and positive changes of students' life are shown to be the most traits the BLS has. Unlike, BLS, while effective, gives rise to a sense of isolation, lack of concentration, the reluctance of attendance, plus fairly vulnerability of participation, which are demonstrated to be the most drawbacks in The BLS. Some recommendations might contribute to successful implementation and satisfying use of BLS have been suggested.

Key Words: Blackboard Learning System BLS, COVID-19, Satisfaction, Learning Management System LMS, Transformation.

COVID-19 SÜRECİNDE YÜKSEK ÖĞRENİMDE BLACKBOARD EĞİTİM SİSTEMİNE GEÇİŞİN ÖĞRENCİ TATMİNİNE ETKİSİ

ÖZET

COVID-19 hastalığının ortaya çıkmasıyla birlikte, dünya, normal insan yaşamını alt üst eden olağanüstü bir durumla karşı karşıya kaldı ve onları zorunlu, yeni teknoloji tabanlı alternatif çözümlere doğru itti. Eitim hayatı da bunun ayrılmaz bir parçasıdır. Türkiye'de yükseköğretim kurumları, eğitim sürecinin aksamaması için ilk anlardan itibaren tam teşekküllü çevrimiçi öğrenme sistemine döndü. Mevcut çalışma '2020 COVID-19 hastalık döneminde İstanbulda bir üniversitedeki yükseköğretim öğrencileri için Blackboard Learning System BLS'ye geçiş ne kadar memnun olduğunu' tek bir modele dahil olan' altı eksene bölünmüş otuz madde üzerinden lisans ve lisansüstü öğrencilerinin algılarının karşılaştırılması yoluyla araştırmayı amaçlamaktadır. BLS ve WhatsApp aracılığıyla gönderilen çevrimiçi bir anket anketi toplam 294 öğrenci katılımcı tarafından dolduruldu, daha sonra onların algılarını analiz etmek için çıkarımsal ve nicel bir tanımlayıcı yaklaşım kullanılmıştır. Bulgular, sırasıyla Yararlılık, Katılım, İletişim ve Kullanım Kolaylığı, Öz-yeterlik ve Zorluklar eksenlerinin öğrencilerin BLS'den memnuniyetle ilgili algıları üzerinde istatistiksel olarak anlamlı bir etkiye sahip olduğunun göstergesidir. Yararlılık ve Katılım eksenleri, öğrencilerin BLS ile ilgili memnuniyetine en yüksek katkıya sahip oldukları, Zorluklar ekseni ise en az katkıya sahip olan eksenlerdir. COVID-19 hastalık döneminde BLS'ye dönüşümün yükseköğretim öğrencileri için tatmin edici olduğu söylenebilir. Lisansüstü öğrencilerin algılarının, Öz-yeterlik, İletişim ve Kullanım Kolaylığı ve Zorluklar eksenleri açısından üstünlüğü ile birlikte, lisansüstü öğrencilerin algılarının Genel eksenler düzeyinde açık bir üstünlüğü vardır. Ayrıca, cinsiyet, yaşanılan yer, tercih edilen cihaz ve gelecekte BLS kullanma istekliliği türü dışındaki tüm demografik boyutlar, lisans ve lisansüstü öğrencilerinin algılarını etkilemektedir. Kullanım ve iletişim kolaylığı, artan öz-yeterlik, esneklik, kullanılabilirlik, erişilebilirlik, aktarılabilirlik, satın alınabilirlik, etkileşim, orta düzeyde zaman tasarrufu ve öğrencilerin hayatındaki olumlu değişikliklerin BLS'nin sahip olduğu

özellikler olduğu ortaya çıkmıştır. BLS etkili olmakla birlikte, izolasyon hissi, konsantrasyon eksikliği, katılım isteksizliği ve katılımın oldukça kırılgan olması dezavantajları oluşturmaktadır. BLS'nin başarılı bir şekilde uygulanmasına ve etkin kullanımına katkıda bulunabilecek bazı önerilerde bulunulmuştur.

Anahtar Kelimeler: Blackboard Eğitim Sistemi BLS, COVID-19, Memnuniyet, Öğrenme Yönetim Sistemi ÖYS, Dönüşüm.

ACKNOWLEDGEMENTS

First of all, it gives me pleasure to thank God Almighty for His Grace and Generosity to patronize and favor me to carry on my education journey to complete a Master's Degree. I would like to thank my brother and sisters for their constant prayer and support, as well as I dedicate this work to my parents' soul who I miss dearly at this moment. I certainly would like to extend my sincere thanks to my university, and first and foremost, my field professor and my advisor, Prof. Dr. PINAR FALCİOĞLU for her valuable efforts taken to support me. It was a great opportunity to make the most of her scientific and practical experience over the years, wherein since the early days of my dissertation, she has made valuable contributions to the development of research progress. Thank you for your patience and insightful comments and information. I will not also fail to extend my warm thanks to colleagues and friends who I appreciate helping in either delivering the bright ideas or translating into Turkish that contributed to serve my research.

TABLE OF CONTENTS

APPROVAL i

ABSTRACT ii

ÖZET iv

ACKNOWLEDGEMENTS vi

TABLE OF CONTENTS vii

LIST OF TABLES x

LIST OF FIGURES xi

CHAPTER 1 1

1. INTRODUCTION 1

1.1 Introduction 1

1.2 Problem Statement 8

1.3 Research Model and Hypotheses 10

1.4 Purposes of the Research 13

1.5 Significance of the Research 15

1.6 Delimitations of the study 17

CHAPTER 2 18

2. THEORETICAL FRAMEWORK 18

2.1 LITERATURE REVIEW 18

2.1.1 Online Learning System Overview: Concepts and Differences ... 19

2.1.1.1 The Digital Education 19

2.1.1.2 History of Distance Education 21

2.1.1.3 Distance Education, eLearning and Online Learning ... 22

2.1.1.4 Learning Management System LMS 25

2.1.1.5 Blackboard Learning System BLS ……. 30
2.1.1.5.1 Functions of BLS ……. 33
2.1.1.5.2 Blackboard Learning System BLS Traits and Drawbacks …….. 37
2.1.2 Previous Studies …… 41
2.1.2.1 The Transformation towards LMSs under Technological Evolution and COVID-19 Disease ……. 42
2.1.2.2 Empirical Literature …… 49
2.1.3 Literature Summary ……... 71
2.2 ABOUT ONLINE LEARNING IN TURKY ……...…… 73
2.2.1 Higher Education in Turkey and Online Learning …… 73
2.2.2 Higher Education under the Shadow of COVID-19 …….. 75
2.3 COVID-19 PANDEMIC AND THE EFFECT ON THE TERTIAR INSTRUCTION ……..…… 78
2.3.1 Origin, Characteristics and Transmission …….. 79
2.3.2 Rising to COVID-19 Pandemic …… 81
2.3.3 The Effect of COVID-19 on the Tertiary Instruction …… 81
CHAPTER 3 …….. 86
3. EMPIRICAL FRAMEWORK …… 86
3.1 Methodology ……..……..……. 86
3.1.1 Research Methodology …….. 87
3.1.2 Research Population and Sample size ……... 88
3.1.3 Data Collection …….. 89
3.1.4 Date Analysis ……. 91
3.1.5 Questionnaire Test ……..... 94
3.2 Findings ……..…….. 95
3.2.1 Demographic Analysis Results ……..…… 95
3.2.2 Students' Perceptions Analysis Results …….. 101
3.2.3 Effect Results of Demographic Dimension on Students ……. 108
3.3 Discussion .....……..…… 111
3.3.1 Effect of Demographic Dimension on Students …….. 112

3.3.2 Students Perceptions Debate ……... 127
3.3.2.1 A Contribution Each Axis in Satisfaction with BLS … 127
3.3.2.1.1 Self-efficacy Axis ……... 128
3.3.2.1.2 An Engagement Axis ……. 132
3.3.2.1.3 Usefulness Axis ……. 137
3.3.2.1.4 Communication and Ease of Use Axis …….. 143
3.3.2.1.5 Challenges Axis ……. 152
3.3.2.1.6 Satisfaction Axis …… 162
3.3.2.2 Impact of All Axes on Satisfaction with BLS ……... 167
3.3.3 Summary ……. 184
CHAPTER 4 …… 188
4.1 Conclusions …… 188
4.2 Recommendations ……..……... 193
4.3 Limitations of Study ……..…….. 196
REFERENCES ……... 197
APPENDIX A ……. 216
Appendix A.1: Questionnaire …….. 216
CURRICULUM VITAE ……..……. 220

LIST OF TABLES

Table 3.1 Demographic Dimensions Information ……..……. 95
Table 3.2 Cronbach's Alpha Coefficient for Reliability …… 102
Table 3.3 Stepwise Multiple Regression Analysis Results with the Correlation Path ... 103
Table 3.4 Independent Sample t-test Analysis Results …….. 106
Table 3.5 The Mean of each Item for Comparing with a five-point Likert Scale …….. 107
Table 3.6 Effect of Demographic Dimensions on Students ……... 109

LIST OF FIGURES

Fıgure 1.1 Research Model ……. 11

Fıgure 1.2 The Blackboard Collaborate (Virtual Classroom) …… 35

CHAPTER 1

1. INTRODUCTION

1.1 Introduction

From a few decades ago, the technology or what is so-called 'technology revolution' has witnessed tremendous strides in all walks of life that its accomplishments have exceeded what has been achieved in centuries. Education industry is one of the sectors which has took the luck in making use of technology evolution in a bid to enhance instructional and pedagogical approaches in line with status quo or any emergency situation. In this scope (Alokluk, 2018:133) expressed that the fast evolution in the technology of information has revolutionized the teaching-learning practices in instructional environment.

Indeed, the disasters and crisis are considered to be an opportunity to find and create suitable solutions aimed to dilution of their effects, and this calls for exploitation cutting-edge technologies, notably in remote pedagogical and educational spheres that are our study field here. In this context, (García-Alberti, et al., 2021; Ahmed, et al., 2021; Emiroglu, et al., 2021; Ali 2020; Daroedono, et al., 2020; Mahalakshmi & Radha 2020; Tümen Akyildiz 2020) believe that the COVID-19 crisis is a chance and promotes the usage and adoption of technology-based or online teaching-learning mode. However, selection process of appropriate online learning-teaching system that contribute to strengthen a satisfactory and effective education process is still not that easy task. Despite this, task can be realized

By understanding usage patterns of instructional technology tools such as the LMS by faculty members and students, institutional support personnel and administration can

make better data-informed decisions regarding future technology procurement and support prioritization to help ensure that instructional needs are being met. (Rhode, et al., 2017: 71)

In relation to this, Dhawan (2020) pointed out that to render online learning process effective in calamity times, it must to be concentrated on the usage of technology (and of course, after the need for evaluation of its merits and demerits) that involves the minimum purchase and maintenance expenditure but can effectively facilitate educational processes.

"Technology is the means for delivery and requires a close cross collaboration between instructional, content, and technology teams" (Ali, 2020:22). It, as defined by (Naresh, 2020), is "a tool, a method for fact-based learning and enables students to do a lot of research using the internet and various other ICT tools". The progress of ICT usage including computer and internet technology in the learning process has influenced positively education system globally (Tubagus, et al., 2020:186). EdTech Start-ups capitalized on the technology and sought to develop several learning and teaching modalities to keep up with any emergent circumstances as COVID-19 pandemic. Innovative and resilient solutions are created by technology to overcome the challenges and difficulties resulted in crisis, and calamities, like what we live now, that couldn't be easily got under control and contained in short time.

Definitely, Technology plays a core role in the learning and teaching processes especially in the wake of the corona virus and the subsequent lockdown and quarantine procedures, in an effort to prevent interruption of education journey, on one hand and to dilution prevalence of this epidemic, on other hand. The use of technology is needed to modify the learning pattern from being instructor-centered to being student-centered (Alim, et al., 2019:244) that enable him/her effectively to create his/her own knowledge structure based on his/her own initiatives and responsibilities (Tubagus, et al., 2020:187). Technology also provides eLearning environment (Kearsley & Shneiderman, 1998:23), that is becoming an ever-growing widespread method in tertiary institutions throughout (Brown, 2010; Jenkins, et al., 2011). An existing technology made eLearning being the essential mode of tutoring the courses at corona virus era as well (Bączek, et al., 2021). One of the Information Communication Technology tools integrated in the education system is the Learning Management System known as LMS (Hamid, et al., 2020) which

supports eLearning (Koh & Kan, 2020:27). And it serves as effective and efficient method of regulating the process of instruction, as well as achieved gains in educational technology of accessibility speed, and power (Nurakun Kyzy, et al., 2018). Based on Butola (2021) the technology contributed to promote LMS (eLearning) through interaction enhancements, good contact between parent and teacher, provide fun too, offer personalization, cost-effectiveness, portability, sustainability, report on real-time performance, resources availability and live-streaming seminars on the solution of real-time doubts. As a result, it can be argued that technology certainly contributes to create the digital education that is, as per Erin (2020), the term used to refer to all online educational practices. In support this, Nestor (2021) writes, the digital education is very probably to become more thrilling from where competition and forthcoming technological achievement.

In the beginning, the online learning platform LMS was used to support and assist the in-class traditional learning and teaching environments (Hamid, et al., 2020; Vasanth & Sumathi, 2020; Sharpe & Benfield 2005; Malikowski, et al., 2007). In addition, the online learning environments, as (Ali, 2020:21) mentioned, enhance incremental learning experiences in which students are able to cooperate, interact, and own their own education with their own time and speed. Thus, as he said, ICT immersed lessons deliver a motivating, stimulating and encouraging education environment for students, plus it also gives rise to self-directed education. In this line, the Blackboard that is one of forms of online LMSs, delivers cooperative and comprehensible, user-friendly situation learning and teaching process AlKhunzain & Khan (2021).

Broadly speaking, technology adoption or usage studies in education like eLearning gateways success among students is a phenomenon that is rarely researched per (Shahzad et al., 2020), and also there insufficient information exists on an effect of transformation towards emergency online education from the learning results for students in each country (Aguilera-Hermida, et al., 2021). As (Jenkins, et al., 2011:462) observed, they report that although the technology has become an integral part of establishments, the transformative effect of the tools of Technology-Enhanced Learning (TEL) on processes of teaching and learning has still not been realized. Wherein (TEL) is defined as “any online facility or system that directly supports learning and teaching” (Jenkins, et al., 2011:448).

Furthermore, due to the massive and ever-growing magnitude of data that is being generated and recorded as concerns the instruction technology systems use, simple and automated ways are needed to collect and vet actual utilization data (Rhode, et al., 2017: 71). Hence, the present study tries to investigate how satisfied with the transformation using Blackboard Learning System BLS (technology adoption and use) is over college students, particularly, under COVID-19 disease, and seek to test theoretical, empirical relationships in terms of undergraduate and postgraduate students at a University in Istanbul, Turkey. All above for sake of getting the evidence of the satisfaction of the transformation to BLS for high education students in the university.

On the other hand, just as the technology plays a pivotal role in online education process, the human capital is backbone of any operations and is as important as technology, but rather it excels in it. Since human being is assigned to create this technology and its applications, we should study in-depth their interaction with the technology and look for what the most difficulties and challenges face them during dealing with, in an attempt to understand man's attitude towards the technology utilization in their daily lives, of course, the students is part of it. Therefore, the current study tries to highlight students' perception pertained to the degree to which the BLS satisfies them, mainly in the unforeseen crisis as coronavirus contagion. According to Dewey, an education is "the development of all those capacities in the individual which will enable him to control his environment and fulfil his responsibilities" and he emphasized that education system is a tri-polar process: teacher, students and curriculum (Aggarwal & Jca 2010:14). "The aims of education, including distance education, cover a wide spectrum" (Holmberg, 2005:19).

With appearance of the novel COVID-19 disease that has become worrisome de facto later, the entire world has been caught between a pair of pliers, on one side, struggling in an effort to trap the COVID-19 disease, to alleviate its transmission and to eliminate completely. On the other side, sustaining of all of sectors intact run without any damage including education sector that touches enormous segment of people, these are students. To avoid disruption of educational process, all education institutions worldwide have taken necessary procedures where some imposed protective actions such as social distancing, mask wearing, ongoing hands washing so on, others had no choice but to move

entirely into online teaching–learning mode. Of course, using online learning varies across countries in an emergency context (Aguilera-Hermida, et al., 2021).

The first pathological case of COVID-19 disease worldwide was reported in the first of December 2019, and the first hospital intake date was in the sixteenth of December 2019 (Huang et al., 2020a:499). The first case of COVID-19 disease in Turkey was discovered on March 11, 2020 and the first death case caused by COVID-19 took place on March 17, 2020 Turkish Ministry of Health (2020). Without doubt, the widespread has altered the working conditions worldwide in about one month. Most of the countries worldwide and Turkey is no exception, are languishing from this pandemic that has impacted on all walks of life; economics, politics, education, health, culture, societal, etc. Based on UNESCO (2020) data, an education and training life of majority of the students (92%) across the world have been affected by the advent of disease by April. While the number of countries that shut down schools in March was six, this number jumped into 195 a month later (Hebebci, et al., 2020:267). Subsequently, the outbreak of the COVID-19 caused the worldwide universities and Turkish universities one of them to close the campuses and compelled them to head to online learning system (Senel, S., & Senel, H. C. 2021; Serhan, 2020; De, 2020; Muftahu, 2020; Murphy,2020; Weeden & Cornwell, 2020; Singh, et al., 2020). In the meantime, in order to address the novel COVID-19, nearly all the world, and including Turkey, has ordered to shut down the public school and tertiary institutions as an emergency procedure to prevent prevalence of this disease, with the hope that advice of public health personal on social distancing could assist to mitigate the infection. In this frame, most of the Turkish higher education institutions were not full-prepared for this kind of comprehensive and rapid transformation in educational environment (Senel, S., & Senel, H. C. 2021).

An unexpected and sudden transformation from traditional learning to online teaching style caused some obstacles and difficulties experienced by users. In this vein,

As transitioning quickly to remote learning is one of the main challenges of universities in response to the Covid-19 pandemic, universities are rising to the challenge by preparing a roadmap in relation to supporting continuity and sustainability of learning. (Muftahu, 2020:420)

Moreover, the transition operation into online learning mode was “painful process not only for the administrators and teachers but also for the students” (EVİŞEN, et al., 2020). As Tümen Akyildiz, (2020:330) stated, students are the most important group of stakeholders affected by the distance learning system. There is, therefore, a need to seek a change in teaching modality from the conventional time-honored “talk and chalk” learning method, to computer-based (online) learning one and to see its effect on students’ attitude and engagement including in the wake of the outbreak of COVID-19 and, quarantine and lockdown actions. As such, the existing study also, in addition to measure students’ perceptions towards the transformation to use of BLS, strives to explore some challenges or difficulties learners faced, as well as traits Blackboard system has.

Since the early spring of 2020, Turkish universities have been facing a huge transformation from conventional in-class education to online teaching-learning mode. In a short time period, millions of students had to stay at home, and proceed with studying in front of a computer screen, and take the courses through the internet network. Furthermore, nowadays, most of the postgraduate students are enrolled as a part-time student, because the fact that they are working in jobs, companies, or businesses of their own, hence distance eLearning assist them a lot due to their time constrain. Very little information exists pertained to the experiences of students towards LMSs in Turkish universities, notably in perilous events such as the pandemic we are currently living, and lockdown and quarantine procedures so as to prevent COVID-19 outbreak. This study, therefore, will center on how satisfied with BLS for higher education students ais under COVID-19 disease. It is worth noting that some universitıes did not have to start from scratch with LMSs, unlike some institutions which have struggled with adapting the instant shift to online learning (Ali, 2020). In this line, a large number of instructional establishments in Pakistan were compelled to suspend online classes for a limited period owing to the learning and management systems unavailability (Adnan & Anwar 2020:46).

Here, it is noteworthy that, in light of acceleration of technology advances in instruction fields, this has reflected on size of technology-based education market. Alokluk, (2018: 144) mentioned that “Global e-learning market is experiencing growth with e-Learning being increasingly used to facilitate talent management”. As a result, the global eLearning (online learning) industry grew by over 900% since 2000 thanks to the

internet growth Lewis (2020). By 2022, the global eLearning market is predicted to grow more than $240 Billion Erin (2020) and it will get to $325 Billion by 2025 Lewis (2020). Nowadays, there are over 700 LMS vendors in the market, and the universal LMS market was estimated at $8.76 Billion in 2019 and was anticipated to increase to $38.10 Billion by 2027 Nestor (2021). Furthermore, Blackboard is the most popular LMS provider in the whole of North America and has the largest market share of LMS companies in the US and Canada combined in 2017, with close to 30% of all educational institutions use Blackboard Lewis (2020).

In summary, technology plays a core role in designing smoothly and effectively teaching and learning delivery mode in line with users' needs to encounter any situation they live. The role of technology has been clearly apparent in the swift transformation process, notably amid COVID-19 spread. As far as the technology is concerned, some consideration should be taken to enhance satisfaction and effectiveness of the transition to online learning system. Investigating tendency of users towards online teaching and learning system is a much important issue, with a view to identify which online education format is convenient for users' needs, on one hand, and to support strengths and better weaknesses for both system and users alike, on other hand. All above to gain a satisfactory, effective, efficient and adequate online learning system whatever situation it is.

This proposed dissertation composes of five major parts. First part has a very brief look at the introduction regards to technology and its relation to online education system in the middle of COVID-19 disease period. As well as, it contains problem statement to determine question and sub-questions of study, research model and hypothesis, purposes and significance, along with delimitations of the study. The second part relates to theoretical framework that comprises three sections; firstly, literature review focuses on LMS concept that discussed history of online learning, definition of distance education, online learning, eLearning, LMS and Blackboard Learnıng System BLS, then traits and drawbacks of BLS. Moreover, it highlights previous studies that debate satisfaction with transformation towards LMSs under technological advancement and COVID-19 disease, while briefing of some previous fundamental articles and searches that have a very association with the present study. Second section touched on overview of Turkish higher education generally and one University that is study field in particular and what they have

done amongst COVID-19 outbreak. Third section is about COVID-19 disease: origin, characteristics and transmission, and its effect on education system. The third part will take empirical framework of research including methodology, findings and discussion. Finally, the fifth part involves recommendations, conclusions and limitations of the study.

1.2 Problem Statement

"With the maturation of the LMS and critical mass adoption across higher education, there is a need to look deeper into how the LMS is being used, to see if it is still meeting the needs of faculty and students" (Rhode, et al., 2017: 69). The research's findings of (Ituma, 2011:63) drove to ask main questions for stakeholders, one of them; "how to ensure that e-learning platforms are used effectively in enhancing active learning". In addition, understanding students' attitudes toward LMS is a vital issue for advancing utilization of LMS and effects (Liaw, 2008:865).

Several literature reviews and researchers (Liaw, 2008; Alokluk, 2018; Muthuprasad, et al., 2021; Bataineh, et al., 2021) including author have shared the same research problem, where it is very important to view the perceptions and preferences of students when it comes to devising the LMSs and their materials to make the learning process effective and productive. The question was close to the existing thesis raised by (Alokluk, 2018, p133) "Now the question is: how effective is this Blackboard system?", the very question was repeated by (Heirdsfield, et al., 2011) and in the same line, (Bataineh, et al., 2021) investigated the effectiveness of distance education and specified the challenges encountered students amid COVID-19. (Aboagye, et al., 2021) also have asked the next question, after discussion of the challenges were faced by the tertiary students in online learning, "will the e-learning be effective in this pandemic era?". On their part, AlKhunzain & Khan (2021) recommended an experimental study to measure the possible implications of BLS for support it. However, the problem here is that there are conflicting opinions about satisfaction with shifting to Blackboard Learning System LBS (LMS) for university students. Hence, we have two schools of thought which includes those who share the opinion that transformation to BLS is satisfactory, effective

and efficient, specially, during COVID-19 disease era, and the others who opined that it is not that satisfactory.

Based on (Muftahu, 2020), the challenges of sustaining higher education such as resistance to accepting adoption of technology and remote education on the part of some students and academic staff have ensued, not least in developing countries owing to the outbreak of COVID-19 disease. Therefore, there is a need to explore what students perceptions have emerged in specific, under pandemic as COVID-19, in attempting to gasp how satisfied with these LMSs (Blackboard) for high education students are.

As a result, an evaluation and measurement of the satisfaction of shifting to BLS and how satisfactory is should be made, for more understanding and solving challenges. Accordingly, this current study will figure out and measure the satisfaction of transformation totally to BLS as a tool to face stopping and to carry on education process for college students without any postpone, at a University in Turkey (2020) through conducting comparison between undergraduates (Bachelor) incorporating freshman, sophomore, junior and senior and postgraduate who contains Master and PhD students. In view of the above, this study investigates a main research question, which is: 'How satisfactory is the complete transformation of educational process into Blackboard learning system BLS (LMS) during the outbreak of COVID-19 disease at a University in Istanbul for high education students – 2020'. This in turn will give rise to the following questions that contribute to guide the present research:

Q1: What are the perceptions of high education students towards transformation to Blackboard Learning System BLS during COVID-19 pandemic?

Q2: Which axes defined by current study have the highest impact on high education students' perception concerning satisfaction with the BLS?

Q3: Have the demographic dimensions had an impact on the undergraduate and postgraduate students about satisfaction with Blackboard Learning System BLS during COVID-19 disease period?

Q4: What are the traits and drawbacks of using the Blackboard Learning System BLS in the wake of COVID-19 disease period?

1.3 Research Model and Hypotheses

Research Model

The main idea of Technology Acceptance Model (TAM), which was introduced by Davis (1989), revolves around if the users have a positive perception about usefulness and ease of use, this in turn gives rise to a positive attitude towards adopting the technology, which will contribute to enhance the actual use of system later on. As well as, this model has undergone many expands and developments by several scholars and researches, wherein in addition to those two variables, the external variables were investigated, in a bid to understand their direct and indirect influence on users' attitudes towards technology use, especially in education (Aguilera-Hermida, 2020; Al-hawari & Mouakket, 2010; Kemp, et al., 2019; Maqableh, 2015; Sahin & Shelley, 2008).

Ribbink et al., 2004 confirmed that positive attitudes often lead to satisfaction. Sahin & Shelley, (2008) stated that it is not easy to address students' needs and optimize their education, if the satisfaction of students in terms of online learning is not investigated. The satisfaction about technology is conceptualized as a key link in their outcomes, with increased enjoyment connected to greater levels of student engagement, which is also linked to increasing student learning. They added that usefulness, computer expertise and flexibility are essential to enforce student satisfaction with online learning. Students' satisfaction, motivation, and attendance are essential to the success of the online learning (Haleem et al., 2021). For their sides, Al-hawari & Mouakket, (2010) stated that, according to the previous study conducted by Lin and Sun (2009), there is a positive and association between satisfaction and TAM factors. They also mentioned that some literature revealed that the intention of repurchase was positively impacted by satisfaction within categories of the products, and it is more likely to keep customers as satisfaction increases. Where "The more satisfied the users were, the easier it was to get attached to blackboard system" (Al-hawari & Mouakket, 2010:303). Moreover, the usefulness and ease of use online learning or LMS, along with the external variables are a significant factors that play a role in the satisfaction with and the effectiveness of online learning or LMS (Hall, 2006; Liaw, 2008; Parker & Martin, 2010; Carvalho, et al., 2011; Maqableh,

2015; Findik-Coşkunçay, et al., 2018; Albashtawi & Al Bataineh, 2020; Nurakun Kyzy, et al., 2018; Hamid, et al., 2020; Aguilera-Hermida, 2020; Kado Kado, et al., 2020; Ibrahim, et al., 2021; Emiroglu, et al., 2021).

Online self-efficacy, as per (Haleem et al., 2021), is the flexible indicator for establishing student satisfaction and with the advent of technology, the technology self-efficacy level of students has been considerably developed. Santoso, (2021), based on his model, claimed that engagement has an effect on satisfaction significantly and positively. Hall (2006) also confirmed that students engagement contribute highly to the successful implementation of LMS.

As such, the TAM model in the current thesis will be employed, as the extent to which the TAM model with its external factors are going to contribute to enforce user satisfaction of the system usage, as demonstrated by many studies (Al-hawari & Mouakket, 2010; Haleem et al., 2021; Sahin & Shelley, 2008; Rani et al., 2014). Therefore, the proposed research model in this thesis will count on six axes (Self-efficacy, Engagement, Usefulness, Communication and Ease of Use, Challenges and Satisfaction), which have thirty items, in an effort to arrive at finding out how satisfied with the transformation into Blackboard Learning System BLS for high education students during COVID-19 disease period. To this end, the Satisfaction will be employed as dependent variable and the others as independent variables (see research model Figure 1.1).

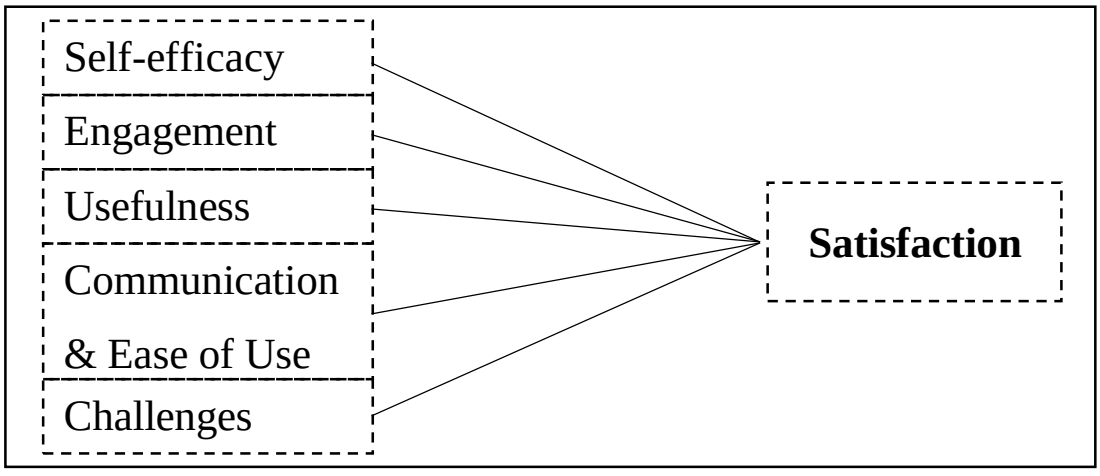

Figure 1.1 Research Model (Source: Author)

Hypotheses

In the light of the questions asked in the existing dissertation at hand that look at the extent to which the swift shifting into Blackboard Learning System BLS mode influence effectively, efficiently college students' satisfaction in the shadow of COVID-19 time. They hereby drive the research to suppose hypotheses intended to lead to realize objectives of study and to receive the satisfactory answers for raised questions. To this end, the following null-hypotheses have been theorized:

H1: The Self-efficacy, Engagement, Usefulness, Communication and Ease of Use, and Challenges axes positively have no effect on students' Satisfaction.

H2: There is no statistically significant difference between undergraduate and postgraduate students' perception on the level of Overall axis of the satisfaction with BLS.

H2a: There is no statistically significant difference between undergraduate and postgraduate students' perception on the level of Self-efficacy axis of the satisfaction with BLS.

H2b: There is no statistically significant difference between undergraduate and postgraduate students' perception on the level of Engagement axis of the satisfaction with BLS.

H2c: There is no statistically significant difference between undergraduate and postgraduate students' perception on the level of Communication and Ease of Use axis of the satisfaction with BLS.

H2d: There is no statistically significant difference between undergraduate and postgraduate students' perception on the level of Usefulness axis of the satisfaction with BLS.

H2e: There is no statistically significant difference between undergraduate and postgraduate students' perception on the level of Challenges axis of the satisfaction with BLS.

H2f: There is no statistically significant difference between undergraduate and postgraduate students' perception on the level of Satisfaction axis of the BLS.

H3: The demographic dimensions positively have no an effect on the program students study on the satisfaction with BLS.

1.4 Purposes of the Research

Due to the high proliferation of COVID-19 disease worldwide, many spheres of our life have been affected. To address this spooky pandemic, the adequate solutions should be looked for, in an effort to defeat and overcome status for the time being. Indeed, an education is one of those sectors that has been affected, thus, it necessary to find available alternatives to keep going educational process. Here distance learning, online learning or also so-called E-learning wherein Blackboard, which is one of LMSs, is used as platform for it, can be seen as the very best and fast substitute, including in the exceptional conditions.

As (Kado Kado, et al., 2020:127) stated, a vast array of studies have been conducted on efficacy of LMS in the formal class, hence there is a need to scrutinize its effectiveness online empirically. In support of that, (Holmberg, 2005:190) wrote, investigating students' own opinions on distance education course is of paramount importance and Balkaya & Akkucuk (2021) stress that how frequently or effectively existing applications of LMS in the market is request a detailed analysis.

The bulk number of scholars have studied the transformation to online learning environments in the scope of coronavirus (GÜRLER, et al., 2020:1896). Despite the increasing evidence that LMSs (Blackboard) are more effective, potent worldwide than conventional education and vice versa, but that literature reviews about satisfaction with these systems and students' perceptions Turkish nationwide are very little, at least until this moment, by the best knowledge of the author. In addition to that, measuring the use of LMS, nonetheless, is a challenge, and this measurement often draws on guess-based estimates (Rhode, et al., 2017: 70).

As with the research purposes presented by massive literature (Al-Balas, et al., 2020; Agarwal & Dewan 2020; Adnan & Anwar 2020; Tümen Akyildiz, 2020; Radha, et al., 2020; Kado Kado, et al., 2020; Balkaya & Akkucuk, 2021; Emiroglu, et al., 2021; Bataineh, et al., 2021; Alsobahi, 2017; Ituma, 2011; Parker & Martin, 2010) regarding students' perception, attitude, opinion, and belief towards using technology-built education. The existing research as well expects to aim to interrogate higher education students' opinions at a university in Istanbul regarding the totally suden transformation to

BLS in the wake of the spread of COVID-19. To understand university students' satisfaction towards using BLS , the following axis; Self-efficacy, Engagement, Communication and Eas of use, Usefulness, Challenge and Satisfaction should be measured in the shadow of COVID-19 disease.

As a result, in view of the above, it could be said that the core purpose of the existing study would be to find an answer to the main question of this study that is:

'How satisfied with the transformation to Blackboard Learning System BLS for high education students at a University in Istanbul-Turkey, during COVID-19 disease period is'. To answer this basic question, such study endeavors to focuses on comparisons between undergraduate and postgraduate students to estimate how satisfied with the transformation to BLSs, during COVID-19 disease period is. To achieve that, two sub-questions arise themselves must be investigated at a time:

How satisfied with the transformation to BLSs, during COVID-19 disease period is on undergraduate students.

How satisfied with the transformation to BLSs, during COVID-19 disease period is on postgraduate students.

Furthermore, the ancillary purposes the study tries to reach progress in accomplishing:

To know the overall tendency of higher education students towards using BLS among COVID-19 time.

To highlight the traits and drawbacks of using BLS in the middle of coronavirus.

To contribute to some recommendations and suggestions help with successful implementation and effective use of BLS.

To sum up, the projected purposes of the current study at hand:

To investigate the satisfaction with shifting toward BLSs through recognizing the impact of the previously mentioned dimensions on such the satisfaction of transformation.

To asses experience of students in using LMSs during COVID-19 disease era.

To ascertain difference between undergraduate and postgraduate students' perception towards BLS.

1.5 Significance of the Research

It has become necessary to deal in different way wıth COVID-19 disease and a living with it should be made. This deadly situation has flipped out the offline teaching and learning process. Then almost all instructional institutes have flown straight to alternative online education system, to avoid stopping education delivery for all categories of students. Much of the research studies regarding LMSs or online learning and, problems and obstacles have been taken place in a nature, normal states, not compulsory and in stable context, not disruptive. However, with appearance of disasters and epidemics, the tremendous opportunities have been generated to conduct researches, papers, articles, dissertations and case studies in this regard. All these scientific papers strive to meet the pressing needs of instruction process persistence in an effective and successful manner.

Hamid, et al., 2020 have drawn attention to existence of the paramount need to discuss the adoption and effectiveness of LMS. Scarcity of studies about students' perception regarding the satisfaction with drastic transformation for BLS, at Turkish Universities in general and University under study mainly in the wake of COVID-19 disease, poses opportunity to gauge the opinions of learners. In an effort to determine the extent to which BLS is satisfactory, as well as identifying the advantages and disadvantages of using the BLS. As far as I know, there the Turkish literature exist taken some subjects matters related to how students perceive and what their attitude about use, acceptance and embrace distance education and online learning or LMSs for instance, Google Classroom, Moodle, and also to discuss the impact of these learning delivery modes, along with advantages and disadvantages before or midst COVID-19 time (Tümen Akyildiz, 2020; Beltekin & Kuyulu, 2020; GÜRLER, et al., 2020; Findik-Coşkunçay, et al., 2018; ACAR & KAYAOGLU 2020; Hakim & Kawamorita 2020; Giray, 2021; Emiroglu, et al., 2021; Terzi, et al., 2021; EVİŞEN, et al., 2020; Tezer & Çimşir, 2018). The same thing applies to the immense none-Turkish studies that have touched on the same above-mentioned topics, too (Aguilera-Hermida, 2020; Allo, 2020; Kado Kado, et al., 2020; Sofi & Laafou 2020; AlKhunzain & Khan 2021; Saidi, et al., 2021; Butola, 2021; Ibrahim, et al., 2021; Muthuprasad, et al., 2021; Al-Salamat, et al., 2020; Kaur, et al., 2021; Alsobahi, 2017; Gulbinskienė, et al., 2017) to name just a few. As such, this is

the first study to measure how satisfied with the totally change into the 'Blackboard' Learning System BLS for high education students among coronavirus pandemic is whether in nationwide or University level under study, through discovering the relationship between undergraduate and postgraduate students.

In this proposed thesis after almost of twenty months of applying BLS as online learning delivery tool, the evaluation of using BLS and considering concerns about the satisfaction with the rapid transformation to this sort of system midst COVID-19 pandemic should be undertaken to look forward to the future prospects associated with the technology-based education systems developments.

In brief, an importance of the current study is similar, to some degree, to the research significance of Kado Kado, et al., 2020. Given all above, thus, the present research will acquire the very importance combined with the following:

- Provide realistic study about the satisfaction with Blackboard in COVID-19 disease period at a University.
- Deliver a precious statistical information related to students' perceptions, impressions and concerns in terms of using BLS during COVID-19 time.
- Since COVID-19 disease is a relatively novel field of study, this proposed dissertation provides an original contribution to the research base for tertiary institutions as well as beyond the COVID-19 disease.
- The outcomes of proposed study will enable faculty member and policy makers at University unser study in particular, in Turkish higher education institutions in general to get a better uptake as regards students' perception towards online education or LMSs and their challenges experienced during unforeseen COVID-19 pandemic.
- Serve as a significant contribution, especially with regard to the University has ınternatıonals students, such means that there is various cultures.
- Has a bit littel add value to researches of the University in this regard, as it offers several contributions to literature in the field of study, as well as the practical contribution.

1.6 Delimitations of the Study

The existing proposed research at hand has been carried out in the wake of COVID-19 proliferation, above and beyond quarantine and lockdown actions, not only nationwide but also worldwide. This, in turn, leads to delimitate the study as the following:

The current study has been confined in using BLS that is one of LMSs, where every university in Turkey is entitled to use its own appropriate LMS.

Study population and period represent all students enrolled in academic year 2019-2020 (second semester) and 2020-2021, and they also employed using BLS as online education mode to complete their study due to the COVID-19 outbreak.

The targeted study sample has been made up of undergraduate, graduate and postgraduate students, and female and male students of university for all of different disciplines.

The surveyed students have witnessed COVID-19 disease pandemic and tight lockdown measures in Turkey that started with appearance of the first case on the eleventh of March, 2020.

The proposed study has investigated undergraduate, graduate and postgraduate students' perceptions at a University in Turkey.

Therefore, respondent's data collection and analysis relied on a comparison between two categories based on the program the students study: postgraduate students' program included Master & PhD and undergraduate & graduate students' program included Bachelor.

CHAPTER 2

2. THEORETICAL FRAMEWORK

Chapter two was split to three section; first, literature reviews to overview concepts and differences of various technology-based education terminologies and their relationship with each other including BLS focus of the current study, with their features, pros and cons. As well as previous studies were reviewed to clarify students' perceptions, attitudes and experiences towards using online learning or LMS with the challenges and obstacles they have and the factors affecting their use. Second, about online learning in Turkey. Finally, the earlier debates of COVID-19 disease and implications on the tertiary education process, then on university students are somewhat covered. All that for exploration the satisfaction of university students with transformation to BLS while coronavirus spread.

2.1 Literature Review

Here, in this section, we will in-depth try to have a look at literature reviews in an effort to fully comprehend the connotations of digital education or so-called online learning or LMSs, in order for us to be able to distinct obviously between the diverse and varied terminologies that have a relationship to technology-based education systems. Followed by prolonged overall review of the transformation to LMSs under the shadow technological evolution and COVID-19 pandemic. While displaying recapitulation of some previous fundamental researches and articles that are most related to the current study in terms of examination of the satisfaction with transition towards online learning

or LMS by means of students' perceptions and determining dimensions affecting both user or system itself, in regular as well as in special circumstances.

2.1.1 Online Learning System Overview: Concepts and Differences

The several and numerous terminologies, that referred to the digital technology-built education and are used in many different names and nomenclatures with varied forms and manners, will be highlighted in endeavor to ensure perception of discrepancies among them. The historical sequence on the onset of technology evolution of the recent education systems from the inception correspondences to existing developed education systems will be narrating. Moreover, LMS with BLS is going to be extensively explained to recognize their feature and function, along with traits and drawbacks they have, in addition to how to implement effectively the BLS is going to be debated as well.

2.1.1.1 The Digital Education

In fact, the digitization relied on the technology development has become recently the axis of the transformation in all facets of life. Obviously, the education process has got a share of this digital transition more than before. The digitalized revolution, based upon (Ali, 2020:22), "can synergise the education ambitions and interests of the students who have become digital addicts". As (Dillenbourg, 2016:557) argued, in his study entitled the evolution of research on digital education, that "the evolution of learning technologies has been mostly driven by the evolution of technologies". (Soroka, 2019:77) added that digital education has undergone a shift from offline to online education thanks to Internet. Generally, "the history of digital education is much shorter than the history of information technology", it has started in 2001, while launching the Open Course Ware project by the Massachusetts Institute of Technology. It is described as organization process of interaction between users within a digital learning environment, the tools used by digital education can be grouped as following; Tool software to founding electronic learning materials, Platforms to provid access to materials and Platforms to interact interactively among people involved in the instructional process such as forums, webinars, social networks, chats Soroka (2019). The digital platforms, based on Fawaz &

Samaha (2021), such as Blackboard are used for “the online learning activities comprised of receiving instruction and delivering course requirements, such as assignments, presentations, reports, and exams”. Soroka (2019) also has pointed out the trends and tendencies in the digital education that contribute effectively to improve the pedagogical paradigm and pedagogical technologies, of which are gamification, mobile learning, adaptive learning, and LMSs for distance or online learning. In this vein, Dillenbourg (2016) deduced that the trends such as more physical, less design, more social, less semantic, more open, more role of teachers, more video, more mobile etc. portray the learning technologies evolution in digital education as a whole and these trends influence learning technologies used in digital education as well. However, (Thomas, 2011:100) states in his book ‘Digital education: Opportunities for social collaboration’, “the integration of learning technologies in educational institutions is a complex process and presents stakeholders with potential opportunities as well as significant points of resistance”. He also adds that understanding the integration process is “crucial in the age of digital education” and has a high risk. Moreover, integrating new technologies is influenced many factors: “the speed at which educational technologies move in and out of fashion; the cost of acquiring and developing them; the effort needed to train teachers to use them; and the time needed to adapt existing learning resources to new systems” (Thomas, 2011:3) for one.

As illustrated above, the digital education, termed by Erin (2020) as all online educational practices, depends primarily on the technology, then it can be said the technology helps to strengthen the learning process. This in turn, leads to another terminology is called technology-enhanced learning (TEL) refers to “any online facility or system that directly supports learning and teaching” (Jenkins, et al., 2011:448). Furthermore, (Maity, et al., 2021) have overviewed the digital education through online teaching and learning, eLearning and distance learning to explore the effectiveness, accessibility and quality of digital education among COVID-19 disease infection. Such means that online learning, distance education or eLearning is seen as the digital education system.

2.1.1.2 History of Distance Education

As a matter of fact, it would be better to inception in succinct glimpse as to historical origin of distance education; online learning or eLearning as other people like to call it.

Distance education has emerged for around 300 years, as training in the form of lessons delivered to learners was offered weekly by communication via US mail. The first distance eLearning happened over the radio airways in the 1920s. Then, thanks to the technology of internet, the remote education has experienced the noticeable change dramatically Clark (2020). Given Holmberg online learning started in the USA by Caleb Philipps in 1728, whereas the lessons were provided in means by a newspaper to people interested (EVİŞEN, et al., 2020:74). Holmberg wrote also in his book (2005:3) that distance education initiated probably as correspondence in 1720s, but it indisputably started in 1830s upon some references. In the 1960s, online education originated at the University OfIllinois, India, Dhawan (2020). School distance-teaching organizations were established in USA, England Sweden, and Norway in (1891-1894-1898-1914) respectively (Holmberg, 2005, p.11). Until 1970s, distance education was delivered in the form of printed materials that continued up to the appearance of television broadcasting technique, along with radio, audio tape, fax, videos and phone were tried as well (Senyuva, 2011:148). In 1970s, the technology of Satellite Instructional Television was used for educational broadcasting over the radio to provide uniform access of knowledge to all the students in India, (Kaur, et al., 2021). A university distance-teaching founded in 1970s-1980s, except University of South Africa in 1946 that became a distance-teaching university in 1962 (Holmberg, 2005:4-11).In the early 1980s, distance-learning programs via television increased (Senyuva, 2011:148). As of 1990s, some developed countries like Germany, England and United States of America (USA) employed distance education for finalizing undergraduate degrees, graduate and postgraduate studies and certificate programs (Senyuva, 2011:150) and in 1994, India's EdTech trip lastly started in India with the launch of 'Educomp' Dhawan (2020). Since the late 1990s, internet/web-based distance education has been initiated considerably using across computer networks (Senyuva, 2011:149).

2.1.1.3 Distance Education, eLearning and Online Learning

Before going into details of Learning Management System (LMS) and features, we should stop over some relevant conceptions and terms associated with it among them; online learning, eLearning, distance education, synchronous and asynchronous in an attempt to understand more as regards role of LMS and its relationship to them. Many of us may be wondering about whether there is a difference between them or not, what are the similarities and the differences they have so on, the same questions have been raised by (Littlefield, 2018; Moore, et al., 2011). In this end, an overview will be made through looking over literature to shed some light on definitions and descriptions for some pertinent digital education and pedagogy system terminologies in a bid to chart a big picture of LMS conception and to simplify the meaning.

The transformation from an on-campus-based to a technology-based education delivery has resulted in an increased demand for various online learning systems that are able to address the different needs of users in educational process and to enable instructional institutes to provide training and educating for anyone, anytime, and from anywhere. Moreover, the online learning is supported as a substitute of face-to-face education because of the increased number of users and it is the best option in corona virus time (Aboagye, et al., 2021). However, this sort of learning is only contingent surrogates of schooling; it cannot supersede live education (Tümen Akyildiz, 2020:323). This in turn has pushed researchers, scholars, subject matter, specialist, and experts to pay attention and to discuss in-depth over the role of online learning system, effectiveness, using, users' satisfaction, benefits, applicability, constraints so forth, in teaching and learning process for now.

There is considerable argument among scientists and researchers pertained to the difference between two terms Learning and Teaching but that is not subject matter in the existing study. Thus, Learning is described as "a constructive process in which information is converted into knowledge through a process of interpretation, correspondence, representations and elaboration" (Siagian, et al., 2020:73). In this context, as with technology evolution, teaching and learning paradigms and methods as well have an upgrade got in response to meet needs of learning process for both instructor and student in line with any novel situation and to create sustainable education

development. Subsequently, we should distinguish between two forms of learning approach; the former, teacher-centered learning approach that is process of transferring the knowledge from teacher to students in which teachers play important roles in the learning process and are information providers, that is, the most dominant source of information (Emaliana, 2017:60). The latter, student-centered learning approach that is "an approach to learning in which learners choose not only what to study but also how and why" Teaching Excellence in Adult Literacy (2010). As (Ituma, 2011:58) written, the increased embrace of online learning by higher education institutes is seen as the vital element of the transformation into student-centered learning. Moreover, blended learning, eLearning, flipped learning, and massive open online courses (MOOCs) are miscellaneous new learning delivery approaches and they are the produce of evolution process in technology (ACAR & KAYAOGLU, 2020:68).

Therefore, (Ruzgar, 2004:22) describes Distance education is "one of the newest forms of education that basically depends on these communication and information technologies". In this regard, Information and Communication Technology ICT as stated by (Naresh, 2020: 465) refers to "technology that provides access to Information technology but focuses primarily on communication technologies. This included the internet, wireless networks, cell phones, and other communication media". The mobile phone, online whiteboards and interactive whiteboards (smarts boards) are also some tools of ICT per (Naresh, 2020: 466). Distance education is expressed by (Holmberg, 2005:2) as "consistent non-contiguous communication between the supporting organization and its students".

(Clark, 2020:414) summarized that distance education "has expanded exponentially from the time of correspondence courses due to the power of the Internet and high-speed communications of video and audio". He adds that this expansion "will continue with the move to smartphone use, virtual and augmented reality, and as a tool for advancing blended-hybrid and flipped course structures" (Clark, 2020:415).

Another concept of electronic distance or online learning is eLearning that falls within a larger term of technology-based learning. As such, Boateng et al. (2016) refers to eLearning as the application of ICTs to better access to resources, which make teaching and learning process easy. Examples of electronic learning (LMS) tools include

Blackboard, WebCT, Moodle and Web 2.0 platforms (Tarhini, et al., 2013). Likewise, IWiLL web-based learning system, Blackboard, Moodle, gadgets etc. are examples for eLearning platforms (Eraslan Yalcin & Kutlu, 2019:2415). In this context, eLearning is defined by (Moore, et al., 2011) as "using computer technology to deliver training, including technology-supported learning either online, offline, or both". Likewise, Azhari & Ming (2015) termed the eLearning as "the usage of electronic devices along with or without the help of internet to conduct a learning environment where it can be beneficial for the student". Web-based computing, distributed learning, online learning, or internet-based learning is listed as another term for eLearning (Butola, 2021:422). In order to complete delivering instruction or learning, it (eLearning or online learning) needs secure and convenient media to support the transfer operations over these media such as remote education modes or platforms rely primarily on technology and its diverse tools. A reliable and easy-to-use technology is indispensable to ensure the success of the online learning process (Saidi, et al., 2021) whereby the smoother and the higher quality of online systems have, the more these systems would be adopted and accepted by large-scale people at large. On a similar note, the quantity and quality of online learning systems like Blackboard in tertiary instruction have risen considerably throughout the years based on several studies (Alokluk, 2018: 133), but awareness of digital platforms per Agarwal & Dewan (2020) is a limiting factor. Moreover, these systems require extraordinary preparations, capacities and IT skills, plus smart applications and devices (Bataineh, et al., 2021:138). Elçi (2021) also confirmed that even though online education approach is accepted and respected than before, there is a need to focus more on technology-oriented instructional management to keep an education process in emergent conditions.

On their end, (Saputro, et al., 2021:113) described that online learning is part of technology-based learning that employs the internet, intranet, and extranet resources and requires a LMS in its implementation and stages to get its effectiveness. Along similar lines, online learning is defined as

> Learning experiences in synchronous or asynchronous environments using different devices (e.g., mobile phones, laptops, etc.) with internet access. In these environments, students can be anywhere (independent) to learn and interact with instructors and other students. (Singh & Thurman, 2019)

In this vein, the classes in distance learning can be synchronous or asynchronous, thus, Synchronous online learning, as per (Huang, et al., 2020:11) is more systematic learning strategy, as the classes are scheduled at specified times and in virtual online classrooms. In this fashion, students are able to interact in real-time, as a result obtain instant feedback and message as required, it includes, as Littlefield (2018) stated, multimedia elements, for example, phone call-ins, video teleconference, web seminars, and group chats, it was in favor of (Saidi, et al., 2021:959) where a synchronous was more likely by students than asynchronous. In contrast, Asynchronous online learning in which the students are unable to receive immediate feedback and message, besides the learning content is not delivered in live classes, but on different LMSs or forums (Huang, et al., 2020:11). That is, it depends, for instance, on e-courses, email, and audio and video recordings Littlefield (2018), as well as group interactions within students are restricted (Tümen Akyildiz, 2020:324). Moreover, Gautam, D. K., & Gautam, P. K. (2020) perceived that asynchronous and synchronous are online teaching styles, whereas asynchronous is called 'recorded' as the contents are prepared already, then the students can watch them online whenever they want, namely, no direct online communication, adversely, synchronous' is called 'live broadcasting' wherein real-time interaction and communication between educators and students. (Heirdsfield, et al., 2011) added that interactions in Blackboard take place synchronously or asynchronously. Sari & Nayır (2020) mentioned that open education, eLearning, virtual learning, m-learning, online learning are in fact various tools of distance learning, and they are different from each other concerning the system or approach they utilize.

2.1.1.4 Learning Management System LMS

The growing introduction of LMSs in all levels of instruction has been noted across the world. Thus, the LMS has become a crucial tool for almost all tertiary instruction institutions, and a driving force in online learning (Rhode, et al., 2017: 68) that it was gained popularity with the prominence of the Internet, with many LMS platforms available today (Hill, 2017). Balkaya & Akkucuk (2021) add that it has become a major strategic component of instructional institutions, wherein, as per (Gautam, D. K., &

Gautam, P. K., 2020), it is a space designed to meet learners, rate learners, assign, interact, and distribute material virtually.

The first LMS was utilized from 30 years ago, as the UK's Open University used LMS in 1990 Nestor (2021). It is available either an open source platform or a commercial platform (Vasanth & Sumathi, 2020:33) and the utilization is free of charge such as Google Classroom (Alim, et al., 2019:242). However, Elizabeth (2020) mentioned that Blackboard is not free, except trial version that has limited features and an annual subscription should be paid with additional charges for optional features - which points out that LMS is not completely free. It can be easily accessed from any devices such as mobiles, laptops, tablets, and computers.

As we know that knowledge management which is one of the core features of a continuous learning philosophy, and contributes to informal learning - as LMS - "that is learner initiated, involves action and doing, is motivated by an intent to develop, and does not occur in a formal learning setting" (Noe , et al., 2017:266). On her end, Tümen Akyildiz (2020:331) stated that "Learner-centeredness is the main paradigm of higher education". Knowledge management systems help with ameliorate the creation, use, and sharing of knowledge, and the usage of eLearning systems, e.g. Blackboard assists to dilute the knowledge reproduction costs, which give rise to effective knowledge management (Alokluk, 2018: 134). Furthermore, LMS goes a long way in transforming the tacit knowledge which is "based on individual experiences that make it difficult to codify" (Noe , et al., 2017:266), to explicit or codified knowledge which refers to "knowledge that is well documented, easily articulated, and easily transferred from person to person" (Noe , et al., 2017:266). This in turn will lead to the fact that the knowledge loss factors because of memory limitations can be eliminated.

A LMS is described by (Tubagus, et al., 2020:186) "a learning process that utilizes computer information technology equipped with internet and multimedia telecommunications facilities (graphics, audio, video) in delivering material and interaction between instructors and learners". As defined by (Noe et al., 2017:292) LMS refers to "a technology platform that can be used to automate the administration, development, and delivery of all of a company's training programs". As well as, it is "a

software application that helps in administering, documenting, tracking, reporting, and delivering educational courses or training programs" Balkaya & Akkucuk (2021).

The LMS hereinafter referred to in this study as Blackboard learning system BLS facilitate joint learning, allows learners to access class materials, and enables learners to take an exam online. (Eraslan Yalcin & Kutlu, 2019; Malikowski, et al., 2007) described that LMS enables the students to get to the content and the materials and to communicate with each other, too.

LMSs, e.g. Blackboard are in the lead of recent technological developments in tertiary instruction (Heirdsfield, et al., 2011). There are numerous LMSs, for instance, Blackboard, Google Classroom, Spectrum, Schoology, uFuture/iLearn, Moodle Live Meeting, Social Media, and Chat Applications (Saidi, et al., 2021) to name just a few. (Senel, S., & Senel, H. C., 2021:182) mentioned that LMSs such as Blackboard, Moodle, Canvas, Google Classroom and Edmodo are widely used in distance education and delivery integrated functions like communication, interaction and storage.

The LMS, which referred to as Virtual Learning Environment (VLE) or Course Management System (CMS) as well, has developed over decades of technological innovation to become a keystone of institutional infrastructure for education technology (Rhode, et al., 2017: 69). This brings us to another label for LMS that is Course Management System CMS. (Malikowski, et al., 2007:149) stated that Course Management System (CMS), for one, Blackboard, WebCT, Desire2Learn, has become a shared resource at distance education organizations, universities and colleges, and they clarified that LMS and CMS have similar charachteristics but tag them differently. In this line, Tella (2012) mentioned in his research's introduction that Course Management Systems CMSs like BLS are components of eLearning and used increasingly for web-based education. Described by him as an information systems class, which run education process in classroom and online education and developed to reinforce the regulatory processes of delivery, content creation, transport, storage and retrieval, and application. Course Management System (CMS) as Blackboard learning system is useful to students learning and teaching process (Bradford, et al., 2007). It, as defined by (Morgan, 2003:2) is "a software system that specially designed and marketed for faculty and students to use in teaching and learning", the Blackboard one of the common systems. Furthermore, it,

namely CMS, is seen as an online computer system that includes discussion forums, quiz tools, e-mail, chat, assignment tools and other applications in one package Phillips (2010).

A syllabus, assignments, reading materials, announcements, quizzes, surveys, chat, discussion forum, virtual classroom and statistical tools are common features of CMSs or LMSs (Malikowski, et al., 2007:150). Of course, much of these features are available in webs separately or presented differently earlier, yet a unique feature of CMSs or LMSs is an integration method of the features in ways, which surge their usefulness (Malikowski, et al., 2007). In addition, LMS have unique features that assist to customize instructional courses in many ways (ACAR & KAYAOGLU, 2020:76). It is more effective, if it is integrated with conventional instruction (ACAR & KAYAOGLU, 2020:75).

On one side, it should also be recalled that the LMS is not unique to purely online education, but also it can be used for conventional learning environment. (Findik-Coşkunçay, et al., 2018: 18) stated that it has an ability to manage and organize lecture notes and offers platforms for discussion and electronic mail, along with provides the potential of assessment of students through exams, quizzes and assignments, and statistical data on learners' fulfillment. Moreover, it makes educators possible to follow up the students' engagement and interaction in class and has the capacity to back up the full course information involving lecture notes, forums, assignments, grades and discussions. On the other side, (Siagian, et al., 2020:74) regard a LMS like Edmodo to be the e-learning interactive learning models. (Soroka, 2019:78) also believes that LMS is used for distance or online learning. Similarly, (Bradford, et al., 2007) mentioned that LMS as Blackboard is used in distance education, blended or hybrid learning and a supplement to other digital environment learning systems. (Emine & Kalelioglu, 2019:165) stated also "Learning management systems used in the e-learning process serve as an opportunity to prepare the ground for learning". (Gulbinskienė, et al., 2017:182) supported the outcomes of literatures, and substantiated that LMS (Moodle) can be served as online environment and is one of the virtual learning environments.

Getting back to talk about question of commonalities and differences between distance education, online learning and eLearning, and their relationship to LMS and in view of the afore-mentioned definitions and examples given already, it can be received the same thoughts or conclusions reached by some researches. Goi & Ng (2008) believe

that eLearning stemmed from distance education but there are differences between them in terms of interaction, paradigm in education and the technology used in instructional activities. (Soroka, 2019:77) wrote, online learning and distance education have much in commonality. (Parker & Martin, 2010:136) point out that distance learning is nearly a synonym for the word online learning. In favor of previous saying, (Moore, et al., 2011:130) mentioned in their study that literature reviews' scholars think that a relationship between online learning and distance learning exists but seem uncertain in their own descriptive narratives, while they themselves observed presence inconsistence in using terminology for different kinds of delivery methods. Namely, online learning, eLearning and distance education are not the same. As a result, what is manifestly explicit is that there some ambiguity still exist in relation to the differences among terminologies that express based-technology education.

In the light this, we would say that both terms of Online or Distance learning and eLearning are two pieces of the same puzzle and that the LMSs are backbone, cornerstone and a core tool or media for each, wherein both of them try to enhance the students' knowledge employing latest technologies. (Malikowski, et al., 2007:151) wrote in this regard, that the growth in use of LMSs is associated with the growth in online learning. (Saputro, et al., 2021:118) have gone even further, as concluded that Learning Management System can be alternative to online or distance learning effective for learning outcomes. As well as LMSs (Blackboard) and online or eLearning together involve the usage of these modern technologies to optimize the knowledge exchange in learning process. "Knowledge sharing and discussion on common available online platform for classes can improve accessibility" Agarwal & Dewan (2020). Nevertheless, finding the appropriate LMS remains so critical to providing an effective education setting (Saidi, et al., 2021:956).

(Almaghaslah, et al., 2018:618) mentioned that adoption reasons of online learning strategy in university are to solve clashes of students' timetable, to assist students living distance settings, to schedule sessions at convenient times of students and lecturers, and to get better educational outcomes through enforcing student-teacher interaction. Therefore, the quality of online learning relies on end users' opinion, knowledge and skills in discovering the features of LMS tools, along with infrastructure quality (Kado Kado, et

al., 2020:127). Senel, S., & Senel, H. C. (2021) add that the online learning quality could be also negatively affected by lack of the main requirements such as infrastructure, technological tools and skilled staff. To avoid a negative attitude of users towards LMS, (Bradford, et al., 2007) described seven principles of efficient and effective education with good practice that leads to; provide quick feedback, promote communication between students and instructors, encourage active education, bolster collaboration among students, inform great expectations, esteem for various talents and education methods, and confirm time on task. As well as (Huang, et al., 2020:10) mentioned that four conditions ought to be available to effectively manage LMSs:

- Containing of LMS over the automatic services, enabling dilution of the workload of the student and instructor.
- Very coupling among education process and structure of LMS.
- Designing well LMS for providing readily available education experiences for both students and instructors.
- Ensuring the security and integrity of educational data generated for students and instructors to protect their privacy.

2.1.1.5 Blackboard Learning System BLS

Numerous technology-based pedagogical tools, for instance, the Web Course Homepage System (WebCH), the BLS, the System for Multimedia Integrated Learning (Smile), and Web Course Tools (WebCT) have been developed for higher education as to promote online education activities. These online platforms use the Internet to allow students throughout the global to reach out to a set of learning tools like chat rooms, discussion boards, course content management, etc. (Ngai, et al., 2007:251). Additionally, applications of the BLS in higher education as (Bradford, et al., 2007) stated, are distance learning and teaching, blended or hybrid learning and a supplement to other digital environment learning systems.

The Blackboard, hereinafter referred to as the Blackboard Learning System BLS, was launched by Blackboard Inc. in 1998 and the number of users reached 12 Million in over 60 countries in 2006 (Bradford, et al., 2007), this number went up more than 100

Million users in 90 countries Elizabeth (2020). It is not complementary software and is much more expensive to maintain because it incurs a yearly cost of licensing (Carvalho, et al., 2011:826). It is available to the users of the course, the system needs a username and password for access (Tella, 2012), thus safeguarding the educators' intellectual rights, the student privacy, and the course content from external parties. BLS, based on Tella (2012), is an integrated, user–machine system for providing powerful and easy-to use systems, along with delivering content/information to backstop instruction process. The BLS has become "an essential component of computer-based instructional capability" that creates motivational education environments and provides access to the various learning means alike and it serves as "part of a total networked learning environment and as an accompaniment to campus and community-wide networked transaction environments" (Bradford, et al., 2007). In this line, (Carvalho, et al., 2011; Tarhini, et al., 2015) explain that the Blackboard is deemed one of the most common web-built education systems tools within tertiary instruction todays and of the more widely used platforms. (Carvalho, et al., 2011) add that it presents a framework for delivery of course besides its user-friendliness by users and provides various functionalities and features which may be quite convenient for different learning objectives and settings.

> It integrates communication tools, including a bulletin board, chat room and private e-mail. In addition graphics, video and audio files can be included into a Blackboard site. Blackboard also provides instructional tools to support course content such as a glossary, references, self-test and quiz module. Students, too, can place assignments and other materials in Blackboard for courses in which they are enrolled. Furthermore, Blackboard also gives academic staff course management tools for grading, tracking student interaction and monitoring class progress. (Tarhini, et al., 2015:742)

According to Financesonline Website, Blackboard is an application that enables institutions and teachers to communicate and teach their staff or students through a virtual settings and it aims to establish and deliver online/remote courses while learning efficiently for users with few or no face-to-face meetings. On top of that, it can provide scalable design, which helps users to combine the platform with the information system of students and operations of authentication, a CMS, and open-architecture with capable

of customization. Moreover, the Blackboard is one of the salient LMSs, which has been used for the application of eLearning in many countries and as well as is effective in respect with the delivering material to the students AlKhunzain & Khan (2021). In the 21st century, the eLearning (Blackboard) causes a more substantial effect all sorts of the pupil, such as the part-time/full-time or remote education student in the high instruction establishment (Azhari and Ming 2015). Moreover, The BLS also meets the needs of four different types of learners; reader learner, reflective learner, visual learner and kinesthetic learner (Bradford, et al., 2007).

BLS is "a LMS, which is used not only as a repository of information, i.e. course materials and course information but also used as a tool for communication through emails, announcements, discussion boards and podcasts etc." (Alokluk, 2018: 135). It provides for both in-class and online education, learning and teaching materials such as lecture and tutorial notes, and video and audio recordings of lectures, communication among users each other, assessment tasks and involvement in work group, chat, blogs, discussion forums and wikis (Heirdsfield, et al., 2011). In this vein, (Rovai & Barnum, 2007) add also that it is composed of a comprehensive package of communication, content management tools, productivity and evaluation, which enable educators to tailor and deliver online education, and (Bradford, et al., 2007) cite the same thing. In support this, as (Ituma, 2011:60) described in his article, the Blackboard system enables in accessing digital resources and communicating among users, has multiple communication and evaluation tools, for example, discussion forums, chat rooms, and is able to customize for individuals and groups, too. Furthermore,

> Blackboard has an interesting mechanism of follow up which is regarded as very significant in the learning system. One of the key features that distinguishes it with other software is that it has a diverse system of creating and administrating the exams effectively. AlKhunzain & Khan (2021)

The benefits of BLS, given (Bradford, et al., 2007), are increased availability and accessibility, rapid feedback, tailing, better communication and skills building such as organization, time management and communication. Unlike, its flaws are hard to study, cost, specific choices might be limited to certain operating systems, incompetence in

utilization of broadband when materials need to be downloaded each time access is requested.

On another note, the Blackboard is considered as one of collaborative virtual learning environments, too. Therefore, one of the most features in BLS is Blackboard Collaborative, so-called also virtual classroom that is termed as a synchronous environment that promots textual chat and enables real-time interaction among users (Bradford, et al., 2007), this feature as well renders many features to present multimedia packages like, per Akinbadewa & Sofowora (2020), videos, texts, sounds, images, etc. It also delivers a platform for all students to take part equally in education process (Kado Kado, et al., 2020), and virtual interactions are useful for time effectiveness for users (Heirdsfield, et al., 2011).

Furthermore, to facilitate working on the smartphones devices, the Blackboard has a software called the Blackboard mobile learn that is a mobile-based application that can be freely downloaded from the Google play or apple store. It just needs institutions ID and password to use it AlKhunzain & Khan (2021). Balkaya & Akkucuk (2021) wrote that LMSs have been widely used in schools and universities across Turkey. Since the early, BLS has been adopted and used by the university as technology as an online LMS for all users (both on-campus and distance users). The utilization of BLS has increasingly grown and become very necessary due to proliferation of COVID-19 disease, entailing fully closure all of face-to-face activities and tight lockdown measures taken by the power.

2.1.1.5.1 Functions of BLS

The major functions of BLS are considered to be tools for it that contribute to establish its functions. To achieve that, it should be looked at its composition. Subsequently, it is made up of the following: Homepage with four options: My Courses, Messages, Notification and Search is above the page. It enables the users to introduce into the BLS's functions including announcements are employed as timely reminders posted within BLS and optionally sent as email to users. Messages allows users to send posts individually or collectively.

My Courses involves three sections:

- The main menus on the top of page, which include Profile, Grades, Dashboard, Preferences and Log out. Profile can provide the detailed information about student and course details, manage personal profile and account and make synchronous and asynchronous discussions via Forum. Control Panel or Dashboard overviews courses users are taking, with setting options, online users for communications' purposes, in addition timeline, calendar, and upcoming events to contribute to management and organization to use the time efficiently. Grades option is used as assessment tool of students and for calculating total scores, communicating scores, or tracking grades, plus feedback to students. Such points out that BLS has an ability to transmit the course content in the form of announcements, files or information of grades (Grade Books) (Malikowski, et al., 2007)
- Courses Icons, on the left page side, can give details concerning every course, assist users to access to instructional materials and contents, in addition to homework assignments and quizzes, based on, (Liaw, 2008:867), can be provided by lecturers to enable learners to upload their assignment files prior to the deadline. Thus, students are able to submit their homework assignments, which are previously created files for grading, from anywhere and follow whether they are evaluated or not (Bradford, et al., 2007). Exams-quizzes option is used for an evaluation, which includes one or more questions of a diverse range of subjective/objective question types as essay, fill in the blank, MCQ, matching, short answer, meaning that it can be a tool for evaluation of users. BLS can provide Course Dashboard option that enables tracking student use of courses with statistical findings over quarterly school duration. It also allows students to track their progress and grades (Bradford, et al., 2007). Moreover, across Courses it can be accessed to Blackboard Collaborate (Virtual Classroom) wherein, as (Liaw, 2008:867) stated, users can present learning and teaching materials such as video files, Word and PDF files, PowerPoint slides etc. anywhere, anytime; and discussion and chatting sessions, and communication can be held among lecturers and peers each other online. , that is, it allows users making a synchronous

discussion to encourage actively engagement and interaction among users and it, as (Bradford, et al., 2007) added, supports text-based chat, too (see Figure 1.2). It can be said that BLS is seen as vehicle for communication, involvement and interaction among participants within instruction environments.

- Deadline, Feedback, Messages, Forum posts, on the right page side, can facilitate posting messages and posts of discussions between instructors and students and among peers to help support them and to promote asynchronous discussions, as well as getting feedback to evaluate the extent to which tasks are accomplished. Organization and time management are one of the significant functions assist to fulfil due dates.

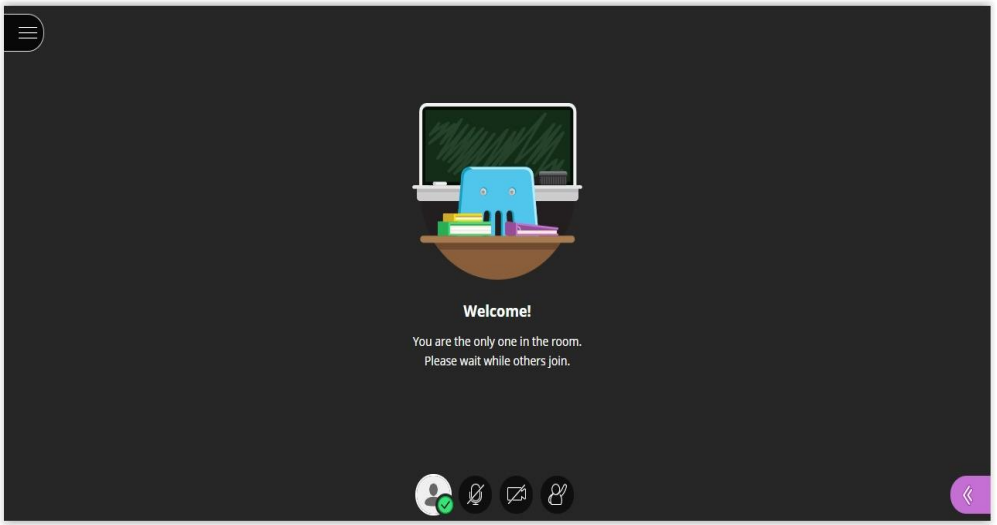

Figure 1.2 The Blackboard Collaborate (Virtual Classroom)
(Source: Kathryn Zawisza , 2017)

Briefly, (Alokluk, 2018; Elizabeth, 2020; AlKhunzain & Khan 2021) perceive that Blackboard is LMS. AlKhunzain & Khan (2021) mentioned that "Blackboard has confirmed to an efficacious LMS". The Blackboard platform that poses the frame of this dissertation, hereinafter referred to as BLS is a standard system that holds too similar elements to the more generic LMS platform utilized by most education institutions. It, by Ituma (2011), commonly involves evaluation tools and multiple communication, e.g. chat rooms, online discussion forums, and highly interdependent online education tracks,

which are able to be allocated to individuals and groups. Which means that those features and tools can facilitate interaction among users (Iskander, 2008).

Given the above-mentioned definitions, explanations and examples cited earlier pertained to distance education, online learning and eLearning, it would be said that there correlation or relationship exists between them, or, in other word, there is similarity to some degree among them and all of them resulted in each other. Moreover, it can be noted that LMSs are employed by all of online learning, eLearning and distance education as a core tools or media to deliver instruction to the beneficiaries. Then, for the sake of the current study's purposes, the remote learning, eLearning, distance education, virtual learning, web-based learning, computer-mediated education and online learning all refer to non-traditional and technological-based learning and teaching methods and environments to deliver instructional courses and to create interaction and communication environments among users in online classes using BLS. Therefore, all these terminologies in the proposed research will be hereinafter referred to as 'online learning' by means of using BLS.

For the sake of success of transition process into LMS (Blackboard), we must get over challenges and difficulties starting from well preparedness until successful adoption of this system that is dependent on many factors and along model of (Bataineh, et al., 2021) the main factors are students, university and technology. Therefore, if the LMSs (Blackboard) are correctly systematic implemented, this in turn will reflect on educators and students' satisfaction, and then will be highly motivated for engagement and interaction along with adoption of this kind of systems. (Eraslan Yalcin & Kutlu 2019:2415) support this as they said, the LMS can be successfully executed by the institutions and the students can be able to embrace it easily. The meanwhile, educational outcomes of LMS will not only surge the technological knowledge level of students and instructors, yet on the digital instructional systems level as a whole, too. In the view of the above, hence, there is the pressing need to investigate students' perception towards the LMS, notably amid COVID-19 status. That will enable us to understand the degree to which these systems influence students' attitude through measuring some traits and challenges that play a vital role in how effective those systems are. In this sense, (Tümen Akyildiz, 2020:324) mentioned that comprehension of students' opinion and belief

towards distance learning in the time of pandemic is a most important for implementation and for the future, so as to ensure its amelioration. The same thing, (Senel, S., & Senel, H. C., 2021:182) affirmed that how effective the online education is, deserve the study. In this subject, as Balkaya & Akkucuk (2021) already said, that there has been the growing use of LMSs in Turkish education institutions. It therefore reiterates this urgent need to study students' satisfaction with transformation to these systems on the level of Turkish education institutes in general, – an existing study location- in particular.

2.1.1.5.2 Blackboard Learning System BLS Traits and Drawbacks

It is worthy to refer that, as extensively explained earlier, once speaking of online, distance learning or eLearning, and pros and cons, bearing in mind some slight inconsistences among them, it is considered to be speaking about LMS – which seen as an effective core vehicle for them - and advantages and disadvantages at a time.

In fact, the advantages and disadvantages of LMS or online learning system contribute to a very substantial extent to generate users' satisfaction and dissatisfaction with using LMS in education system. Several literature referred to that (Liaw, 2008; Tella, 2012; Baber, 2020; Giray, 2021; Koh & Kan, 2020; Al-Samarraie, et al., 2018; Nayak & Suesaowaluk, 2007; Alturise, 2020; Aboagye, et al., 2021; García-Alberti, et al., 2021; Al-Balas, et al., 2020).

Online learning experience in nature represents challenges, primarily amid hectic times (Ahmed, et al., 2021:89). (Bataineh, et al., 2021) agree with that, wherein they stated that an intention and acceptance of LMSs are one of the main challenges faced decision-makers. Accordingly, identifying "the factors affecting adoption of LMS applications is important for future LMS design and educational strategy development and management" Balkaya & Akkucuk (2021). For his part, Tella, (2012) is in favor of that, too. Furthermore, Knowing pros and cons of LMS helps lecturers and learners to get effective teaching and learning environment (Vasanth & Sumathi, 2020:33).

In line with that, (Parkes, et al., 2015) opined that students generally have rather high levels of readiness for competencies linked to the technology usage and the Internet except the knowledge and use of LMSs were lower. Moreover, he extracted that students felt poorly got ready to achieve balance study, social, family and work lives within an

electronic education environment. Students were not also considered to be ready in the competencies involved with working with others, but they were fairly ready to competencies responding to the others and they have low levels of readiness for competencies related to interactions with content of eLearning. Nevertheless, (Muthuprasad, et al., 2021) perceived that technological constraint, instructor's incompetence, learner's inefficacy, distractions, a lack of community and health issues were challenges that influence students' perceptions and preference for online learning system midst COVID-19 pandemic. According to Analysis of SWOC of Dhawan (2020), he is of the view that lack of personal/physical attention, student's capability a confidence level, distractions, as well as time management, anxiety & confusion, frustration, technical challenges are all weaknesses online learning in the time of COVID-19 crisis. He added that despite flexibility of online learning, there are some difficulties and troubles attached to technology such as downloading errors, installation problems, login troubles, issues with audio and video, theoretical content, etc. In this respect, internet speed, internet bundles, technological problems e.g. availability of compatible devices and phone hanging, distractions that include technology, family and television, indolence and lack of motivation, the large number of assignments, unattractive boring content and vague assessment procedures are the most of challenges and obstacles confronted distance education students during COVID-19 (Bataineh, et al., 2021). In support this, (Gautam, D. K., & Gautam, P. K., 2020) mentioned that there are some difficulties that accompanied the transition process to online higher education amid coronavirus spread such as poor internet connectivity, handling with numerical computations, and unavailability of the devices. AlKhunzain & Khan (2021) add the connectivity issue as internet speed was one of the problems of M-Blackboard Learn. Similarly, the lack of connectivity, data limit and data speed are hindrances of internet infrastructure, along with direct interactions in online learning (Muthuprasad, et al., 2021).

Moreover, Tümen Akyildiz (2020) explored that anxiety, boredom and despair instances of students were caused by COVID-19 itself, not brought about by learning system. The weaknesses of the online learning were absence of interaction, difficulties in communicating with professors that cause isolation for learners and feedback, a load of assignments, time management issue, problems in exams methods, and traditional

educational customs. Senel, S., & Senel, H. C. (2021) append test security, preventing cheating, copying and plagiarism in online education environments as challenges, mainly in assessment process. Likewise, (EVİŞEN, et al., 2020:83) view that, based on students' attitude towards online learning amidst pandemic, the most disadvantages were lack of interaction and motivation, speed of lesson traffic, technical issues, financial difficulties and time management problems. (Al Rawashdeh, et al., 2020:232) stress technical problem as drawback in BLS. In similar line, online learning implementation, financial issue, and the availability of internet access are challenges of the LMSs Allo (2020). The cost of access and printing costs seem to be drawbacks as well (Heirdsfield, et al., 2011). In addition to the prior obstacles, the most frequent problems students faced using BLS were unable to find the targeted material and difficulties logging on to the system, along with inability to submit assignments, lack of capacity to open files in less percent (Carvalho, et al., 2011:837). As (Emiroglu, et al., 2021) believed, the most problem of distance education in current virus time was connectivity, along with the students felt uncomfortable owing to isolation, scary, unnecessary, and boring.

The students' insights studying in applied disciplines such as medical and engineering, including in the shadow of COVID-19 disease period have been not much different over the prior opinions. Then, as Giray (2021) stated on an assessment of engineering student satisfaction with eLearning, that the most challenge faced by students was internet connection and infrastructure (power cut). In addition to difficulties in self-motivation, concentration, preserving self-discipline, taking exams, too many and difficult assignments, interaction with students and professors, achieving team assignments, more workload and insufficient course materials, along with social life and lab sessions. Furthermore, (García-Alberti,, et al., 2021) highlight challenges of online learning in lockdown era among them: unsuitable home environment, less understanding and interaction of applied courses, the need to prepare new teaching materials, absence of training in using technology and remote evaluation ways, digital incompetent lecturers. As (Bączek, et al., 2021) wrote, absence of the interactions with patients and technical problems are the main cons of eLearning among COVID-19 outbreak. (Terzi, et al. 2021) confirmed that its limitations were decreasing interaction and minimizing socialization.

(Al-Balas, et al., 2020) add that low quality of teaching, a poor internet coverage, and not secure based on (Abbasi, et al., 2020), represent challenges of distance learning.

On another note, as per students' perception about shifting to the online learning platforms midst COVID-19, (Gautam, D. K., & Gautam, P. K., 2020) stated that such platforms have flexibility pertained to place, time, availability of teaching materials and sitting arrangement, and ability to engagement, one-on-one interaction with educators, preparing assignments, searching additional materials, adding presentations, videos, and audios. In Analysis of SWOC conducted by Dhawan (2020), indicates that instant feedback, flexibility, wide availability of courses & content, and addressing to a large public are elements of power, this promotes, in this kind of crisis like COVID-19, to keep going a collaborative and interactive learning environment. The main mires of BLS, as students declared, are flexibility and saving-time (Al Rawashdeh, et al., 2020). (Heirdsfield, et al., 2011) is in favor of (Al Rawashdeh, et al., 2020) and append that the accessibility, helpfulness, interaction, more interesting and involvement, motivation, expression freedom are viewed as beneficial in BLS. (Alim, et al., 2019) state further that advantages of LMS (Google Classroom) are time saving, convenient and fast setting, surge in communication and collaboration, rapid sharing of resources and centralized data storage. As well as, mires of eLearning are easy to reach anytime, time-saving, better data protection, simple, fast and reliable access to tools, and more effective flow of knowledge Butola (2021). The flexible schedule and convenience of online learning are regarded as benefits the most along, as per (Muthuprasad, et al., 2021). Strengths of pandemic distance education, as Tümen Akyildiz (2020) argued, were flexibility of time and place, having more responsibilities in learning, and comfort in exams. (EVİŞEN, et al., 2020:83) perceive also that the online learning characteristics in the middle of COVID-19 are comfort, time-saving, economic, being together with family and autonomous education.

In the same context, the advantages of BLS or online learning according to students' opinions with scientific applied majors who learn in time of coronavirus infection outbreak are aligned to a great degree with the previous students' views in the other majors. Giray (2021) described accessibility to course material any time and place, less travel and costly, flexible scheduling, time-efficient, location convenience, improving self-learning and competence, replacement exams with assignments lower stress and safer,

as characteristics of eLearning for engineering students. The same thing applies to medical students as to their perspectives over online learning, where accessibility to learning materials and flexibility in choosing the time and place are seen as the most positive side of eLearning during COVID-19 pandemic (Bączek, et al., 2021). Likewise, time-saving, better education, flexibility of class, given (Al-Balas, et al., 2020), are distance eLearning benefits. (Terzi, et al. 2021) also add that benefits of distance education were supporting individual learning, minimizing time and location limitations, opportunity to use advanced technology, supporting continuous, qualified and economic education. (Kaur, et al., 2021) mention some features of online learning such as the anywhere-anytime learning, safe and protected learning environment, rather free noise and free disturbance learning environment.

Basically, it can be said that the traits and drawbacks of BLS use for both offline and online education whether in normal or abnormal conditions as COVID-19 disease are influenced by issues that have to do with users, system itself or surroundings. Therefore, accessibility, availability, ease of use, flexibility, time-saving, communication, collaboration, interaction, as can undertake live online classes, video and audio chats, conferencing, live meetings and webinars, so forth are viewed as the most advantages relevant to a great extent to mechanism of system. Alternatively, the greatest disadvantages or challenges having to do with either system, users or surroundings are connectivity, technical problems, isolation, distraction, lack of motivation, lacking suitable devices, psychological troubles such as anxiety, despair, boredom so on. Much of these difficulties might be attributable to “a lack of standards for quality, quality control, development of e-resources, and e-content delivery” Dhawan (2020), as well as insufficiency of infrastructure, technological tools and skilled users (Senel, S., & Senel, H. C., 2021).

2.1.2 Previous Studies

In this section will take up as much as possible the previous researches regarding students’ perceptions about the transformation into digital online learning systems, including BLS under study that is one of LMSs. Moreover, outlining some previous fundamental studies and articles that are most linked to the present thesis with some

comments and that were conducted pre and during COVID-19 outbreak would be reviewed.

2.1.2.1 The Transformation towards LMSs under Technological Evolution and COVID-19 Disease

To start with, it is apparent that COVID-19 disease story has started but will not finish soon as much people would have thought. Moreover, its implications and consequences appeared in all-around will spare none. Thus, its adverse effects have thrown and will throw a shadow over all what contact our life's aspects. Following (Radha, et al., 2020:1088) any horrible event that is goning on in the world will consistently have an impact on education process. As such, COVID-19 pandemic has its imprint on education. The COVID-19 disease has grown rapidly since its first prominence to become a truly worldwide phenomenon, and subsequently it has borne on high education institutions the world over. The prevalence of corona virus has challenged the preparedness of the universal instructional systems to confront calamities that call for remote and electronic operation. Likewise, there are real concerns with students regarding becoming infected with COVID-19 (Çalışkan, et al., 2020), these fears are not only restricted over learners, even all groups of society. Therefore, it is imperative to carry out study to advance alternative learning modes that meet effective educational objectives (Tubagus, et al., 2020:187) and to document users' perception and readiness having significance in funky education modality (Muthuprasad, et al., 2021).

Learning is "a process of acquiring knowledge or skills through study, experience, or being taught" (Radha, et al., 2020:1088) and "the design of different types of learning environments can depend on the learning objective, target audience, access (physical, virtual and/or both), and type of content" (Moore, et al., 2011). As noted earlier, there three learning delivery methods or environments exist; traditional learning environment, blended or hybrid learning environment (integrating traditional and online learning) and online learning environment. The LMS can be employed as a key tool in all these environments, but the issue is 'how it is used within those environments or inside the education institutions'. Likewise, effectiveness of LMS, as per Hall (2006), draws on how to use it in university. (Hall, 2006; Carvalho, et al., 2011), based on literature review made

by Francis & Raftery (2005), distinguish between three modes of level of engagement in LMS. Basic level where LMS is just used as a repository, that is, providing course administration and information, the instructional activities take place in on-campus traditional mode. The second level is mixed mode where LMS provides course administration, in addition to collaborative, interactive communication environment for users, it occurs in blended learning environment. The third Level is similar to mixed mode, nonetheless it is applied in totally online learning module. Moreover, their results confirmed that LMS is used only to provide course administration and information wherein teaching and learning process occurs in traditional education environment. This contrasts with the current study in terms of learning delivery environment as it is carried out in fully-fledged online learning environment.

The progress of technologies and social media drive to growing online learning mode (Al-Balas, et al., 2020). The online teaching-learning has become a phenomenon within education process in recent decades, as information communication technologies supports eLearning and makes it possible to provide education to anybody, anyplace and anytime Balkaya & Akkucuk (2021). As a result of that, it is of importance to evaluate these learning systems (Salter, et al., 2014). According to the logic of the exception cited from Schmitt (2005)—that extraordinary times call for extraordinary measures—"one common trend in education systems around the world has been to respond to the pandemic with "emergency eLearning" protocols, marking the rapid transition of face-to-face classes to online learning systems" (Murphy,2020:492). In a similar vein, (Muftahu, 2020:417) is in favor of what Murphy said where he explored that the COVID-19 disease has driven campuses in different countries beyond their limits towards developing creative and convenient surrogates e.g. transforming into remote education. Therefore, these transformations to LMSs (Blackboard) have been highly regarded by researches and scholars since appearance of the infected COVID-19 disease, where a plethora of studies, researches and papers have discussed and still excessively divers affects, changes and, challenges and difficulties ensued due to this emergent situation. As such, we hereby tried to scrutinize the shifting manifestation to these systems in order for us to understand more about, on one side, the extent to which this change influences the generally pedagogical and instructional processes and methods, and on other side, factors affecting students'

performance and productivity in particular. Furthermore, what challenges and changes accompanied tight lockdown measures and social distancing, thus, it enables stakeholders to map a successful implementation strategies of this sort of systems including in exceptional conditions. This in turn will be triggering a continuing debate of effective strategies, which is able to enforce education institutions success in shifting to teach online (Allo, 2020).

A compulsory switching into LMS owing to COVID-19 infection has been a very complicated conducting for tertiary instruction establishments Aguilera-Hermida (2020). Aftermath the transformation process through on-campus learning format for LMSs (online) across the world underlined various viewpoints and reactions issued by plethora actors with regard to an effectiveness and efficiency of these systems to cater of the needs of learning-teaching operations whether in the level of students or the level of educators alike. However, the bulk of literature reviews have focused on studying the perceptions of students and instructors about LMS and a little number of researches have highlighted BLS.

To achieve an effective and feasible change, mostly in the midst of perilous times as coronavirus pandemic, into this kind of remote learning and pedagogical models, there are a great deal of practical procedures or preparations should be taken action before and during the switching in an attempt to ensure secure, smooth implementation and in the same time, of effective. In a similar line, (Rohman, et al., 2020, p.3649) suggested that to implement effectively the transition, pre-training, pre-explanation of features utilization, platform with a digital library, course content, teaching methods, eLearning media, and technology support should be taken into account. Sari & Nayır (2020) support most of these previous suggestions that are seen as source of difficulties in online education process, hence, the absence of prior implementation leads to problem being both lecturers and learners not ready for this process, this in turn, will reflect on their negative perception and attitude towards online learning system. Furthermore, the LMSs become the mandatory tool for all instructional institutes across the world in the wake of coronavirus era (Radha, et al., 2020:1088), yet, whilst the implementation process as per (Daroedono, et al., 2020:2791), several factors might influence positively (supportive) or negatively (inhibitors), and interfere with the process. In a similar line, Aguilera-Hermida (2020)

concluded that motivation, self-efficacy, ease of use, accessibility and cognitive engagement are prominent factors play role in adoption of online education technology. Besides, the user's intention of technology usage (readiness of usage) is one of the successful transformation factors to LMSs Yakubu & Dasuki (2019). They also add that usefulness, which is an important dimension of adoption online leaning technology, have an effected role in the successful shifting process to LMS technology. In this context, (Lee, et al., 2010 & Parisio, 2011) mentioned that lack of incentives e.g. positive attitudes, training, behavior, and financial rewards are factors that restrict the usage of eLearning technology. Therefore, "the effective implementation of this tool is important to improve the quality of learning, access to education and training, provide cost-effectiveness and reduce the cost of education" (Findik-Coşkunçay, et al., 2018:13). "All the preparations, such as schedule planning to the communication technique during the learning process, become an important step for online learning implementation" (Rohman, et al., 2020:3645). As (Vasanth & Sumathi, 2020:33) stated, the effectiveness of LMS is associated with the extent to which interact instructors and students, and technology between each other. In support of this view, (Gautam, D. K., & Gautam, P. K., 2020) showed that the student, teacher, and infrastructure are substantial and responsible for effectiveness of online learning system in the middle of coronavirus disease. Thus, preparations required to implement the transformation to BLS, can be divided to a three of splits: the former relevant requirements of students, the second relevant requirements of technology, and the latter relevant requirements of instructors or institutions.

As for the relevant requirements of students, (Schullo et al., 2007), given literature reviews, showed that

- The development a sense of social existence to promote their sense of participation and comfort.
- The permanent and regular communication with academic staff or facilitator in online environments to motivate the students.
- The ongoing guidance and support through a mixture of student-student and student-instructor interactions in the quest to take maximum advantage of their distance education experiences.

- Enhancing an education community, which draws on schooling in small groups working to deliver encouragement and support, and on sharing of responsibility with individual efforts.

They also added that, concerning technology relevant requirements, the selecting of the system is based on what you need the system to do, identifying users and their usability, technical, and educational needs and how the system is compatible with your existing technology infrastructure. In this respect, consideration should be given to the stakeholders' opinion prior taking decision, as well as trying the system in real situations. Moreover, usefulness, ease of use, accessibility, flexibility, intention, enjoyment, helpfulness, communication, self-efficacy, engagement, satisfaction, challenges and difficulties to name just a few are seen as factors bearing on users' perceptions towards using technology such as using LMS in education system (Aguilera-Hermida, 2020; Yakubu & Dasuki; 2019; Parker & Martin, 2010; Carvalho, et al., 2011; Albashtawi & Al Bataineh, 2020; Findik-Coşkunçay, et al., 2018; Hamid, et al., 2020; Liaw, 2008; Maqableh, 2015; Lee, et al., 2009; Kado Kado, et al., 2020; Daroedono, et al., 2020; Ali, 2020; Al-Balas, et al., 2020; Tümen Akyildiz, 2020; AlKhunzain & Khan, 2021; Kaur, et al., 2021; Muthuprasad, et al., 2021; Nurakun Kyzy, et al., 2018). Thus, the foregoing dimensions should be paied into attention in the event of preparation for transformation to LMSs to bolster users to embrace and use them mostly in the catastrophic conditions.

With respect to relevant requirements of instructors or institutions, (Chakanyuka, et al., 2010) argued that "staff support, well-coordinated and systematic step-by-step processes of staff induction, staff development, caring for workers, adequate funding and results based incentives" are pivotal factors related to staff, which contribute to quality in distance and open education. In addition to factors of "competencies in, positive attitudes towards and commitment to the philosophical underpinnings of open and distance learning" (Chakanyuka, et al., 2010). Moreover, to enhance the practices in BLS, Salisbury (2018) indicates the following factors; focusing on efficiency, data, and the system's content, storage, in addition to group work, knowledge creation, communication with students and administrative tasks. The continuous training and pre-training programs are needed to foster using of LMS technology (Tarhini, et al., 2017; Gautam, D. K., & Gautam, P. K. 2020; Azhari & Ming, 2015; De, 2020; Muftahu, 2020)

It is right that instructors and students have to be motivated to be adept users of eLearning. If not, it is able to restrict their utilization of creative pedagogies (Bradford, et al., 2007). Some features of Blackboard, as (Heirdsfield, et al., 2011) described, urge student-centered modes for learning. As well as instructors play a key role in guaranteeing that Blackboard fosters student-centered learning. Therefore, both learners and lecturers must get technical support and guidance from the IT department and specialists before and during an online course (Bączek, et al. 2021). All those to ensure quality of online education and to improve their experience to cope well with the emergent circumstances anywhere and anytime.

Al-Nuaim, (2012) wrote, to bridge the digital chasm between academic staff and potential students, DDL (the Deanship for Distance Learning) in King Abdulaziz University, Saudi Arabia initiated an intensive training program that is available to all faculty, plus targeted training to electronic education course educators two weeks before every semester. That, as he wrote, was tailored to educate them the way of transferring their tutoring mode, turning from traditional educators to online facilitators. The level of awareness, readiness and acceptance with lecturers, along Osman (2020), or even learners (along author) to transform towards distance education environment definitely differs, hence, training workshops and weekly Webinars to leverage this shifting should be held. There must be an alternative plan and a high level of readiness in teaching strategies, sufficient and reliable technology infrastructure, and students have to possess the skills of problem-solving, critical thinking, and adaptable abilities Dhawan (2020).

Moreover, students' perceptions towards using LMS tools vary across instructional environments – blended, face-to-face or fully-fledged online. (Parker & Martin, 2010:135) found that the virtual classroom characteristics and features were evaluated by learners in the entire online mode higher than learners in the blended one. On the contrary, the blended learning can be better (García-Alberti, et al., 2021). As (Rafi, et al., 2020) reported, that majority of the undergraduate students favored recorded lessons (69.2%) over live-streaming lessons (33.5%). Al-Nuaim, (2012) maintains that no important discrepancies conventional and online students'performance assigned to the same course and taught by the same teacher. (Tonsmann, 2014) stated that the performance of synchronous learning in exchange for other deliver style was compared by the different

literature, and the inferences of all these literature demonstrate that both delivery formats are able to compare in their effectiveness to educate. On his end, Phillips (2010) reports that a similar comparative study between face-to-face, synchronous, and blended/hybrid environments gives higher marks to the synchronous modality in academic success, retention, grades, and overall rating. (Radha, et al., 2020) reported that eLearning contributes to a social change. Most of students have reported their self-study skills to improve because of eLearning and opinioned that eLearning is very useful during the quarantine time and makes their knowledge wider (Radha, et al., 2020). However, (Radha, et al., 2020) wrote, in spite of the growing popularity of online learning courses, conventional in-class learning is still the best option for a large range of students. especially for practical learning. Alternatively, there are several majors in higher education containing practical courses or classes are difficult for lecturers to carry out easily in LMSs. This is in line with many literatures (Almaghaslah, et al., 2018; Radha, et al., 2020; Abbasi, et al., 2020; Ibrahim, et al., 2021; Muthuprasad, et al., 2021). As (Muthuprasad, et al., 2021) observed, there the significant variation does not exist within the graduate and postgraduate students' perspectives about online education delivery modality, while (Terzi, et al., 2021) perceived that distance education is an idiosyncratic aaproach, particularly for nursing. The fact that some medical or engineering majors have a shortage pertained to practical field in the scope of online learning system, compels stakeholders to make the efforts in a bid to look for alternatives to address educational needs and to foster learning outcomes, including midst COVID-19 spread. On their end, (Çalışkan, et al., 2020), to confront any shortcomings emerged in online process, are of the opinion that task training, online problem-based, computer-built simulations, and case analysis that are considered as various education techniques ought to be appended to medical curriculum.

In 2007 (Malikowski, et al.:170) concluded that due to the popularity of CMSs or LMSs, the questions will likely be arising by users concerning how to effectively and efficiently utilize a CMS and expected that the number of studies on CMSs will increase by researchers as well. It is abundantly clear that literature have had taken enormous topics in various ways, wherein a number of studies emphasize on students' self-reported perceptions of learning e.g. motivation to educate, students' educational objectives, and

prior experiences, along with their predispositions, thoughts, beliefs, opinions and attitudes over online learning to get to the desired outcomes (Sharpe & Benfield, 2005; Rovai & Barnum, 2007; Nurakun Kyzy, et al., 2018; Isik, et al., 2010; Ituma, 2011; Carvalho, et al., 2011; Heirdsfield, et al., 2011; Parker & Martin, 2010; Alsobahi, 2017; Almaghaslah, et al., 2019; Serhan, 2019; Serhan (2020); Emine & Kalelioglu, 2019; Kemp et al., 2019; Akdeniz, et al., 2020; Rafi, 2020; Ferraro,et al., 2020; EVİŞEN, et al., 2020; Koirala, et al., 2020; Giray 2020; Abbasi, et al., 2020; Daroedono, et al., 2020; Rohman, et al., 2020; Chen, et al., 2020; Kado Kado & Yonten, 2020; GÜRLER, et al., 2020; ; Al Rawashdeh, et al., 2020; Beltekin & Kuyulu 2020; Koh & Kan, 2020; Bączeket al., 2021; Ibrahim, et al., 2021; Muthuprasad, et al., 2021; Ahmed, et al., 2021; AlKhunzain & Khan, 2021; García-Alberti, et al., 2021; Terzi, et al., 2021; Emiroglu, et al., 2021). In addition to that, given (Ituma, 2011:60), self-reported approach is beneficial for inspecting how frequent a phenomenon or variable is, and for examining the extent to which a relationship exists between variables of importance, too. On other side, the others literature reviews tried to focus on exploiting objective performance measures to come up with conclusions serve research's purposes (DeNeui, et al., 2006; Ryabov, 2012; Marikar & Jayarathne, 2016; Al Rawashdeh, et al., 2020; Carleschi, et al., 2021). As a result, the next part will rather extensively discuss several students' perceptions, attitudes and experiences towards using online learning systems generally and BLSs particularly whether in usual or unusual conditions such as COVID-19 pandemic. As well as dimensions or factors affecting their usage will be reviewed in an effort to understand more about the degree of the satisfaction with the transformation to BLS for high education students in the wake of COVID-19 disease along with having a look at some of their advantages and disadvantages.

2.1.2.2 Empirical Literature

Here, we will be more focused briefly on the most prominent inferences that several scholars have come up with in their researches, mostly in COVID-19 time. Moreover, author as much as possible has endeavored to get to the most related conclusions, results and analyses to his findings. Considered to the previous researches that have addressed the users' satisfaction or effectiveness of LMS, either in the nature situation or in the

shadow of crisis such as COVID-19 pandemic, or the ones that have touched on the measurement of users' perception towards LMS, its advantages and disadvantages, it has been noted that there have been contradictory outcomes about it. Accordingly, the viewpoints on this subject were divided, some have gone to be in favor of the satisfaction with and efficiency of LMS utilization in education system with the positive attitudes towards it students had, the others have been in contrast to that.

Several literature reviews have tried to evaluate satisfaction with online learning system or LMS in various ways and methods, wherein some strived to look for users' perception, attitude and belief towards LMS, some others focused on addressing factors or dimensions that have an effect on users and their learning outcomes. Moreover, there were other people who have touched on measurement of LMSs' features and their effects on users' performance along with the advantages and disadvantages of LMS have been investigated as well. Consequently, the literature results that were irrelevant to the current study or ones that evaluated different factors or constructs from dimensions at hand here were overlooked. As for the positive students' perception, attitude and experience towards online learning system or LMS, in addition to challenges, traits and flaws will be overviewed in the following paragraphs in a bid of absorbing of the satisfaction with the transformation to BLS for higher education students amongst COVID-19 disease duration:

By employing self-reports of 328 graduate students' opinions who studied 19 courses through BLS at university in the state of Virginia USA, Rovai & Barnum (2007) made research to measure online course effectiveness. Ex post facto and correlational designs were applied to address questions of study and an online questionnaire was emailed to participants to be filed out. The resultant outcomes showed that there large differences exist in students' perceptions over online courses learning, namely, online courses and programs are not equally effective, in other words, perceived learning varies based upon course; consequently, the need of online course learning quality assurance that endeavors to balance course design, pedagogy, and technology with the needs of learners is concerned. Moreover, the significant differences were founded in respect of gender, as female students had significantly higher levels of perceived learning in their online

courses than did male students. They asserted that interaction in online courses had an affect on learners' perceived learning as well.

Parker & Martin, (2010) did research to compare between online and blended (hybrid) classes students' perceptions pertained to features and characteristics of virtual classroom. Fifty-seven undergraduate students participated in filling out the two-part survey using 4-point Likert scale held in one of USA universities. The data were compiled and analyzed to realize whether students' perceptions about features vary according to kind of course delivery (blended vs online) or not and Do their opinions as to characteristics; usefulness and ease of use, interactivity, synchrony, and sense of community vary under delivery method (blended against online)?. Cronbach's alpha for the features was 0.92 and for every characteristic sense of community, synchrony, ease of use and usefulness, and interactivity (α =0.77, α =0.76, α =0.70, α =0.70 respectively). The findings reported that the fully online students appeared to be more comfortable in using technology and more positive perspective than their peers in blended courses, as students in online courses delivery rated the virtual classroom characteristics and features higher than those in the blended courses delivery. This indicates the degree of satisfaction with the virtual classroom software in learning process. Additionally, characteristics of virtual classroom; interaction, synchrony, usefulness and ease of use were statistically significant.

Hall (2006) conducted the study to compare between staff' and students' experiences and expectations concerning use Blackboard in one of UK universities. The survey is employed as tool to collect the data from 909 students and 79 members of staff. The findings indicate that Blackboard is an important tool for both users and that students' expectations support the fact that the Blackboard is considered as supporting traditional methods and not as a replacement. Both users perceived that Blackboard is a useful addition to learning process and easy to use, and helps with revision. An inability of access materials, technical issues, and connectivity difficulties were seen by much of users as the most challenges. The whole, student engagement and staff support contribute considerably to the successful implementation of LMS. He recommended the transformation to LMSs that have greater integration and engagement being led by learning and teaching requirements and supported by appropriate technology, instead of

the systems has been just technology led. Such means the switching into the blended or online learning mode has a further level of communication, engagement and collaboration. Moreover, he suggested the importance of working with non-users to figure out why they are not using these systems. What are the challenges that keep them from using them? Are they issues of access, inclination or opportunity?

The literature findings of (Sarikhani, et al., 2016) in Iran with regard to the impact of eLearning on university students' achievement and creativity, where a quasi-experimental design with pre-test/post-test with a control group for 40 students was used to realize so, showed that online learning is effective for knowledge and creativity acquisitions. Such indicates to efficiency of self-directed eLearning at evolving achievement and creativity. They recommended integration the use of ICT in various ways within education to advance satisfaction with and efficiency of an education system and delivery developed training courses with theoretical and practical tools to students to further their technical and scientific knowledge and skills.

In this subject, literature confirmed the satisfaction with ICT integration in education systems that was recommended by previous study, where an exploratory research design was a methodology used by Ali (2020) to unveil how necessary online learning in higher education institutions is in the middle of COVID-19. He, by using meta-analysis, highlights the transformation process depended on ICT basically to online learning in corona virus time requires preparations through thought, coordination and carefully decision-making, and it is important to use technology and technological gadgets to strengthen teaching and learning including in crisis. Moreover, there is a high level of student satisfaction and interest in ICT integrated learning systems and a COVID-19 disease is assumed to be opportunity for adoption of online learning system that becomes necessity the world over. The confidence, motivation, student accessibility and staff readiness are seen as dimensions whose significant role in ICT integrated learning.

A study has been conducted in Colleges of Uttar Pradesh for 100 students and 50 faculty members in India, entitled an Online Learning Effectiveness Analysis amongst the COVID-19 lockdown, by Agarwal & Dewan (2020). By using Google Form, the survey was randomly distributed to respondents with some connections in person to get in-depth feedback and the data were analyzed by routine statistical program. The results revealed

that online learning is a great tool and the only way to deliver education in the wake of corona virus. However, internet issues, lack of motivation, misconduct in classes, health problems due to longer screen time, and difficulty to specify and treat audience of students came out as the hurdles.

A case study of the BLS done by (Liaw, 2008) to figure out the total number of 424 students' satisfaction, behavioral intentions, and the effectiveness of the BLS in Taiwan with a view to know the reasons of the dissatisfaction of students with this system. A paper-and-pencil three-parts questionnaire; first part for demographic, the second for eLearning experience, final part for attitudes towards eLearning, was implemented with the alpha reliability was very accepted , as $\alpha = 0.97$ and reliability of the scales was reckoned ample. Moreover, the dimensions of the research model the study counted on were perceived self-efficacy, perceived usefulness, perceived satisfaction, behavior intention, system quality, effectiveness, multimedia instruction and interactive learning activities. The results indicate that self-efficacy was the biggest contributor (50.5%) in affect on satisfaction, while Multimedia instruction was the biggest contributing factor (47.9%) on the usefulness. Additionally, interactive learning activities, multimedia instruction, and eLearning system quality have an affect on the effectiveness of BLS, as multimedia instruction was the most contributing factor (58%). He therefore detected that the students have an average level positive attitude about usage of BLS and that self-efficacy is influential predictor of students' satisfaction and of usefulness of using system. On top of that, the satisfaction and usefulness have an impact on students' behavioral intention of system usage that has a significantly high correlation with the effectiveness. Such points out that there is a need of more interactive and communicative functions and activities, along with furthering Blackboard learning performance, motivation, and efficacy between users by means of varied multimedia learning contents.

In support of the previous study as to satisfaction, and in order to gauge the satisfaction level of students with BLS and the dimensions that anticipate their satisfaction, the literature is carried out by Tella (2012). The findings of this research, entitled 'System-related factors that predict students' satisfaction with the BLS at the University of Botswana' that were compiled by questionnaire instrument for 503 undergraduate students, reported that all of the factors; net benefits, self-regulated

learning, system quality, teaching/learning quality, service quality, and content quality associated with users' satisfaction with the BLS. Furthermore, these factors jointly predicted 54% of variations in the satisfaction level of learners. He therefore suggested developing the support services for BLS users, while having the support team available any time to help, because the technological system in nature is suddenly expected to result in technical problems.

In responding to the growing call from eLearning researchers to interrogate learners' opinions of eLearning systems, Ituma (2011) made article to scrutinize systematically students' perceptions, and engagement, as well as their perceived effectiveness in Blackboard WebCT learning system platform used in blended learning environment. This is with a view to answer to questions about students' view of the different components of system, how often they use and the relationship between the usability and gender differences. He employed empirical exploration to achieve so, by means of a self-report adjusted survey, which was developed by the learning and teaching development unit (LTDU) of the university earlier, handed in class, after a pilot study was made, to bring together data from eighty undergraduate students at a university in London, UK. The different components of Blackboard WebCT were considered and some of them such as course content, assignment, discussion components (92%, 48% & 28% of participants respectively) appeared to be valuable, while calendar component (37% of participants) and web links component (24% of them) were not valuable, along with chat, calendar and learning module (46%, 34% & 18 respectively) were never being used. Additionally, there no statistically significant difference existed between gender (or even variables of continent of origin and age) and the perceptions related to the usability of Blackboard WebCT that may be stemmed from the complete exposure to Blackboard WebCT and computer devices, and equal access and technical support. He determined that much of the students had a positive respective of BLS as useful in supplementing traditional teaching, while using it frequently and varying in the perceived usability of different elements of Blackboard WebCT. He recommended using frequently BLS components such as course content should be focused on, as well as taking advantage of interactive components like discussion and chat via group-based tasks to bolster students' online learning experience.

To investigate the effectiveness of blackboard, a research has been carried out in Taif University KSA, by (Al-Salamat, et al., 2020). The descriptive study method was utilized via two surveys sent to a random sample made up of 804 students and 240 instructors. They founded that the students' belief about the effectiveness of BLS were very positive amid corona virus and considered to be the only available way to ensure following of education in the dissemination of corona virus disease. The same thing applies to instructors as the BLS was viewed as effective system for carrying on education. In addition to the prior observation, the male students' opinions regarding this effectiveness were higher than those females, and master's students were higher than those undergraduates were as well. This outcome might be traced to it is the only available way to pursue instruction process, overcoming difficulties and challenges by trained instructors in advance, acquiring adequate experience by users over time, as well as efforts taken by university such as technical support, training programs, well-equipped infrastructure.

Moreover, (Salter, et al., 2014) have done in Australia the research to identify the effectiveness eLearning in Pharmacy education by means of systematic review and meta-analysis of effectiveness studies that assessed eLearning programs in undergraduate, postgraduate, and continuing professional development pharmacy education. This review aims at measuring four levels: React is 'learners' views, experiences and satisfaction about the e-learning program', Learning is 'change in attitudes, knowledge or skills after training', Behavior is 'transfer of learning to the workplace' and Results are 'changes in organizational practice'. For reaction, the students had interesting online experience and high satisfaction with improvements in attitude, despite limitation of evidence in increasing knowledge and skills and no evidence on eLearning effectiveness at enhancing knowledge long term. Consequently, they demonstrated eLearning to be effective at increasing knowledge immediately after training and no different in its effectiveness in comparison to in-class education and to be a highly acceptable educational system by Pharmacy education students.

In a similar vein, Ibrahim, et al. conducted a recent, cross-sectional, web-based study in King Abdulaziz University, Jeddah, 2021, with sample size of 340 students, about medical students' perception of eLearning amid COVID-19. The primary data was

gathered by an electronic, self-administered questionnaire, designed by Google Form, consisting of the eLearning acceptance measure including three factors; perceived usefulness (PU), tutor quality (TQ), and facilitating conditions (FC), and students' opinions as regards benefits, enablers and blocks, and was analyzed by descriptive, inferential statistics and multiple linear regression. They aggregated to that digital eLearning is optimal solution in exceptional circumstances and moderately accepted, and however, not that good (half of students' opinions) compared with traditional education, such implies that it is an inconvenient instructional method for medical education. The obstacles are limited resources (like poor internet connectivity) and the lacking of personal preference (negative attitude) towards online education, in addition to training defect and insufficient technology skills. As for benefits were an interaction, adaptable, less time consuming, motivation and fair evaluation tool. The technological skilled instructors, active communication, motivation, good instructional design, subject and a friendly LMS were considered as enablers of online learning. As a result, all these enablers with support are needed to develop users' skills leading to foster accepting an eLearning systems usage.

In the same medical context, in observational study of a total of 804 medical students' view on online learning whilst COVID-19 in Poland, conducted by (Bączek, et al., 2021). Once the four-part questionnaire was approved, it was disseminated by Facebook to medical students for one month. They maintained that eLearning modality is valuable tool in teaching medical learners and effective in surging knowledge as traditional mode, less effective insofar as increasing social competences and skills compared with traditional style, and is highly accepted. Moreover, the most qualities were flexibility, accessibility, enjoyment and comfort ability. Alternatively, absence of interaction with patients and technical issues were the core defects of online learning. Consequently, they recommended that the well thought-out strategy is necessary to execution online learning into the curriculum wherein this kind of learning counts on both content delivery and ability of student to handle with the materials and get feedback. The clinical and social skills and increasing knowledge arising from online system should be focused on all in together.

The results of the study undertaken in India by (Muthuprasad, et al., 2021) who employed an online survey of 307 students designed with the assistance of literature

survey, informal debates with the learners and pre-testing, explored that the majority of students' perceptions have a positive attitude towards online learning system during pandemic prevalence and it is a meaningful system. But that it is more challenging than conventional education due to technological impediments, delayed feedback and deficiency of technology skills with faculty member. Subsequently, care of these challenges should be taken while designing components of an online course to become compatible with students and more satisfactory. Furthermore, the flexibility and convenience for the students were observed to be a merit of online learning system, while connectivity problems is the most difficulty. Well-structured content and recorded videos with assignments and quizzes at the end of every lesson are preferred by students and help to optimize the learning and teaching satisfaction.

In a non-remote context, case study for 541 university students and 6 lecturers using quantitative and qualitative approach was undertaken by (Nurakun Kyzy, et al., 2018) in the Kyrgyz Republic to check students' viewpoint concerning LMS and usability through the following determinants; ease of use, advantages of use, technical characteristics of LMS and feedback options of LMS,. The results showed that all these variables have an affect on use of LMS and on understanding online courses and that factor of feedback options of LMS was the most significantly effective. In addition to the prior observation, the demographic gender dimension did not influence students' success in LMS courses, while the academic majors' type had an effect. However, administrative matters and inadequacy of instructors' experience on LMS were the main problematic issues as educators' perspective. Overall, annotation of LMS use's advantages for learners, and providing support and feedback in the learning process contribute to the successful LMS implementation. Furthermore, the computer literacy rate of users and the advancements of ICT in the rural areas support the more evolution of LMS.

In the same vein, after the data of 470 undergraduate and postgraduate students were collected by a comprehensive online two-part questionnaire the former part for demographic information and the latter, composed of 44-itemt with a five-option Likert scale, for gauging the factors, 271 of which were excluded and only 253 students were included in analysis. The findings of a structural research model about students' adoption of LMSs conducted by (Findik-Coşkunçay, et al., 2018) in Turkey, explored that

satisfaction, perceived usefulness, perceived ease of use, interactivity and control, enjoyment and subjective norm play a significant role directly or indirectly in intention towards LMSs use. Moreover, these factors are not directly associated with specific functions of the LMS, they are connected with students' viewpoints at large. At any rate, students' perception towards adoption and acceptance of LMS use in higher education context was positive resulting from acceptance of research model. Although the study provides a new research model for scholars, it is difficult to be generalized due to it was in the same university and the other factors should be examined.

The findings of research held by Albashtawi & Al Bataineh (2020) in Jordan about the students' opinions over LMS were analyzed and discussed where a quasi-experimental design, one group pretest posttest design based on the quantitative data, and convenience sampling composed of twenty six students were used. As well as the primary data was compiled by the 16-item survey, to examine students' view towards LMS pertained to its ease of use, usefulness, and accessibility. They maintained that LMS is an innovative and effective online learning system aided with optimizing learners' performance in English reading and writing. Moreover, this platform is considered to be usefulness, ease of use and accessibility pursuant to students' positive respective, this traced to pre-training programs, its features are easy to grasp and use, a good preparation and execution, and a positive students' attitude. It is crucial for educational institutions to absorb the recent technologies and how they are operated and utilized, in a bid to ensure developing learning-teaching process whatever status.

The study method applied by (Siagian, et al., 2020) was a research development model composed of three stages; a preliminary research, planning and preparation of learning models and field tests of learning models developed. This is to measure efficiency and effectiveness of LMS (Edmodo) in instructional design, they have reached that LMS is successful, efficient and effective in supporting students' interaction and engagement in class, and in increasing students learning. In addition, students' attitude toward it was positive and interesting in instructional design learning, along with very high satisfaction level to learning conditions. On top of that, they also affirmed that learning problems linked to time and place can be got over by LMS.

ACAR & KAYAOGLU (2020) reached worthy outcomes, which is in line with this study's results, in their research achieved in Turkey on high school students, regarding whether utilization of LMS (Moodle) as a means of blended learning is satisfactory. The research design was quasi-experimental study with mixed-method namely quantitative and qualitative. A convenience 44-student sample was surveyed by semi-structured interviews and the 9-question survey taken from two studies to glean the data. They explored that most of students were satisfied with using LMS and it is an effective online learning instrument contributing to foster blended education, as learners' performance, motivation, productivity, and grades accordingly increased after using this platform. They also affirmed that, in addition to the previous observation, LMS is a powerful solution for instruction system midst directives of the stay at home due to COVID-19. It can be argued that it is an online tool for all instruction environments – traditional, blended and online mode.

In literature of (Gautam, D. K., & Gautam, P. K., 2020) held in Nepal, an exploratory research design built on quantitative and qualitative approach was utilized. The primary data collection and analysis were taken place to discover factors of effectiveness of online learning in coronavirus time by three steps; an interview for 15 postgraduate students, the survey for158 undergraduate and postgraduate students and interview for 16 instructors. The results explored that the effectiveness of the online learning platform relies notably in COVID-19 on infrastructure, faculty member and student, and there is a significant relationship between them. Likewise, there is no correlation between the online learning effectiveness and students' level of education, as well as learners suffered anxiety caused by coronavirus, but their willingness to learn is not affected. To be more effective tool, techno-friendly curriculum, proactive management, trained and designed academic staff, supportive learners and assurance of IT infrastructure should be developed. In general, the transition to the online learning platforms are effective and useful, mostly in the serious situations such as the one we are currently living.

In this line, in literature review on a global perspective about eLearning during COVID-19 held in India by (Radha, et al., 2020), one hundred seventy-five students from throughout the world participated in the one-month e-survey formulated by Google Form. They reported that the eLearning have an effect reflected on students' performance

through a great interest in and increasing use of online resources for academic use, this may be resulted from the technology literacy students have. Even though the students had a generally positive attitude towards online mode, they preferred the traditional learning. The results showed that International students (100%) are interested in online learning and perceived it useful, while around 80% of National students perceived that. (78%, 67%, of National, International students, respectively) preferred conventional education, International, National students (83%, 80% respectively) voted that in-class learning is important for practical teaching and the very low percent of students faced issues with online learning and felt social change. In general, the interesting, usefulness, increasing knowledge, willingness and self-study are viewed as landmark eLearning factors and eLearning have been largely used by students all over the world. As a result, it is inevitable option in tertiary education, mainly in COVID-19 period and lockdown procedures.

Gulbinskienė, et al., (2017) conducted study in Lithuania to assess the potentially relative satisfaction with Moodle (LMS) as one of virtual learning environment VLE. They employed the methodological references, a quantitative research and statistical data analysis approaches to evaluate tow hypotheses; first, using Moodle platform motivates students to develop language learning skills; secondly, using Moodle platform aids to improve metacognitive awareness and bolster student autonomy. The conclusions they got to that the LMS (Moodle) can be effectively functioned as online learning environment which using it has a big influence motivation of students to improve learning skills, helps students to learn easier and enhances their confidence more. Additionally, most of students 80% confessed the fact that the learning process using LMS becomes more interesting. As well as prior observation, it contributes to evolve metacognitive awareness and bolster student autonomy. Features of interaction, involvement and communication LMS has might be the reason of all this, in addition to instructors' role and skills which help to facilitate learning process.

As with the previous assessment, the evaluation of the students' perceptions on LMS use (Google Classroom) in the learning process has been done by (Alim, et al., 2019) in Indonesia through the descriptive qualitative methodology to access collected data from interview sessions with learners. After analysis of information compiled, they demonstrated that the application of LMS is effective and useful to better students' skills,

discipline, abilities, and independent learning via teaching materials. Furthermore, it is able to promote communication and cooperation, sharing of resources, saving time and knowledge skills. Nevertheless, some blocks were listed such as inability of some students to access the account provided by the lecturers due to lack of the mobile phones, limitation of Wi-Fi in campus, unaffordability, namely, inadequacy of mobile internet data for student's attendance online classes. This result may be attributable to limitation of study on only students of the Faculty of Teacher Training and Education.

A structured multiple-choice survey handed out for 31 high education students in Sri Lanka University by (Marikar & Jayarathne, 2016) to interrogate their views of LMS (Moodle) in education system and then its results were analyzed. They found that students' responses tend to be a strong positive towards LMS platform, wherein extreme good scores in online examinations were received by 61% of students while existing a bit more preference of learning achievements for technical majors' students in comparison to students of non-technical majors. This difference may be attributable to some reluctance in using system because it is the first time to experience LMS. They also observed late submission in both online and printed examination, and lack of motivation and interesting. On top of that, they stress students' achievement goals and the instructor have strongly involvement in learning achievements and satisfaction, unlike, students' motivation and collaborative learning that are the least contribution. It can be said that the more users become familiarity with usage of technology, the better their conviction with it is.

In case report, built on assumption of lack of engagement and interaction in online learning, by (Elsamanoudy, et al., 2020) held in KSA, they reported that the virtual classroom teaching using the Blackboard Collaborate Ultra is useful, interactive, alternative community tool, in either ordinary states or hectic times like COVID-19 event. It can be successfully utilized side-by-side or instead of on-campus education. Such means that it can help to achieve engagement and interaction. Likewise, they mentioned some merits, by some ex-literatures, for instances, delivering learning to plenty of learners anywhere and lower costs, save-time and better learning-teaching process by investing of information technology tools, on the other hand, anxiety, distraction, omission, isolation, less participatory, and technical troubles as negative side of online module.

In the sex-steps thematic analysis of Allo (2020), via qualitative approach using semi-structured interview through WhatsApp application to take students' perceptions over how good online learning is amongst COVID-19 undertaken in Indonesia, concluded in his literature that the LMS is helpful in the wake of COVID-19, but not easy to use some features. He stressed that student's conditions in related to the availability of internet access, financial issue, and choosing effective, suitable applications contributing to online learning implementation, should be looked after. To overcome those conditions, he proposed making use Messenger and WhatsApp (Voice Note) application integrating with this system, individual assignment to keep distancing, group task for helping learners without internet access and the explanation in advance by Voice Note for material and assignment to get partially over lack of ease of use LMS.

Furthermore, a case study for 64 postgraduate students in Turkish Gazi University conducted by (Isik, et al., 2010) employed survey instrument with five-choice Likert-scale to gather data in terms of their attitudes about web-built distance instruction. The data then were analyzed by the following techniques; descriptive statistics, one-way ANOVA, independent sample t test, and correlation. Their findings demonstrated that postgraduate students had a general positive attitude, yet the female students' attitude was significantly more positive than male and expressed themselves more freely and comfortably in online environment. Furthermore, online learning was shown to be more efficient and more comfortable compared with conventional in-class education, as well as cost free and multimedia enrich education environment. However, most of students felt bored while studying online; hence the online learning must be set up in systematic and methodological approach.

To explore impact using Mobile LMS in online learning on the academic success of students and their views, Tezer & Çimşir (2018) held study using both quantitative and qualitative approach for 70 students in one of Turkish universities. They detected that using Mobile LMS in online learning was useful and satisfying, and increased students' motivation; as a result, it fosters academic success of students and improve positively their opinions as to Mobile LMS. On the other side, the internet connectivity problem and its costs was one of the obstacles in this application. Thus, they recommended integrating mobile into LMS and providing internet connection in higher quality and lower costs.

On the other hand, the students' perspectives have a negative insights in using online learning system or LMS in education process will be reviewed in the next to ensure widely understanding factors affecting students' satisfaction with BLS amidst the novel coronavirus pandemic period, and to figure out features, drawbacks and challenges:

A short study of (Chen, et al., 2020) achieved in USA, employing a multiple choice survey filled by 39 dental students, argued that the switching into the online learning format in midst COVID-19 has generally influenced students as their learning became worse and combining synchronous and asynchronous components may be better students learning online. Furthermore, the findings showed increasing burnout, decreasing engagement and retention, while the attendance did not change. Students held the view that virtual class is more interactive.

A study using e-questionnaire adopted from previous study and formulated by Google Form so that the link was posted by emails and WhasApp, was conducted by (Kaur, et al., 2021) in India, regarding 123 engineering students' response towards quality of online learning system whilst COVID-19 spread through considering knowledge gain, concept clarity, assessment, and satisfaction level of students. The findings revealed that students' experience, satisfaction with online learning was less than face-to-face learning, and their willingness to pursue the study through the online system was less too. Such means that it is still supplementary and not an alternative system to on-campus education. To leverage students to adopt these systems, an interactive and innovative teaching models, and contacting more with students during online classes ought to be taken into account by lecturers. Respectively, eliminating of shortcomings in online learning such as lack of confidence with students, lecture delivery, poor connection, etc. will be done. These negative responses in terms of using online learning system in the light of COVID-19 may be attributable to quality issue of online instruction.

Hebebci, et al, (2020) carried out research in high schools in Turkey to investigate students and teachers' opinions on online learning while COVID-19, they revealed that the students were unsatisfied due to absence of infrastructure, insufficient time, inadequate teacher, adaptability and lack of understanding the topics of lessons. On the other hand, the teachers argued that online learning mode has positive facets, yet, interaction is the most barrier, this is traced to asynchronous education is mostly preferred to synchronous

education and not preparedness for rapid transition. In any case, both teachers and students expressed positively that education can be achieved in a planned and scheduled way even amid exceptional situations. However, there some hindrances as infrastructure troubles, limited interaction, and absence of some facilities.

On a similar note, a research article undertaken by Adnan & Anwar (2020) in Pakistan, by using an online modified 38-item questionnaire as a data collection instrument to evaluate 126 undergraduate and postgraduate students' attitude over the compulsory online education. The findings indicated that the online learning system is unsatisfying and is not as effective as traditional education amidst a novel corona virus, especially in underdevelopment countries due to technical and monetary issues. Needing to develop contents, materials, curriculum, training programs and an efficient delivery system is explicit as they recommended. In addition, they mentioned that out of the challenges and problems coped on high education students are absence of interaction and communication among users, feedback time, and lack of conventional classroom socialization. This outcome may be resulted from the small sample size and non-random choose.

In similar research purposes to the current study carried out by (EVİŞEN, et al., 2020) in Turkey to explore students' perception as regards the huge shifting into online learning and its advantages and disadvantages midst coronavirus situation via inductive study, the primary data were got together by six students' journals and interview. By employing a qualitative descriptive research design, researchers came to that most of students' experience with online learning was not enjoyable and that the swift turn and risks of virus have influenced students' views towards it who were not prepared neither mentally nor financially. However, even though students deem that online learning advantageous, practical and helpful, and they have a desire to use it in the future, they favor on-campus education setting. Furthermore, the most characteristics of online learning while COVID-19 were comfort, time-saving, economic, getting together with family and autonomous education. As for disadvantages were viewed to be absence of interaction and motivation, velocity of lesson traffic, technical matters, financial challenges and difficulties of time-management.

Moreover, Fawaz & Samaha (2021) achieved the study about symptoms of stress, depression, and anxiety within Lebanese college students in eLearning system environment amid COVID-19. A quantitative cross-sectional research design was adopted to survey 520 undergraduate students online for assessing the proliferation of stress, anxiety, and depression symptoms amid students who initiated eLearning and students' satisfaction with eLearning as well. They have shown that an abruptly switching to online instruction mode owing to the prevalence of the virus hindered the student's education, created stressful loads of work, which started leading to anxiety and depression symptoms within undergraduate students. Which means that it made them unsatisfied with the online learning experience, namely, there a significant relationship exists between satisfaction and those signs as well as the satisfaction itself was considered to be a predictor too. It can be traced to the economic, political and health situations reflected on social ability and professional development.

Gürler, et al., (2020) carried out research at a state university in Turkey to identify faculty and vocational school students' opinions of higher education with respect to distance education system and to figure out how satisfied the students toward this system is in the middle of COVID-19 disease. A self-reported survey was distributed to students, only 2371 of which filled it out, and the collected data were analyzed by Chi-square test, t test and ANOVA test. Their results pointed out that the vocational school learners followed up the course activities (asynchronous courses, synchronous courses, and course material tracking) less regularly than the faculty learners did, while they also held the opinion that the system more successful than faculty students. Furthermore, as for satisfaction, the vocational school learners and learners with low GPA have an interest and more satisfaction with online learning system. Concerning application of this system in taking a test, the students believed that it is inconvenient due to absence of the technical support in case getting trouble during the exams, while it helped them with having access to lectures easily. To confront the weakness of distance learning system, the researchers proposed optimizing contents and infrastructure, this would considerably contribute to its efficiency.

In comparison study before and during COVID-19 duration undertaken in South Africa by (Carleschi, et al., 2021), the total of 256 participants were surveyed by the Force

Concept Inventory (FCI) as an evaluation vehicle to examine students' performance through pre- and post-tests. They suggested that transitioning mid-semester to online format has no noticeable difference of gain when comparing the results with previous studies. The grades in 2020 were not highly affected as compared with 2019 grades, however, the gender difference evinced that female students' gains were better than male. The main obstacles are linked to connectivity. In general, the switching process have not influenced students' conceptual performance and understanding, such implies that the online system can maintain level of students' performance even in difficult conditions, even it can enhance them.

Based on the research article counted on a cross-section approach, conducted in Jordan by (Al-Balas, et al., 2020) who employed the 23-question survey distributed by Facebook and WhatsApp for 652 medical students to examine current distance education situation, challenges and viewpoints of students and their satisfaction with it. They are of the view that the previous learners' and professors' experience and interaction are a most significant to enhance students' satisfaction with online platforms, that is, they represent challenge. Furthermore, low quality of teaching and connectivity were counted as limitations. Unlike, even though level of students' satisfaction with distance learning was low, the flexibility and saving-time were its outstanding features. Therefore, the success implementation requires grasping technological, financial, institutional, instructors, and students' blocks along with infrastructural and technical requirements. Furthermore, learners think that the blended education format is favorable for the medical instruction in the future because of difficulty of getting adequate clinical medical skills via just distance education.

In the same field, (Ahmed, et al., 2021) applied the survey adopted from the previous research. The questionnaire that was consisted of three parts; demographic, students' preference for online curriculum and student's preference for online curriculum courses was modified electronically and sent out to Pharmacy students, just 50 of whom responded. They extracted that Pharmacy students' perception in KSA towards BLS were somewhat interested in. Nevertheless, they are heavily in favor of the conventional in-class learning approach. Likewise, the researchers recommended utilizing of blended educational modality mostly in COVID-19 disease era. On another note, to optimize the

quality of BLS to meet learners' needs, the constraints faced by them should be minded when implementing this sort of education model.

In like manner, in research executed in Pharmacy school, in KSA by (Almaghaslah, et al., 2018), the self-administrated online questionnaire adopted from literature are voluntarily filled out by forty seven pharmacy graduate students, they are assertive that students have some interest in LMS within Pharmacy courses. Even though majority of learners had prior experience in utilizing Blackboard platform, most of them still perceived that instructor-delivered dedicated lectures modality is better than ones in online platform. This preference might be attributable to having difficulty in some curriculum that are not able to be applied in online way and to the limited use of technology by faculty members to a certain extent. Additionally, under this study, it can be understood that there is no highly effect of previous experience on students' perception.

In this context, a study done at Medical college in Pakistan by (Abbasi, et al., 2020), an across-sectional descriptive study was undertaken to examine students' perspectives towards eLearning in the scope of COVID-19, altogether 382 medical students were surveyed by a 23-item questionnaire with 5-choice Likert scale posted by means of email. The results pointed out that overall students' perception towards the online learning style was negative because of nature of applied subjects that are inconvenient in online setting, they are not ready to embrace the online education and they preferred the conventional teaching in coronavirus epidemic time as well. In order to ameliorate quality of online teaching in an effort to convince students to adopt online platforms in their learning among COVID-19 outbreak, the necessary arrangements should be taken by institute and lecturers.

Further, in applied sciences framework, Giray's empirical search (2021) in Turkey was designed to establish engineering undergraduate students' opinion on their online learning experience midst coronavirus period compared with on-campus education through assessing their satisfaction that was suboptimal due to the swift shifting into online learning system and adaptability with fresh situations. Data of the research were gathered from convenience sample consisted of 290 respondents by the online self-reported survey filled electronically out via survey monkey platform and were quantitatively and qualitatively analyzed. He observed that student interaction and

collaboration, instructor support and student autonomy are remarkable factors for students' satisfaction with online learning. Among prominent findings, evaluation methods should be altered for online learning to be fairer, using extensively lectures video recordings by students were beneficial, lectures in on-campus more useful compared with online live lectures and employing external online materials aid in reinforcing students' performance. Moreover, he proposed providing a list of instructional content, modifying materials to be in line with online style, assessing infrastructure and teaching platforms within COVID-19 era, allocating office hours for students, using collaborative coding platforms and utilizing various evaluation tools.

A study has been conducted by Aguilera-Hermida (2020) in USA aftermath the transformation to online learning to reveal university students' perception as to use, acceptance and embrace of emergency online learning through measuring students' attitudes, emotions, activities and educational experiences. The 36-item online survey formed by the Qualtrics survey platform was used to combine the 270 multinational students' quantitative and qualitative data. The following factors adopted by the literature; perceived behavioral control (self-efficacy, ease of use, and accessibility), cognitive engagement with (Cronbach's alpha = .92), and attitude, affect, and motivation were analyzed. He contended that online learning is not the same as emergency online learning and it is unique to the emergency circumstances. However, the students preferred traditional education delivery due to unfavorable conditions for both students and lecturers, such as limited accessibility, financial hardship, stress balancing life and so on that may lead to negative students experience, and declining their cognitive engagement, self-efficacy and motivation. Wherein if the learning experience was positive, they may increase the adoption of online learning, unlike if negative. Moreover, they affirmed that self-efficacy, ease of use and motivation play an important role in the cognitive engagement and academic performance of students, mostly during COVID-19, consequently, they influence adoption of online learning technology. Thus, they suggested implementing a "nudge" system to enhance feeling confident with students within class, subsequently surging self-efficacy and cognitive engagement, as well as adaptability, content compatible with conditions and instructors' comprehension of the surrounding circumstances contribute to improve online tertiary education experience.

To achieve aims of research of transitioning from face-to-face to remote learning amongst COVID-19 of which; determining 31 students' attitudes toward the use of Zoom for learning and establishing advantages and disadvantages undertaken in USA. Date were gathered by filling a 5-point Likert-type 19- item questionnaire, along with tow open ended questions adopted from literature and objectives of study. Serhan (2020) showed that the fully and abruptly transformation was not easy neither for instructors nor for students. Therefore, students had a negative attitude towards the Zoon learning and that its use had a negative effect on their engagement, interaction and motivation in Zoom sessions. By and large, the students were utterly unsatisfied with their learning experience in Zoom class in comparison to conventional education that might be traced to lack of students and lecturers' readiness owing to the sudden transformation, Zoom bombings, internet access issues, along with equity and access issue. He identified the following disadvantages based on students: distractions, quality of interaction and feedback, poor education quality and technical difficulties in a much smaller proportion, while flexibility was counted as the most advantage.

The descriptive study was a methodology in the article achieved by (Rohman, et al., 2020) in Indonesia, as altogether 128 students were surveyed by the online 15-question questionnaire made by Google Form to evaluate students' perceptions about implementation of online learning through indicators of convenience, involvement, effectiveness and challenges experienced by students. The outcomes contended that the online learning format is the solution for higher education, and is viewed as flexibility, and a new experience in the wake of COVID-19 era. Nevertheless, most of learners had negative impressions and evaluations resulting from dominance of assignment over the explanation, additionally, some barriers and difficulties like internet access, cost of internet, technical issues, interaction, engagement, lack of effectiveness and difficulty of system usage and understanding the topic of the courses. All this can be arisen from a lack of existence of sound planning. They suggest that, given learners' negative experience, the preparation, planning, role of professors and technical support should be taken carefully by stakeholders to improve experience of students towards online education.

Computer Bases Assessment Acceptance Model (CBAAM) used by Maqableh (2015) to investigate the acceptance of a Computer Based Assessment CBA was applied

on 546 higher education students at university of Jordon, of which 62.3% were females (340) and 37.7% were males (206) with ages range from 17 to 23. A Structural Equation Modeling (SEM) approach based on AMOS 20.0 was used to consider causal relationships and to examine the hypotheses between the observed and unobserved constructs in the model involving perceived usefulness, perceived ease of use, behavioral intention, facilitating conditions, goal expectancy, content, social influence, perceived playfulness and computer self-efficacy. The data was gathered by the field study containing a five choice Likert-scales paper-based survey having 34 questions that was reviewed by three lecturers who are specialized in the Management Information Systems (MIS) major, after that the pilot study was carried out. The reliability and validity of survey were verified by previous study and peer reviews, in addition to the reliability test for Measurement Model appeared Cronbach Alpha values over 0.60 for all factors, such means that they are reliable. The findings had him held the view that factors of perceived ease of use, computer social influence, self-efficacy, facilitating conditions, perceived usefulness, goal expectancy and content have only indirect effects on students' use of computer based assessment system, while perceived playfulness has a direct effect. As a result, higher education students will more likely use system, when it is playful and the system will only be playful, if it is easy to use and useful. In this regard, the stakeholders such as instructors, institutes and developers should pay attention to further strategies and methods make the educational environments more playful and exciting.

The comparison between Blackboard and Moodle LMS systems has been held for 876 undergraduate and postgraduate students to assess their perceptions by (Carvalho, et al., 2011), in Portuguese university. The electronically posted questionnaire was made up of four parts; identification (demography), level of experience, features used, and satisfaction with Moodle and Blackboard LMSs. The large proportion of students 96% used LMS as a complement to in-class conventional education, not as blended learning or the completely online learning. Such means that LMS is seen as complementing rather than substituting classes, that is, the level of engagement of students is restricted to course administration, course information and students support in just traditional learning environments. Namely LMS as a repository, wherein the students are inactive players as opposed to what is happening in online or blended learning modes from communication

and collaboration activities. As a result, the level of engagement is dependent on the degree to which LMS integrates in course activities. They reported that the more students use one of the LMSs, the more they tend to prefer it and that the previous experience in using LMS, along with ease of use has an effect on students' preference and level of satisfaction with LMS. Moreover, students are of the opinion that LMS to be beneficial and contributes to their learning activities. They also point out to some difficulties such as inability to find the targeted material and difficulties logging on to the system, along with inability to submit assignments, lack of capacity to open files in less percent. Therefore, as authors concluded, the development of LMS use fall in the hands of faculty members, where their opinions should be taken account pertained to design and manage the courses.

2.1.3 Literature Summary

Of course, there no single study exists having all these modalities or the whole factors that influence the satisfaction with online instruction process. Some research addressed the given psychological or technical aspects affected on users' attitudes or dispositions towards online learning system, others emphasized on specific advantages and disadvantages of online learning and their role in enhancing or refusing using and accepting online learning system by users. Moreover, it is noteworthy that each research has been carried out in different spatial and temporal situation or condition that might have been extraordinary or ordinary in nature. As a result, the discussion findings, as well as conclusions have varied across surrounding environment of study, where the outcomes have been explained within their own contexts.

By and large, there are considerable variances of perspectives or attitudes toward using online learning system or LMS, ranging from positive, moderate to negative perceptions. These differences called for applying diverse methodologies of which were quantitative or qualitative methods, or mixture (hybrid method), in addition to use the research models containing various factors or variables that have an impact on utilizing systems.

Comparing the developed world to the developing countries, based on afore-mentioned literature, as to use of online learning system or LMS, it can be noted that most of countries had common challenges in the transformation process, although the

developed countries have an advanced technology, well-equipped infrastructure and qualified cadres compared with the developing countries. This did not coincide with what Ali (2020) discussed in his study, as the developed countries were able to transform quickly towards online learning system thanks to advance preparation and readiness. As for students' viewpoints with scientific disciplines of an applied nature such as Medical and Engineering, they were also differentiated to some degree. However, we can express that there is a satisfaction with, and a heavy use and adoption of LMSs in tertiary institutions across the world, especially in the midst of the COVID-19 outbreak and the rigorous lockdown regulations. Further, they are the best solution for avoiding disruption of instructional process during the stay-at-home orders due to COVID-19, notwithstanding the fact students' preference for traditional education environment. This increasing growth of utilization this kind of the systems could be traced to a vast array of the justifications based on previous studies, including but not limited; flexibility, accessibility, availability, ease of use, large-scale, low transition costs, adaptability, independency, usefulness and communication, and all of these justifications are seen as advantages of LMSs. Nevertheless, in the face of the massive traits, some restrictions and blocks are triggered by depending on these platforms, some of them: costly internet bundles, connectivity problems, the sense of responsibility, inadequacy of the interactivity, social isolation feelings, overloading assignments, evaluation issues, and infrastructure and technical issues. Therefore, the successful transformation to the online learning system depends to a great degree on the successful implementation process that needs the necessary requirements in terms of students, staff and technology to be fulfilled.

Majority of above-mentioned literature reviews' results could not have been generalized, since everyone has been only exclusively implemented for given faculty students in a specific university and has a small sample size as well. As such, an existing study has been conducted at one of Turkish higher education institutions in exceptional setting due to the emergency of COVID-19 pandemic, that it's gone viral, not only nationwide but also across the world. What is more, in the view of all above literature reviews, it is explored, at least for the time being, that there is no research available on Turkey-context that studied exactly the discrepancies between the undergraduates and

postgraduates regarding the satisfaction with the transformation to the BLS for high education students in the wake of COVID-19 contagion prevalence.

2.2 About Online Learning in Turkey

2.2.1 Higher Education in Turkey and Online Learning

After emergence of COVID-19 disease, has been categorized as pandemic worldwide, it has become the first main concern of the world' nations and its institutions including Turkey to stand up in the front of their responsibilities toward their nationals not only to protect their health, but also to ensure economic and social aspects and to maintain their interests as before. In the spirit of responsibility and duty, Turkish state, in the first moment of discovery of disease, issued some actions and measures to encounter this pandemic outbreak and to mitigate its implications.

Turkey is located at Middle East bridging Europe and Asia with a total land area of 769,630 Km2. The current population is 85,412,550 accounting for 1.08 of the total world population and 75.7% of them is urban with the median age 31.5 years Worldometers (2021). "Turkey has the largest higher education student population in the European Higher Education Area with 207 universities, of which 129 are state and 78 are foundation universities" Yekta Saraç (2021). Number of students recorded a national total of 8 million or so, distributed as follows: 101,242 Doctoral, 3,002,964, 297,001 Master's, 4,538,926 Bachelor's, and Associate's İstatistik (2020), and 4,108,863 (around 51%) of which are female, while 3,831,752 (almost 49%) are male Studyinturkey (2020).

According to (Isik, et al., 2010:222), they stated that, from eleven years ago, there an increasing demand exists as concerns postgraduate education in Turkey that can be met by online learning. Giray (2021) adds traditional learning has already some digital materials and methods. Turkey has become one of the preferred destination for many international students in the last few years for now from all over the world, mainly Middle East, African, Pakistan, and India countries, wherein the number of international students went up from 16,656 in 2001 to 185,047 students in 2020 Studyinturkey (2020). It is good number compared with Spain and Scandinavian states and approaching Japan. While international higher education students reached more than 5.6 Million across the world,

up from 1.6 Million in 2000 Iie.widen (2020). Which points out to that most of them will directly affect resulting from this pandemic, it may give rise to come back their home, this return involves many risks; most relevant transmission of disease, as well as some of those countries do not have infrastructures enough to make online learning process.

Turkey is not new pertained to a digital education. The online or distance learning was not completely spur of the moment decision. Very early on, Turkey has been in an effort to keep up with the latest technologies in each area including education so far. Turkey has adopted the Digital Transformation in Higher Education Project since the early, increased in recent years, wherein 120 universities have Distance Education Application and Research Center (DEARC) to support online learning for more two million students (Elçi, 2021:345).

In the historic account of online learning development for Higher Education in Turkey by (Ruzgar, 2004; Senyuva, 2011), they described that the distance education subject matter was for the first time expressed in 1927 at a meeting about the education problems and the first attempt was in 1933-1944 through mail-education courses. In 1956, Banking and Business Law Research Institute-Law Faculty Ankara University started the first concrete and significant application on distance education. Then, by 1960, delivering college chances of Secondary and Vocational School graduates by mail-education. After that, the Ministry of National Education founded Mail-Education Center (Education Center with Letter) in 1961, wherein the preparatory courses were delivered by letters to the people who would like to finalize their education from outside. In 1970s, the components and approaches of the distance learning were provided by a TV system founded at the Eskisehir Economical and Commercial Sciences Academy (EECSA). The Ministry of National Education within 1975-1978 initiated an experimental distance education program for diffusion of higher education but this attempt was not meant to be. The reading/ writing campaign, in 1981, was launched through television across the country to elevate literacy rate. The law vested the responsibility of "Continuous and Open Education" on universities by 1981. After one year, in 1982, the Council of Higher Education (CoHE), referred to as YÖK, was established and vested to regulate all higher education institutions. By 1982, Open Education Faculty (OEF) at Anadolu University in Eskisehir embarked on undergraduate degree programs and other programs to deliver

them to Turks across Turkey, Europe and Turkish Cyprus via television, video, printed materials. Since 1982, it can be said that the online learning has been actually applied by the Ministry of National Education and some universities through internet/web and started centrally according to establishment of Anatolian University Open Education Faculty (AUOEF). It provided researches, publications and associate and undergraduate degrees within distance learning programs via TV course programs, published materials, face-to-face academic consultancy service channels, and later via video education, radio & newspaper channels, and computer aided instruction,. In late 1992, Firat University proceeded with broadcasting education-purposed programs over the local television. As of 1993, distance education studies have been taken place via television programs for teaching computer use and programming languages. Bilkent University in conjunction with the New York University created videoconference system in 1996; some courses were held interactively. By 1998, in similar fashion to Firat University, Selcuk University commenced the radio and television broadcastings. After 1998, East Anatolian universities were connected by a videoconference system for distance learning across radio, television, satellite, camera and other new technologies. In 1999, Firat University transmitted the "robotic" course to web media, whereas this course was delivered as distance education to the students of Kahramanmaras Sutcu Imam University and Sakarya University. In 2000, web-based MBA program was initiated by Bilgi University. Since 2000, Istanbul University, Harran University and Istanbul Technical University employed online learning by means of videoconference and broadcasting. Moreover, to support online learning, two years before the COVID-19 pandemic began, CoHE started intensive programs for students and academic staff through 'Digital Transformation Project at Universities' targeted enhancing academic staff & staff for digital education in Turkish tertiary instruction establishments. As well as it created an open source database to gather all distance and open education materials from universities cost-free Yekta Saraç (2021).

2.2.2 Higher Education under the Shadow of COVID-19

The traditional in-class education in all schools as well as universities was halted in Turkey in March, in response to protect community in general and students mostly from

the outbreak of the novel epidemic COVID-19 disease. Further, it was transited, after one week of decision of education suspension, into online education platforms and every university identified their own online learning systems (MEB, 2020). In this side, the students 43% support that Council of Higher Education CoHE [YÖK] to delegate its authorities to universities regarding transition process, as well as most of them 78% believed that it is good to get the respective of the Ministry of Health to start in-person learning in the middle of COVID-19 pandemic CoHE (2021). "Universities with Distance Education Application and Research Center (DEARC [UZEM]) started to practice distance education, the courses and course tools that are already in the digital environment opened for access" (Elçi, 2021:344).

Turkey's Council of Higher Education CoHE [YÖK] has decided to suspend conventional education at universities in the spring term of the 2019-2020 academic year and shift abruptly into remote learning environment because of the novel COVID-19 outbreak CoHE (2020a). It has announced, on 18 March 2020, the essential legal arrangements for universities to keep going educational process with online style CoHE (2020b). It also allowed students to suspend their studies and postpone enrollment owing to the issues the students confronted in arriving at remote learning courses CoHE (2020a). An online educational commission was founded by CoHE, as it managed to set a roadmap for the 2021 academic year, and to provide a platform to support academic staff Yekta Saraç (2021).

In this context, some steps have been taken parallel with the world higher education institutions, as per Elçi' study (2021), to encounter this emergent situation early by CoHE. First of all, on March 6, 2020 suspension or putting off international engagement in academic activities and conducting the international meetings online, along with, the training postponed for three weeks on 16 March. Then an educational planning model was announced on 18 March. Besides, the "Digital Transformation Commission in Higher Education" had developed the Pandemic Distance Education Applications Roadmap supported by CoHE that focused on human resources, infrastructure, content, legislation, plus implementation needed to undertake online education activities to guarantee the sustainability of the educational process in tertiary instruction. Subsequently, the universities with an equipped online learning infrastructure started with the transition

process to online mode, and in the same time strive to support unprepared universities in cooperating with CoHE. Likewise, the announcement mentioned that campuses have the choice to utilize asynchronous/synchronous approaches of distance education and to make the measurement and evaluation of courses. For, thesis defenses and thesis monitoring committees in postgraduate programs, and proficiency exams could be carried out in a digital environment ensuring to be "registered and audited". It is also noteworthy before COVID-19 disease, in February 2019, based on the Digital Transformation in Higher Education Project, more than 6000 faculty members from many universities took part in "Learning and Teaching in the Digital Age" training program. Thus, the faculty members with experience in developing distance education content and tools can contribute to provide assistance and aid for universities that need support. As such, the courses developed in the digital environment by Anadolu, Atatürk, and İstanbul Universities would become open to general accessibility under the ring name the Higher Education Institutions Courses Platform (https://yokdersleri.yok.gov.tr/). In the context of another announcement on the twenty-third of March 2020, which mentioned that e-books and the digital course resources were made accessible to students on this platform. At the end of March 2020, Middle East Technical University involved in that platform across the support of videos and digital textbooks, and a gradual increase in the number of students able to access it was announced. Furthermore, at the end of the semester, the baseline framework as to the education assessment and measurement was issued by CoHE, and it was also offered to the universities on the eleventh of May 2020, submitting a proposal to make the tests in the form of assignments and projects by employing digital chances. All these actions have been applied to all of universities levels - associate, bachelor, master and PhD - upon their open capabilities. Furthermore, given Yekta Saraç (2021), in applied disciplines the students were allowed to study face-to-face in small groups with advance consent by Health ministry and hygienic protective measures.

To know the impact of COVID-19 pandemic on Turkish university students, a focus group discussion approach through Skype applied by Tümen Akyildiz (2020) in Turkey, was held to obtain the data of twelve undergraduate students' thought on the pandemic distance education. After qualitative study criteria including credibility, transferability, dependability, and confirm ability were addressed, the data were analyzed by qualitative

content analysis. She claimed that COVID-19 have influenced negatively most of students' lives, thus, it caused anxiety, boredom and despair, but it is opportunity for boost distance learning implementation. Moreover, absence of interaction, difficulties in communicating with professors that cause isolation for learners and feedback, a load of assignments, time management issue, problems in exams methods, and traditional educational customs were viewed to be, on one side, the weaknesses of the online learning. On the other side, its strengths were flexibility of time and place, having more responsibilities in learning, and comfort in exams. She finally proposed some ideas, given her sampling participants, to optimize implementation of distance education, for example using synchronous and asynchronous lectures, immediate feedback from lecturers along with qualify them technologically, clear criteria for evaluation and useful appraisal techniques with reducing the number of assignments.

Yekta Saraç (2021) concurs with the previous study in terms of online learning is a good opportunity and has possibilities in the wake of COVID-19 disease. (Akdeniz, et al., 2020) think that the positive college student's attitude towards COVID-19 is only with their good COVID-19 knowledge to help with halving negative emotions and risks of contagion. However, (Emiroglu, et al., 2021) believed that relevant authority has not been well equipped to jump into online learning process while COVID-19 crisis. Because of sudden leap in the method of instruction, several higher education institutes were unready with suitable online instructional platforms and online educational resources (Aguilera-Hermida, et al., 2021).

2.3 COVID-19 Pandemic and The Effect on the Tertiary Instruction

Coronavirus Disease is "a highly transmittable and pathogenic viral infection caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which emerged in Wuhan, China and spread around the world" (Shereenab, et. al., 2020). Total cases across the world 218 M, Recovered 194.8 M and Death 4.5 M. Total cases across Turkey 6.36 M, Recovered 5.82 M and Death 56,458 until end of August 2021.

2.3.1 Origin, Characteristics and Transmission

Origin

"In 2003, the Chinese population was infected with a virus causing Severe Acute Respiratory Syndrome (SARS) in Guangdong province. The virus was confirmed as a member of the Beta coronavirus subgroup and was named SARS-CoV" (Shereen, et al., 2020:92). Then it circulated swiftly across the world with over eight thousand cases and 750 diseases. After decade in 2012, some Saudi natives were hit with another corona virus named as the Middle East Respiratory Syndrome Coronavirus (MERS-CoV). Before the end of 2019, as (Shereen, et al., 2020) stated, the Chinese state told the WHO over many cases of pneumonitis, with uncommon causes. The beginning of disease spread was in the seafood market in Wuhan/China, and over fifty persons were quickly infected. Moreover, Wuhan faced a novel disease prevalence, which caused over eighteen hundred plus more than seventy thousand infected people in 50 days. They added that the reports then clarified that the new virus is a β group member of coronaviruses. The novel virus was described by the Chinese scholars as 2019 novel coronavirus or Wuhan coronavirus, due to it belongs to the family of Coronaviridae in the Nidovirales order, and forms crown-like spikes over the external surface of this virus, hence, it was called as a corona virus.

The zoonotic source of SARS-CoV-2 is not confirmed, however, sequence-based analysis suggested bats as the key reservoir. DNA recombination was found to be involved at spike glycoprotein which assorted SARS-CoV (CoVZXC21 or CoVZC45) with the RBD of another Beta CoV, thus could be the reason for cross-species transmission and rapid infection. Based on phylogenetic trees, SARS-CoV is closer to SARS-like bat CoVs. (Shereen, et al., 2020)

In the first of December 2019, it was reported the first pathological case of COVID-19 disease, and the first hospital intake date was in the sixteenth of December 2019. After discovery of the first cases, an epidemiological warning state was put out by local health authorities in the end of December (Huang et al., 2020a). Two months after the first symptoms of the virus, the World Health Organization WHO declared COVID-19 as the public health emergency (Lai et al., 2020). The rapidity of this spread can be understood by characteristics of the virus itself.

Characteristics

In study of (Huang et al., 2020a; Shereen, et al., 2020; WHO, 2020a) asserted that symptoms of most patients were fever, respiratory distress, and dry cough. WHO (2020a) further stated that headache, sore throat, nasal congestion, lack of smell/taste, joint/muscle pain, puke, vertigo diarrhea, chills are seen as less common symptoms. As for severe symptoms, they represent anorexia, muddle, the constant chest pressure or pain and high temperature (above 38 °C). Furthermore, the other signs which are less widespread as following; excitability, anxiety, low awareness, trouble sleeping, depression, neurological damage, hallucination, encephalitis, and strokes.

Transmission

Based on the World Health Organization WHO (2013), there are six phases identify how dangerous the pandemic is and the sort of proliferation: the first phase is the transmission of viruses from animals-to-animals without infection in human. The second phase is the transmission from animals-to-animals with slight possibility of infection in human. The third phase is the temporary transformation between animal-animal or human-animal with infection in humans. The fourth phase is ongoing human-to-human transmission. The fifth and sixth phase are the transmission of the human-to-human virus in two or more states, in some sense, widespread human contagion. It can be said that the sixth phase means that a worldwide pandemic has started.

WHO (2020b) has come out scientific brief, based on several researches, where it stated that COVID-19 disease is caused by the SARS-CoV-2 virus, which proliferates among people, mainly when a person with virus contacts with another one. It can be transmitted by speaking, sneezing, cough from the nose/mouth of infected people. Aerosol transmission can happen in specific settings, particularly in indoor, well-non-ventilated and packed places, where infected people spend long periods of time with others. The virus can also spread after infected person(s) sneeze, cough on, or touch the surfaces, or things, such as tables, doorknobs and handrails. Other people may be got infecting by contacting these contaminated surfaces, then touching their eyes, noses or mouths without having washed their hands first.

2.3.2 Rising to COVID-19 Pandemic

(Lai et al., 2020) concluded that the healthcare workers as well as everyone are under menace in terms of hygienic owing to COVID-19 prevalence and information available regarding it is still not that much, in addition to that, the medical treatment efforts to control it are still subject to the research and development pipeline by now. On another note, he argued that what can do now to prevent its spread among human is aggressively execute contagion control actions. Oversight the circumstance should be continued by the health entities, where the more knowledge is found out about it, the better possibility of facing it earlier. (Shereen, et al., 2020:96) suggested that the full restriction over the usage of wild creatures as the food resource should be blocked. Evolving protective medication and effective techniques for early diagnosis of the disease are needed as well.

(Anderson et al., 2020) opined that compulsory and voluntary quarantine, lockdown of workplaces or educational facilities where the risk of contagion is anticipated and halting mass social events may contribute to mitigation of the spread of the virus. There are some daily protective measures to low down the outbreak of COVID-19 by Bender (2020) staying at home when feeling sick, cleaning hands regularly, wrapping mouth and nose, and cleaning repeatedly touched things and surfaces. On a similar note, (Akdeniz, et al., 2020) stated, in their study about protective behaviors of Turkish university students, that cleaning hands, putting on masks and protective gloves, eschewing the touch with, eyes, face, and hands, laundry at high-temperature, personal and social isolation, and place's recurrent ventilation are protective actions that are advisable by health specialists. In addition, they observed that social isolation, ventilation and hand washing are the most protective measures and that the anxiety caused by COVID-19 may generate shifting into online learning.

2.3.3 The Effect of COVID-19 on the Tertiary Instruction

The fact that COVID-19 disease has influenced throughout the entire spheres including education operations is visible. By the spread of COVID-19 diseases, it forced the operational practices including the education sector to change all over the world in a short span of time, where it, namely education suffered at the level of the world.

Respectively, the COVID-19 disease will cause a long-term influence on tertiary establishments (Shahzad et al., 2020) and its outbreak influences the adaption process (Akdeniz, et al., 2020). The tertiary institutions have put forth efforts to effect concrete changes in a bid to avert an interruption of education processes and to mitigate COVID-19 disease outbreak at a time. As a result, all institutions have made decision to transform towards alternative systems such as online learning system. (Adnan & Anwar, 2020:49) confirmed that COVID-19 influenced traditional university education and instructional associations. An online learning system is picked as a substitute option to keep going the education. Dhawan (2020) opined that online learning is a panacea in the wake of COVID-19 pandemic. Continuity of COVID-19 disease will result in growing use online platforms in education operations (Muthuprasad, et al., 2021). (Naresh, 2020: 468) also claimed that education after COVID-19 Crisis built on ICT has great potential for enhancing teaching in the educational setting. Moreover, (Muftahu, 2020:417) contended that COVID-19 imposed a state of compulsion for both the academic staff and students, where the students have been spurred by their universities to complete instruction requirements via online education system owing to COVID-19 as well as the academic staff were trained in utilizing the online learning tools and materials. In India, Committee was founded to look at a contingency plan that would include an alternate academic calendar and ways to conduct exams for colleges and universities (Mahalakshmi & Radha, 2020:2406). The TAIF University also have started training faculty members and student on the LMS (Al-Salamat, et al., 2020). He mitigation of traditional in-class education by universities as a way of enforcing spacing to alleviate interactions of close proximity has been seen by the public health officials and specialist in epidemiological and contiguous disease as a justifiable decision Murphy (2020). T (Weeden & Cornwell, 2020:238) stated that the initial reactions about the transition's decision to the online learning mode taken by universities have contradicted, as some of them considered it an essential step in the right direction in the face the novel virus, and others described it as an overreaction. Furthermore, they opined that implications of network models for Epidemic Spread on a University Campus are not that high, that is, they are unable to remove the pandemic threat utterly, but the possibility of alleviation is more likely.

De (2020) reviewed literature to determine effects of the COVID-19 disease on universal education, noting that schools, colleges and universities were undergone to switch into synchronous, asynchronous and online modalities, with virtual labs to deliver learning. With absence of network capacity, the rurally and remotely students, as well as handicaps would be reluctant to continue learning. A restrict trainings were provided for instructors to reconfigure evaluation and instruction strategies online utilizing applications smartphone/web and other digital tools. He also pointed out that COVID-19 created isolation, anxiety and stress within students and academic staff that gave rise to hinder students' attendance. As for higher education institutions students, he listed LMSs, social media platforms and technology tools were used broadly as alternative ways to share information and materials and to communicate with each other. Moreover, medical and healthcare, pharmacy and dental education were vulnerable the most owing to pandemic, as clinical activities and specialties, internships in hospitals, pre-clerkship, clinical rotations etc. all were suspended, which had entailed degradation of learning outcomes and performance. That is stemmed from absence of transferability of virtual reality systems, insufficiency of programs to assess students' efficiency without tests and inability to use mannequins online. Unlike, telemedicine and virtual surgical simulation through 360º field-of-view cameras, videos, podcasts, webinars so forth were used by medical students to cope these challenges.

In a similar vein, the research article made by (Singh, et al., 2020) aimed at study of effect of COVID-19 pandemic on instruction and new chances in online teaching via determination of benefits and challenges of online learning. They confirmed that COVID-19 pushed the Indian government to accelerate widely in utilization online learning platforms to avoid interruption of education. However, this rapid transformation has given rise to some opportunities of online teaching and learning that have down sides and positive sides. As such, enhancing instructors' and students' capabilities, helping in minimizing generation lag between educators and learners, time saving, freedom of place and space, ability to use fewer resources to achieve greater output, interesting and engaging in learning activities, acquiring more knowledge, updating applications, making students more responsible, usefulness for catering the needs of inclusiveness, ease of data/record management; increasing transparency and environment friendly have been as

remarkable traits of online education. In contrast, as for online learning limitations and barriers can be summarized as the following; complications stemmed from gaps among students in terms of age, gender, level education, family commitments so on, equally resources distribution issue, health and psychological problems of users owing to lone usage of technological devices, lacking human touch, feedback problems among users, the requiring a good training of users, lack of communication and communication skills development, calling for more sincerity and dedication, sustaining the interest of students and the threat to privacy and security.

By the same token, the study of Butola (2021) maintained that COVID-19 outbreak has caused closure of educational institutes the worldwide, which has impacted learners ranging from school-learning to post-graduate students, and has pushed the move to online learning environments. LMSs and video conferencing tools have been used broadly. Therefore, COVID-19 has unveiled abilities of those establishments to experience an education process interruption. He believed that eLearning is very helpful during corona virus epidemic and that the knowledge of technology and its uses are needed. However, he numbered some restraints of eLearning are not effective in rural regions, not convenient for technical courses, not helpful for students who have no self-motivated to educate and feeling reluctance. On the other hand, easiness, accessibility, secure, saving time and knowledge availability are viewed as some of its features.

Osman (2020) verified in his research global impact of COVID-19 pandemic on learning systems made at Oman Royalty that coronavirus is an effective ‘change agent’ to accelerate adopting the online learning system by tertiary institutions which are change-resisting in nature. Of course, bearing in mind their level of flexibility, preparedness and adaptability, which are seen as the main factors tested really by COVID-19. The actions taken by the royalty were adoption of an Emergency Remote Teaching (ERT) plan by current blended courses over platform, providing equally access to online classes, promoting extra services for system overload, formation of subcommittees to ensure quality and facilitate procedures, support for students with special needs, and modify some academic regulations. Moreover, He believed that students’ experience with such system was satisfied. Despite their digital skills, they are still in need to motivation and self-regulation skills. He also has seen that it is early to say that these systems are only viable

substitute, because an interaction and the assessment of performance, especially technical capabilities and practical skills serve as a challenge. Thus, relevant online assessment models and substitutive evaluation approaches should be embedded.

Likewise, a research counted on six-phases methodology on the effect of coronavirus on medical learning, carried out by (Daroedono, et al., 2020) reported that there some factors exists, as per 545 students' perception, such as flexibility of time and location, low cost (except mobile data), no needed specific preparation and no hassle considered to be supportive for eLearning implementation process. On the contrary, there are inhibitory factors like connectivity, internet data cost, material lesson pilling up, lack of concentration, interaction and understanding. Moreover, they perceived that COVID-19 is a chance for educational institutes to better medical education delivery to students in the future. A coronavirus pandemic changed and forced the lecturer, students and staff to do many alterations to ensure achieving of online learning and teaching in the right way as best as possible.

Çalışkan, et al. (2020) wrote that tertiary education establishment takes on a vital role in fixing public health issues by means of training new, active and dynamic doctors, and he appended that increasing knowledge of the students about medical aspects in terms of pandemic should be taken into consideration by education institutions.

Based on (Gautam, D. K., & Gautam, P. K., 2020), they observed that majority of students were effected by COVID-19, yet, the postgraduate students were relatively more effected than undergraduate students were, and such implies that the lockdown and social distancing measures have an affect reflecting on students. (Shahzad et al, 2020) contended that there are impacts of corona virus in electronic learning on students of tertiary institution, as their study reveals that both females and males have a varying level of pertaining to eLearning gateways utilization.

CHAPTER 3

3. EMPIRICAL FRAMEWORK

Herewith chapter three which accounts for the empirical context of the research will continue to strive for that attainment of the study objectives in practice, through establishing appropriate research design and methodology followed by the existing thesis. Such research design draws on the nature of the problem presented by the study targets, which is an investigation of 'How satisfied with the full-fledged transformation to BLS for high education students, Istanbul-Turkey, during COVID-19 disease period is' via making comparison among undergraduate and postgraduate students' opinions. Then, the results will be exhaustively debated later on to draw the public landscape for what has been observed.

3.1 Methodology

"Data are not only elusive, but also ephemeral" (Walliman, 2010:65), such means that the nature of data is changeable and scalable at one time or another and that the outcomes are not infallible as well. A systematic review to obtain the theoretical part (or background of study) of the present study was done in detail for the collected literatures. Secondary sources of data used are journals, reports, search engines, company websites and scholarly articles, research papers, and other academic publications. On other hand, the primary data referred to "data that has been observed, experienced or recorded close to the event are the nearest one can get to the truth" (Walliman, 2010:69) were employed. This is with a view to surveying university undergraduates (Bachelor) including freshman,

sophomore, junior and senior year, and postgraduates that involve Master and PhD students with respect to their perceptions on the satisfaction with the transformation towards Blackboard Learning System BLS in the light of exceptional situation, due to COVID-19 disease pervasiveness the world over. Which implies that the current proposed dissertation uses one of types of the primary data called interrogation that is "data gained by asking and probing, e.g. information about people's convictions, likes and dislikes etc." (Walliman, 2010:70).

To this end, an online two-part questionnaire instrument is applied in a bid to investigate six axes and eleven demographic dimensions affecting their perceptions and to identify traits and drawbacks, as well as the challenges and obstacles they experienced while COVID-19 pandemic crisis. All that will be taken place through conducting comparison between undergraduate and postgraduate students' perceptions via thirty items divided into six axes that is involved at a single model. As per ethics policies, getting the students' consent to participate in the survey was taken place by setting a choice of brief informed consent in the beginning of the survey form to verify explicit approval, along with the participation of students, by its very definition, in filling the form out implies that they are willing to take apart. To preserve privacy more name and student No. was not incorporated in survey upon my advisor suggested. Further, distribution of the online questionnaire survey to high education students was initiated immediately after receiving Ethical approval from Ethics Committee in University, under Reference Number:

3.1.1 Research Methodology

Measurement techniques, as (Şimşek, 2012:1531) discussed, could be self-employed that may focus on how users consider, think, perceive, learn, believe, behave or feel, or on actual performance that aims to evaluate individual performance of every user on a test-like situation. As such, the current research's main object is to be investigation on how undergraduate and postgraduate students perceive the satisfaction with transformation towards BLS in the wake of COVID-19 disease spread. Since descriptive research, as per (Walliman, 2010:10), counts on observation as a means of compiling data,

which tries to scrutinize situations to identify what is the norm, and the distribution of questionnaire is a form of Observation, subsequently, the research design implemented in the existing study is a descriptive study approach. On top of that, questionnaire, pursuant to (Walliman, 2010:97), is an especially appropriate vehicle for acquiring quantitative data, and he adds it is a flexible, quick, easy, and cheap instrument, as well as no personal effect of the scholar and covering an enormous of cases, people and geographical regions. It therefore has been selected as a tool for the data collection, notably whilst directions of the stay within home owing to COVID-19 disease. This indicates that this data collected, analyzed are having quantitative characteristic. As a result, in view of the foregoing, the study design at hand can be described as a descriptive, quantitative research method. In this regard, the more careful the sample choice and the research design is, the more valid survey has, Matar & Samour (2015).

3.1.2 Research Population and Sample size

Generally, the population in research is "a collective term used to describe the total quantity of things (or cases) of the type which are the subject of your study" (Walliman, 2010:94) and it has the following properties: homogeneous, stratified, proportional stratified, and categorized by type and location. Accordingly, the target populace was all the registered fulltime undergraduate and postgraduate students of a private university in Istanbul/Turkey in specific who have witnessed lockdown actions to mitigate corona virus disease due to the prevalence of COVID-19, through spring semester 2020 for the end of spring semester 2021. In addition to students enrolled part-time who, based on (Carvalho, et al., 2011:829), may be less able, less ready, or less desirable to attend classes, and might take advantage of further from the online learning functions of LMSs.

The present research sample surveyed was randomly selected from the respective colleges and programs of the university, so that individuals in the sample took part to fill up the online survey on a voluntary basis. Unfortunately, the participation rate has not risen to the level of expectations, with only almost 10 per cent of respondents having participated successfully to complete the questionnaire, out of a total respondent number of 2954 whom the survey was sent. Therefore, the actual overall size of the sample is 294

students whose data were brought together and analyzed in an effort to attain the purposes of the currently proposed thesis.

3.1.3 Data Collection

The data of a quantitative nature, have been collected by the online survey method that was used to compile data from 294 student respondents who finished successfully filling up, who are currently pursuing their undergraduate and postgraduate degrees in different colleges of university either in full-time or part-time study hours. Basically, the questionnaire, which is an instrument to get data, aims to inspect higher education students' viewpoint with respect to the satisfaction with the entire transformation into the BLS in the middle of COVID-19 prevalence. The online self-reported questionnaire survey items were gleaned from similar studies, which are (Aguilera-Hermida, 2020; Al-hawari & Mouakket, 2010; Ituma, 2011; Liaw, 2008; Maqableh, 2015; Parker & Martin, 2010; Salloum et. al., 2019). So that they were amended and developed through extensive review of the relevant literature to keep up with the requirements of this proposed research and students' environment, in order to investigate its hypotheses. After consultation with my advisor and give-and-take, the final survey form was endorsed. All questions on the survey were closed-ended questions, which refer to, according to (Walliman, 2010:97), kind of questions that have a set of defined answers to select from, and are marked by ease of coding, fast of replying, and require no specific creative-writing from participants when answering. They, namely questions, were in two formats, multiple-choice and rating questions on a five-point scale (Likert scale).

A standardized, electronic, self-administered survey was fallen within two parts (see appendix: I):

The first part consists of eleven questions of demographic information, as related to age, gender, kind of current program they study, the place living, the favorite device for using Blackboard, the favored duration each class, the favorite number of classes a day, the kind of exams, the nature of majors or subjects taught, the willingness on using BLS in the future, and an existence of the previous experience in using LMS. As (Ituma, 2011:59) stated that, based on many literatures, the sort of the specialization, instruction methods, the online-education technology nature used, and education background are

factors that might influence how satisfied with electronic learning is within any given context. The options to responding to questions diversify, as some answers contain the options of Yes, No or Not Sure and the others range from two options to four options that only one option of them must be chosen.

The second part having thirty items is made up of six axes: Self-efficacy (4 items) was adopted from (Aguilera-Hermida, 2020; Ituma, 2011; Liaw, 2008), Engagement (4 items) was adopted from (Aguilera-Hermida, 2020), Usefulness (5 items) was adopted from (Ituma, 2011; Liaw, 2008; Maqableh, 2015), Communication and Ease of Use (6 Items) was adopted from (Al-hawari & Mouakket, 2010; Ituma, 2011; Salloum et. al., 2019), Challenges (7 items) was adopted from (Aguilera-Hermida, 2020; Maqableh, 2015; Parker & Martin, 2010), and Satisfaction (4 items) was adopted from (Liaw, 2008; Salloum et. al., 2019). Dimensions or variables set out in the present study as axes are "components of the indicators which can be measured" (Walliman, 2010:66), where indicators, according to him, are "phenomena which point to the existence of the concepts" (Walliman, 2010:66). The six axes involving thirty items are devoted to obtaining the undergraduate and postgraduate students' perceptions about the unexpected transition towards the utilization of the BLS in the wake of the COVID-19 disease period. All axes included had respective items that were measured using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). By (Adams, et al., 2006; Carleschi, et al., 2021), also significant is the application of the 5-point scale in the questionnaire, unlike the three-point scale, as reported in interviews with the student respondents. As well as the distinction 'disagree' against 'strongly disagree' and 'agree' versus 'strongly agree' is considered by them as a significant one, plus if there is no option 'agree' and 'disagree', they will mostly attend to pick 'neutral' one.

Aftermath the final exam conducted through the BLS, the online questionnaire form formulated by Google Form was sent out to all registered students in 2020-2021, by postgraduate students' WhatsApp group and BLS itself. Further, the link of the questionnaire was shared, with the undergraduate students, by some colleagues whose knowledge of them, who in turn circulated the questionnaire among other students. These participants have been opted, because they at the time, as with all registered students, had to use BLS to access their course materials as a result of protective COVID-19 measures.

When the link is clicked, the student respondents are directed immediately and automatically to the page of the research title with illustrative information relating to the dissertation and the option of informed consent, once approved, they are forwarded to the demographic part composed of eleven questions to be filled out. After that, sections of items involving the students' perceptions under the second part will appear in succession. On another front, due to the majority of the population targeted are predominantly Turkish-speaking students and are unable to talk English, the survey was firstly created in English and afterwards was translated by my advisor and colleague translator to the Turkish language of the Turkish-speaking students who do not know the English language.

3.1.4 Data Analysis

As with most surveys that create more often data of a quantitative nature, the questionnaire survey employed by the existing research resulted in quantitative data as well. Therefore, the quantitative analysis – or so-called statistics - which is numbers-shaped data that are treated mathematically to verify their characteristics (Walliman, 2010:113) is required. Data collected were analyzed by using the Inferential statistics method such as Stepwise Multiple Regression Analysis, Independent Sample t-test Analysis, Pearson's Chi square Test, as well as the Descriptive statistics approach of Means, Standard Deviations, Frequencies, and Percentages. Here, it can be said that the study at hand is Inferential and Descriptive study with Quantitative method.

As above-mentioned, the key purpose of the present thesis is expressed as the degree of how satisfied with the completely transformed into BLS for higher education students in the wake of COVID-19 disease period by means of the comparison between undergraduate and postgraduate students' perception. Consequently, three hypotheses are assumed in a bid to fulfill the main objective, in addition to establishing the traits, drawbacks, and challenges and obstacles in order get help to reach some recommendations aimed at strengthening the tertiary education process in university in particular and in Turkish universities at large.

At the outset, once reliability are examined by the Cronbach Alpha coefficient test, demographic analysis for demographic variables is done to obtain information for the

sample addressed. Demographic analysis, as Adam (2021) described, is the process of researching different dimensions of society or community, like age, level of education, marital status, mortality, birth rates, etc. He adds that demographic data mean socioeconomic information that is reflected in the form of statistics. Some demographic factors or variables are qualitative by its nature, hence, as per (Şimşek, 2012:1531), students are "either in one subcategory or in another, rather than being in one subcategory to a certain degree and in another to a different degree". Which points out that the student will be grouped in only one item or category, that is, for instance, he/she, in terms of gender, will be only either male or female, it couldn't be 40% male and 60% female. Furthermore, Students' satisfaction and enjoyment with their learning experience count on how the education addresses the desires, expectations, and wishes of learners in whatever the age-group they reflect (Şimşek, 2012:1529). On the other hand, to accomplish the current research's goals, analysis of students' perceptions is to be completed by many of various statistical analysis tests based on the nature and type of variables in the sample at hand. Thus, the research tries initially to find out the extent to which students satisfy with the BLS. After that the differences on every axis basis is examined by means of Independent Samples T-test to arrive at identifying whether or not the differences exist between undergraduates (Bachelor) who involve freshman, sophomore, junior and senior, and postgraduate containing Master and PhD students. This, in turn, leads to recognize for who these differences are, through comparing the means, and demonstrate eventually the university students' perceptions as concernsthe satisfaction with the full-fledged transformation into BLS during COVID-19 disease period. In addition to that, the demographic dimensions are tested to establish whether they have an influence undergraduate and postgraduate students' perception.

As such, for testing of the first hypothesis in seeking to attain the key purpose of the dissertation, how satisfactory with the transformation into BLS for high education students during COVID-19 disease period, on the basis of every axis is, will be tested by regression analysis. To this end, Stepwise Multiple Regression Analysis is implemented to investigate how effective or the extent to which Self-efficacy, Engagement, Usefulness, Communication and Ease of Use, and Challenges axes influence satisfaction axis that is considered in the current thesis as a measure of dependent variable. Generally, Multiple

Regression Analysis is "a technique used to measure the effects of two or more independent variables on a single dependent variable measured on interval or ratio scales" (Walliman, 2010:125).

On top of that, the R-squared value (R^2) is applied in a bid to set out which of five axes that influence satisfaction axis with BLS have the most effective contribution to high education students' perceptions. As it refers to a statistical metric, which represents the proportion of variance for a dependent variable, which is explained by one or more independent variables within a regression model, and its value ranges 0-100%, wherein the greater the R-square, the more consistent the model is with your data (Blog.minitab, 2013).

To the attainment of the second hypothesis and affiliated sub-hypotheses, the Independent Samples T-test is adopted to tell the differences between the undergraduate and postgraduate students' perceptions, as the level of significance is 0.05. To start with, specifying if there discrepancies exist on each axis basis among undergraduate and postgraduate students' perception is done by the significance level. Afterwards, comparing between undergraduate and postgraduate students' perception on the level of every axis is conducted by the means to determine the difference tends to whom. Finally, the difference on overall axes basis and for whom is identified as well, to establish whether their perceptions are different or not.

Moreover, to arrive at the degree to which the students perceive each Item in a bid to infer the traits and drawbacks of BLS, the five-point Likert Scale will be employed to establish if an approval is high, moderate, or low level through examining Items' means, as the following:

High level the mean value is more than or equal 3.4

Moderate level the mean value ranges from 2.6 to 3.39

Low level the mean value is less than 2.6

The third assumption attempts to establish the extent of the influence of demographic dimensions on the program students study over the satisfaction with BLS, in order to achieve that, Pearson's Chi square Test seeks how true the third hypothesis.

To achieve the research goal, IBM the Statistical Package for the Social Science (SPSS), version (26), has been used for manipulating and analyzing the data.

3.1.5 Questionnaire Test

The present study's the online self-reported questionnaire formulated in Google Form has been embraced from previous researches that touched on the online learning system or LMS at varied circumstances either in pre or whilst the novel COVID-19 pandemic. As a result, the online self-reported questionnaire survey should be examined in terms of reliability. It can be tested by means of two ways; the former way relies on the results of the literatures' tests the existing study adopted on, wherein the tests of previous studies, which were themselves originally adopted from other studies, of reliability showed that the Cronbach Alpha values their questionnaires falls within acceptable limits.

In order to reiterate the previous outcomes, the latter way is carried out by the researcher through undertaking the pilot study, as the instrument was also administered to twenty students exposed to online learning, to determine its reliability and a Cronbach Alpha value. The pilot study is "pre-test the questionnaire on a small number of people before it is used in earnest" (Walliman, 2010:98). Then, Cronbach's Alpha Coefficient test is utilized to measure reliability, which is termed as:

> the robustness of questionnaire and, in particular, whether or not it will produce consistent findings at different times and under different conditions, such as with different samples or, in the case of an interviewer-administered questionnaire, with different interviewers. Matar & Samour (2015)

On their side, (Noe , et al., 2017:225) described the reliability as "the degree to which a measure is free from random error". The reliability coefficient above 0.7 are seen as satisfactory, as Cronbach's Alpha Coefficient value ranges from 0.0 to +1.0 Matar & Samour (2015).

As reflected in the analysis, Cronbach's Alpha Coefficient of thirty items is valued by $\alpha = 0.838$, meaning that the value is more than 0.7 that represents acceptable value, stated differently, it is indicative that the questionnaire has a high reliability. So, as mentioned earlier, the items used to measure the six axes were derived from the various previous studies and much of these items were already tested by other researchers and went through the evaluations to verify reliability and validity. Moreover, the questionnaire form items were undergone to revise many times by advisor to end up in its current format.

3.2 Findings

Here, the results that were obtained by the manipulated and analyzed data compiled via the online survey can be shown in many tables and figures to enable to make it sense. In order to facilitate discussion and interpretation of undergraduate and postgraduate students' responses towards the satisfaction with the complete transformation to BLS under COVID-19 disease and the stay-at-home commands to alleviate its spread and to protect the students.

Although the online questionnaire has been sent to around over 2954 undergraduate and postgraduate students, the response rate was low. This supports what (Walliman, 2010:97) said in his book that even though the postal or internet questionnaire is easy to obtain a comprehensive coverage by random delivery, rates of response are inclined to be very low and it is not easy to figure out the extent to which the sample will be representative. It might be attributable to a lack of incentives, or to it being submitted to students in exams and educational leave periods. However, as (Walliman, 2010:114) stated, the more the number, the statistical examinations are more reliable, as the cases number greater than twenty are most often needed to make any sense of the analysis, and in this regard the exiting study's cases have arrived at 294 that marks an acceptable number to be more reliable. The data collection process has lasted four months and ten days, where it began on the twenty-fourth of June 2021 and it ended in the autumn on 31 October 2021.

3.2.1 Demographic Analysis Results

Table 3.1 illustrates Demographic Dimensions Information:

		Total 294	100%
Demographic Dimensions		Frequency	Percent
Age	18-29	268	91.2
	30-39	19	6.5

Table 3.1 (cont'd)

	40 & above	7	2.4
Gender	Male	160	54.4
	Female	134	45.6
The current program you study	Undergraduate	242	82.3
	Postgraduate	52	17.7
Where do you live?	City	271	92.2
	Village	12	4.1
	Others	11	3.7
The device you prefer to use for Blackboard	Mobile	24	8.2
	Laptop	240	81.6
	Desktop	26	8.8
	Tablet	4	1.4
How long would you like the online classes (per class) to be?	45 Min	196	66.7
	60 Min	69	23.5
	90 Min	24	8.2
	More than two hours	5	1.7
How many classes per day would you like to take on Blackboard collaborate?	Only one class	54	18.4
	Two classes	116	39.5
	Three classes	76	25.9
	Over three classes	48	16.3
What kind of exams would you like?	Take home	57	19.4
	Multiple choice & true-false	125	42.5
	Both	112	38.1
What kind of subjects do you study?	Practical and Theoretical	211	71.8
	Only theoretical	83	28.2
	Yes	144	49.0

			Table 3.1 (cont'd)
Are you willing to continue the classes through Blackboard system in the future after COVID-19?	No	79	26.9
	Not sure	71	24.1
I have a previous experience in using the Learning Management Systems (Blackboard).	Yes	176	59.9
	No	118	40.1
No missing data.			(Source: Author)

As for 'age group' variable which provides information about whether the differences in age play a significant role in using BLS, the table No. (3.1) shows that 294 students participated in the study, out of which 91.2% (268) were 18-29 years old, 6.5% (19) of them ranged 30-39 years old and the rest 2.4% (7) were 40 years old and above. In the flip side, the proportion within age-group 18-29, as shown in Table (3.6), tends to undergraduate students with 89.2% in return for 10.8% of postgraduate students.

In Table (3.1), in the demographic analysis, the 'gender' variable spells out that female respondents have 45.6% (134) of a total of student respondents, while 54.4 (160) per cent of respondents reflects male. In the flip side, the proportion within gender, as shown in Table (3.6), tends to undergraduate male and female students with 80% & 85.1% respectively in return for postgraduate male 20% and female 14.9% students. The 'gender' variable indicates which students based upon the type of the sex tend more to utilize BLS whilst COVID-19 disease and is there an effective on gender basis as to using BLS?

On the question of 'The current program student study' which determines the kind of education level that student study at the moment, wherein it has three options that constitutes the academic programs; Bachelor, Master and PhD, and it is grouped in two categories; undergraduate category for Bachelor's degree program students and postgraduate category for Master and PhD's program students. The existing research is reliant on this question in terms of conducting the comparison between undergraduate and postgraduate students' opinions. The table No. (3.1) illustrates how many students are for each program, the highest proportion 82.3% (242 students) goes to undergraduate students (Bachelor's degree program), followed by postgraduate students 17.7% (52 students) of

the total student respondents that contains both Master' and PhD' degree program students. As a result, the total proportion of undergraduate program students comes to 82.3 per cent, with a total number of 242 students, against fifty-two postgraduate students, a total percent of 17.7%.

Regarding 'Where to live', this question was raised to tell whether a student resides in some area whose a good infrastructure which help him/her to attend the online learning during COVID-19 spread, as shown in the table No. (3.1), the majority of respondents, 92.2% (271) live in 'city', 4.1% (12) of which reside in 'village' and just 3.7% (11) expressed 'other'. Alternatively, when it comes comparing between undergraduate and postgraduate students the outcomes demonstrated that the rate of undergraduate students within place of the living pertained to City (81.5) appears to be more than that of postgraduate 18.5%, Table (3.6).

In regard to 'the device you prefer to use for Blackboard' whose four options; Mobile, Laptop, Desktop and Tablet for students' preferences related to devices used to join learning via BLS. This, in turn, will help the stakeholders such as decision makers, developers, faculty members to figure out what software should be developed to be compatible with the favorite devices by students to better the learning and teaching process. Analysis' results in the table (3.1) spells out that most of the student respondents, 81.6% (240) who responded to the online survey has a preference towards the Laptop, while the rest percent were broken down into 8.8, 8.2%% and 1.4% over (Desktop, Mobile and Tablet respectively). Alternatively, when it comes comparing between undergraduate and postgraduate students the outcomes demonstrated that the rate of undergraduate students within devices' preference pertained to Laptop (83.3) appears to be more than that of postgraduate 16.7%, Table (3.6).

The four-option question '45 Min, 60 Min, 90 Min or more than two hours' is 'How long would you like the online classes (per class) to be?' aims to set out the duration of a single-lesson in the online environment which is counted to be appropriate for students who study remotely, as given their views. It is apparent from the table No. (3.1) that the student respondents (around 66.7%) would like the class being 45 minutes long and just five respondents opted more than two hours in exchange for 23.5% & 8.2% of them, 60 minutes & 90 minutes long respectively. Alternatively, when it comes comparing between

undergraduate and postgraduate students the outcomes demonstrated that the proportion of undergraduate students within the duration of a single-lesson pertained to 45 Min (90.8) appears to be more than that of postgraduate 9.2%, Table (3.6).

In a similar line, the question with four-choice 'Only one class, Two classes, Three classes & Over three classes' was also asked in the following form of 'How many classes per day would you like to take on Blackboard collaborate?' so as to clarify the number of lessons students want to attend daily on BLS. This question and that of the previous spell out how ready students stay for a long time on BLS notably in an exceptional condition as COVID-19 pandemic. As illustrated in the table No. (3.1), the student respondents' views diverge as the lowest number of them is noted in 'Over three classes' with 48 (16.3%), then 54 (18.4%) of them voted over 'Only one class' a day, whereas the highest rate with 39.5 per cent (116) goes to 'two classes', followed by 'Three classes' daily with approximately 25.9 per cent (76). Alternatively, when it comes comparing between undergraduate and postgraduate students the outcomes demonstrated that the rate of undergraduate students within the number of lessons a day pertained to Two classes (82.8) appears to be more than that of postgraduate 17.2%, Table (3.6).

The topic of evaluation within the online learning system is a critical matter that worries students and impacts on their performance on one hand and instructors are concerned over cheating issues which result in an unfair assessment on the other hand. Hence, the next question 'What kind of exams would you like?' was raised with three-point 'Take home', 'Multiple-choice and True-False' & 'Both' to assist the relevant actors to evolve the evaluation tools of effective in line with students' desires, and actualization of fair assessment. The table (3.1) demonstrated that the student respondents preferred the assessment via 'Multiple-choice and True-False' exams with nearly 42.5 (125) per cent rather than the assessment via 'Take home' exams that made 19.4% (57) of respondents in return for roughly 38.1% (112) for 'Both'. Alternatively, when it comes comparing between undergraduate and postgraduate students the outcomes demonstrated that the proportion of undergraduate students within the kind of exam pertained to 'Multiple-choice and True-False' (92.8) appears to be more than that of postgraduate 7.2%, table (3.6).

The online learning system or BLS has a dilemma in terms of delivery of the applied courses which require lab sessions, surgical operations and contact with patients for medical students, field works on-site for engineering students at varying their specialties so forth. As such, a special question was listed in the survey 'What kind of subjects do you study?' which expresses whether a kind of the students' discipline is 'Practical and Theoretical' or 'Only theoretical' to find out the extent to which the kind of the major influence the effectiveness of transformation in using BLS which will be debated later. It is clear from the table No. (3.1) that the nature of the courses the largest of student respondents with 71.8 per cent, study is of Practical and Theoretical, against 22.2 per cent of them study only theoretical subjects. Alternatively, when it comes comparing between undergraduate and postgraduate students the outcomes demonstrated that the proportion of undergraduate students within the kind of subject pertained to Practical and Theoretical (86.7) appears to be more than that of postgraduate 13.3%, Table (3.6).

The students have got stuck under COVID-19 pervasiveness and lockdown and stay-at-home instructions, subsequently they have been forced to switch into the BLS. If this the compulsive status quo faded, would students still want to carry on studying with BLS?. The same question was formulated within the questionnaire to specify how willing the students have to catch up on studying by means of BLS under the normal state without COVID-19 or any special situation, stipulating, 'Are you willing to continue the classes through Blackboard system in the future after COVID-19?'. As demonstrated from the table (3.1), almost half of the student respondents with 49 % (144) voted 'Yes' to the question compared with approximately 26.9% of respondents (79) rejected keeping going the study via BLS after COVID-19 pandemic phase. Whereas the 24.1 percent (71) of respondents, which is close to the previous rate, are unsure of if they have a willingness to continuity of the learning process through BLS or not. Alternatively, when it comes comparing between undergraduate and postgraduate students the outcomes demonstrated that the proportion of undergraduate students within the willingness in using BLS after COVID-19 pertained to Yes (79.2) appears to be more than that of postgraduate 20.8%, table (3.6).

Finally, concerning the last demographic question, the students' experiences in the practice of the technology-based learning differ across the degree of the knowledge level

using technology tools which support the education process. So a two-option question 'Yes' or 'No' was allocated for whether or not the students enjoy a previous experience using LMS technology referred to in this study as BLS, in an effort to recognize the impact of the previous experience over the effectiveness using BLS under the shadow of coronavirus. As can be seen in Table (3.1), the 59.9 percent of the student respondents (176) confirmed that they possess a previous experience using the LMS, while just 40.1% of participants (118) responded 'No', that is, there no exist a previous experience utilizing LMS. Alternatively, when it comes comparing between undergraduate and postgraduate students the outcomes demonstrated that the proportion of undergraduate students within having a previous experience using LMS pertained to the positive responses (86.9) appears to be more than that of postgraduate 13.1% who have a previous experience in that, Table (3.6).

It is worthwhile that all the above results related the comparison among the undergraduate and postgraduate students are expected and logic due to the fact that the number of undergraduate students is more than that of postgraduate.

3.2.2 Students' Perceptions Analysis Results

As a complete to the questions' results of the self-reported survey, the expressions about the students' perceptions have been drafted in several items made up of thirty diverse items that were categorized in six main axes having unequal item's number which might be affected the satisfaction with the unexpected transformation to BLS for higher education students while COVID-19 time. That is, this existing study proposes and examines the axes (or factors) imbedded in the model that may have an effective contribution to students' satisfaction with the transformation towards BLS based on their items, consequently impact on university students' perceptions. The findings of the second part of the questionnaire as to items of higher education students' perceptions and its axes can be seen in the next paragraphs.

It is worth noting that examining the degree to axes are reliable before conducting any test for them should be undertaken. As illustrated in table (3.2), the reliability demonstrates to be assumed in either each axis or allover axes, as Cronbach's alpha Coefficient goes through 0.70.

Table 3.2 illustrates Cronbach's Alpha Coefficient for Reliability:

Axes	Items No.	Cronbach's Alpha Coefficient
Self-Efficacy	4	.799
Engagement	4	.848
Usefulness	5	.920
Communication and Ease of use	6	.784
Challenges	7	.762
Satisfaction	4	.813
Overall Axes	30	.848

(Source: Author)

As can be seen in Table (3.3), based on Stepwise Multiple Regression Test, since the P-value (significance level) in terms of the Self-efficacy, Engagement, Usefulness, Communication and Ease of Use and Challenges axes show to be less than 0.001, the regression is statistically significant. Then there is a positive correlation between Satisfaction dependent variable and the independent variables- Self-efficacy, Engagement, Usefulness, Communication and Ease of Use and Challenges. It turns out that Self-efficacy, Engagement, Usefulness, Communication and Ease of Use, and Challenges axes positively have an effect on students' Satisfaction axis. This certainly leads to the argument that the Hypothesis H1 is rejected.

Moreover, to find out which of these five axes have the highest effective contribution to students' satisfaction towards BLS for higher education students during COVID-19 disease period, The R-squared (R^2) value in stepwise multiple regression test has been applied to realize that.

As can be seen in Table (3.3), it turns out that the Usefulness, Engagement, Communication and Ease of Use, Self-efficacy and Challenges axes - respectively have an effect on students' Satisfaction axis. Further, an axis that has the most effective

contribution to students' satisfaction with the transformation towards BLS for higher education students during COVID-19 disease period is the Usefulness axis that is the greatest effective contributor (22.9%), as it has the highest R-squared (R^2) value (.229). Followed by the Engagement axis that has 22.4% effective contribution, with R-squared (R^2) value, which is .224. The Communication and Ease of Use, and Self-efficacy axes come next, which have (16.4%, 14.0%) effective contribution with R-squared (R^2) values (.164, .140) respectively. In return, the Challenges axis has the lowest effective contributor (4.1%), as it has the lowest R-squared (R^2) value (.041).

Table 3.3 illustrates Stepwise Multiple Regression Analysis Results & Correlation Path:

Dependent variable	Independent variables	B	R^2	Correlation	P-value
Satisfaction	Usefulness	.045	.229	.679	<0.001
	Engagement	.052	.224	.646	<0.001
	Communication and Ease of Use	.061	.164	.593	<0.001
	Self-efficacy	.054	.140	.570	<0.001
	Challenges	.168	.041	.202	<0.001

The level of significance (P-value) at 0.001. (Source: Author)

Independent Sample t-test aimed at identifying whether there is a difference between undergraduate and postgraduate student's perception in terms of the six axes of survey items, be it on the overall axes level or each axis level.

As can be noted in Table (3.4), pursuant to Independent Sample t-test, since the P-value (significance level) on the overall axes level shows to be less than 0.05 in the 95% confidence interval, the discrepancy between undergraduate and postgraduate students is statistically significant, [$t_{(294)}$ = -2.803, $p < 0.05$ (.005)]. It turns out that students' perceptions towards the satisfaction with the transformation make a distinction as concerns overall axes. Such leads unquestionably to the argument that the Hypothesis H2 is rejected. The mean of the overall axes level of postgraduate students (M = 93.6, SD = 12.89) shows to be greater than that undergraduate students (M = 87.2, SD =15.40). In

other words, the postgraduate students' perceptions as to the satisfaction with the transformation into BLS are evident to be more positive than the undergraduate students' perceptions, as [$M_{undergraduate} = 87.2 < M_{postgraduate} = 93.6$].

As for sub-hypotheses, as can be noted in Table (3.4), pursuant to Independent Samples T-test, since the P-value (significance level) on the Self-efficacy axis level shows to be less than 0.05 in the 95% confidence interval, the discrepancy between undergraduate and postgraduate students is statistically significant, [$t_{(294)} = -2.473$, $p < 0.05$ (.014)]. It turns out that students' perceptions towards the satisfaction with the transformation make a distinction as concerns self-efficacy axis. Such leads unquestionably to the argument that the Hypothesis H2a is rejected. The mean of the Self-efficacy axis level of postgraduate students ($M = 15.3$, $SD = 2.99$) shows to be greater than that undergraduate students ($M = 14.1$, $SD = 3.32$). In other words, the postgraduate students' perceptions as to the satisfaction with the transformation into BLS are evident to be a bit more positive than the undergraduate students' perceptions, as [$M_{undergraduate} = 14.1 < M_{postgraduate} = 15.3$]. Furthermore, with respect to its four-items, the table (3.5) spells out high level of approval from students' perceptions for items 1, 2, 3 with means ≥ 3.4, while item 4 indicates moderate level of approval from their perceptions.

Since the P-value (significance level) on the Engagement axis level shows to be more than 0.05 in the 95% confidence interval, the discrepancy between undergraduate and postgraduate students is not statistically significant, [$t_{(294)} = -1.656$, $p < 0.05$ (.099)]. It turns out that students' perceptions towards the satisfaction with the transformation do not make a distinction as concerns Engagement axis. Such leads unquestionably to the argument that the Hypothesis H2b is accepted. In other words, the students' perceptions as to the satisfaction with the transformation into BLS are not evident to be different. Furthermore, with respect to its four-items, the table (3.5) spells out moderate level of approval from students' perceptions for items 5, 6, 7, 8 with means range 2.6-3.39.

Considering that the P-value (significance level) on the Usefulness axis level shows to be more than 0.05 in the 95% confidence interval, the discrepancy between undergraduate and postgraduate students is not statistically significant, [$t_{(294)} = -1.338$, $p < 0.05$ (.182)]. It turns out that students' perceptions towards the satisfaction with the transformation do not make a distinction as concerns Usefulness axis. Such leads

unquestionably to the argument that the Hypothesis H2c is accepted. In other words, the students' perceptions as to the satisfaction with the transformation into BLS are not evident to be different. Furthermore, with respect to its five-items, the table (3.5) spells out high level of approval from students' perceptions for items 11, 13 with means $\geq$ 3.4, while items 9, 10, 12 indicate moderate level of approval from their perceptions.

Since the P-value (significance level) on the Communication and Ease of Use axis level shows to be less than 0.05 in the 95% confidence interval, the discrepancy between undergraduate and postgraduate students is statistically significant, [$t_{(294)} = -3.227$, $p < 0.05$ (.001)]. It turns out that students' perceptions towards the satisfaction with the transformation make a distinction as concerns Communication and Ease of Use axis. Such leads unquestionably to the argument that the Hypothesis H2d is rejected. The mean of the Communication and Ease of Use axis level of postgraduate students (M = 21.8, SD = 2.57) shows to be greater than that undergraduate students (M = 20.2, SD = 3.20). In other words, the postgraduate students' perceptions as to the satisfaction with the transformation into BLS are evident to be a bit more positive than the undergraduate students' perceptions, as [$M_{undergraduate} = 20.2 < M_{postgraduate} = 21.8$]. Furthermore, with respect to its 6-items, the table (3.5) spells out high level of approval from students' perceptions for items 14, 15, 16, 17, 18 with means $\geq$ 3.4, while item 19 indicates low level of approval from their perceptions with mean less than 2.6.

Considering that the P-value (significance level) on the Challenges axis level shows to be less than 0.05 in the 95% confidence interval, the discrepancy between undergraduate and postgraduate students is statistically significant, [$t_{(294)} = -2.645$, $p < 0.05$ (.009)]. It turns out that students' perceptions towards the satisfaction with the transformation make a distinction as concerns Challenges axis. Such leads unquestionably to the argument that the Hypothesis H2e is rejected. The mean of the Challenges axis level of postgraduate students (M = 23.1, SD = 3.05) shows to be greater than that undergraduate students (M = 21.8, SD = 3.21). In other words, the postgraduate students' perceptions as to the satisfaction with the transformation into BLS are evident to be a bit more positive than the undergraduate students' perceptions, as [$M_{undergraduate} = 21.8 < M_{postgraduate} = 23.1$]. Furthermore, with respect to its 7-items, the table (3.5) spells out high level of approval from students' perceptions for items 22, 24 with means $\geq$ 3.4, while item

23 indicates low level of approval from their perceptions with mean less than 2.6, and items 20, 21, 25, 26 indicate moderate level of approval from their perceptions.

Since the P-value (significance level) on the Satisfaction axis level shows to be more than 0.05 in the 95% confidence interval, the discrepancy between undergraduate and postgraduate students is not statistically significant, [$t_{(294)} = -1.155$, $p < 0.05$ (.249)]. It turns out that students' perceptions towards the transformation do not make a distinction as concerns Satisfaction axis. Such leads unquestionably to the argument that the Hypothesis H2f is accepted. In other words, the students' perceptions as to the satisfaction with the transformation into BLS are not evident to be different. Furthermore, with respect to its 4-items, the table (3.5) spells out high level of approval from students' perceptions for items 27, 28, 29, 30 with means ≥ 3.4.

Table 3.4 illustrates Independent Sample t-test Analysis Results:

	The current program you study			
	Undergraduate No.= 242	Postgraduate No.= 52		
Axes	M (SD)	M (SD)	t- value	P-value
Self-Efficacy	14.1 (3.32)	15.3 (2.99)	-2.473	.014
Engagement	11.6 (4.50)	12.7 (3.62)	-1.656	.099
Usefulness	16.5 (5.13)	17.5 (4.65)	-1.338	.182
Communication and Ease of use	20.2 (3.20)	21.8 (2.57)	-3.227	.001
Challenges	21.8 (3.21)	23.1 (3.05)	-2.645	.009
Satisfaction	15.4 (2.70)	15.8 (2.52)	-1.155	.249
Overall Axes	87.2 (15.40)	93.6 (12.89)	-2.803	.005

The level of significance at 0.05. (Source: Author)

Table 3.5 illustrate the Mean of each Item for comparing with a five-point Likert Scale:

No.	Item	M	S.D	Level of Approval
1	I feel confident using the Blackboard system.	3.98	0.88	High
2	Blackboard enabled me to organization and time management.	3.45	1.05	High
3	Blackboard helped me with knowledge of new tools.	3.61	1.05	High
4	Blackboard added value to your learning skills.	3.25	1.16	Moderate
5	Blackboard increased the level of involvement activities.	3.04	1.18	Moderate
6	Blackboard encouraged me on the class attendance more than face-to-face.	2.87	1.42	Moderate
7	Blackboard aided me to concentrate more than traditional learning.	2.77	1.39	Moderate
8	Blackboard improved my grades.	3.13	1.27	Moderate
9	Blackboard increased my productivity.	3.08	1.15	Moderate
10	I believe Blackboard can assist learning efficiency.	3.37	1.18	Moderate
11	I believe Blackboard can assist learning performance.	3.41	1.16	High
12	I believe Blackboard can assist learning motivation.	3.22	1.22	Moderate
13	I believe Blackboard can assist learning assessment / evaluation (quizzes / surveys / self-tests).	3.57	1.10	High
14	Posting announcements, other timely news and information by your instructor or department were in time.	3.77	0.96	High
15	I got feedback from instructors/staff immediately.	3.47	1.01	High
16	Discussions and Submissions (email, chat, post, etc.) were active and effective.	3.71	0.89	High
17	Blackboard Collaborate (virtual classroom) is very beneficial.	3.42	1.09	High
18	Blackboard enables me to access to learning resources / materials (files / content/ assignments / learning modules).	4.08	0.78	High
19	It was difficult for me to use Blackboard.	2.06	1.06	Low
20	I felt time-consumption.	2.78	1.17	Moderate
21	I felt isolated.	3.27	1.26	Moderate
22	I was ready to study using Blackboard system (Having intention).	3.50	1.02	High
23	Using Blackboard was costly of internet access.	2.59	1.16	Low
24	Blackboard increased family time during COVID-19.	3.42	1.24	High

Table 3.5 (cont'd)

25	Blackboard helped me with personal improvement during COVID-19.	3.21	1.23	Moderate
26	Blackboard allowed me to practice new activities during COVID-19.	3.25	1.19	Moderate
27	I am satisfied with using Blackboard as a learning assisted tool.	3.81	0.92	High
28	I am satisfied with Blackboard functions.	3.94	0.78	High
29	I am satisfied with Blackboard contents.	3.96	0.74	High
30	I am satisfied with Blackboard interaction.	3.72	0.89	High

(Source: Author)

Briefly, it is clear from the evidence in this study that there is a statistically significant impact of the Usefulness, Engagement, Communication and Ease of Use, Self-efficacy and Challenges axes – respectively on students' Satisfaction axis with the BLS, at the 0.001 significance level. As a result, these axes reflect to be satisfaction indexes. Wherein the Usefulness and Engagement axes have the highest effective contribution to students' satisfaction with the transformation towards BLS for higher education students during COVID-19 disease period, in return to the Challenges axis has the lowest contribution. As well as, there are insignificant differences at the 0.05 level between the student participants' responses over the axes of Engagement, Usefulness and Satisfaction, and that there are statistically significant differences at the 0.05 level among the student participants' responses towards the axes of Self-efficacy, Communication and Ease of Use and challenges. Nevertheless, there statistically significant differences exist at the 0.05 level between the undergraduate and postgraduate students' perceptions as concerns overall axes. This difference tends to postgraduate students who have the highest mean. For its side, the students' approval in terms of thirty items tends to range from high to moderate level with superiority of high approval level, except tow items tend to be low approval level.

3.2.3 Effect Results of Demographic Dimension on Students

It is evident from Table (3.6) the extent to which demographic dimensions influence higher education students during COVID-19 disease period. Mainly, this test elaborates

on an association between demographic dimensions and undergraduate and postgraduate students.

Table 3.6 illustrates Effect of Demographic Dimensions on Students:

		The current program you study			
		Undergraduate	Postgraduate		
Demographic Dimensions		Count (%)	Count (%)	X^2 value	P-value
Age	18-29	239 (89.2)	29 (10.8)	74.079*	< 0.001
	30-39	3 (15.8)	16 (84.2)		
	40 & above	0 (0.0)	7 (100)		
Gender	Male	128 (80)	32 (20)	1.290	.256
	Female	114 (85.1)	20 (14.9)		
Where do you live?	City	221 (81.5)	50 (18.5)	4.780	.092
	Village	12 (100)	0 (0.0)		
	Others	9 (81.8)	2 (18.2)		
The device you prefer to use for Blackboard	Mobile	16 (66.7)	8 (33.3)	5.223*	.156
	Laptop	200 (83.3)	40 (16.7)		
	Desktop	22 (84.6)	4 (15.4)		
	Tablet	4 (100)	0 (0.0)		
How long would you like the online classes (per class) to be?	45 Min	178 (90.8)	18 (9.2)	33.067*	< 0.001
	60 Min	50 (72.5)	19 (27.5)		
	90 Min	11 (45.8)	13 (54.2)		
	More than two hours	3 (60)	2 (40)		

Table 3.6 (cont'd)

How many classes per day would you like to take on Blackboard collaborate?	Only one class	29(53.7)	25 (46.3)	39.653*	< 0.001
	Two classes	96 (82.8)	20 (17.2)		
	Three classes	71 (93.4)	5 (6.6)		
	Over three classes	46 (95.8)	2 (4.2)		
What kind of exams would you like?	Take home	33 (57.9)	24 (42.1)	32.827	< 0.001
	Multiple choice & true-false	116 (92.8)	9 (7.2)		
	Both	93 (83)	19 (17)		
What kind of subjects do you study?	Practical and Theoretical	183 (86.7)	28 (13.3)	10.015	< 0.001
	Only theoretical	59 (71.1)	24 (28.9)		
Are you willing to continue the classes through Blackboard system in the future after COVID-19?	Yes	114 (79.2)	30 (20.8)	2.286	.319
	No	66 (83.5)	13 (16.5)		
	Not sure	62 (87.3)	9 (12.7)		
I have a previous experience in using the Learning Management Systems (Blackboard).	Yes	153 (86.9)	23 (13.1)	6.426	< 0.001
	No	89 (75.4)	29 (24.6)		

X^2. Pearson's Chi square Test.

*. Likelihood Ratio used, as the expected count at one of group < 5. (Source: Author)

As can be noted from Table (3.6), it turns out that age, the duration of the online class, the number of online classes a day, Student exams' kind demographic, the kind of subject students study, and the previous experience of higher education students in using LMS (BLS) positively have an effect on undergraduate and postgraduate students on the satisfaction with BLS owing to P-value < 0.001. That is, there is an association between these demographic dimensions and the program the students study. Such implies that the third Hypothesis H3 concerning them is rejected.

Unlike, students' demographic gender dimension, place of the living, the sort of preferred device and the willingness in using BLS in the future have no effect on undergraduate and postgraduate students on the satisfaction with BLS owing to P-value > 0.001. That is, there is no association between the dimensions concerning gender, place of the living, the sort of preferred device and the willingness in using BLS in the future, and the program the students study. Such implies that the third Hypothesis H3 regarding gender, place of the living, the sort of preferred device and the willingness in using BLS in the future is accepted. As a result, it is abundantly clear that all demographic dimensions, except gender, place of the living, the sort of preferred device and the willingness in using BLS in the future, positively have an effect and association with undergraduate and postgraduate students on the satisfaction with BLS owing to P-value < 0.001.

3.3 Discussion

"The transformational impact of blended and fully online delivery methods on learning is only now beginning to be felt" Goi & Ng (2008). This impact can be noted very substantially nowadays, including in the wake of the novel COVID-19 era. Some measures, practices, and changes such as online learning mode might come here to stay owing to COVID-19 disease which its effect on tertiary education has demonstrated the potentials of this sort of education (García-Alberti, et al., 2021).

It is not clear since the onset of the COVID-19 disease, whether it will stop soon or lasts for many years to come. Therefore, it is quite possible that online teaching and learning will keep going in the next months or years, as a result, students' perception as regards the switching into the online education system should have been understood for

providing tertiary educational establishments with information, to be ready for when the future emergencies occur (Aguilera-Hermida, et al., 2021). In tandem with this, the students' viewpoint and engagement are very critical to assess the success of the LMS (Eraslan Yalcin & Kutlu, 2019), and comprehension of their attitudes towards it permits to find the right teaching and learning settings (Liaw, 2008). As well as, this understanding might assist to and better the design of the online education (Dickey, 2004). On their end, (Hamid, et al., 2020) added that the survival of the LMS relies on how students adopt and use it effectively. In favor of what is stated earlier, a research paper by (Saidi, et al., 2021) in Malaysia has been done to identify which LMSs are the most effective and favored for users. The outcomes pointed out that the swift switching to alternative systems poses a harsh challenge over coronavirus period because of their huge and diverse options. Likewise, the findings assist with the optimal choice of the efficient and appropriate platform for users to implement successful online learning, hence, optimizing the best contents and materials to be compatible with these exceptional circumstances.

Obviously, the equipment and preparedness of every university differ from each other, this, in turn, will reflect on the extent to which they will be ready to achieve successfully the transition process in an attempt to meet the educational needs to keep up with any emergency situation, such as the case it is lived right now. In this context, Elçi (2021) wrote that no matter how different the preparations are between developed and developing states, the reaction concerning the pressing and obligatory shifting is not that much different. Nevertheless, an implementation process of LMSs, which BLS is one of them, represents one of the most important obstacles, particularly in developing countries and in the light of the conditions they live in now.

3.3.1 Effect of Demographic Dimension on Students

The individual differences is defined by (Şimşek, 2012:1529), as personality traits that make a distinction students from one another in the educational operations, such as age, previous experience, learning style, ability, gender, motivation, self-efficacy, and level of achievement. These differences go some way towards influencing the performance, interaction, and attitudes of students during teaching and learning process.

With respect to the demographic variable 'the current program student study', it divided the sample to two groups on which to basis the comparison operation is going to be undertaken. The former is an undergraduate student group who numbered 242 students, or 82.3 per cent of the total sample and the latter constitutes a postgraduate student group, numbering 52 students, which is equivalent to 17.7%. These proportions approach from proportions of (Carvalho, et al., 2011:828) which are 72% for undergraduate and 28% for postgraduate and Hakim & Kawamorita (2020) around 78% were Bachelor's students and a bit less than quarter 22% were Master & PhD students. In the study held by the Turkish Council of Higher Education CoHE (2021) proportion of undergraduate students is almost three-fourths 74% of participants, while postgraduate students are four per cent (master and PhD, 3% & 1% respectively) and the proportion rest (22%) goes to associate degree students. All these rates are normal, due to the fact that applicant students number, stemmed from secondary education outputs, for Bachelor stage are always far greater than that of postgraduate stage.

As can be seen in the demographic analysis results as well as its effect on the students' perception, it is evident that there an association exists between age and undergraduate and postgraduate students' perception. Which points out that the fact that the age has an influence their perceptions about the satisfaction with the full-fledged transformation into BLS among COVID-19 disease period. This outcome concurs with Fawaz & Samaha (2021), while does not with (Koirala, et al., 2020; Terzi, et al. 2021). Moreover, the largest number of the students' age group ranges from 18 to 29 years old, be it in undergraduate and postgraduate. Which is indicative that most of them were born in the technology era and belong to Z generation who enjoys high technology skills. Such is in line with Turkish literature addressed in this study, wherein the ages average ranged from 19-25 CoHE (2021), such means that the majority of the students have grown up in the scope of digital and technological leapfrogging, hence, this generation is called by Z generation. Ferraro, et al., 2020 indicated that the adolescent people appear an incredible resilience and ability to deal with technology compared to previous generations, which points out that the age has an effect in using BLS. However, the age average of the students, pursuant to (Holmberg, 2005:13), ranged from 25-35 in the most of educational

organizations and they preferred distance instruction, including those their age over 35. This preference was traced to its flexibility and adaptability to individual students' needs.

An association between gender and students' perception seems to be non-existent, which indicates that it does not play a role in influencing their viewpoints, that is, gender has no effect on undergraduate and postgraduate students' perceptions on the satisfaction with the full-fledged transformation towards BLS in the wake of COVID-19 disease period. It may be due to the fact that the large number of students are young people who are less than 29 years old, wherein all of them have the same interests in technology knowledge or so. Which is not consistent with (Al-Salamat, et al., 2020; Alsobahi, G. (2017); Isik, et al., 2010; Kado Kado, et al., 2020) who viewed that an association between gender and student's perception is existent, namely there is no difference. However, (Bączek, et al., 2021; Ferraro, et al., 2020; Nurakun Kyzy, et al., 2018) are in line with the result of the present study concerning gender. An observational study of (Ferraro, et al., 2020) implemented in Italy, the quantitative method is used, and the characteristics of 83 students (sample size) were identified by the descriptive analysis as well as the data were collected by gender. They underscored that there were no gender differences in the perceptions of school students concerning online learning format and that level of anxiety and stress during online instruction dropped fairly with some students mainly as to homework. Additionally, the relationship between student-tutor and student-student is not changing both in normal learning and in online mode. Since this study was undertaken on the adolescents (Z generation), this indicates that they have a most considerable resilience and an ability to deal with technology as compared with previous generations. The analysis' outcome of gender category percent appears generally that the number of males is more than that of the female, as just over half of the student participants (54.4%) account male group in return for 45.6 per cent are female group. Likewise, the proportion of male in undergraduate seems to be greater than that of postgraduate, as well as the female rate in undergraduate is larger compared to postgraduate. Conversely, 55% of respondents were female and 45% of them were male in study made by Turkish Council of Higher Education CoHE (2021).

In the same vein, there is no relationship between place of the living and the program the students study, meaning that place of the living has no impact on undergraduate and

postgraduate students' perceptions on the satisfaction with the total transformation towards BLS in the wake of COVID-19 disease period. It can be said that the place the student lives is no critical dimension to have the students attend and participate in BLS, since the village as the city has minimal basic infrastructure services that contribute to promote an easy shifting into alternative instruction systems. The large majority of the student respondents with 92.2 percent reside in city what means that they enjoy a good infrastructure compared with other places. Such enables them to transform rather user-friendly into the other instructional styles that are appropriate of their situation, and help them to take part efficiently in educational activities, in particular, in COVID-19 pandemic time. This result coincides with the results of (Saidi, et al., 2021; Daroedono, et al., 2020; Heirdsfield, et al., 2011; Koirala, et al., 2020) where a high percent of the student respondents reside in urban areas. (Radha, et al., 2020:1091) stated that online learning is worse in the rural areas than urban because of absence of infrastructure including connectivity and power supply. Gautam, D. K., & Gautam, P. K. (2020) confirmed the previous saying that the online learning out of the city was less effective than that in the city due to connectivity issues and (Koirala, et al., 2020:254) adds that there is a relationship between living area and the students' perception.

Accessing to technology services and tools call for devices which facilitate to make the most effective use of these services and tools, where (Bataineh, et al., 2021) stated that the online learning requires applications and smart devices to allow for live communication. Likewise, (Aguilera-Hermida, et al., 2021) wrote that smart devices, for instance, laptop, tablet, mobile, or computer, along with access the internet are indispensable to enable users to have get into online learning platforms. In the same line, (Radha, et al., 2020) wrote also the online learning system greatly draws on the utilization of intelligent devices and the internet that are a core constituent for it. On their side, (Alim, et al., 2019:242) explain that the LMS usage can be done through computers and smartphones devices, and BLS can be utilized over all sorts of tablets and mobiles Financesonline Website. Thus, the question is asked students to specify which the device they prefer to use for BLS. The large of students appear to favor Laptop for accessing to BLS other than the rest devices Mobile, Desktop and Tablet. It is in conformity with, to a certain extent, (Terzi, et al. 2021), as 59.7% of students used laptop, 32% Mobile phone,

2.2% Tablet and 6% Desktop. In contrast, most respondents (76%) preferred using Mobile for their online learning, just 0.8%, 21.2%, 2.4% of them used Computer, Laptop, Tablet, respectively (Abbasi, et al., 2020). GÜRLER, et al., (2020) revealed that most of the participants around 40% voted for the computer as a device the most utilized to access the internet for online learning, while only almost 27% did for using mobile. Nestor (2021) stated that, based on many pieces of researches, over half of the university students (56%) used tablet or mobile to finish their online activities, and the majority of graduate students (81%) employed or would have liked to employ smartphones for their online learning. However, much of the students in many studies favored using handheld phone devices as a means of accessing online learning or LMS (Muthuprasad, et al., 2021; Al-Balas, et al., 2020; Ferraro, et al., 2020; Bataineh, et al., 2021; Koirala, et al., 2020; Beltekin & Kuyulu, 2020; Emiroglu , et al., 2021; Sofi & Laafou, 2020; Radha, et al., 2020). Which supports what Clark (2020) wrote that "the use of smartphones for learning will increase the accessibility of training, while virtual and augmented reality will provide a more robust learning experience" and that the mobile devices, upon (García-Alberti, et al., 2021), will play a vital role in tertiary education. Tezer & Çimşir (2018) described that integrating the handheld phone devices that provide learning independently as to place and time with LMS has become indispensable and confirmed that utilizing mobile LMS is useful, while AlKhunzain & Khan (2021) perceived that utilization of mobile in BLS is rather unsatisfied. However, although the fact that usage these devices to access to technology tools such as BLS is seen as very important, an association between the kind of device preferred and students' perception in this study shows to be non-existent, which signifies that it does not take on a significant role in influencing their viewpoints. In other words, the kind of device preferred does not influence undergraduate and postgraduate students' perceptions on the satisfaction with the total transformation towards BLS during COVID-19 disease period. It coincides with (Koirala, et al., 2020; Terzi, et al. 2021).

As a result, learners are also interested in the use of different devices in the learning process (Erin, 2020) and most of the student respondents (83%), pursuant CoHE (2021), had various electronic devices for online learning. Nevertheless, university students appeared to use highly Laptop for accessing to BLS in lieu of the rest devices. Which points out that the majority of students feel comfortable using Laptop, it might be traced

to the variety of programs and software it possesses, which aid to enhance using various LMSs and accessing different resources compared with the other devices, as well as it combines desktop specifications, and tablet and mobile features. It can be also resulted from, as per (Adnan & Anwar 2020:46), learners who used mobile devices to access the internet seem not to be able to make use of online education owing to a great deal of online content is not available through mobile devices. This, in turn, pushes the stakeholders to give consideration more for developing software which are not only compatible with laptop but also with the other devices, especially smartphones, because around 70% of organizations offer mobile learning and by 2020, the mobile eLearning market is projected to grow to $38 Billion Lewis (2020). The growth rate accelerates due to COVID-19 incidence and it is anticipated, by 2027, to lift until $ 80.1 Billion Nestor (2021). Moreover, a study in KSA achieved by AlKhunzain & Khan (2021) to explore the medical students' views over the use of smartphones for BLS. The results deduce that the BLS has an effectiveness to a certain degree, especially in terms of usage of the mobile phones in this system. However, the students have challenges in using it, such as internet speed, self-learning, which reflected on the rather dissatisfaction state. On another note, the findings appeared the differences between male and female students' opinions, as female students' adoption and interaction of BLS were less than males, in contrast, on usefulness. They also indicate that in case the BLS is used with conventional learning, it would be more feasible. That said, the result of the past study could not be generalized, due to it is limited to medical students and only utilizing mobile device.

It is undoubtedly boring for students to stay for long periods of time to take lessons, hence two questions was raised within survey to help establish the ideal number of lessons a day with the duration of each. It is evident from the findings that 66.7 per cent of the student respondents preferred the single-lesson being 45 minutes long with two lessons a day that were viewed as suitable by 39.5% of the student respondents, followed by 25.9% of them would like being three lessons. It concurs with (Muthuprasad, et al., 2021) around half of respondents favored 45 minutes per class, whereas the insights differed among students as some would like lessons being short and the others prefer them to be longer (Hebebci, et al, 2020). It is clear that students tend to the short lessons regardless of its

numbers this is in line with what (Marikar & Jayarathne, 2016:57) stated in their discussion that the technology is a lot more effective in short-term course delivery.
Further, most students said, as per (Ahmed, et al., 2021), having a fixed time for each lecture makes attending lectures easier. However, it is difficult for instructors to cover all aspects of lesson over only 45 minutes long due to there is some technical problems during teaching, some questions are asked by student need to clarify from instructors, other students delay in attending, some assignments should be discussed so forth. Therefore, it is better to split the lesson to two-part each part contains 45 minutes to enable both instructors and students to take a rest and complete the lesson left effectively. On other hand, how associated between the duration of the class as well as the number of classes a day, and undergraduate and postgraduate students' perceptions are shown to be existent. Which indicates that the duration of the class and the number of classes a day have an effect on undergraduate and postgraduate students' perceptions on the satisfaction with the entire transformation towards BLS in the wake of COVID-19 disease period. It can be claimed that the less the duration of the class becomes, the more the number of classes a day is, meaning that the students tend to the short lessons which attract them to attend and take part in educational activities addressed within the online class. That gives a hint to the shareholders such as decision-makers, academic staff, and developers that they should look after more in designing teaching and learning materials anchored in small models in time and content in the form of graphic, audiovisual, and written works.

As far as, the exams is concerned by both students and faculty members, so its own question was set up in striving to grasp students' views towards the kind of exams applied online they would like to be taken under a stay-at-home commands owing to COVID-19 proliferation. The available exams in the online learning mode or LMS are in the form of take home, assignment, multiple-choice and true-false at least by now. In this vein, (Senel, S., & Senel, H. C., 2021:184) mentioned that take-home exams, performance tasks, assignments, peer/self-evaluation models and e-portfolios are evaluation techniques or tools in the LMS to reinforce test security and they described take-home exams are a type of open book exams. Multiple-Choice Questions (MCQ) are a useful instrument for learners to examine their level of knowledge in respect of the evaluation (Marikar & Jayarathne, 2016:55). Moreover, LMS quizzes, as (Malikowski, et al., 2007:161) termed,

is an assessment tool, which features many species of questions, such as matching, multiple-choice, filling the void, ordering, true/false, arithmetic, a long and short responding.

Given the results of the question, the evaluation through 'Multiple-choice and True-False' exams won highest votes by the student respondents, followed by 'Both' and 'Take home' distributed respectively between the two. It signifies that the greater percent of students has a preference to take a test by means of Multiple-choice and True-False that does not coincides with the outcomes of (Senel, S., & Senel, H. C., 2021). So that multiple choice and true/false and both (take-home & MSQs &T-F) were the lowest used and not preferred, while assignments such as take home, performance-based techniques and open-ended questions were favored by students among COVID-19 quarantine. Nevertheless, (Tümen Akyildiz, 2020) showed that most students had problems with exams methods in distance education environment, some declared that multiple-choice test exams are not suitable, whereas assignment exams (Take home) were inconvenient for the others either. On his part, Hall (2006) perceived that many of the students wish to take non-assessed online exams with feedback to aid them know what they have learned or have to work on, and most of them did not want basically to take their tests online. He therefore raised some questions that require more investigation to get answers: "Why is this so? Is it the perceived unreliability of the technology? Do students not want to type in exams? Or is it some other reason?" Hall (2006).

As a result, it is apparent that there no big discrepancies exist on students' opinions in that regards, it might be attributable to the fact that the exams delivered online are problematic, in themselves, in terms of possibilities of cheating and plagiarism, an unfair evaluation, impersonation. Consequently, the extent to which the exam is reliable and valid must be considered by the exam designers, instead of the online tool kind. (Senel, S., & Senel, H. C., 2021:184). Moreover, the present study result pertaining to the association between the kind of exam and undergraduate and postgraduate students' perceptions reports that there is associated between them. Meaning that this dimension, namely the kind of exam has an influence undergraduate and postgraduate students' perceptions on the satisfaction with the complete transformation towards BLS during COVID-19 disease period. It can be explored that the kind of exam contributes to change

the students' perceptions about how satisfactory with the transformation into BLS is, therefore, the care should be taken by instructors when the choice kind of exams to evaluate fairly their students. Besides, because there is the rapprochement of percentages to some extent between the option of 'Multiple-choice and True-False' exams and the option of 'Both' that is Take home and Multiple-choice and True-False exams, it is better that exams combine these two types to match different student capabilities, where this mix of exam gives them a chance to improve their grades. This, in turn, drives the students to perceive the BLS as a satisfying system in the educational process and enables the instructors not to assess the students unfairly.

Aftermath spread of COVID-19 disease, the tertiary institutions unexpectedly transformed in both the theoretical and applied sections into the online learning system to avoid disrupting the instructional process and to execute protective measures. Since, according to (Nurakun Kyzy, et al., 2018), the kind of academic discipline and the field of online course that students study has a vast importance in the success of students, their impact on system use should be verified. Thereby, the questionnaire involved query regarding subjects' quality if they are both practical and theoretical or only theoretical that aim to set out which sections are most affected during the sudden transformation operation which is going to be the debate matter later on. The findings of this query look to be more tend to the option of practical and theoretical with 71 per cent of the participants, versus approximately one third (29%) of them who opted 'only the theoretical'. In contrast, the percentage of the student participants of technical departments was less than non-technical departments (Nurakun Kyzy, et al., 2018) and much of the students (almost 60%) distributed in theoretical subjects, the rest in practical sections (engineering & technology, science, healthcare) (Carvalho, et al., 2011). Although, half of the students disagreed about understanding the scientific subjects through online style, based on (Bataineh, et al., 2021), the grades of students who were from non-technical disciplines were a little less than those who were from technical disciplines, however both of them had equally knowledge with information technology, as (Marikar & Jayarathne, 2016) suggested. (Carvalho, et al., 2011) reveal that LMS, which promotes the larger number of their subjects is more vividly to be favored by students. On the other hand, (Daroedono, et al., 2020) mentioned that students of clinical phase in medical college are very prone to be

potential vectors for coronavirus transmission, due to frequent rotations between departments and hospitals. This indicates how the role type of discipline play in affecting education while COVID-19.

In a similar vein, the findings in this study confirmed that there an association between the kind of subject and undergraduate and postgraduate students' perceptions exists, which reflects the degree to which this dimension influences the higher education students' opinion during the COVID-19 disease period. Meaning that the subject both practical and theoretical that the students study takes on a significant role in guiding their insights and contributes to impacting on the satisfaction with the transformation into BLS under the exceptional situation as COVID-19 pandemic, which is consistent with (Nurakun Kyzy, et al., 2018), as type of academic majors influenced the success of LMS use. Notwithstanding the fact that the previous study was conducted before COVID-19, the result corresponded with the present study in terms of the effect of the kind of discipline on students' perception, namely that it has an effect, whether the situation is normal or abnormal.

Furthermore, the learning or teaching process, in particular, medical, health sciences or engineering fields is difficult for both students and lecturers alike, where there are some curriculum, contents or learning materials are unfavorable in LMSs, along with the lack of practical knowledge or laboratory skills in engineering, specifically amidst COVID-19 disease (Ibrahim, 2021; Kaur, et al., 2021; Bao, 2020). But that (Holmberg, et al., 2005:14) perceived that the distance education system is suitable for all subjects without exclusion including medical subjects. The students opined that some medical subjects could be taught by Blackboard system, while others are not suitable (Almaghaslah, et al., 2018). Moreover, (Butola, 2021:423) opines that these systems can play role in medical and health sciences education by means of many different models such as e-books, digital editions of online journals, role-playing, e-atlases, medical video games, instructional libraries, interactive patients, videos of scenarios depicting good and bad communication-skills, health decision support services and multimedia case reports and patient records. In this line, (Kaur, et al., 2021) stated that there a great deal of engineering innovations contribute to provide the virtual labs or virtual devices such as Lab VIEW, MATLAB, Augmented reality (AR), AR learning system, so on, in the quest of supporting practical

laboratory experience of engineering students. A virtual patients (VPs) was proposed by (Bączek, et al., 2021) as a resolution, and Remote Standardized Patients (RSPs), who are able to contact with learners through the internet to optimize social skills and real-time feedback. In addition, Sultan Qaboos University in Oman Royalty has attached importance to the special needs of students, where strived to deliver the helpful technologies for impairments such as Natiq Reader, Non Visual Desktop Access NVDA screen reader, Text to speech program, Index Everest v5, OCR Optical Character Recognition program for reading pdf, Braille display, and other. As well as doing some necessary amendments in the teaching and learning process to address learners' needs with visual disabilities Osman (2020).

By a web-based cross-sectional survey approach for 318 nursing students posted by WhatsApp achieved by (Terzi, et al., 2021) in Turkey, was found out that the students have a positive attitude at distance learning among coronavirus time, and the effective and positive students' thoughts promote positive attitude that might be attributable to the sustained support by respective units and instructors. On the other hand, the negative attitude concerning using distance learning in the future stems from uncertainty over distance learning as well as the reduced perception owing to COVID-19. The factor of duration of experience with online learning has an effect the attitude level of students, along with contents and interaction. Since the nursing is an applied major by its very nature, it is hard to be fully online. Thus, the various online teaching modalities should be evolved to bolster a positive attitude of students related to distance education in the scope of COVID-19 state.

With a view to ensuring whether students' attitudes originated from the conviction of it or just responding to an emergency situation, a forward-looking and prognostic query was listed in the demographic part. Although the willingness in using BLS in the future does not influence high education students' perceptions on the satisfaction with BLS, the result has produced somewhat tendency to the willingness to continue the education via BLS beyond the expiry of the COVID-19 pandemic, which is where the proportion of the student respondents who have a desire of continuity comes near the half. That is in compliance with (EVİŞEN, et al., 2020), as most students are willing to move on the online education in the future and is not corresponded with (Abbasi, et al., 2020) where

the majority of respondents (77%) did not prefer studying online in the future. Conversely, 22% of the student respondents in this study did not want to carry on studying over BLS, whereas 23 per cent, that is very close to the precession rate, who were hesitated over continuation. Kaur, et al. (2021) revealed that most students were more hesitated about the desire to pursue online learning in the future, that is, less willingness. Furthermore, as (Al-Balas, et al., 2020) thought, it will be challenging for most of students' viewpoint to get adequate skills using distance eLearning, thus they prefer blended educational mode to deliver learning in the future. Much of students 48% disagreed that online learning is inevitable in the future Beltekin & Kuyulu (2020), while Hakim & Kawamorita (2020) believed that students' satisfaction with the online education method is going to be higher in the next years and (Siagian, et al., 2020) detected that LMS is promising for future students. Additionally, almost 93% of organizations report that they plan to adopt LMS Nestor (2021).

The willingness in using the BLS in the future appears not to be related to the program the students study, meaning that the willingness in using the BLS in the future has no impact on undergraduate and postgraduate students' perceptions on the satisfaction with the total transformation towards BLS in the wake of COVID-19 disease period. Even though the rate of the willingness is close to the half, there is still uncertainties or rejection on the the satisfaction with using BLS. It cannot at least till now explain so before making discussion of the second part of the survey, but it is possible to highlight some pertinent elucidation. The willingness of continuity utilizing BLS beyond coronavirus time can be interpreted by the fact that the majority of students are young adults aged from 18 to 29 who have the ability to deal professionally with technology tools, so that they see it as an opportunity to practice their capacities to use such sort of system. Another reason can be also the flexibility of time, place and pace that grants them possibility of acquiring further time to practice other activities. On the other side, the rejection and uncertainties about using BLS after the demise of COVID-19 disease might be emanating from limited comprehension of the courses through BLS, technology illiteracy, lake of the precedent know-how of BLS usage, a sense of distractions or the environment around them is inappropriate to attend the lessons over BLS.

Last but not least, prior to turning into the second part of the questionnaire, evaluation of the volume and kind of previous knowledge that each student possesses, according to (Şimşek, 2012:1530), ought to be taken into account prior to the commencement of providing new material. Prior knowledge is not only confined to information, but also experiences, opinions, and attitudes towards a new subject. All the above have driven to ask if the students had got previous experience in using LMSs or had not. The survey has discovered that around two-third of the student respondents answered 'Yes', which is in accordance with outputs of (Eraslan Yalcin & Kutlu, 2019; Almaghaslah, et al., 2018; Carvalho, et al., 2011; Terzi, et al. 2021) where the majority of students had a previous experience utilizing LMSs. Conversely, which result at the same time is not in harmony with what the following researchers had reached (Al-Balas, et al., 2020; Baber, 2020; Bączek, et al., 2021; Liaw, 2008; Parker & Martin, 2010; Saidi, et al., 2021) as a large proportion of students had never had the past expertise in using LMSs. It is what indicates that we are before students' group, who represent the majority, possess technology skills, and are able to handle computers and software, as opposed to a less number of the student respondents may have some technology skills, but they cannot deal with this kind of systems, or may not possess any past expertise or skills at all, depending on their educational background, interests or personal preferences. Because very simply even if the students got used the technology skills before, it does not have to mean that they would be able to usage of BLS. This result related to the question, then this previous experience, might be attributed to, what has been stated earlier, the fact that more than half of the student respondents ranged 18-29 years old, who are technology generation or so-called Z generation. In other words, they are easily able to interact with technology tools owing to they have grown up in parallel with it and become much more accustomed to it. That said, it is still early implying if there is a difference concerns the students who have never used the LMS before and those who have used it, between undergraduate' and postgraduate' students.

In this context, after analysis, the current study arrives at the finding that the previous experience in using LMS shows to be effective dimension over students' perceptions, where there is an association between the previous experience in using LMS and the postgraduate and undergraduate students' perception. It is an indication that it has

taken on a significant role in strengthening students' experience in using the BLS effectively to achieve the learning activity involvement. Meaning that the previous experience reports to be an influential dimension undergraduate and postgraduate students' perception as concerns the satisfaction with the transformation to BLS during COVID-19 disease period. The researcher attributes a cause to that most the students are young aged group who grew up under recent technology developments, which serves as boost for them to apply their technological skills. On the flip side, there a less sense with undergraduate students exists on the satisfaction with the transformation towards BLS, in spite of the fact that they have a prior experience in utilizing technology tools and are able to use an LMS. This might be attributable of undergraduate students could be less mature and less grasping life conditions and surrounding environments reflecting negatively on their perception and experience. Terzi, et al. (2021) is in harmony with the past result, as they revealed that there is statistically significant difference between experience and attitudes towards distance learning, and they wrote that receiving experience in online learning and more technological knowledge with computer is an extremely important matter for contributing to elevate the positive students' attitude and involvement in online education. Beltekin & Kuyulu (2020) observed that the students who had not a previous experience with online learning system have a resistance more than who had. Along similar lines, Aguilera-Hermida, et al. (2021) added that the previous experiences play a crucial role in online learning system use, and help students with using online learning better in the future, which nevertheless does not implies that they will get the more improved academic outputs. In addition to that, the abruptly transformation towards emergency online learning system coerced students to be more conscious of technological instruments than before. On top of that, as (Carvalho, et al., 2011) perceived that the previous experience in utilizing LMSs influence preference of students, and that the overwhelming percentage of students who were comfortable by utilizing IT is attributable to they have previous technology skills. They added that Blackboard needs further effort to make users better competent. Even though this study was done before COVID-19 and in a developed country, it reiterated the relevance of the previous experience and its effect on students' viewpoint, meaning that this dimension is still effective at any given time and space.

Students' distance-learning experience during COVID-19, as (Ibrahim, et al., 2021) observed, were better as compared to traditional learning. Conversely, students had a less estimating of online learning experience amid pandemic (Kaur, et al., 2021), and Aguilera-Hermida (2020) indicated that the students viewed that the online learning is not desirable due to they have no previous experience. Hence, just over half of participants, pursuant to (Koirala, et al., 2020), voted that they need specific preparation for online lessons. Besides, although three-quarters of respondents have great computing skills, as per the outcome of (Findik-Coşkunçay, et al., 2018), almost one-third of them are acquainted with LMSs. The students who utilize frequently LMS are more satisfied with LMS (Koh & Kan, 2020). As Balkaya & Akkucuk (2021) explored, there is a difference between LMS users and non-LMS users before, because when the LMS improves learning outcomes, it is more probable to be used by users. However, majority of students reported that they could handle with the technology tools for online learning, and did not encounter challenges (Adnan & Anwar 2020) such implies that they enjoy experience to LMSs.

In PhD dissertation conducted by w (2017) to examine the total of 90 Saudi students' opinions about utilizing Blackboard as a LMS in USA universities and to identify the difficulties addressed by students during their use BLS. The questionnaire tool sent by email was implemented as a quantitative method to compile data from students who used BLS in the blended education environment. The findings of students' responses indicates that students perceived positively BLS. Furthermore, there were no statistically significant discrepancies as concerns experience level, namely, among experienced users and first-time users. Students' opinions about the BLS did not differ also statistically regarding gender, and interaction between experience level and gender. That contradicts what the current study found, with respect to the previous experience, while it agrees with that over the gender and the positive perception about the BLS use.

As a result, it can be claimed that having prior experience of using the LMSs is a major dimension determining the the satisfaction with these systems. As (Kemp et al., 2019) wrote, if students have used technology, it is easier to use it again. That brings us to the end of the first part's discussion of the survey insofar as socio-demographic information and it is time to jump into the other part of it. All of the axes with their items relevant to the second part of the questionnaire survey will be extensively discussed in the

following paragraphs in an effort to reveal the extent of how satisfied with the unforeseen transformation into BLS under the shadow of COVID-19 and lockdown actions.

3.3.2 Students Perceptions Debate

Actually, the researcher has decided that an investigation of the the satisfaction with transformation to BLS for higher education students under COVID-19 disease period is carried out by means of taking students' perceptions through conducting a comparison between undergraduate and postgraduate students' perceptions using the self-reported survey formulated by Google Form. Which is an optimal approach to glean data online from students, far from direct contact, under the lockdown and quarantine procedures to maintain social distancing. Consequently, the second part of the questionnaire survey will accurately emphasize on students' opinions counting on thirty items within six axes that are all embedded inside the research model to complete attaining the research proposed purposes successfully.

3.3.2.1 A Contribution Each Axis in Satisfaction with BLS

Here, undergraduate and postgraduate students' perceptions will be discussed in detail on each axis basis in the quest of comprehending contribution every axis in the satisfaction with of transformation to BLS amongst COVID-19 pandemic, while comparing the results with literatures. To do that, the satisfaction with BLS was firstly investigated in the context of research model to specify whether the students are satisfying with BLS or not, and to recognize how each axis contributes to students' satisfaction axis that is employed as dependent variable. After that, the comparison between academic programs on each axis level was undertaken. Additionally, students' opinions are going to be compared with each other on the level of each item, which is called indicator as well, wherein items will follow the outcome of their own axis, be it statistically significant or non-significant. In the interim, the traits and drawbacks of BLS will be inferred from this discussion. It is worth noting that the concise information about each axis and its items will be given in the meanwhile of the discussion as much as possible.

3.3.2.1.1 Self-efficacy Axis

First of all, it should stop over some information of self-efficacy, which refers to the capabilities the persons have and enable them to attain goals successfully, whereby the subject evaluates what one can do with the skills one has. In this line, Bandura (1977) stated that it is how a person assesses his or her capabilities to successfully engage with educational technology and added that "previous experiences and efficacy expectations contribute to self-efficacy" Bandura (1977). Self-efficacy is "perceived beliefs about one's own capability of achieving a task or being successful in a particular area" (Şimşek, 2012:1530). Accordingly, the students are going to make their best efforts in their field that they are competent in, and have a high proficiency in, unlike, they will quit, if they have no proficiency or ability. Aguilera-Hermida (2020) wrote that in order for the students to have confidence in their own abilities and to know their prior capacities, the enhancement of students' control through promoting them should be paid into consideration. Students' self-efficacy, interaction environments and multimedia forms are considered by (Liaw, 2008:866) as dimensions for developing effective eLearning (Blackboard system). Self-efficacy is also a strong determinant of a successful online educational experience (Albelbisi & Yusop, 2019). Thus, students should be aided to set out their resource and improve their confidence (Aguilera-Hermida, et al., 2021).

The researcher therefore, in the present study, has opted this factor as axis because of its importance, which depends on the next four items or indicators: a sense of confidence using BLS, an assistance tool for organization and time management, Knowledge of new tools and addition of value to learning skills, to examine its impact on their students' opinion. In fact, it should be paid attention that there is no study took these four items in one factor or axis. Hence, it is difficult for researcher to make very delicately comparison between the result of this study regarding axis and other search result, be it in the comparison of the all students' view or that of undergraduate and postgraduate students' view. The same applies to the rest axes. Therefore, the author will try to compare on the level of every item as much as possible to get logical interpretations of the findings.

Given the inferential analysis result as to regression, it indicates to self-efficacy axis has a little more than a moderate positive correlation with students' satisfaction, with a statistically significant impact. Wherein it also possesses the effective contribution but to

a lesser extent than the Usefulness and Engagement axes, that is, it influences positively, in some degree, students' satisfaction with the BLS. In other terms, Self-efficacy seems to be a somehow significant predictor of students' satisfaction, with the BLS. The outcome of the analysis of if there is a statistically significant difference between undergraduate and postgraduate students' perception on the level of Self-efficacy axis as to the satisfaction with the total transformation towards BLS during COVID-19 time, shows a statistically significant divergence among both groups in favor of postgraduate students. Namely, the postgraduate students' perceptions as concerns the satisfaction with the transformation into BLS are evident to be a bit more positive than the undergraduate students' perceptions.

As such, the students' perception concerning feeling confident with BLS demonstrates to be high, which concurred with (Al Rawashdeh, et al., 2020; Gulbinskienė, et al., 2017; Liaw, 2008; Maqableh, 2015) as most students felt confident using BLS, as opposed to (Beltekin & Kuyulu, 2020; Serhan, 2020). Nayak & Suesaowaluk (2007) found that eLearning management system provides learners authentic interactive environments, but one of disadvantages of eLearning is increasing the possibility of copyright infringements. This in turn may interpret why some students in this study did not feel confident using the BLS.

The students viewed that BLS highly enabled them to organization and time management, which is in contrast to (Tümen Akyildiz, 2020; EVİŞEN, et al., 2020) who saw that time management was problem for students. However, they coincide with (Beltekin & Kuyulu, 2020; Bradford, et al., 2007; Carvalho, et al., 2011; Koirala, et al., 2021) where BLS promotes organization and time management skills that allow users to allocate time efficiently. Moreover, (Beltekin & Kuyulu, 2020; Bączek, et al., 2021; Daroedono, et al., 2020; Gautam, D. K., & Gautam, P. K. 2020) think the online platforms enjoy the flexibility in time, location and pace. "Distance education can safely be described as a useful and flexible kind of education with special potential for student autonomy" (Holmberg, 2005:206). In their study about the student experience of eLearning in higher education, Sharpe & Benfield (2005) concluded that although eLearning provides flexibility in time and pace of student, the time needed to dedicate to

online work and time management has students establish and reconstruct new patterns of study, as well as activity were expressed as major concerns by students.

The Knowledge of new tools is highly noted by the students that coincides with (Aguilera-Hermida, 2020; ACAR & KAYAOGLU, 2020; Bączek, et al., 2021; Radha, et al., 2020). Aguilera-Hermida (2020) showed that students reported that knowledge of new learning tools (analyzing/creating videos, online quizzes, etc.) increased during lockdown, while time management skills diminished. He held the opinion that students and professors became more knowledgeable of the tools for online teaching and learning.

How complex eLearning systems are play an outstanding role in adding value to student learning and the value of these systems can be optimized by bolstering services of eLearning (Lee, et al., 2009). As (Naresh, 2020: 464) wrote, information skills and technology adoption skills are the most important skills. The students, in the current study, moderately perceived that BLS added value to their learning skills and optimized their self-learning skills which corresponds , in some extent, to (Ituma, 2011; ACAR & KAYAOGLU, 2020; Alim, et al., 2019; AlKhunzain & Khan, 2021; Hall, 2006; Muthuprasad, et al., 2021; Radha, et al., 2020, Sofi & Laafou, 2020). Dhawan (2020) mentioned that by using LMS as a means of online learning, it would leverage critical thinking skills, problem resolution capabilities, and learners' adaptability, and (Sarikhani, et al., 2016:28) also stated that the results of several studies point out that learners' creative skills can be benefited by means of online learning process implementation in different ways. However, as per (Bączek, et al., 2021), the online learning is less effective when it comes to increasing skills and the insufficient skills with students pursuant to (Prescott, et al., 2013) owing to the lack of training.

Just as the Self-efficacy axis as a whole has a somewhat effective contribution to students' perception and to the satisfaction with the transformation towards BLS with superiority of postgraduates' perceptions over their peers the undergraduate, their own items, except adding value that has moderate level, have high level of approval from students' perceptions. Therefore, the BLS is highly seen by students as a meaningful, enhanced-knowledge, confident, moderate add-value tool, which enables them to learn relying on their time, place and pace that is in line with their self-abilities to be more autonomous. In other words, the BLS highly grants them the autonomy that makes them

to study on their own pace, to organize and to manage their time upon their requests and needs, which drive them highly to acquire the knowledge of new tools aid to engage in the online learning process among COVID-19. In this way, the BLS moderately managed to add value to their learning and self-learning skills, and then fostering the students' confidence in utilizing it, which gives rise to enhance the self-efficacy. Furthermore, the BLS appeared to be more productive in strengthening of self-efficacy based upon the postgraduate students' viewpoints compared with the undergraduate students. It can be said that the Self-efficacy is a somewhat satisfaction index, and one of the axes that has an effective contribution to enhancing students' satisfaction with the education using the BLS, where increasing the self-efficacy is spotted by students' perceptions. Such result reflects a clear image about students' perceptions influenced by Self-efficacy, which complies with (Aguilera-Hermida, 2020; Maqableh, 2015; Liaw, 2008). Aguilera-Hermida, et al. (2021) supported that the positive attitude towards online learning helps with optimizing in self-regulated skills, and positively influences learning, and added that self-efficacy is a substantial dimension for engagement and has a positive impact on online learning outcomes amid COVID-19, as well as students must regard themselves as capable of dealing with study among such harsh circumstances. Balkaya & Akkucuk (2021) observed also that self-efficacy affects very strongly on intention to use LMS in the future, subsequently on users' opinions. To back seamless BLS experience especially in emergencies as COVID-19, based on (Huang, et al., 2020), the reliable network infrastructure should be ensured to deal with massive users at a time. Further, the utilization of electronic technologies contributes to improve students' skills (Sarikhani, et al., 2016:26). In their comments regarding the previous studies in their paper, (Prescott, et al., 2013: 4) alluded to the need of proper training to use the interactive applications incorporated in CMS which are able to attract attention to evolution learners' higher order cognitive skills.

On the other side, since the self-efficacy influences and has an effective contribution, in a certain extent, to students' satisfaction with the BLS, with high level of approval regarding their items. It can be inferred some traits of BLS, which are flexibility in time and space, increasing the technology knowledge and learning skills, supporting the confidence with LMS, plus enhancing self-efficacy.

3.3.2.1.2 An Engagement Axis

An engagement axis aims to recognize the difference between undergraduate and postgraduate students counts on four items: increasing level of involvement activities, encouraging on class attendance more than face-to-face, aiding to concentration more than traditional learning' and improving grades. An engagement is processes that allow the user to understand the knowledge, and includes focusing attention, engaging curiosity, concentration, and flow (Kemp, et al., 2019). Student engagement with a BLS is seen as instructors' major preoccupation due to it has been positively linked to learning outcomes, motivation and learner score (Alokluk, 2018:139). Given conclusion of (Yakubu, et al., 2019), they found that the successful embrace of eLearning modes relies on the users' engagement, both instructors and learners. According to the UTAUT framework of (Venkatesh, et al., 2003), expectancy effort is one of factors bears on individual's behavioral intention to use technology, which refers to an individual's likelihood to participate in a specific behavior. Which implies that involvement activities of students in the BLS are affected by the extent to which the students feel like toward the use of the BLS.

Moreover, (Kearsley & Shneiderman, 1998:20) mentioned, pursuant to engagement theory, in order for effective learning, mainly technology-based education, to take place, "students must be meaningfully engaged in learning activities through interaction with others and worthwhile tasks" and they add that eLearning provided by technology bolsters communication and creativity required to enrich engagement. On their part, (Hall, 2006; Carvalho, et al., 2011) stressed that the extent to which users engage in LMS should be paid into consideration. Baber (2020:290) held the opinion that absence of physical socialization in online learning makes online student engagement to be a stronger factor of the student's perceived learning outcome. Thereof, the engagement axis was listed in the existing survey to observe involvement activities, level of attendance, grades and concentration to do with using BLS by students midst COVID-19 pandemic. According to the analysis outcome, Engagement axis enjoys a relative high positive association to students' satisfaction, with a statistically significant impact, meaning that it influences positively students' satisfaction. It is also considered as one of the highest effective

contributors to students' satisfaction with the BLS. In other terms, Engagement seems to be a more crucial predictor of students' satisfaction with the BLS. Additionally, the findings report that there is no statistically significant difference between undergraduate and postgraduate students' perceptions on the level of Engagement axis as concerns the satisfaction with BLS. Namely, the postgraduate students' perceptions as to the satisfaction with the transformation towards BLS are evident not to be different from the undergraduate students' perceptions. Meaning that the postgraduate students' perceptions are spotted not to be different from the undergraduate students in terms of four-items as well.

Education establishments are the liaison centers of social interactions and activities, wherein majority of students indicated that an interaction is necessary either in the traditional or online learning (Adnan & Anwar 2020). Thus, the student respondents in this study perceive that BLS contributes moderately to surge the level of participation activities. Which contradict (Bączek, et al., 2021; Beltekin & Kuyulu, 2020; Rohman, et al., 2020; Tümen Akyildiz, 2020), where most students disagreed.

The student respondents view that BLS moderately encourage them to attend the class more than face-to-face, which is in keeping with (Elsamanoudy, et al., 2020; Hall, 2006), and it goes against the study of (Bataineh, et al., 2021; Carvalho, et al., 2011). Also an attendance in online classes did not change as compared to normal classes (Chen, et al., 2020), while the blended learning mode for attending classes was favored by students (Ahmed, et al., 2021).

Concentration "Determines whether the user is concentrated on the activity" (Maqableh, 2015:561) and he believed that using a useful system contributes to aggravate students' concentration, enjoyment and curiosity. The student respondents seem to be moderately agreed that an aid of BLS to concentrate on the lessons better than that of face-to-face learning mode. (Muthuprasad, et al., 2021) is in favor of that, while (Daroedono, et al., 2020) isn't, and the concentration was one of the difficulties encountered students Giray (2021).

The grades is one the precious predictors of learning outcomes that are defined by (Tubagus, et al., 2020:187) to the degree to which the learning and teaching objectives are attained. Using BLS, as analyzed previously, shows to improve moderately the student

respondents' grades among the confinement time owing to COVID-19, what means that their performance and achievement in the exams after the shifting to BLS are a little bit better as compared with traditional education. This result is in line with (Akinbadewa & Sofowora, 2020; ACAR & KAYAOGLU, 2020; Al Rawashdeh, et al., 2020; Lewis, 2020). The grades did not affect considerably (Carleschi, et al., 2021; GÜRLER, et al., 2020), and students' thoughts varied as to improvement of grades using online exams (Tümen Akyildiz, 2020), while their learning outcomes did not improve in the online learning (Rohman, et al., 2020).

In the light of that, it can be argued as to Engagement axis that BLS helps moderately the college students to enhance the level of involvement activities in the online class, and stimulates fairly interactions among users to share the knowledge and the information. Emboldening an attendance in BLS lessons is relatively pointed, as the students moderately perceive that they joined the classes established on BLS a bit more than they did on face-to-face learning. Furthermore, increasing in the level of grades and concentration was fairly felt by students thank to BLS that encourages them to make the most of its features to lower distractions, laziness, inertia and monotony, meaning that the academic attainment improves moderately. In other words, the level of engagement in BLS environment has been moderately noted, which is reflected through surging the levels participation activities, attendance, concentration and scores even moderately. When it comes to the difference between students, the postgraduate students are spotted not to be different regarding engaging as compared to the undergraduate students. Notwithstanding the fact that Engagements' four-items have moderate level of approval from the student respondents, the Engagement axis demonstrates to have a high effective contribution to students' perceptions with satisfaction, then to the satisfaction with transformation into BLS during COVID-19 disease period. Such indicates that engagement is an effective axis, in other terms, it, while a moderate items level, is seen as a high satisfaction index.

The reasons behind the moderate approval level regarding items might be attributable to the fact that keeping going on the internet for a long time may push the students to navigate the web sites, play games, chat with friends, listen to music, enjoy video-clips and comics, and so on, consequently, the level of engagement in BLS seems to be not that much remarked. As well, it can be originated from the idea that staying home

due to quarantine may expose the students to many distractions, for instance, family, children, household chores, noise, etc., which then will negatively reflect on the engagement in the learning activities on BLS. It can be also exam methods adopted by instructors, which might not give the students more time to achieve them, which leads to influence their grades or learning outcomes. It may be stemmed from the role of faculty members who might not provide the support when requested, and from their inability to exploit effectively the tools available in a BLS to stimulate the students to take part in the class due to an inadequate knowledge of the use of technological tools. This applies to the students as well, despite the previous experience in using LMS they have. Nevertheless, it is surprising, although the fact that the BLS has many features that revitalize the students to make use, making the most of time, as they do not have to spend more time to travels from and to university and this goes to the worker students as well, the level of engagement in BLS shows to be sub-par or moderate. Further, notwithstanding the flexibility of the involvement in BLS where they can talk, write or send immediately images or files, the engagement is not feeling well by higher education students either, which is surprising. In spite that, the Engagement is still a high satisfaction index.

In this vein, Aguilera-Hermida (2020) agreed with the current research outcome, as observed that the overall cognitive engagement fell and learners voted that their concentration, level of engagement and class attendance declined as compared with before COVID-19, along with their grades did not change. He added that the family conditions have an effect the level of concentration. In another study of Aguilera-Hermida with others (Aguilera-Hermida, et al., 2021) confirmed that the students struggled with the transition to online learning that led to the lower engagement level, and they detected that the negative emotions as anxiety influenced negatively engagement of students and that these emotions might be stemmed from conditions surrounding students by virtue of coronavirus. They concluded that prior experience did not affect online engagement level either.

Sari & Nayır (2020) believed that the lack of students' participation in online environments is attributable of the inability of lecturers to communicate with learners face-to-face to follow whether the student is listening to the lesson, and (Heirdsfield, et al., 2011) thought that students' engagement with LMS is influenced by the individual

differences. (Carvalho, et al., 2011) discussed level of engagement in Blackboard via its functionalities. The results showed that the large percent of students engaged oftentimes in using Blackboard for, check course scors (47%), download course materials (~79 %) and look for course announcements (~63%), and while most of them have never involved in course virtual classroom/chat room (~90%), sharing files with peers (~74%) or engaging in forum discussions (~72%). Which implies that Blackboard is used by students for engagement so as to manage courses and support students in traditional education settings more than to communicate and collaborate.

Goi & Ng, 2008; Hamid, et al., 2020; Heirdsfield, et al., 2011; Elsamanoudy, et al., 2020; Kado Kado, et, al., 2020 think that LMS plays positively role in reinforce the engagement, in contrast to (Chen, et al., 2020; Serhan, 2020). As Hall (2006) suggested, the level of student active engagement and satisfaction of users with utilization of LMS contribute to the successful implementation of LMS. To encourage students to more participation in BLS, it has to, to mention only a few, make some actions like granting the freedom of students to choose appropriate time of sessions, the deadlines of the assignments and take home exams should be more flexible, an instant feedback and an incentive questions and quizzes before starting the class. All these to ensure stimulating the students to attend and engage actively in BLS classes. Along the line mentioned earlier, (Elsamanoudy, et al., 2020) are in favor of some of those procedures that promote the learners in an attempt of attracting them to be more interactive inside this kind of online education platform and to enforce an efficient engagement not least in perilous period like this. Getting creative, meaningful and authentic learning can be realized by attaining an engagement that requires focus on collaboration, project-based assignments and non-academic or realistic focus (Kearsley & Shneiderman, 1998:23), however, Agarwal & Dewan (2020) are of the opinion that student-teacher engagement and active participation in classes are still a challenge. Ryabov (2012) conducted the research using a multinomial logistic model in one of USA universities that used Blackboard as LMS. 286 students in many various disciplines participated in this study with a view to clarify the role of student engagement in achieving a better grade through testing the effects of the following variables; the amount of time spent online, previous achievement (GPA), major, credit hours, and gender. He revealed that both dimensions time spent online and

previous achievement (GPA) have the most effective on attaining academic achievement, while the rest of variables were inconsistent. Which implies that in order for higher levels of achievement to realize, the learning activities stimulating learners to spend more time online should be attached importance to.

In view of the above, because Engagement's items, while a high effective contribution of Engagement axis to the satisfaction with BLS, have moderate level of approval from students' perceptions, it can be inferred some drawbacks of BLS, among them: limited enhancement participatory activities, shortage of attendance and concentration as compared to in-class conventional education, and inadequacy educational attainment.

3.3.2.1.3 Usefulness Axis

Usefulness is the technology functionality (Parker & Martin, 2010:137). Perceived usefulness is "The degree to which a person believes that using a particular system would enhance his or her job performance" Davis (1989). Thereof, the productivity, efficiency, performance, motivation and assessment are the main indicators employed in this research to scrutinize the usefulness of BLS pursuant to students' viewpoints in an effort to recognize their satisfaction with it under COVID-19. The finding as to Usefulness axis shows that it has the most positive correlation with students' satisfaction towards the BLS. It positively influences students' perceptions with satisfaction, i.e. a statistically significant, and has the highest effective contribution to students' satisfaction with the BLS. Furthermore, there is no statistically significant difference between undergraduate and postgraduate students' perceptions on the level of Usefulness axis as concerns the satisfaction with BLS. That is, the postgraduate students' perceptions as to the satisfaction with the transformation towards BLS are evident not to be different from the undergraduate students' perceptions. Meaning that the postgraduate students' perceptions are spotted not to be different from the undergraduate students in terms of five-items as well.

Considering that the student respondents report that the BLS moderately increases their productivity, such indicates that the BLS looks to be not, to some degree, a means of surge students' productivity, which is contrary to Maqableh (2015) where increasing in

students' productivity appeared to be moderate. It can be due to the uncertainties expressed by the student respondents that is getting too close to the negation rate. Even though BLS is being able to make the students to get the resources and materials in quick speed, which then aid to obtain timely the knowledge by academic staff so that it enables them to devise efficiently online teaching materials and deliver effectively the learning contents to learners, the increasing productivity is unmet as intended. The uncertainties are likely to be from the lack of ongoing feedback by instructors to let students know how well they are doing or from the little know-how and new experience in handling with BLS, in spite of the high rate of the student respondents have a previous experience.

The learning efficiency seems to be moderately felt by the student respondents after using BLS, but Liaw (2008) saw the opposite from so, and agreed with the current finding that the learning performance is highly felt by the student respondents. The moderate level of efficiency can be originated from unfamiliarity well with technology tools by the faculty members and students, or lack of know-how for both themes and students so that they are being unable to deliver efficiently and seamlessly the learning to students. Notwithstanding the tools used in BLS such as multimedia, presentations might contribute to improve the learning efficacy and performance, the sense that the BLS is an auxiliary tool in learning efficiency sounds to be insensible by students. Albashtawi & Al Bataineh, 2020; Fang et al., 2019; Radha, et al., 2020 analyzed that LMS or online learning had a positive effective on learners' performance, while (Rohman, et al., 2020) believes, pursuant to students' perspective, had not. ACAR & KAYAOGLU (2020) viewed that students voted that productivity, efficiency, motivation and performance were bolstered by LMS, and these results does not correspond to a certain extent with the existing research outcome, except performance.

Motivation is emotional effort and power about achieving a task and its source is twofold: internal and external motivation (Şimşek, 2012:1530). As (Baber, 2020:289) stated, the students were not ready or prepared for online learning, hence, verifying students' motivation for learning online is an important thing. The BLS is seen by the student respondents to be a moderate motivate vehicle to learning. It is probably to be owing to fears and concerns from getting infections of COVID-19, a sense of monotony due to sitting for long periods in front of devices' screen, the traditional indoctrinating

performance of education by some instructors while abusing the technology tools. Half of students just over were convinced that online systems motivated them during COVID-19 pandemic (Ibrahim, et al., 2021). Further, majority of students held the view that utilization of mobile LMS was useful in online learning and increased their academic success and motivation Tezer & Çimşir (2018). Most of students pereived that LMS increased their motivation in developing learning skills (Gulbinskienė, et al., 2017), while Turkish students' motivation did not change before and after transition compared with other countries students (Aguilera-Hermida, et al., 2021). Unlike, most of student voted that the online learning is less motivating than the conventional education is (Adnan & Anwar 2020; García-Alberti, et al., 2021; Koirala, et al., 2020). Similarly, the learners appeared that the online learning environment was not motivating (Aboagye, et al., 2021), they were less motivated after shifting into online learning in COVID-19 time Aguilera-Hermida (2020), and they also lacked intrinsic motivation to embrace LMS (Kado Kado, et al., 2020).

The distance education aims to provide teaching and learning facilities (Holmberg, 2005:20). Indeed, the students concern over the fair evaluation of their learning outcomes in online education environments. As (Radha, et al., 2020:1090) wrote, evaluation of the student is one of the significant approaches of the assessment process in the education system. Senel, S., & Senel, H. C. (2021) described that BLS provides the benefits for assessment like instant feedback, ease of editing, submitting/responding, control and storage, providing student participation, motivation and statistical data, enriching assessment tools and products and re-use. They stated further assignments, projects and online tests are evaluation techniques along with feedback and monitoring are ways for online formative assessment, whereas student-faculty interaction and communication can be established by feedback. Likewise, LMS is able to create surveys and quizzes for evaluating users and courses, and an assessment can be formative, summative built on a learning objective or activities within a lesson (Malikowski, et al., 2007:162). BLS also supports assessments through test building with diverse questions types in different and random ways, with an access code can be created to secure tests as well as an option to lock the browser while the exam to block cheating Elizabeth (2020).

The student respondents perceive sufficiently the BLS as a means of the learning evaluation, this belief may be because of instant accessibility of scores' information, or about the improvement in their grades. In contrast, the student respondents' negatively perception in terms of this item is more likely to be the unsuitable kind of exams it provides, or the easily available cheating opportunities in online settings, which lead to unfair assessment. It is probably to be owing to the fact that the nature of postgraduate studies are different from undergraduate studies, namely, more research, wherein the postgraduate students rely highly on assignments and researches. On their side, (Senel, S., & Senel, H. C., 2021) deduced that the reason behind an unfair assessment results from firstly the first time online experience by instructors and secondly heavy workload of assignments (evaluation tools). García-Alberti, et al. (2021) appended that due to the nature of some disciplines and lack of clear remote evaluation methods, the evaluation is still challenge, notably in engineering areas, hence, the online test tool could not be a source of doubt nor conflict to learners.

(Al-Salamat, et al., 2020; Kaur, et al., 2021; Radha, et al., 2020; Senel, S., & Senel, H. C., 2021) found that evaluation and assessment of students by using BLS or online learning is effective, but most students do not prefer using it in this kind of education as per (Senel, S., & Senel, H. C., 2021). Pursuant to (Prescott, et al., 2013), they stated that one of the key results of study of the University of Wisconsin System (UWS) is limited use of LMS functionality (interactive parts), with strong focus on the 'static' tools (surveys, quizzes and tests).

On the whole, in this axis, although the fact that increasing productivity, the learning efficiency, and learning motivation reflect moderately on the students, the Usefulness axis shows to have the highest effective contribution to students' satisfaction, then to the the satisfaction with the transformation into BLS during COVID-19 disease period. Such indicates that usefulness is the most critical predictor of the satisfaction with BLS, stated differently, it, while a moderate level of productivity, efficiency and motivation, is still the highest satisfaction index. It can be said that BLS is a useful tool, where the learning performance and a learning assessment tool have the high level of approval of the students' perceptions as well. Since the evaluation or assessment processes of exams count on how confidential and secure of data and information, this can be the reason behind the

other students' disapproval over the satisfaction with BLS as a learning assessment tool. An evaluation by means of quizzes, surveys and self-tests presented by BLS partakes in the facilitation of taking a tests and the instant distribution of scores and the handy access to them, the periodical control of students' level throughout the academic year, these may be why they perceive BLS as a learning evaluation tool. When it comes to the difference between students, the postgraduate students are spotted not to be different regarding usefulness as compared to the undergraduate students. However, this calls for making extra efforts to set effective, reliable exams technics serve fair assessment processes by academic staff, and such then is leveraging satisfaction instances with students giving rise to motivate the satisfying usage of BLS. When students believe that BLS would assist them to have a better grasping of a topic and better performance, they might accept its use and hence, they will look at as a satisfactory tool in enhancing their learning. The students' attitude perceived that the online learning or LMS is usefulness among COVID-19 pandemic based on (Akinbadewa & Sofowora, 2020; Albashtawi & Al Bataineh, 2020; EVİŞEN, et al., 2020; Kado Kado, et al., 2020; Lewis, 2020; Radha, et al., 2020), which is in accordance with the above result and is in contrast with (Emiroglu, et al., 2021).

An empirical study undertaken by DeNeui & Dodge (2006) in USA to check the impact of Blackboard on blended learning courses through determining a link between Blackboard platform usage by 80 students and their performance. The results frankly cleared up that the students' performance in exams who used Blackboard very often was better than those who used it less frequently. Thus, it can be said that there is a significant positive partial relationship between overall Blackboard usage and students' GBA. Moreover, individual differences in learning modes might affect how learners use features of Blackboard and what extent they get benefit from them.

In technology era, evaluation process of students' performance and outcome has become more dependent on digital approaches use, as computer-based evaluation instead of paper-based assessment. Thus, Maqableh (2015) tried to study students' disposition towards using Computer Based Assessment CBA by means of determining factors that impact on learners' view on using computing system in evaluation. He points out that Technology will play role in promoting both evaluations of and for learning. Perceived usefulness, as per him, is used to measure the degree to which persons perceive that their

job performance will rise when they employ a certain computer system. He is assertive that social influence constituted by the effect of people's opinion, superior and peers influence, goal expectancy and content have a positive effect on perceived usefulness that contains indicators of work, effectiveness and productivity.

Usage of LMS is correlated to usefulness of system (Hamid, et al., 2020, p, 213). The usefulness axis in this study is reliant on productivity, efficiency, performance and assessment. To ensure furthering students' performance in online learning environments that gives subsequently rise to increase level of the student satisfaction, the focus should on the methods that contribute to promote functioning students to be more skilled and proficient in the shadow such sort of learning delivery. Some literature as Giray (2021) highlighted some of those ways employed by learners to assist them in better their discharge among them; using other online resources like YouTube, revisiting video and lecture recordings, regular or disciplined study, interacting with classmates, doing more study, research and repetition of content, taking notes and self-educate with applying their knowledge. The students' performance and motivation is influenced by overloading assignments and unclear evaluation methods (Bataineh, et al., 2021). So, an assessment and taking exams are problematic matter are unfair in online education and most students traced that to high potential to cheating within students, to get over this point, auto-graders, just-in-time assessments and using an evaluation framework have been suggested by Giray (2021). Nevertheless, in his analysis on impact of LMS on academic education, Nestor (2021) wrote that LMS gives the students unlimited access to materials, and it also eliminates difficulties of manual trailing of student progress and performance.

It can be claimed that the usefulness is seen as the highest effective contribution to students' satisfaction with the transformation toward BLS among COVID-19 period, wherein BLS does partake highly in enhancing students' learning performance as well as it is highly able to provide the learning evaluation features of efficient and rather secure. Additionally, it helps moderately with learning efficiency and motivation, and with raising moderately their productivity. In a similar context, as (Parker & Martin, 2010) analyzed, the online students rated that virtual classroom enhanced highly their performance and effectiveness for category of 'usefulness and ease of use' characteristic. The results indicated statistically significant differences between online and hybrid students in terms

of interaction, synchrony, and usefulness and ease of use characteristics. Higher ratings for the usefulness and ease of use of virtual classroom by online students may be traced to technology literacy and quicker acclimation with it. Thus, the usefulness and easy to use of the technology will support student's interest in online learning methods.

On the other hand, even though the Usefulness axis tends to have the highest effective contribution to the satisfaction with BLS, and is the highest satisfaction index, it can be inferred some following traits and drawbacks of BLS: lack of learning efficiency and motivation, inefficiency in increasing student productivity sound to be drawbacks. In contrast, an effective learning performance and an effective learning evaluation tool are considered as traits.

3.3.2.1.4 Communication and Ease of Use Axis

The direct communication either between the students each other or the lecturers and students is vital dilemma. Absence of communication and communication skills development is problematic issue in online teaching and learning (Singh, et al., 2020). The distance education counts on a pre-produced course materials and noncontiguous communication between educators and students. Among purposes of the communication in distance education are to promote learners' interest and motivation, to facilitate students learning and to evaluate learners' progress (Holmberg, 2005:104). BLS allows communication through announcements, email, virtual classroom, and discussions (Bradford, et al., 2007). Therefore, the communication and ease of use axis in this research will touch on posting timely information, feedback from instructors, effectiveness of discussions and submissions, benefit of Blackboard Collaborate (virtual classroom), accessing to learning resources/materials and difficulty of BLS usage. Furthermore, perceived ease of use is defined by Davis (1989) as the extent to which someone perceives that utilizing a specific system would be devoid of effort, in other words, ease of use is "how simple it is to become skillful in using the technology" (Parker & Martin, 2010:137). Effort expectancy is defined as the ease associated with the use of a system (Venkatesh, et al. 2003). Undoubtedly, utilization of LMSs have more increased lately aftermath spread of COVID-19 pandemic and tighten lockdown and confinement measures than ever before, the results of study of Aguilera-Hermida (2020) are in favor of that, hence,

usage easiness of such systems marks a significant dimension for users reflecting on adoption this sort of education way and then adaptability. Yakubu & Dasuki (2019) shows that some factors influence the university's student intention to adopt and use eLearning systems directly, and that performance expectancy is the strongest determinant and then the ease associated with the use of a system (efforts expectancy).

Based on the results, Communication and Ease of Use axis has a more than a moderate positive association with students' satisfaction, and a statistically significant effect. Wherein it also possesses the effective contribution but to a lesser extent than the Usefulness and Engagement axes, that is, it influences positively, to a certain extent, students' satisfaction with the BLS. In some sense, Communication and Ease of Use axis sounds to be a somewhat significant predictor of students' satisfaction with BLS, meaning that it demonstrates to be a somehow satisfaction index. On the other hand, as can be shown from t-test of Communication and Ease of Use axis, a statistically significant difference between undergraduate and postgraduate students' perception is found on the level of Communication and Ease of Use axis as concerns the satisfaction with the full-fledged transformation towards BLS during COVID-19 disease period. In addition, this divergence sounds to be tending to postgraduate students' perception. Namely, the postgraduate students' perceptions as to the the satisfaction with the transformation into BLS are evident to be a bit more positive than the undergraduate students' perceptions, this applies to its six-items as well.

The student respondents in the present study view that BLS manages highly to have their instructors or department post announcements, other timely news and information in time. This is consistent with Hall (2006), as most the student respondents agreed that Blackboard helps easily to find the requested information and (Prescott, et al., 2013) asserted that functional features of CMS (Blackboard) like sending announcements, posting content and email are the most used. Malikowski, et al. (2007) came to the following conclusion; CMSs, or LMSs as named by the other researchers, were used largely for transmitting information to users while using in moderate degree for class discussions, whilst they, by contrast, were low to moderate utilized for evaluating. As opposed to AlKhunzain & Khan (2021), much of the students emphasized that Blackboard did not help them with speedy delivery of information. In this way the students will be

aware of up to speed and up to date, which make them keeping up with the learning process step-by-step, without having to call academic staff. That said, some announcements and information sometimes require a little bit clarity by concerned, because every student interprets any information in his/her own way. As for the comparison between the students, the postgraduate students rather than the undergraduate students are spotted to be more agreed in this item. It is unexpected result due to the fact that some of them have jobs and engagements, while they are able to follow the updates.

Dhawan (2020) stated in his SOWC Analysis that immediate feedback is one of the strengths of online learning, (Graham, et al., 2001) appended that instructors need to provide two types of feedback: information feedback and acknowledgment feedback, and Akinbadewa & Sofowora (2020) opined that effect of multimedia learning could be attached to the interesting activities as immediate feedback. So, the feedback was listed in the current survey as indicator for axis of communication and ease of use. The result demonstrates that the BLS highly enables the student respondents, with preference of postgraduate students, to get immediately feedback from their instructors/staff, which allows them to know how well they do. It turns out that BLS is highly able to have academic staff/staff is being available for students when requested any time or 7/24 anywhere, to a certain extent, in other words, it can be claimed that BLS possesses an availability trait during the learning and teaching process. However, the availability of academic staff/staff all along is problematic issue, as it will result in an extra workload that is reflecting negatively on the exercise of their duties and functions. In line with this, (Al-Balas, et al., 2020; Bataineh, et al., 2021) observed that most the students received feedback from professors in short time, as opposed to Beltekin & Kuyulu (2020), where most of respondents voted that they can't get enough feedback on online learning. Feedback from lecturers was problematic issue for students as well Tümen Akyildiz (2020). Even though instant feedback helps students with specifying mistakes and deficiencies in their performance hence supports self-learning, the feedback and instant assessment are not enough to further effectiveness of learning (Senel, S., & Senel, H. C., 2021). Alternatively, absence of feedback will absolutely strengthen the sense of dissatisfaction with BLS as a means of communication among users within online setting.

Therefore, care should be taken by the instructors to give feedback to the students immediately (Muthuprasad, et al., 2021).

> The learning activities are educative message transformation process in the form of learning materials from learning resources to learners. Learning resources in the learning activities are lecturers and the messages delivered are the learning materials received by […] students (Alim, et al., 2019:240).

Thereof, how active and effective submissions and discussions is in BLS is an indicator described in the survey to determine the communication and ease of use of BLS, and the finding shows that the discussion and submission in the BLS is highly active and effective, based on a large number of the student respondents' viewpoints, with superiority of postgraduate students. Which indicates that the students used effectively emails, chat sessions, posts open in the BLS to submit their materials, questions, files among each other or to their instructors, which help them to discuss the lectures within lesson, rendering the BLS active system to do that anywhere and anytime leading to promote the learning operation. That compels to saying that BLS is a medium whose ability to transfer the knowledge and information among students each other and between faculty members and students as well, in other statement, it enjoys an advantage of transferability of knowledge. Bataineh, et al., 2021; Elsamanoudy, et al., 2020; Kado Kado, et al., 2020 are in favor that LMS or online learning assists the students with submissions or discussions, as opposed to (Ahmed, et al., 2021; Beltekin & Kuyulu, 2020). Saputro & SUSİLOWATİ (2019) came to conclusion that the practical features of the LMS on learning can be shown by accessibilities of communication, discussion and assignment submission. Educators stated that postgraduate students were more serious than undergraduate, as they submit their assignments frequently (Gautam, D. K., & Gautam, P. K., 2020). On the other hand, it is not easy for the students to accomplish their assignments in groups by online learning but they can easily finish assignments in time (Adnan & Anwar 2020). Absence of group discussions during assignments, as (Aboagye, et al., 2021) stated further, is one of the social issues.

Consequently, to enhance satisfaction with lessons in LMS, Sari & Nayır (2020) propose some teaching approaches for example, discussions, brainstorming sessions, exercises, case study, games, experimental learning. Further, (Findik-Coşkunçay, et al.,

2018) thought that LMSs and services ought to support interactivity through promoting communication between professor and learner, providing tools as e-mail, forum and chat to foster the environment for students to learn by these systems applications.

The BLS has a tool so-called Blackboard Collaborate that represents virtual classroom where the students and instructors are able to meet each other visually and audibly, thus, a specific indicator was allocated in the survey to figure out how beneficial is it. Elizabeth (2020) described the virtual classroom as a virtual space that enables the users to come together, share applications and files, as well as action at the whiteboard. The student respondents highly declare that Blackboard Collaborate is very beneficial feature, but the uncertainty seem to be somewhat explicit, what means that they feel ambiguous about the perceived benefit of virtual classroom, which it can be originated from inability to take advantage of the features or difficulty of understandability how to use. In this vein, as (Al-Balas, et al., 2020) analyzed, high percent of student favored Live-streaming session (virtual classroom) to deliver instructional materials, while students preferred recorded classes uploaded to live online classes (Muthuprasad, et al., 2021). Students held the opinion that video/audio streaming of lectures was valued (Heirdsfield, et al., 2011), and most learners, pursuant to (Chen, et al., 2020), felt that virtual class is more interactive, and they, as per (Almaghaslah, et al., 2018), felt more interested in it. With respect to the comparative among students, the postgraduate students' perceptions are spotted to be superior in this indicator as compared to the undergraduate students. It can be interpreted so, that most of the postgraduate student respondents are from MBA program who do not depend on applied courses, Conversely, the undergraduate student respondents whose courses may be of an applied nature, which cope with obstacles in teaching on BLS.

The student respondents, with superiority of postgraduate students, perceive that BLS highly enables them to access to learning materials or resources (files, learning modules, assignments, content). It turns out that the accessibility is an outstanding feature of BLS that facilitates making the most effective use of the learning materials and resources available in BLS, which allow students to take advantage of files, video recordings, links, assignments, exams that instructors uploaded, and to put in order them in a manner that align their needs. On top of that, it can be argued that BLS has not only

accessibility of resources and materials, but also has an ability to provide them and render them available user-friendly for users whenever they want, namely an availability, regardless of the time and place the users are, might be distinctly seen as a trait of BLS. Which is consistent to (Heirdsfield, et al., 2011) who detected that accessibility to resources and availability, along with communication were noted as features the most in Blackboard. (Bataineh, et al., 2021; CoHE, 2021; Emiroglu, et al., 2021; Hebebci, et al., 2020; Kado Kado, et al., 2020; Sofi & Laafou, 2020) viewed that LMS or online learning allowed the students to access easily to materials and resources. The instruction and material were not easy to utilize in LMS, hence, the learners preferred individual assignments and tasks to keep social distancing owing to spread of the disease, along with explanation of assignment and material in advance this, in turn, will enforce understanding Allo (2020).

'It was difficult for me to use Blackboard' is an indicator employed in the survey to show how difficult using BLS is. It is prominently that the student respondents tend strongly to that it is easy to deal with BLS among COVID-19 period. It is indicative that they are easily able to use the features and tools open in BLS to help them attendance, discussion, participation and communication in the lessons delivered by academic staff via it. That is may be interpreted within answering the question related to whether or not the students have a previous experience in using LMS, wherein the students' responses report having them the previous experience that contributes to simplify handling various BLS tools effectively. Another reason may be attributable to the support provided by the academic staff through advice and guidance or by technical staff who can serve in terms of the technical support facets throughout most of the time. The past finding is in favor by Hall (2006) as the students disagreed that Blackboard is difficult to use, as opposed to (Aguilera-Hermida, 2020; Morgan, 2003). As for the comparison between the students, because of low approval level concerning difficulty of BLS usage, it can be said that postgraduate and undergraduate students perceive that BLS use is easy, but undergraduate students see it easier to use.

The finding by in the light of the above, is the indicators of accessibility, timely announcements and information, feedback, discussion and submission, virtual classroom and easiness of BLS contribute manifestly to bolster the communication and ease of use.

It turns out that BLS plays an active role for the convenience the efficient instantaneous and non-instantaneous communication that creates cooperation and collaboration among the students themselves for information-exchange especially in discussion sessions on one hand, and between them and their instructors who deliver the knowledge, which strives to actualize the goals of the education process on other hand. The possibilities of the communication across BLS return to the features it enjoys such as chat, email, forum, and first and foremost the Blackboard Collaborate tool, which provides live-streaming classes. An active communication, in turn, contributes largely towards enriching an interaction needed in the learning activities notably in an online environment, as well as, it provides an appropriate interactive surrounding for those students who are anti-social or introverted, or feel embarrassing during the participation in face-to-face education delivering mode. That therefore will assist academic staff to minimize the disparity in terms of introversion through stimulating the anti-social students to be more interactive in discussions sessions, along with aiding them to limit the distraction, which several students suffer from within the online lessons as much as possible and to recognize the extent to which students understand.

In relation to this, (Alim, et al., 2019) think that the effectiveness of communication, pursuant to Hardjana, is evaluated by many dimensions that as follows; message format, message content, communication media, receiver or user, the credibility of the source/information and timing. They add that increasing in efficient cooperation and collaboration is one of advantages of LMS the most. Alokluk, 2018; Morgan, 2003; Nayak, & Suesaowaluk, 2007; Tubagus, et al., 2020 view that LMS or online learning provides better opportunities for users to enhance communication skills and collaboration with each other, unlike, (Almaghaslah, et al., 2018; Giray, 2021; Muthuprasad, et al., 2021; Prescott, et al., 2013; Tümen Akyildiz, 2020). Hence, the electronic communication that lack of body language, emotions and facial expressions might be less effective compared with in-person communication (Baber, 2020) and this, based on (Almaghaslah, et al., 2018), can be traced to the limited technology use by professors.

Easiness of BLS usage seems to be clear with accordance to the student respondents, which is a reversal of students' views, by (Al Rawashdeh, et al., 2020; Prescott, et al., 2013). It concurs with (Akinbadewa & Sofowora, 2020; Albashtawi & Al Bataineh, 2020;

Ibrahim, et al., 2021; Salter, et al., 2014), where the online learning or BLS is seen by students' opinions as easy to use. Aguilera-Hermida, et al. (2021) stated that ease of use is a strong factor for utilization of online learning.

Here, it can be saying that BLS demonstrates to be easy to use as a satisfactory tool to establish an interactive communication among students under lockdown measures due to COVID-19 prevalence. In a similar vein, much of students voted that LMS or online learning was easy to use and real-time communication is one of the feature of LMS (ACAR & KAYAOGLU, 2020; Emiroglu, et al., 2021; Sofi & Laafou, 2020). Conversely, As (Rohman, et al., 2020) analyzed, most respondents voted that online learning is not easy to use and grasp, and does not help them to communicate and interact, which means it is not convenient, along with they faced difficulty in using it and in discussion & communication (interaction). They stated that the smoother communication and interaction between professors and learners become, the better students feel online learning modality. Perceived ease of use aims to "measure the person's belief that using a computer system requires no effort" Maqableh (2015:561), and he explained that a system that is able to be utilized without great effort will seamlessly allow users to utilize it without any disturbance. He observed that the perceived ease of use and usefulness had a positive impact on students' concentration, curiosity and enjoyment. Furthermore, constructs of facilitating conditions or support, and computer self-efficacy impact on the perceived ease of use.

Simplicity of design plays role in attracting students for application of LMS. Accordingly, to lower the feeling difficulty in using BLS, it should be designed user-friendly to stimulate them. Hamid, et al. (2020) supported that design of LMS bears on ease of use of system that demands improvements relevant to interface and interactional design. They thought that one of the most features of LMS is an accessibility all time long, which allows students to use and do learning tasks, hence, it eases their leaning and promotes their performance, in addition to that, the discussions in LMS was more active compared with face-to-face learning. They also reported that thought-provoking questions and feedback by instructors are substantive ways for students' engagement and motivation in LMS platform that create reinforcing their performance, then, at the same time,

empowering effectiveness of LMS. Moreover, they viewed that usage of LMS is directly proportional to ease of use system.

Unexpected result obtained from study of usage of Blackboard WebCT components such as course content, assignment, discussion, chat, learning module, mail, calendar, announcement, and web links in blended learning carried out by (Ituma, 2011) was the highest per cent of students never use chat element, despite it is one of significant interactive components. This might, as his argue, result from utilizing personal e-mail instead of chat to contact with others, and designing the module with narrow range for teamwork activities. Therefore, integrating group based assignment and its tasks into the module may lead to increase rather high use of interactive elements such as discussion, mail, chat. On the contrary, the course content component instead of participation via chat and discussion elements was used very highly by students in instructional process. Such implies that the more active learning components like simulations and games may be requested to be included in Blackboard WebCT to go some way towards supporting involvement and interaction.

As a result, the communication and ease of use is considered as an axis that contributes effectively, in some degree, to students' perceptions towards the satisfaction with the transformation to BLS in the wake of COVID-19 disease period, meaning that it is a somewhat satisfaction index. Wherein an easiness of BLS usage enables the students to catch up the announcements and information on time to be informed about progress as appropriate. It also allows to access readily to instruction available resources and materials to support the learning and teaching process remotely. As well as, BLS is able to create the interactive communication among users through Blackboard Collaborate tool (virtual classroom), which provides opportunities to conduct the discussions among individuals or groups, correspondences and live-sessions and to receive the feedback from academic staff/staff. This would contribute pretty much to promote the students to participate in learning activities actively and regularly, this in turn will reduce a sense of monotony or distraction, even feeling isolation owning to lockdown actions, leading to improve the performance and the learning outcomes. That result might be due to the quality of BLS design, which is characterized by an efficient and easiness that provides a short response time to gain information and feedback. It can be stemmed from the previous knowledge

students possess to use technology tools or this kind of system that helps them to understand how to deal with it. As well, having freedom to study by their pace and time to take part in the instructional activities as well as accessibility of educational features and materials the BLS has might be valid grounds for that. It may be also resulted from attention to be paid to set up the materials tailored to the needs of the students in all of the levels. Moreover, The author attributes a cause to that the features BLS enjoys that can be easily learned may play a role to spur the students' curiosity to discover them and practice them in the learning process. It can return to that all facilities and tools are within one frame, as the students are able to get to resources and materials no matter what time and place. Some those reasons are aligned to what were listed in the DeLone and McLean model of information systems success (2003), as they were used as measures of system quality. Concerning the comparison between students, the postgraduate students are spotted to be superior in their perceptions that BLS is an easy tool to use and communicate as compared to the undergraduate students.

Some traits that BLS enjoys can be inferred, in the view of the above discussion, among them: accessibility of materials and resources, transferability of knowledge, availability of academic staff, staff and materials, live broadcasting, plus possibility of networking and communication, and ease of usage.

3.3.2.1.5 Challenges Axis

Having some technical problems or even any difficulties in LMS is possible owing to abruptly transition of educational process method. Conducting effective distance education in the background of inexperience and immediate need is a real challenging Bentata (2020). The problems caused by distance education have been discussed by several scholars in the midst of COVID-19 time (Emiroglu, 2021). "There may be some challenges or even obstacles, as with all new systems, that impede this transition to or integration into the new paradigm" ACAR & KAYAOGL (2020). Therefore, Giray (2021) raised questions on the challenges, positive and negative facets of online learning among COVID-19 to evaluate students' satisfaction. As such, seven items, which are a sense of isolation, time-consumption, readiness of use (having intention), cost, increasing family time, personal improvement and practice of new activities during COVID-19 are

enshrined in the survey to attempt to reach out to learn about obstacles that may impair the students to make use features of BLS. In addition to that, to monitor the changes emerged in the college student' life over the unforeseen transformation into BLS. Just as the aforementioned axes try to uncover the advantages and disadvantages of BLS, the Challenges axis attempts to disclose some of them.

Despite of an ineffectual association between Challenges and Satisfaction axes, it, as evidenced by analysis, confirms having a statistically significant impact on students' perceptions towards satisfaction with the BLS. Therefore, it possesses the least effective contribution to students' satisfaction with the transformation of BLS, meaning that it is the least crucial predictor of the satisfaction with BLS. In addition to that, it has a statistically significant disparity between undergraduate and postgraduate students' perception as concerns the satisfaction with the full-fledged transformation towards BLS during COVID-19 disease period. As well, this disparity shows to be tending to postgraduate students' perception. Namely, the postgraduate students' perceptions as to the satisfaction with the transformation into BLS are revealed to be a bit more positive than the undergraduate students' perceptions, the same thing is applicable to their own seven items or indicators.

Feeling consumption of time when usage of BLS is moderately noted as a challenge by the student respondents, stated differently, BLS is fairly saving-time. That is aligned, to a certain degree, with (Al-Balas, et al., 2020; Al Rawashdeh, et al., 2020; Carvalho, et al., 2011; Ibrahim, et al., 2021; Siagian, et al., 2020;) where the students voted that LMS or online learning is viewed to be saving-time, while (Beltekin & Kuyulu, 2020; Morgan, 2003; Prescott, et al., 2013) think otherwise. For the student who do not have time to study in traditional in-class environment, (Siagian, et al., 2020) confirmed that LMS is able to overcome this barrier, and provides learning without being bound by time or space. A sense of time-consumption during utilization of BLS is considered to be a bit more feeling by the postgraduate students than the undergraduate students. It can be claimed that BLS has a moderate ability to save time that is spent to practice the learning activities, as the students do not have to take the transportations back-and-forth for going to their campus to attend the classes. Another reason behind that may be friendly accessibility to resources and information needed via tools and features BLS provides, in other statement, all needs

pertaining to learning materials are in one place that aids to spare the trouble of having to look for things.

Some studies have shown that the implementation of eLearning technologies is not solely a technological solution but is rather influenced by behavioral and social context (Boateng, et al., 2016). The transformation to BLS has a challenge moderately in the current study, according to the student respondents, which consisted in a moderate closer to high feelings of isolation, while the postgraduate student respondents show to be a bit more a feeling of isolation than the undergraduate student respondents are. On a similar note, (Abbasi, et al., 2020) mentioned that an immense number of respondents felt isolation within online learning, in other terms, there is limited students-teacher interaction. Aboagye, et al. (2021) thought that the online education makes leaners feeling isolated; subsequently the interaction between the learners and lecturers is very essential to encourage socialization. Tümen Akyildiz (2020) noted that isolation was attributable of the absence of communication with lecturers. Although the student respondents in this research confirmed that BLS possesses an interactive communication, but they are still feeling moderately loneliness. It might be because of low self-confidence, inopportune home conditions, fears of getting COVID-19, poor habits for instance, malnutrition, lack of exercise or keep sitting for a long time in the sample place.

In contrast, as (Parker & Martin, 2010) analyzed, the online and blended students rated 'I felt isolated' very low, meaning that they did not feel isolated. They perceived that if the features of virtual classroom are used effectively, the interactive nature of this system, easiness of use and usefulness, synchronous capability might support a sense of community. Dickey (2004) reported that using web-logs (blogs) in distance learning helped prevent feelings of alienation and isolation for distance students. Bao (2020) mentioned that most of students' difficulties came from the absence of a good learning attitude, in some sense, problems, for instance, the absence of adequate learning materials, good learning settings, or self-discipline usually come across them in the event of being self-isolated indoors. Thus, these students will not have crucial incentives for their educational or career progression Fawaz & Samaha (2021). To resolve this issue according to the principle of sufficient support of (Bao, 2020) is that feedback in time,

plus e-mail guidance and online video instruction should be provided by academic staff members and teaching assistants to learners afterward lesson.

The student respondents also have a high readiness or intention to take part in the learning on the BLS, what indicates having high intention to study utilizing BLS amid COVID-19 with no effect of this pandemic on their willingness or readiness. It would be said that the willingness or intention students have is not considered to be as a challenge when it comes to using BLS in the shadow of COVID-19. Such might be derived from students' technological literacy and their willingness to apply their technological abilities. The previous outcome goes with (Radha, et al., 2020), which their respondents did not hold the view that eLearning brings a social change either. Because willingness of students to learn is not affected by anxiety caused by COVID-19, as per (Gautam, D. K., & Gautam, P. K., 2020), the effectiveness of online learning is also not influenced.

Alternatively, having the intention (or readiness) by learners to online learning seems to be as an impediment (Aboagye, et al., 2021), and users' readiness of LMS usage influences their opinions and the lack of readiness is resulted from insufficiency of experience in dealing with it (Nurakun Kyzy, et al., 2018). On his end, (Maqableh, 2015) detected that both ease of use and usefulness have no positive direct influence behavioral intention to use a system, while computer self-efficacy has an indirect effect on it. He appended that the support that is provided by experts during learning systems, or facilitating conditions will go some way towards assisting to cope the difficulties. As for the comparative among students' perceptions, the postgraduate student respondents have an intention or readiness in using BLS amidst COVID-19 a bit more than the undergraduate student respondents have. That may return to that most of postgraduate students have jobs that prevent them from coming to face-to-face classes, subsequently BLS marks an appropriate option for them.

Of course, the swift and dramatic transformation into online education creates several challenges of which internet problems either in terms extra financial burden or in connectivity that is going to hurt students in the first place. Thereof, indicator is listed in the survey to tell if the BLS usage will pose additional cost over students by virtue of access to internet so as to use BLS for lengthy periods of time. The responses tend to have an acceptance that accessing to BLS via the internet does not imply extra financial burden.

That may return to the fact that the university where students study is private, that is, the students belong to a class in good financial income, which enable them having the ability to endure any other charges. In addition to that, the Turkish government has taken action to overcome some internet issues like insufficient internet bundles and high costs, wherein it has given a free internet packet reached to 8 GB monthly to all students. Along similar lines, some countries as India launched free channels to render learning and teaching contents for the students (Kaur, et al., 2021). Other nations as Indonesia, internet providers have offered internet bundles service in a more affordable cost (Daroedono, et al., 2020), some loaded students laptops (Serhan, 2020). As for the comparative among students' perceptions, the undergraduate student respondents perceive that accessing to BLS by means of internet is less costly as compared with the postgraduate student respondents. This is an unexpected result due to the fact that most postgraduate students have the jobs or own businesses that help them to cover such expenses, conversely the undergraduate students who mostly are reliant on their family to provide their needs. As a result, this indicator pertained to defray the cost of the internet is not seen to be that challenging when it concerns usage of BLS in the middle of coronavirus.

Dhawan (2020) viewed that digital divide & illiteracy, and obsolescence and technology cost are deemed to be challenges faced online learning. Digital gap, upon (Kado Kado, et al., 2020), marks major challenge to equal education. Likewise, the pricing and cost is the one of the core difficulties to implement the LMS (Saidi, et al., 2021). The financial burden resulting from using internet data serves as the challenge of students, accordingly they like feel taking advantage of facilities as WhatsApp and gratis Messenger software in their lecture instructions Allo (2020). As (Daroedono, et al., 2020) added, there are financial burden other than internet costs students incur like transportation tickets, meals because of attendance of traditional in-class learning, while with LMSs most of these burdens alleviate. (Shahzad et al., 2020) are in favor of that, as the more using LMSs become, the less education cost will be. Most of students experienced barriers and difficulties like internet access, costly internet, technical issues, interaction and difficulty of usage (Rohman, et al., 2020), whereas they, as per Tezer & Çimşir (2018), had access to internet using the handheld phone, just a few of them did not by virtue of financial difficulties.

Also important is the monitoring of changes within students' social life and daily activities due to COVID-19 prevalence. The questionnaire therefore incorporates three items; increasing the time spent with family, personal improvement and practicing new activities to tell the extent to which the BLS usage influences their social behavior and personal activity in the light of COVID-19 period. Increasing in the time spent with family during using BLS is highly remarkable, where they are able to have plenty of time to talk to their family and to share their news and problems or to play with their children, to check out their school position etc. As indicated earlier, the time lost to and from university or workplace as well may be behind that, where it can be exploited more in the interest of family. That said, at the same time, it can be distractive factor making them are unable to focus on their learning activities. Regarding to the comparative among students, the postgraduate students feel an abundance of time, when they use BLS to join their lessons, which allow them to spend more time with their family as compared with the undergraduate students. It can be contended that indicator of spending time with family provided by BLS is not viewed to be challenging, but it can be an opportunity that contributes to show some changes in students' life amidst COVID-19, yet, it is still unknown whether these changes originate from the coronavirus crisis itself or from other causes.

Indeed, the catastrophic situations like COVID-19, for one, do not provide an appropriate environment to allow the students to develop themselves readily, since the self-improvement call for doing best efforts on their own to grow their skills, abilities, knowledge. All that for development their productivity, performance, efficiency and motivation within online learning mode which, in turn, will positively reflect on socialization, communication and satisfaction. The declaration of student respondents seems to follow the same lines, as the BLS is noted to be a moderate closer to high help with personal improvement during COVID-19, this goes with what is observed in the Self-efficacy axis from some good in their skills and knowledge of new tools, along with improved time management and organization, aftermath using BLS. Regarding to the comparative among students, the postgraduate students find that their self-improvement is remarkable by using BLS more than the undergraduate students. It can be also argued that personal development stemmed from utilizing BLS is not viewed to be that

challenging, yet it is able to be an opportunity to promote some positive changes in students' skills amidst COVID-19.

As with the previous indicator, the BLS moderately enables the student respondents to have the chances to practice new activities. Unexpectedly, even though the fact that all activities especially public social and physical activities were indefinitely suspended owing to the pervasiveness of COVID-19, the students could moderately practice new activities amid quarantine, this might be attributed to the same grounds described in item of spending time with family. On their part, the postgraduate student respondents perceive that BLS aid them to do moderately new activities more than the undergraduate student respondents do. Practicing new activities, where a moderate approval level closer to high, is not considered to be as a challenging indicator, but it can be an opportunity to demonstrate possibilities of BLS to change positively some students' exercises under the shadow of confinement time.

Consequently, the changes observed in the students' life and manner thanks to use BLS are deemed to be a genuine product of tight lockdown measures due to the emergency of COVID-19. This reflects how BLS contributes to the impact on students' behaviors that lead to change some habits across their life, then on their instructional process. Moreover, these changes stemmed from BLS usage do not pose challenges as much as opportunities within the satisfaction of transformation towards technology-based learning systems such as BLS in the wake of coronavirus. Which, in the same time, can give rise to inference some traits or drawbacks of BLS, depending on students' viewpoints who attended the lessons established on BLS.

Minimizing socialization was one of the limitations in online learning (Terzi, et al. 2021). As Aguilera-Hermida (2020) observed, much of students perceived that online learning helped them with spending more time with their family, practicing new activities and acquiring new skills (personal improvement). He added that the family circumstances influence the level of facilitation access to educational tools, hence, the high costs of internet bundles representative an impediment to the accessibility of LMS resources. Bataineh, et al. (2021) indicated that majority of students confronted challenges and obstacles with online learning style. Although the BLS can provide more times to practice some activities and to spend longer time with family, they held the view that this caused

distraction of students wherein it is difficult for them to get control family distraction or using technology for gaming. Some students saw that distance education, pursuant to CoHE (2021) enabled them to make more time for themselves and their courses, and allowed them to be together with family (EVİŞEN, et al., 2020). It, namely online learning system, definitely contributed to increase social mobility (Holmberg, 2005).

In view of the above, it turns out that the harsh transformation into BLS explicitly has no challenges that influence the satisfaction level, except a sense of isolation in a certain extent, even has opportunities such as increasing the time spent with family, self-improvement and practicing new activities, which contribute to adjust some students' habits and activities amid COVID-19 period. In some sense, it can be contended that a moderate saving-time, intention or readiness of BLS use, access to internet costless, spending time with family, self-improvement and practicing new activities are deemed to be as traits provided by BLS for higher education students, while a sense of isolation looks to be a drawback faced students. Briefly, the challenges axis has no ability enough to contribute highly to students' perspective about satisfaction with the full-fledged transformation towards BLS during COVID-19 disease period. Meaning that it is the least satisfaction index.

The use of Blackboard by students is mandatory owing to COVID-19 pandemic and lockdown procedures forced by government, hence, this will impact on students behavior, this in turn, significantly influence usage of technology (as Blackboard) by (Venkatesh, et al., 2003). The adoption and implementation process of LMS involve much challenges and problems that should be scrutinized (Findik-Coşkunçay, et al., 2018). They observed that if the learners see the LMS to be useful, this will give rise to increase an intention in using this system. They also detected that satisfaction, interactivity, usefulness, enjoyment, and ease of use effect on intention towards LMS use. In a similar vein, (Hamid, et al., 2020, p, 213) stated that the state emphasis on ICTs and affordability because of low prices offered by providers led to highly devices and connection availability, they confirmed that students' intention to use the LMS was affected by usefulness and utilization easiness. Alternatively, Morgan (2003) was of the view that one of challenges increasing usage of Blackboard rapidly is budgets, and touted that "budgets are constrained". However, this literature, as noted, is very old, as conducted in 2003, thus,

many things may have changed since then. Tarhini, et al. (2017) mentioned also that lack of adoption of eLearning technologies within high education institutions in some countries is due to paucity of financial resources and shortage of trained personal. In this respect, they tended to concur with Morgan (2003) and Azhari & Ming (2015), which also highlighted appropriate training as a clear need.

Kado Kado, et al. (2020) thought that challenges the most are inequality in knowledge by virtue of digital gap, lack of device and connectivity and workload of assignments, and that these challenges can be converted into opportunities by taking advantage of efficiency of instructional technological tools. In the same line, (Emiroglu, et al., 2021) reported that the most difficulties countered students were connectivity – disconnection, slow connection, and downloading, along with the students felt uncomfortable owing to isolation. That said, (Heirdsfield, et al., 2011) demonstrated that the Blackboard has interactive tools that may considerably contribute to mitigate isolation's feelings with spatially remote students. The reasons behind choice of some student to resort with learning online may return to family/work commitments and residence so far away from college. The cost of access was seen as drawback in Blackboard.

Moreover, Sari & Nayır (2020) noted that technological and system-related difficulties such as lack of infrastructure and internet access are both the problem and the source of the problem. Electricity and a stable internet connection is still a bigger challenge by viewpoints of (Dhawan, 2020; Fawaz & Samaha, 2021). The most problems students encountered were inability of access materials, technical issues, and connectivity difficulties, to find solve for such problems most of students get help from their friends Hall (2006). As (Senel, S., & Senel, H. C., 2021) noted, the absence of expert staff, technical problems, or inexperience may negatively influence online learning system. The accessibility issues as cost of internet, connectivity, unavailability of required technology, correct browsers problems, are the most challenging encountering the student with online learning (Aboagye, et al., 2021). Likewise, the main barrier that encountered undergraduate students, by (Ibrahim, et al., 2021; Kaur, et al., 2021; Rafi, et al., 2020) was the problem with network connectivity. As for the pedagogical issues, as (Tonsmann, 2014) reported that some prior researches mentioned the communication issues owing to

defect connections as the key trouble in the synchronous mode, and most respondents in his study perceive having a course concurrently is faced by a great technical obstacles. Nevertheless, (Kaur, et al., 2021) proposed some solutions for connectivity issues across diverse services such as cable networks or Direct to home, so-called Landline.

The research's findings along (García-Alberti, et al., 2021) in Spain and Peru, related to challenges of online learning in COVID-19 era, deduced that although online learning has an adaptability feature over obstacles, the lack of uniform controls that results in loss of the assessment quality, reducing the digital gap, and the absence of inclusion in tertiary education are seen as challenges. Moreover, the need to strengthen the online instruction learners to get over their low level of motivation and understanding of applied subjects. To confront these restraints is through policy-making to uphold learners' adaptability and integration with the online learning system, developing some practices and actions such as videos recorded in advance with inserted questions to ensure follow-up, and pre-prepared quizzes and surveys for remote usage. Finally, the remote assessment process remains dilemma requiring ongoing improvements and searches.

Similarly to the previous study, (Aboagye, et al. 2021) discussed in their research article was held in Ghana, an important challenges such as accessibility issues, social issues, lecturer issues, academic issues, generic issues, learner intention and motivation, and demographics experienced the online learning students in COVID-19 period. They were assertive that tertiary students were not ready for an online learning experience and accessibility issues as cost of internet, connectivity, incompatible devices are the most crucial challenge. It was followed by social issues, lecturer issues, academic issues and generic issues respectively. They also argued that before the full-fledged transformation to the online learning system, the blended method should be firstly adopted to prepare gradually the learners for online situation. They recommended reduction internet cost and ensure the connection quality by services providers, giving students devices by government and inclusion of the students in programs linked to online experience.

Therefore, in the view of all the above, it compels to that it is necessary to study profoundly and periodically problematic issues experienced by learners within LMS environments, mostly in such current catastrophic times.

3.3.2.1.6 Satisfaction Axis

Satisfaction is how convinced or pleased a user is with information system DeLone & McLean (2003). Based on Astin, the student satisfaction is defined as "the student's perception pertaining to the college experience and perceived value of the education received while attending an educational institution" (Bolliger, 2004:62). Satisfaction is "an affective learning outcome indicating the degree of (a) learner reaction to values and quality of learning, and (b) motivation for learning" (So & Brush, 2008:323). Aguilera-Hermida (2020) mentioned, according to (Kemp et al., 2019), affect incorporates the degree to which a user is satisfied and enjoyed with the previous information system utilization, the affect over the technology usage, and the one's emotional condition, and he added that the satisfaction in the activity is encompassed in the motivation. In the same time, the motivation and interaction are as assumed by (Ibrahim, et al., 2021), considerable enablers of online learning system. The current and future use of LMS depends on the extent to which students are satisfied and enjoyed about their experience towards this kind of systems (Findik-Coşkunçay, et al., 2018). The students' satisfaction is viewed as a critical matter for education process that raises misgivings during transformation process, as well as the swift transformation, that no one was ready for it, has compelled the researches to discuss student satisfaction and quality of education (Baber, 2020). On their end, (Shahzad et al., 2020) deduced that user satisfaction is significant in terms of eLearning, in some sense, there is positive relationships between eLearning and user satisfaction.

Therefore, the axis of satisfaction is listed within the survey to rate undergraduate and postgraduate students' satisfaction in regard to the completely transformation to BLS among COVID-19 pandemic, and is used as dependent variable in the research model. To this end, the respondents were told to reply on four questions related to satisfy with contents, functions, interaction of BLS, along with being helpful learning tool. Given the finding analysis as to Satisfaction axis, it reports that Satisfaction dependent variable and the other independent variables- Self-efficacy, Engagement, Usefulness, Communication and Ease of Use, Challenges is associated with each other and the correlation between them ranges positively from weak to relative strong. As the Usefulness enjoys a relative high positive correlation with students' satisfaction and the Challenges has a somewhat

weak positive correlation to students' satisfaction over the BLS. Further, the Usefulness, Engagement, Communication and Ease of Use, Self-efficacy and Challenges respectively have an effective on students' satisfaction about the BLS, i.e. statistically significant influence. The Usefulness axis shows to be the highest effective contribution to students' satisfaction with the transformation into the BLS during COVID-19, and the Challenges axis shows to be the least. Stated differently, the Usefulness axis is the most crucial predictor of students' satisfaction towards the BLS, in contrast, the Challenges axis is deemed the least students' satisfaction predictor with the BLS amongst COVID-19 disease period. As a result, it can be claimed that the Usefulness, Engagement, Communication and Ease of Use, Self-efficacy and Challenges respectively are considered as satisfaction indexes, which expressed by students. On the other side, the outcome is assertive that there is no statistically significant difference between undergraduate and postgraduate students' perceptions on the level of Satisfaction axis with the BLS. In some sense, the postgraduate students' perceptions as to the transformation towards BLS are evident not to be different from the undergraduate students' perceptions regarding Satisfaction axis itself.

As such, there is a high level of satisfaction within student respondents over BLS as a learning aid and over BLS functions, which might be attributed to the smooth design of BLS that facilitate readily accessing to various functions. Such functions are able to enable the students to follow directly and indirectly their classes whenever they want and wherever they are, to organize and manage their time upon the needs, and other several tasks. The previous experience may be another cause as well, which have them be more familiar in making use BLS features easily. In addition, possibilities of communication, feedback by academic staff, department, or staff in time, accessibility of resources, which can support the students' satisfaction and reduce resentments might be sound reasons behind that.

The student respondents declare that they are highly satisfied with BLS contents. The content is seen as significant dimension in students' satisfaction (Ong, et al., 2004). It is measured by whether it is ample, beneficial, modern and meets users' needs and has two factors the course content to examine difficulty, easiness, usefulness, and if it is interesting or boring, and the questions content that looks for whether or not they are relevant to course content, easy, clear and understandable (Maqableh, 2015:562). The

LMS contents are about assignments, reading materials, announcements, grades, notes or syllabus in the shape of files Word format, PDF, PPT etc. uploaded to or downloaded from LMS by instructors or students (Malikowski, et al., 2007:156). Sari & Nayır (2020) view that responsibility of setting course contents are not confined with only educators. Parents and students ought to be also included in the training by regulating training sessions and creating open access libraries in respect of course contents. Nurakun Kyzy, et al. (2018) see that a poor content of materials is created by inadequacy of recent pedagogical approaches instructors' knowledge in LMS environments. Micro-learning is a main modern tendency in which students opt small-sized education units to interact with learning content, as it marked over almost three-fifths % of eLearning in 2018 Lewis (2020). This topic - micro-learning- can give a chance for future research to evaluate how effective this way delivering content to higher education students in small learning units and in short-term learning activities is. The broad availability of content and courses is considered to be one of online learning strengths Dhawan (2020), this clarifies why students of university are highly satisfied about BLS contents, in addition to that flexibility that enables them to access to the materials, information, assignments and so forth, apart from the time and space.

The vast majority of respondents viewed that course contents of Blackboard WebCT like related materials, a study guide, lecture presentations (PPT), seminar notes, and were very valuable due to feelings free in their time for involvement and taking note in lessons (Ituma, 2011:63). Likewise, (Al-Salamat, et al., 2020) found that interaction of students in BLS has a very great effectiveness, but the contents have a great effectiveness, and educational tools and techniques in BLS are also a great effectiveness. The students seemed to be satisfied with content (Bataineh, et al., 2021; CoHE, 2021; Osman, 2020; Salter, et al., 2014; Terzi, et al. 2021), while they did not per as Karadağ & YUCEL (2020).

The interaction was a motivating factor for students, thus, its absence is considered a challenge Aguilera-Hermida (2020), wherein students interaction enables them to educate from one another through comparison of their assimilation and the manner they would implement it to new conditions (Tonsmann, 2014, p.62). Interaction quality plays a vital role in assessment of students' satisfaction with LMS (Koh & Kan, 2020), and in

course effectiveness (Rovai & Barnum, 2007). Distance education delivers learner-instructor interaction, learner-learner interaction , and learner-content interaction (Ruzgar, 2004:24) and the effectiveness of LMS thereby is linked to interaction between students, instructors, and technology (Vasanth & Sumathi, 2020:33).

As with indicator of 'BLS contents', the student respondents have a high satisfaction level with BLS interaction. This is in harmony with communication and ease of use axis in which it confirmed that BLS could readily provide the interactive communication among students to be able to interact with their peers and instructors, while interacting with content as well. That may explain why they feel satisfying with interaction within BLS in COVID-19 time on which the students can conduct individually or collectively discussion sessions, sharing knowledge and information and accessing to contents and functions. This result is consonant with (Al Rawashdeh, et al., 2020; Ibrahim, et al., 2021; Osman, 2020; Parker & Martin, 2010; Senel, S., & Senel, H. C., 2021; Siagian, et al., 2020), conversely the students expressed there is lack of interaction during online classes (Al-Balas, et al., 2020; Daroedono, et al., 2020; Giray, 2021; Koirala, et al., 2021; Serhan, 2020; Tümen Akyildiz, 2020). To reinforce an interaction across BLS, (Kearsley & Shneiderman, 1998:23) suggest that the use of technological tools, such as online conferencing, video/ audio conferencing, groupware, email, and network databases, significantly contributes to increase the degree and ease of interaction between all involved, plus access to information.

All things considered, it can be contended that the satisfaction with the transformation into BLS demonstrates to be highly felt and manifestly shows across the satisfaction level with contents, functions and interaction, in addition to being the helpful learning tool in the light of COVID-19 disease period. The reasons behind that are the same as those mentioned in the axis of Communication and Ease of Use, plus that BLS is viewed as a helpful learning tool, which has opportunities to change constructively in students' abilities, because of lack of challenges and difficulties, in some degree, hamper to the educational process. The same result is noted by Liaw (2008), wherein the students had a high satisfaction with these items. Meaning that the students' satisfaction does not differ, be it before or during COVID-19 disease period.

In a similar line, most students were thought by (ACAR & KAYAOGLU, 2020; Allo, 2020; Bączek, et al., 2021; Koirala, et al., 2021; Osman, 2020; Rafi, et al., 2020; Siagian, et al., 2020; Sofi & Laafou, 2020; Tezer & Çimşir, 2018) to be satisfied with experience of online learning or LMS, on the contrary what (Abbasi, et al., 2020; Al-Balas, et al., 2020; Kaur, et al., 2021) saw.

Bolliger (2004) concluded that student satisfaction is a core factor in establishing the pass/fail of online students, courses, and programs. He also explored that instructor, technology and interactivity are the main factors to identify student's satisfaction in online learning system. Likewise, students' satisfaction with online learning is a core dimension for successful experiences. Quality of the usage easiness, content, licensing, and interactivity are basic elements for selecting online learning resources (Aguilera-Hermida, et al., 2021). González Rogado, et al. (2014) reported that learner satisfaction differs drawing on the didactic methodology used in the educational process, and that virtual learning enhances this methodology by using favorable technology tools. In an effort to surge students' satisfaction, some ideas could be proposed for instance, developing adequate methods and materials, making evaluation and assignments conductive with online environment, encouraging interaction instructor-student by allocation office hours and student-student, stimulating students' engagement through Q&A sessions and bettering instructional platform Giray (2021). Considering more differences among students' opinions in respect with LMS quality contributes to strengthen student satisfaction (Koh & Kan, 2020).

In this context, in a cross-country study held in both South Korea and India by Baber (2020) is intended to lead to establish the determinants that have an impact on undergraduate students' learning outcomes and student satisfaction with online learning amongst COVID-19. After data was compiled from 100 undergraduate students and was analyzed by various statistic tests, the findings appeared to support motivation, interaction, instructor knowledge and facilitation, and course structure (content) as factors influencing student satisfaction and learning outcomes of students. In addition to prior result, it is found that student satisfaction was affected by students' perceived learning outcome.

In a comparative and quantitative study of level of satisfaction pre and amid COVID-19 for 144 international students conducted in Turkey by Hakim & Kawamorita

(2020) reported that students would rather in-class than online education. Furthermore, satisfaction of students with on-campus education was more than online mode. This result might be stemmed from the fact that factors related to student's satisfaction on-campus such as proficiency, helpfulness, methodology, effectiveness, facilities, quality, easiness, accessibility, feedback impact more on international students than online study. It is all return to deficiency of digital skills with faculty members. However, they anticipate that satisfaction level of online learning with students will be better in the future.

3.3.2.2 Impact of All Axes on Satisfaction with BLS

The degree to which the students perceive any electronic LMS, like BLS, as avital to them, draws on user satisfaction, usage and acceptance (Alokluk, 2018). He states further that the usefulness is how crucial the course tool for users is concerning educational activities according to their perceptions, and the usage of the BLS rests on system adoption, organizational culture, and user preparedness as supported by previous studies. Lee, et al. (2010) mentioned that learners' adoption and use is mandatory for effective BLS. Measuring user acceptance and satisfaction is a basic element in managing electronic learning initiatives. Furthermore, the extent to which the users feel satisfied with Blackboard services or not is defined as E-satisfaction Al-hawari & Mouakket (2010), and the positive attitudes as per (Ribbink et al., 2004) very often create satisfaction. On his side, Dhawan (2020) as well confirmed that preparedness is a prominent aspect to adapt online learning (BLS) in wake of corona virus pandemic, wherein initial reports based upon Osman's research (2020) pointed out to that COVID-19 has a significant affect the rate of adoption of the remote education.

Therefore, in the light of the above discussions, the author has attempted his best to ascertain the satisfaction of higher education students with BLS in the wake of COVID-19 incidence and lockdown measures, through students' perceptions via conducting the comparison between the undergraduate and postgraduate students' viewpoints. This comparison is done by dividing the items into six axes to attain so, which are Self-efficacy, Engagement, Usefulness, Communication and Ease of Use, Challenges and lastly Satisfaction, on which the differences among students' insights towards the satisfaction with transformation show, where all axes were included in the single model. As was

expected, the Usefulness, Engagement, Communication and Ease of Use, Self-efficacy, and Challenges axes spell out to have an effect on students' satisfaction - i.e. a statistically significant impact, as a result, they enjoy respectively an effective contribution to the students' satisfaction with the BLS, stated differently, they show to be satisfaction indexes. Getting back to the comparison of the undergraduate and postgraduate students' perceptions, it obviously turns out that the Self-efficacy, Communication and Ease of Use and Challenges axes rather than Engagement, Usefulness and Satisfaction axes have the statistically significant differences in favor of postgraduate students' perceptions. Moreover, the Overall axis has a statistically significant difference for postgraduates as well, then it can be claimed that the postgraduate students' opinions report to be more convinced that the full-fledged transformation process into BLS in the wake of COVID-19 infection is satisfactory as compared to the undergraduate students' opinions.

As such the postgraduate students are apparent to be greater well versed on using BLS thanks to their feeling confidence to this system, acquiring new tools and moderate learning skills which enable them to be able to manage and organize their time in a manner appropriate to their needs. In other terms, they look to be having self-efficacy more than the undergraduate students are. Due to Self-efficacy axis possesses an effect and contribution to students' satisfaction, it has higher effective contribution to the postgraduate students' perception with the BLS, compared to the undergraduate students, that is, the transformation to BLS during the epidemiological lockdown period is considered by the postgraduate students' views to be more satisfactory in comparison to the undergraduate students' views.

They, namely undergraduate and postgraduate students, also show to be moderately able to attend the online classes in which they feel fairly encouraged to participate effectively in the instructional activities as compared with traditional classes, which gives rise to an increase barely of concentration while delivering lessons and then to a surge moderately of their academic scores. It can be contended that their engagement in BLS platform amidst COVID-19 appears to be not different from each other, in some sense, the satisfaction of transformation towards BLS during the epidemiological lockdown period due to COVID-19 emergence is considered by both undergraduate and postgraduate students' views to be the same - i.e. a non-statistically significant difference.

On the other side, Engagement axis demonstrates to have a high effective contribution to the undergraduate and postgraduate students' perception about satisfaction with the BLS. Although BLS has an interactive tool as Blackboard Collaborate, and it is also beneficial based on the students' perceptions, it is barely or moderately able to hold the attention of the students. This may be traced to their household life is filled with several distractors and joints for instance watching TV, play game, housework, children, noise etc. that influence concentration during online learning. Which reflects negatively on the satisfaction with BLS, as it fairly manages to encourage them on the class attendance and participation, stated differently, BLS can be a bit more boring to learn. It can be said that concentration, attendance and gaining grades (learning attainment), plus the involvement in BLS show to be sub-par or moderately compared to on-campus classes delivering.

The BLS, according to postgraduate students' perceptions that demonstrate to be inclined being not disparity on the satisfaction with BLS use compared to the undergraduate, plays a moderate role in increasing fairly their productivity because the BLS contributes moderately closer to high to motivation in which it is able to enhance the instructional efficiency. It also plays a high role in spurring highly their learning performance and in providing highly an auxiliary evaluation tool, wherein they could follow easily their evaluation via exam's grades provided on the BLS platform or feedbacks from academic staff any time, namely BLS can be characterized as a satisfying learning evaluation vehicle. Consequently, it can be asserted that they both, undergraduate and postgraduate, feel the usefulness with using BLS in the same line, in some sense, their perceptions about the satisfaction with transformation into BLS during the epidemiological lockdown period due to COVID-19 emergence are unconsidered as different - i.e. a non-statistically significant difference. Since the Usefulness axis has the highest effect on students' satisfaction with the BLS, this indicates that it has the highest effective contribution to the undergraduate and postgraduate students' perceptions concerning satisfaction towards the BLS. That said, that does not negate the existence of usefulness across BLS, albeit a moderate productivity and motivation, and a moderate efficacy closer to a high.

The postgraduate students perceive that they are more able to communicate readily with each other or with their academic staff/staff, wherein BLS allow them to make

effectively discussion sessions via the beneficial virtual classroom feature, submit their active inputs and get timely to the information, feedbacks and announcements provided by academic staff/staff. The cause of all that is attributed to easiness of use of BLS and receiving the required technical and epistemological support through feedback from academic staff/staff in time, plus the accessibility to the resources and materials. In contrast, the undergraduate students' sense of communication and ease of use of BLS fall short of the postgraduate students. It turns out that the postgraduate students can use the BLS more easily than the undergraduate students can, which enables them to communicate more effectively and actively in the middle of COVID-19 contagion. Such points out that the Communication and Ease of Use axis has an effective contribution to the postgraduate students' perceptions towards satisfaction with the BLS compared to the undergraduate students. Namely, the transformation into BLS during the epidemiological lockdown period is considered by the postgraduate students' views to be more satisfactory in comparison to the undergraduate students' views - i.e. a statistically significant difference.

The challenges and difficulties or changes, except a sense of time-consumption and isolation, and a cost internet access coped by the postgraduate students seem to be less than those made by the undergraduate students. Since a costly internet access and time-consumption are barely expressed by the students, they can't be seen as real the challenges for them as the feeling of isolation moderately noted by them. Although postgraduate student respondents have a high intention/readiness to use BLS, the sense of time-consumption and isolation, and internet expenses of access to BLS are not seen by the undergraduate students as a challenge as much more as the postgraduate students. Further, in spite of the fact that the feeling of isolation is shared by the postgraduate students more than the undergraduate, the BLS provides moderately the opportunities to assist to bring some positive changes in the students' life, such as practicing new activities and improving their personality, and provides highly a chance to spending more time with their family. As well, these changes are spotted in the undergraduate students less compared to postgraduate students. It can be clearly noticed that the postgraduate students does not experience the real challenges with using BLS among COVID-19, except the sense of isolation, more than the undergraduate students do, and they, on top of that, get

opportunities to change their life practices better than their peers in the undergraduate. Even though it is indicative of the fact that the challenges axis spells out to be the least predictor and contributor to students' satisfaction, it has a higher effective contribution to the postgraduate students' perceptions about satisfaction with the BLS, compared to the undergraduate students. In some sense, the transformation to BLS during the epidemiological lockdown period owing to COVID-19 emergence is considered by the postgraduate students' viewpoints to be more satisfying in comparison to the undergraduate students' viewpoints - i.e. a statistically significant difference.

Finally, the satisfaction level of using BLS as learning assisted tool does not tend to the postgraduate students or to the undergraduate students, in some sense, their perceptions are not different from each other, wherein they both have a high satisfaction level towards BLS. Meaning that it enables them to interact, to access to contents and to use functions satisfactorily and efficiently. Since BLS activities or functions are dependent highly on their interactivity levels and immediate response rates, which are, as noted earlier, met by means of interactive communication among students themselves or with their instructors/staff or with contents. As well, due to students can control over the learning content and time. As a result, an indicator of the overall satisfaction level of utilizing BLS as a learning helpful tool is enhanced by further indicators of the satisfaction level, which are contents, functions and interaction. Furthermore, it is an indication of the fact that the satisfaction axis has been impacted respectively by the Usefulness, Engagement, Communication and Ease of Use, self-efficacy, and Challenges axes. Where their effective contribution to both undergraduate and postgraduate students' perceptions regarding satisfaction with the BLS are discrepant. That said, their perceptions about their satisfaction with the transformation into BLS during the epidemiological lockdown period due to COVID-19 emergence are unconsidered as different - i.e. a non-statistically significant difference. Notwithstanding the students' satisfaction level with BLS, based on students' approval, demonstrates to be high, an Engagement in BLS is still substandard in comparison with on-campus education format. However, it is worthwhile that the feeling satisfaction status is not necessary that to mean that the BLS is useful, effective and efficient. Some researchers such as (Koirala, et al., 2020) affirmed that there is satisfaction feeling, but instead, overall negative view about online learning system

experience. Despite negative attitudes around such systems, the overwhelming majority of students and researchers believe that BLS (LMS) is still the optimal resolution for carrying on the learning and teaching process among emergent situations such as the one we are currently living.

As a result, it can certainly be inferred that the Usefulness, Engagement, Communication and Ease of Use, Self-efficacy and Challenges axes respectively have an effective contribution to the high education students' perceptions about the satisfaction with the BLS during COVID-19 disease period. Meaning that these axes are seen as predictors of students' satisfaction, that is, these axes enhance the students' perceptions in terms of the extent to which the BLS is satisfactory in their education process under COVID-19, this in turn, reflects to be an satisfaction index. However, the effective contribution of these five axes to the satisfaction axis with BLS, ranges from the highest to the lowest effective contribution. As the most critical axis that positively influenced students' satisfaction toward BLS is Usefulness. Which means that Usefulness axis is a significant factor, which has the highest effective contribution to students' satisfaction with the transformation to BLS. As well, Engagement axis is an important predictor of students' satisfaction with BLS. Stated differently, Usefulness and Engagement axes seem to reinforce highly students' positive perceptions towards students' satisfaction with BLS. Furthermore, Communication and Ease of Use and Self-efficacy axes are respectively seen as important two contributors, but to a lesser extent than the previous two axes, in term of their influence students' satisfaction with the BLS. Alternatively, Challenges is the least crucial axis that positively influenced students' satisfaction toward BLS, due to the coefficient correlation between them is extremely weak. Such implies that it is very lowly significant factor, which has the least effective contribution to students' satisfaction with the transformation into BLS. In some sense, the challenges axis appears to improve less the positive perceptions of students about student satisfaction as concerns the transformation to BLS. When it comes investigating as concerns the effectiveness of transformation towards BLS on the level of the overall axes, as evidenced by analysis, the overall axes have a statistically significant difference between undergraduate and postgraduate students' perception as to the full-fledged transformation towards BLS during COVID-19 disease period. As well, this fairly high difference shows to be tending

to postgraduate students' perception. Namely, the postgraduate students' perceptions as to the satisfaction of transformation into BLS are revealed to be more inclined than the undergraduate students' perceptions. The same thing applies to Self-efficacy, Communication and Ease of Use and Challenges axes, as the differences tend to postgraduates. Then, it can be argued that the postgraduate students perceive that the transformation into BLS during COVID-19 disease period is satisfactory more than the undergraduate students do.

In the light of all the above, it turns that the quest of ascertain to the purposes of the research it is not as easy as it sounds, considering the social distancing imposed, fears of getting the novel viral infection, scarcity of information about the university - study population, plus difficulty of accessing to these information. However, in spite of all constraints accompanied to complete the research, it can be claimed that both the main objective as well as the main question of the current dissertation were, to a great extent, met. The core aim of the study is intimately linked to figure out an answer of the main question relevant to the dissertation, which is 'How satisfied with the transformation to Blackboard Learning System BLS for high education students at a university, Istanbul-Turkey, during COVID-19 disease period is'.

In seeking to clarify the differences between the undergraduate and the postgraduate students as to the the satisfaction with BLS in the wake of COVID-19 incidence, the researcher has drawn on thirty items divided into six axes that is embedded in a single model to measure the students' satisfaction with the BLS. An impact of demographic variables on undergraduate and postgraduate students' perceptions was viewed as well. All this in order for the study to reflect a clear image about the extent to which the transition process to BLS influences the university students' education. After data has been gleaned using survey technique to empirically validate the research hypotheses, it could come to the conclusion that all axes addressed in the present study as dimensions, are considered to be of dramatic interest in the satisfaction with the sudden transition towards BLS under the shadow of COVID-19. It is certainly an indication that these axes have taken on a significant role in contributing frankly to both the undergraduate and postgraduate students' perceptions, so that all of them have been affected by an entire jump into BLS. This therefore provides ample evidence that the totally transformation to

BLS has a satisfaction by all higher education students, with more satisfaction in favor of postgraduate students. Whereby it, namely BLS managed to create an enabling useful environment for self-efficacy and skill, communication built on the easiness of usage, moderate engagement, opportunities of change, while minimizing the challenges and difficulties, which eventually reflected on their high satisfaction with the transformation, subsequently on their perceptions to value BLS as a satisfactory learning tool among COVID-19 pandemic. Nevertheless, it is clear from the evidence in this study that there is significant differences between the undergraduate and postgraduate students' perceptions in terms of Self-efficacy, Communication and Ease of Use and Challenges, along with the Overall axes. As the undergraduate students show to be a bit more vulnerable of the sudden leap in the method of instruction, from conventional to online mode applied to BLS, compared to their peers in the postgraduate. On the other side, the promotion of engagement should be taken into account to improve the usefulness of BLS that contributes considerably in the the satisfaction with BLS, including during COVID-19 period. So, in a nutshell, it can be affirmed that the findings reflect a clear image about the satisfaction with the transformation towards BLS for higher education students, but it is more clearly demonstrated by the postgraduate students. In other words, the transformation into BLS during COVID-19 disease period is satisfactory for the university students, but it is greater satisfactory for the postgraduate students. Moreover, it can be claimed that the undergraduate students' less positive perceptions towards BLS might be caused by human-related factors or may be resulted from a compulsory use of system.

To the best of researcher's knowledge, at least up until now, there is no literatures taken on interrogating the satisfaction with the transformation to BLS across evaluating the differences concerning 'the program student studies' namely Bachelor, Master & PhD. Therefore, it is not easy for the present study's conclusions to be compared with that literature reviews on this basis, hence, the existing results are going to be comparable with that of prior research regardless of whether the current education level that student studies is undergraduate or postgraduate. As such, this finding is in agreement with that of (AlKhunzain & Khan, 2021; ACAR & KAYAOGLU, 2020; Elsamanoudy, et al., 2020; Isik, et al., 2010; Saputro, et al., 2021; Tonsmann, 2014; Tubagus, et al., 2020; Terzi, et al., 2021; Tezer & Çimşir, 2018), wherein the online learning or LMS was explored to be

useful learning environments, as opposed to (Beltekin & Kuyulu, 2020; Emiroglu , et al., 2021; Rohman, et al., 2020; Tubagus, et al., 2020). Likewise, the online learning or LMS mode was favored by the students to conventional in-class education approach (Al Rawashdeh, et al., 2020; Ibrahim, et al., 2021; Sofi & Laafou 2020), while (Abbasi, et al., 2020; Adnan & Anwar 2020; Aguilera-Hermida, 2020; Ahmed, et al., 2021; Almaghaslah, et al., 2018; Bataineh, et al., 2021; EVİŞEN, et al., 2020; Kaur, et al., 2021; Serhan, 2020) thought to the contrary.

One of case study objectives carried out by (Hamid, et al., 2020) in Brunei is explanation of the effective factors of LMS. The study model, counted on the Technology Acceptance Model (TAM) in addition to the following factors system accessibility, subjective norm, technical support and system design, was examined by 98 students using online survey formulated via Survey Monkey platform to identify the factors affecting students' acceptance of LMS. The results revealed that the usefulness and ease of use factors have an effect on using LMS and both of them are significantly influenced by design of system and subjective norm of lecturers. Furthermore, the LMS helped greatly to enhance communication, engagement, interaction with students and acquiring knowledge, and made learning materials and resources readily available anytime that will contribute to increase learning and teaching effectiveness on one side and to evolve students' perceptions to be more confident and comfortable then more satisfied in using the LMS on the other side. They listed the network stability as challenge in using LMS. To leverage the satisfaying usage of LMS, simplicity and usefulness of design, development of handheld phone applications, new motivated ways for attracting students and optimizing network infrastructure could be taken into account.

With 677 respondents have been checked by (Emiroglu, et al., 2021) in Turkey employing quantitative survey for establishing their insights in relation to the impact of distance learning while COVID-19 period and the difficulties they came across. All participants filled voluntarily out the self-reported 5-point Likert scale questionnaire. The study focused on the main factors for example, accessibility, usefulness, ease of use, communication, involvement, effectiveness, flexibility, motivation. Majority of students had negative attitude towards the online instruction, however, they were enthusiastic to operate on it, as well as it helped them with communication and cooperation with their

classmates and access to materials, and was easy to use and useful. On another note, the most challenge was connectivity, along with socialization issue (isolation). Additionally, these difficulties originated from online learning itself and its technological complications.

In their study held in EUA, (Al Rawashdeh, et al., 2020) brought together data from 60 students by using the questionnaire and two tests as a methodology with a view to inspect effects of the transformation to online learning using BLS platform while COVID-19 infection. To accomplish that, measuring the difference between students' achievements before and after the move and identifying students' opinion in this shift regarding confidence and interactivity, effectiveness, preferences and effort along with pros and cons have been done. The results showed that there is a significant difference between students' achievements in online versus conventional mode. Which means that the transformation to online learning system (BLS) is useful, and that students felt a positive experience towards BLS. Moreover, BLS was found to be more interactive and favored in contrast of traditional instruction, confident, helpful and useful, but putting forth more efforts is requested. For its traits, it was revealed to be less time consuming and flexible, while the technical problems was suffered by most of students.

Drawing on some statistics, Lewis (2020) argues that there academic orientations for online learning exists, and that students in higher education depend on online education for their learning, wherein students report that they learn five times more material in online mode compared with traditional learning. He adds that student retention proportions for online learning are higher in comparison to in-class education format. Saputro & SUSİLOWATİ (2019) explored that LMS is practical, effective and simple, given all respondents' view. The scientific-based LMS is able to be applied on other education levels and courses. They argued that the effective characteristics of the LMS could be appeared on the online learning system, and the information simplicity and speed. The practical characteristics of the LMS on learning can be reflected by accessibilities of communication, evaluation, assignment submission and discussion.

It is a matter of concern, as it has mentioned earlier, that the fast transformation into BLS or online learning because of the pervasiveness of coronavirus, which has resulted in the lockdown procedures is more likely to hold several problems and challenges related

to isolation, remoteness, disconnectedness and other, which might influence satisfaction with such systems. In this regard, to better online learning, (Gautam, D. K., & Gautam, P. K., 2020) proposed, as per students' opinion, providing internet with low-costs and high-capacity by state and the educational institutions, training faculty members, students and staff on using online learning platforms, and supplying college e-mail ID of official remote learning gateways and apps. Likewise, (Bao, 2020: 113) proposed the following five guidelines to optimize students' education engagement and concentration so as to ensure the satisfactiom with the transformation towards online education. Sufficient backstopping by academic staff, high-grade engagement; backup plan for exceptional circumstances, a strong link and significance among student education and instructional design for online education, and providing educational information and knowledge online effectively. Moreover, seven elements of satisfaying and effective online learning (Blackboard) in wake of COVID-19 have been established by (Huang, et al., 2020) as the following:

1. Directing students to adopt effective education approaches utilized individually/collectively.
2. Delivering interactive friendly digital educational materials and resources like e-books, quizzes, micro-learning and games.
3. Using adequate educational tools.
4. Ensuring reliable network infrastructure.
5. Following teaching strategies, such as case studies, experiential learning, etc., to support efficient approaches for organizing the education.
6. Enabling the partnership among the stakeholders (organizations, schools, governments).
7. Providing real-time supportive services by using effective and efficient education resources, tools and technologies, and by cooperating between community, government, education institutions, and families.

The advantages and disadvantages of online learning system or LMS including challenges and difficulties issue have been discussed by several scalars (Al-Balas, et al., 2020; Alim, et al., 2019; AlKhunzain & Khan, 2021; Allo, 2020; Al Rawashdeh, et al., 2020; Bataineh, et al., 2021; Bączek, et al., 2021; Butola, 2021; Dhawan, 2020; Emiroglu,

et al., 2021; EVİŞEN, et al., 2020; García-Alberti,, et al., 2021; Gautam, D. K., & Gautam, P. K, 2020; Giray, 2021; Kaur, et al., 2021; Muthuprasad, et al., 2021; Nayak, & Suesaowaluk, 2007; Senel, S., & Senel, H. C., 2021; Serhan, 2020; Terzi, et al. 2021; Tümen Akyildiz, 2020).

The quest to find the traits and drawbacks of BLS accounts for one of the purposes of the present research, which can be inferred from the prior intensive debates. As with several literature that came to the enormous advantages and disadvantages of online learning or LMS, this study tries to figure out some of them, which may help to establish vulnerabilities to strengthen them and stakes to avoid them so as to look for suitable alternatives and solutions. As a result, it can be claimed that the merits listed below demonstrate to be the main traits of BLS:

- Increasing the self-efficacy of students, as skills in the time management and organization, acquiring knowledge of new tools.
- Enhancing sense of independence in learning student life that enables to learn free-range and at their own pace, while promoting more the reliance on self.
- Trustworthiness in the employment of BLS to support remote instructional operation via effective tools and features open on it.
- Addition value knowledge-related, to a certain degree, which is the main aim of the educational process, especially in the exceptional situation such as the one we are currently living.
- Providing an interactive environment that fosters to improve the efficiency promoting in turn, the performance.
- Delivering live-streaming.
- An equitable accessibility to the resources and materials that are needed to enrich the education process.
- Having the assessment tools that help to render various exams patterns with making accessible online anytime, anywhere, as well as an aid to get easily and automatically to grades.
- Ability to communicate real-time among the students each other and with their academic staff/staff.

- Conducting discussion sessions, individual as well as collective, and submitting and receiving the subjects.
- Availability in either educational resources and materials or academic staff/staff round-the-clock.
- Easiness of usage of the tools, functions and features that is provided by BLS
- Sufficient flexibility to accommodate different circumstances.
- Diminishing the effort taken to achieve some tasks or to access to them.
- Less consumption of time, while moderate saving-time.
- Less cost of access to internet bundles thanks to free internet package aid from government.
- Positive change in family life through enabling highly spending more time with them during COVID-19.
- Practicing new activities and exercises in the wake of COVID-19 pandemic, while improving personality.

The most drawbacks derived from students' perceptions towards BLS usage are of which:

- A poor participation in the learning activities, to a certain degree, because the increase level of the involvement activities in online lessons is not that clear.
- Fairly limited productivity that might affect accomplishing the tasks well.
- A sense of the reluctance for attendance of online classes, which may influence engagement in the lessons to enrich an interactivity as compared to face-to-face education.
- Lack of concentration, to a certain extent, during online lessons that then reflect on the performance and on attaining a good learning outcomes and scores compared with on-campus instruction delivering.
- An insufficient motivation and interest to engage effectively to learn online that might lead to feeling reluctance for participation.
- Feeling isolation and loneliness that may lead to affect the psychological and mental health due to the prevalence of COVID-19 disease and stay-at-home warrants.

On the whole, in view of the above, the higher education students' perceptions evaluated by six axes: self-efficacy, engagement, usefulness, communication and ease of use, challenges and satisfaction, about the transformation towards BLS during COVID-19 disease period tend towards be approval as concerns the satisfaction with BLS, despite some drawbacks. Such means that each axis has an effective contribution to their opinions towards satisfaction that reflect considering that the transformation into BLS amongst COVID-19 pandemic and under tight lockdown measures is of satisfying. As well, the postgraduate students' perceptions are demonstrated to be more inclined to consider that the shift towards BLS is more satisfactory during COVID-19 period in comparison with that of the undergraduate students. In other terms, the satisfaction of transformation to BLS for the postgraduate students under the shadow of COVID-19 is shown to be more than that of the undergraduate students. Moreover, demographic dimensions except gender and the kind of device preferred, place of the living and the willingness in using BLS in the future, have an effective on the high education students. It can be said that the axes emerging in this research are consistent with some factors stated in some literature (Albashtawi & Al Bataineh, 2020; Heirdsfield, et al., 2011; Kado Kado, et al., 2020; Siagian, et al., 2020; Sofi & Laafou, 2020). Furthermore, the result of this study was endorsed by these studies, which confirmed that LMS is considered to be satisfactory, efficient and useful.

Sofi & Laafou (2020) carried out study in Morocco to determine effect of using LMS platform (Google Classroom) in teaching midst coronavirus. Methodology used was quantitative approach for purpose obtaining the data from 76 participants via questionnaire and qualitative approach through conducting interview with instructors. They reach to that students had a positive perception and satisfaction towards using LMS, and applying LMS through mobile was effective. Moreover, traits of LMS are considered to be easy to use, flexible, accessible, available resources, acquiring knowledge as well as communication and interaction. This finding can be traced to the technical characteristics of platform. An insufficiency of infrastructure constitutes flaw. Nevertheless, some proposals should be taken into consideration to enrich this experience such as continuous training on it, developing interface and contents, providing needed infrastructure and generalizing the experience in other courses and subjects.

In literature to identify extent of use of LMS (Google Classroom) among COVID-19 for Bhutanese students by (Kado Kado, et al., 2020). The five-point Likert scale survey tool used to examine students' opinions was is applied to obtain the quantitative data from purposive 100-students sample and the qualitative data were extracted by interview technique. The quantitative data were analyzed in terms of the next dimensions perceived usefulness, perceived ease of use, facilitating conditions, communication and interaction, hedonic motivation, and challenges and opportunities in implementation. The results of mixed approach analysis confirmed that the switching into these systems has led to go up embracing online learning, and that LMS is useful for online teaching and learning process and is an effective tool compared with formal in-class education. Likewise, it contributes to creating an environment of individualized learning, enhancing creative and critical thinking skills, as well as enforcing competencies of communication, interaction and collaboration. However, the students faced some obstacles such as lack of devices and connectivity resulting from digital divide. In other statement, LMS is seen as usefulness, ease of use, and facilitating, communication and interaction tool, yet, it is not that motive.

In rather similar study of the current research carried out by (Heirdsfield, et al., 2011) in Australia, pertained to use of Blackboard system, with a view to determine the features of Blackboard system by means of users' opinions. The mixed approach applied, wherein the quantitative data to identify views about using BLS were obtained by online questionnaire posted to 459 students and 43 academic staff and focus group discussions for six students and nine staff were taken place to get the qualitative data for indicating the features of LBS. The conclusion they have reached that Blackboard is seen as effective, where it has made possible availability of learning resources anytime and anywhere, accessibility of materials, readily communication amongst users, efficient use of time, interactivity, participating ideas along with collaboration, as a result, all these features helped to enhance users' learning experience in using BLS. Thus, the BLS should be seen as more than simple a repository of educational resources and materials. Nevertheless, the cost of access and printing were noted as obstacle.

In this context, in February, the Council of Higher Education (CoHE) (2021) carried out a massive survey for students and faculty members of higher education regarding their perceptions on online learning and covered all higher education institutions whilst

coronavirus period to reveal the challenges and opportunities of the swift unexpected transformation to online learning format. The sample size was one million and 255022 thousand students and 27820 faculty members from 207 universities. An online survey was applied to compile the data pertained to the next axis; online learning competences, technical infrastructure and accessibility. The results of analysis in terms of students was as following; most students were from applied majors and the rest 40% were from different disciplines. Almost three-fourths of participants are undergraduate students, 22% of them are associate degree students and 1% is doctoral students. Most of survey respondents from students stated that they had digital devices, and could access the internet and electronic course content, such means that the accessibility of internet was ample. More than half of them perceived online learning was on the same level with traditional education. Moreover, landscape of them held the opinion that they could make use of the course contents and materials delivered in online learning, and one quarter showed that online courses had a positive impact on their learning. While around half of the students stated that their instruction life was positively influenced by online learning or that its impact was not clear, 37% of which stated that it enabled them to get more time for themselves and their courses among online learning. 46% of the students favored having full-fledged on-campus learning, one-third of them wanted the education to be completely online, and one-quarter preferred to have a hybird education after the COVID-19 disease. As for evaluation ways used by online learning, most students reported that they were assessed by online exams and/or written tests, followed by homework, projects and assignments, a few of them by online presentations and verbal tests (Yekta Saraç, 2021; CoHE, 2021). As Yekta Saraç (2021) concluded, the respondents reported that there did not serious problems exist in accessibility and infrastructure, which are seen as significant factors in the transformation process. It might be traced to the necessary support provided to institutions anywhere alike. However, almost half of students were unsatisfied as to the efficacy and quality. By and large, an online learning experience was considered to be an opportunity and more flexible in providing potentialities. He recommended providing academic support, skills and values for students, as well as promoting academics experience to better motivation and quality.

On the other hand, some other studies shared contrary opinion about the satisfaction of transformation into BLS or online learning system. In analogous study of this research was carried out in Jordan by (Bataineh, et al., 2021) for gauging the extent of the use of distance education amidst COVID-19 spread and determining the challenges experienced by the tertiary students. The findings demonstrated that the extent of the use of distance education was a medium level and most of learners are dissatisfied with distance education experience among coronavirus disease, owing to some constraints such as technology and internet issues, distraction, online content design and absence of motivation. Moreover, the successful distance education counts mainly on university, student and technology. Hence, availability of devices, internet bundles to facilitate using, pre-plans of university to evolve infrastructures, training, designing so on and advisory programs of student to incentive online learning awareness, all this in an effort to drive to adoption and acceptance of online learning system.

In study, similar to the current research's purposes, held for 594 of private and public universities' students in Turkey by Beltekin & Kuyulu (2020) to investigate students' respective about distance learning mode among COVID-19 quarantine and to assess its drawbacks and positive and negative facets. To obtain data, software of Web-Based Instructional Attitude Scale was implemented. The results observed that online learning system was not as efficient as traditional education but in the same time, they believed that transformation decision into distance education format is convenient. Furthermore, it has some drawbacks such as influencing negatively students' social aspects, the lack of sense of affiliation to university, and technical problems reflected on the motivation to study. Pursuant to a previous online learning experience, the students who did not get used previously online learning system have a resistance more than who got used. Additionally, the level of class did not influenced students' view. Finally, prior training programs, countervailing training, taking thoughts of stakeholders account, optimizing infrastructure and developing applications line with handheld phones and others devices were suggested by them to make the students ready to use these systems and to partake in the quality and efficiency of education process.

A study conducted by (Koirala, et al., 2020) in Nepal, utilizing the descriptive, cross-sectional research design, the tow-section semi-structured survey was used to

examine perceptions for 133 nursing students towards online learning in the light of COVID-19. Some findings showed that nearly half of respondents voted that the online learning style is easy to use and most of them perceived that they got feedback quickly among online learning. Further, about half of students disagreed that online learning aided them to easily sharing of ideas with colleagues, in some sense, submissions are not active and effective. The comfortable communication while online lessons was inconclusive by students. They explored that approximately half of the participants tended to negative perception about online education system, i.e. online learning is not better than conventional learning mode. It is a most necessary for students to be direct contacted with educators to enhance online learning environment. Nevertheless, despite negative insights, the online learning system is still solution, as per most of students, followed by tertiary institutes, and must be kept going in the middle of COVID-19 period. Furthermore, there is statistically significant relationship between residence area and the students' insights about online learning system, yet, not statistically significant correlation with age and device type.

Such discrepancy between the current findings and some literature may be due to the differences in the sample sizes, target populations, disciplines, or the studies' conduction times and places, while raising fears about COVID-19. (Ibrahim, et al., 2020) add that pre-training courses, disparities among academic year of students, or the kind of program as this study claimed, might contribute to these resulting difference.

3.3.3 Summary

Broadly speaking, it can be claimed that all purposes addressed in the current study are considerably fulfilled and that this research has gone a substantial way towards meeting its prime goal. In this regard, the higher education students, both undergraduate and postgraduate have felt manifestly a high tendency of approval towards the satisfaction with BLS. Meaning that the fact that the transformation process into the BLS confirms to be satisfactory in the wake of COVID-19 disease period for high education students, with clear superiority and more firm preference for the postgraduate students' perceptions as compared with their peers in the undergraduate, in terms of Self-efficacy, Communication

and Ease of Use and Challenges. A clear superiority of the postgraduate students' perceptions on the overall axes level as well. In addition to that, the Usefulness, Engagement, Communication and ease of Use, self-efficacy, and Challenges axes respectively influence and have an effective contribution to the students' perceptions about satisfaction with the BLS, stated differently, they, namely axes are considered as satisfaction indexes. Besides, the Usefulness and Engagement axes tend to be the highest effective contribution to the students' perceptions regarding satisfaction with the transformation towards BLS. The Challenges axis tends to be the least effective contribution to students' satisfaction towards the BLS.

On the other hand, all demographic dimensions other than gender and the kind of device favored, place of the living and the willingness in using BLS in the future, have an effect on the undergraduate and postgraduate students' perceptions. Those positive feelings that have given rise to the satisfaction with BLS could be attributable to many reasons accompanied the swift transition operation over the terrifying and fast-paced pervasiveness of the novel coronavirus pandemic. These guards might be with BLS itself, university or students. Insofar as BLS, the grounds of pass could be certainly resulting from ease of use, interactive communication, effective features and functions, accessibility, flexibility, and availability, transferability, plus BLS renders larger-scale coverage in real-time for all students, which achieves the principle of equality of opportunity. Yet some challenges such as absence of interaction and social life, as (Giray, 2021) explored, is not because of using BLS itself, but over COVID-19 quarantine and lockdown measures which affect psychological status of students, as some researches. With respect to university, the causes of the success might be stemmed from a good implementation process by university administration, having dependable infrastructure, instant support services provided by academic staff/staff, along with the good knowledge capacities of academic staff. Finally, as concerns students, the effectiveness rationales return to having intention and readiness for using BLS, self-efficacy, affordable costs, the sense of constructive change, and the previous experiences of using technology tools such as LMSs and young age group. The researcher also attributes this to the confidence the students have in BLS. It is also worth noting the fact that BLS usage by university is mandatory, means that usage by students is not dependent on referral by their colleagues

or instructors. The students' attitude towards online learning, as (Aguilera-Hermida, et al., 2021) reported, is factor associated with internal feelings, while ease of use and self-efficacy are more closely related to the learning and teaching context. For their side, (Salter, et al., 2014) believe that the users' perceptions and attitudes might be turned over by external factors.

That said, there are some students' perceptions disapprove or not leaning towards the satisfaction of transformation into BLS, the researcher attributes a cause to that this experience is novel and mandatory. Which aligns with (Emiroglu, et al., 2021) who inferred that the negative attitude towards online learning system is attributable to the abrupt switching, and that if it is implemented voluntarily and gradually, the students' respective could be positively changed. Furthermore, there are various features buried in BLS; but finding them easily seems to be the problem. This may also contribute to poor students' attitude and perception of satisfaction with these systems, notably with those students who have no enough experiences to deal with, or are unable to grasp how these systems to work. The reason behind that, it may be highly attributable to students' ability that is one of the individual differences, as (Şimşek, 2012:1530) wrote, providing every student with more convenient opportunities in the fields in which they have better aptitude should be taken into consideration.

Moreover, the advantages and disadvantages have been inferred in an attempt to recognize the greatest strengths and weaknesses within BLS during the sudden transformation due to COVID-19 disease period, which help to access to some recommendations and suggestions. This in turn contributes to provide some information to decision makers at university and other education institutions so as to implement successfully the transition process into these systems amid crisis and to optimize their use in the education operation. An ease of use and communication, accessibility, flexibility, availability, affordability, transferability, increased self-efficacy, interactivity, saving-time moderately and positive changes in students' life are shown to be the most traits BLS enjoys, unlike, there some drawbacks exist, among them a sense of isolation, lack of concentration, the reluctance of attendance, plus vulnerability of participation. However, no matter how successful BLS is in the wake of critical circumstances, careful

consideration should be given to the health implications of using electronic devices for lengthy periods that would lead to the risk of repetitive strain injuries for one.

CHAPTER 4

With this fourth chapter, the thesis ends up coming to an end, where the synopsis of the significant outcomes that have been arrived at through the dissertation at hand. Moreover, some proposals resulting from extensive discussion is going to be provided to interested people in this field, in the hope that they are able to contribute to education process that depended on LMS, plus a few some future studies are suggested to enrich this area even more. Eventually, some study limitations will be presented to clarify the circumstances in the course of the study conduction.

4.1 Conclussions

Beyond a reasonable doubt, in the advent of COVID-19 pandemic, all around us have changed in terms of in how to deal with them. It has really influenced every sectors (Singh, et al., 2020; Tümen Akyildiz, 2020; Ibrahim, 2021; Agarwal & Dewan, 2020; Ali, 2020; Muthuprasad, et al., 2021; Fawaz & Samaha, 2021; Aboagye, et al. 2021; Saidi, et al., 2021; Osman, 2020; Daroedono, et al., 2020; Beltekin & Kuyulu 2020; Hakim & Kawamorita, 2020; Sofi & Laafou, 2020). Notwithstanding, the technology is very most important and has an eminent role for instruction process, especially online learning, it sometimes, based on (Saidi, et al., 2021), can diminish educational experience, and it might be neither docile nor secure, as well. However, “It is said that without technology, there is no distance education” (Bataineh, et al., 2021:146). Furthermore, it is not as easy as it seems, conduction of the current study in such catastrophic times during the keeping at home warrants due to the pervasiveness of COVID-19 disease, but for existence of technology tools that facilitate the communication and the access to the required information and resources regardless of the time and space.

Having an analogy between eLearning's or online learning's and LMSs' examples listed by (Tarhini, et al., 2013; Eraslan Yalcin & Kutlu, 2019:2415; Saidi, et al., 2021) gives an index to that online learning, eLearning and distance learning draw on LMSs to manage, organize, and facilitate education process, in addition to deliver teaching and learning in an accessible form for the users. Such means that LMS cannot be, in a great degree, discussed apart from online learning, distance education or eLearning.

The COVID-19 pandemic forced universities and schools to jump entirely from traditional in-class into online learning format (Serhan, 2020; De, 2020; Muftahu, 2020; Murphy,2020; Weeden & Cornwell, 2020; Giray, 2020; Hakim & Kawamorita, 2020; Singh, et al., 2020; Ali, 2020; Agarwal & Dewan 2020; EVİŞEN, et al., 2020; Osman, 2020; Al-Balas, et al., 2020; Beltekin & Kuyulu 2020; Saidi, et al., 2021; Elsamanoudy, et al., 2020; Ferraro, et al., 2020; ACAR & KAYAOGLU, 2020; Chen, et al., 2020; Daroedono, et al., 2020; Sofi & Laafou, 2020; Tümen Akyildiz, 2020; Radha, et al., 2020; GÜRLER, et al., 2020; Al Rawashdeh, et al., 2020; Terzi, et al., 2021; Carleschi, et al., 2021; García-Alberti, et al., 2021; Fawaz & Samaha, 2021; Kaur, et al., 2021; Muthuprasad, et al., 2021; Bączek, et al., 2021).

Numerous countries including Turkey have encountered a common situation, which is the sudden transformation into online learning system owing to a worldwide pandemic (Aguilera-Hermida, et al., 2021). The transformation processes from traditional learning models to LMSs such as BLS is not that easy or difficult, in particular, in emergent situations like COVID-19 pandemic, wherein there are the several pro-active procedures should be taken to address instructional needs for both instructors and students. However, the difficulty's and ease's issues rely on how ready the educational entities are, and what preparedness they have, either in terms of infrastructures or in capabilities of lecturers and learners. It was underlined by (Singh, et al., 2020) that taking a leap of education system requires necessarily the readiness for adaption and adoption of online learning platforms.

Indeed, the introduction of LMS in education system intended to lead to leverage the satisfaction with education delivering to students by it to make them more efficient in a bid for gaining the knowledge apart from the surrounding environment settings. However, the satisfaction with the online learning system is highly contentious matter among researchers at large. As many researches or experts interested in online learning or

distance education are convinced that learning method at a distance/online can be as satisfied as conventional one, versus other researchers who see the opposite. On his end, (Ruzgar, 2004:30) believes that it takes a significant position in Turkish education system, and it will be as satisfactory as conventional in-class learning and teaching mode when the courses are set up by utilizing appropriate technologies and approaches. Carvalho, et al. (2011) add that LMS usage has grown substantially in instructional campuses across the globe. By virtue of proliferation of COVID-19 disease, the LMSs have become more prevalent and relevant than ever Vasanth & Sumathi, (2020). In the catastrophic situations, where learners are untenable to the physical attendance in class, the LMS delivers a comfortable learning platform (Kado Kado, et al., 2020). The online learning or eLearning is seen to be a satisfactory and effective education mode has students come out their best abilities and potentials (Radha, et al., 2020). "The emergency distance education system has not taken on the task to cure students psychologically [..] it tried to sustain teaching" (Tümen Akyildiz, 2020:332). However, "The emergency online learning transition has been a difficult experience for many students around the globe" (Aguilera-Hermida, et al., 2021).

Nevertheless, LMSs are an ideal alternative for the formal on-campus education to continue educational process, and an optimal solution taken by higher education institutions, including in exceptional incidences as stated by (Ibrahim, et al., 2021; Bataineh, et al., 2021; Muthuprasad, et al., 2021; Aboagye, et al., 2021; Al-Balas, et al., 2020; Fawaz & Samaha, 2021; Elsamanoudy, et al., 2020; Gautam, D. K., & Gautam, P. K. 2020; Koirala, et al., 2020; Rohman, et al., 2020; Mahalakshmi & Radha, 2020; Tümen Akyildiz, 2020; ACAR & KAYAOGLU, 2020; Baber, 2020). Provided that they are designed suitably, upon (Ibrahim, et al., 2021; Muthuprasad, et al., 2021; Gautam, D. K., & Gautam, P. K. 2020).

This study therefore concentrates on investigating the satisfaction of high education students with BLS at a university in Istanbul during the COVID-19 disease period through a comparison between undergraduate and postgraduate students' perceptions via an employment of thirty items divided into six axes that is embedded in a single model. As a result of that, the present research arrives at the Usefulness, Engagement, Communication and Ease of Use, Self-efficacy, and Challenges axes respectively have an association with

and an effect on positively students' satisfaction with the BLS. As well as, they enjoy an effective contribution to students' perceptions about their satisfaction towards the BLS. Wherein the Usefulness and Engagement affirm to be the most crucial axes that positively influenced students' satisfaction about the BLS, meaning that they both are significant predictors, which has the highest effective contribution to students' satisfaction with the transformation to BLS during COVID-19 disease period. Alternatively, the Challenges axis is very lowly significant factor, which has the least effective contribution to students' satisfaction with the transformation into BLS, in other terms; it seems to improve less the positive perceptions of students about student satisfaction with the BLS.

It can be claimed the fact that the transformation process into the BLS stresses to be satisfactory for high education students in the wake of the COVID-19 disease period. With obvious supremacy tends to be in favor of the postgraduate students' perceptions as compared with their peers in the undergraduate, in terms of Self-efficacy, Communication and Ease of Use, and Challenges axes that have statistically significant differences. Likewise, there a clear superiority of the postgraduate students' perceptions over the Overall axes level that is statistically significant exists as well. On a related matter, all demographic dimensions; age, the duration of online class, the number of classes a day, the type of exam, the kind of subject, and the previous experience in using LMS, other than gender, the kind of device preferred, place of the living and the willingness in using BLS in the future, have an effect on the undergraduate and postgraduate students' perceptions.

Moreover, it has come to some the traits and drawbacks as concerns BLS resulting from the complete transformation into it owing to COVID-19 disease period, among them: an ease of use and communication, increased self-efficacy, flexibility, availability, accessibility, transferability, affordability, interactivity, saving-time moderately and positive changes of students' life are shown to be the most traits the BLS enjoys. Unlike, BLS, while effective, leads to a sense of isolation, lack of concentration, the reluctance of attendance, plus vulnerability of participation, which are demonstrated to be the most drawbacks in The BLS.

In short, it is clearly for mires and flaws of BLS that there are diverse sources create the positive or negative aspects for using BLS. Of them what comes out from human

behaviors, competences or surroundings, stated differently, non-technical matters such as infrastructure, instant support services provided by academic staff/staff, the good knowledge capacities of academic staff, preparedness, level of education, age, courses nature, self-efficacy, affordable costs, the sense of constructive change, and the previous experiences of using technology tools. Others origin from the system itself, namely technical matters for instances ease of use, interactive communication, effective features and functions, accessibility, flexibility, and availability, transferability and saving-time. All of them have direct and indirect impacts on users' attitude, perception, belief, viewpoint towards BLS usage, consequently it is reflecting off the satisfaction of transformation into BLS including in the wake of catastrophic settings as pervasiveness of COVID-19 pandemic across the world.

The current study has numerous consequences related to BLS might be more helpful for the Turkish stakeholders such as policy-makers in relevant educational institutions in developing the programs, plans and policies about adoption LMSs within them.

It is still uncertain in terms of if the COVID-19 disease and its implications will be over soon or not. Therefore, it must make scenario planning and look consistently for the convenient alternatives tailored to the needs to address significant shortcomings. A contingency plans or B or C plan whatever, as per Dhawan (2020), should be set to conform crisis and natural calamities. In case, the COVID-19 will be continuing longer, an education process might be changed from in-class to full-fledge online format to be certified instruction mode for decades to come. As far as the spread of COVID-19 disease will maintain its presence, the education process might keep going to be delivered in the form of online learning format throughout the world (Terzi, et al., 2021). As a result of that, it is necessary to avoid the deficiencies that accompanied remote education and normalize educational life along these lines of education. However, a novel corona virus has been an impetus for instructional establishments at the world level to keep going innovative modes on short notice. Pursuant to the vast number of the LMS data analyzed by Nestor (2021), it has been arrived at that the use and adoption of the LMS and electronic learning technologies have the potentioal to increase rapidly. He added, based on forecasting of practitioners and researchers, that LMS would be a "next-generation digital learning environment" (NGDLE). However, (Carvalho, et al., 2011) argued that, apart

from traits it has, the institutional backup takes on a core role in the ongoing usage and embrace of it.

4.2 Recommendations

As noted earlier, there some obstacles exist faced the unexpected transformation towards BLS as a full-fledged online learning tool that should be taken care in the quest for lasting solutions to promote the students' satisfaction, especially in the catastrophic periods as the case it is lived right now.

Notwithstanding the high education students expressed that they have an intention and readiness to utilize BLS, there is still a need to enforce readiness of students to keep up with technology, the very same it is advisable along Ali (2020), notably in hardship times and enable them to adapt with any emergent situations.

Giving the lecture in the form of narrative should be diluted by drawing on micro-learning activities that diminish the cognitive load on the students. This therefore entails focusing on designing micro-media, micro-material, micro-content that attract students' attention and have them more concentrating.

Developing light motivational tools such as quizzes and questions counting on the fast answers (yes or no, MSQ, matching, etc.), which are raised to students before, during and end of the class to pay their attention for as long as the class.

Diversification of methods of taking a test might contribute to attain the goals the students set up to increase their productivity.

An intensive reliance on presentations, videos, drawings, formats and everything visual to deliver the educational material.

Involving the students in setting up the calendar to encourage them to attend later on, bearing in mind the specific needs of vulnerable groups, as well as students' particularities and situations.

A periodic meetings between the students and rectors or on their behalf should be convened to discuss the problems and difficulties in an attempt to make decisions that address students' needs notably related to issues of registration, selecting and nixing courses, financial payments, graduation projects and dissertations (how to select subject

and advisor), plus accommodation and residence permit. Because all these issues may contribute to distract students' attention.

Ten minutes' online meetings with psychological support professionals prior to each lecture ought to be held to stimulate the students and to reduce a sense of isolation and loneliness.

Students are required to perform some light exercises for a maximum three minutes every now and then, such as stretches during online class to mitigate the feeling of boredom and isolation.

The university has to perform a comprehensive evaluation of its all BLSs experience in the wake of COVID-19, particularly 24 months later for rigorous lockdown and quarantine regulations.

Providing small electronic information broachers that illustrate in pictures without further ado and in very few clear steps how to use BLS and e-campus, and distributing them to all students by the beginning of each semester, including technical support staff contacts.

Introducing the needed amendments in health care as to students ought to be taken action.

Publication of an electronic handbook in the form of drawings or video materials in collaboration with healthcare specialists to illustrate simply how to protect from the risks of repeated use of technological devices, while attaching them prior every class.

There are some recommendations were suggested by a couple of researches to support online education modes. Shahzad et al. (2020) recommend some suggestion for higher education institution, such as design the gateway in an easy-to-use manner, sustainable access to the online learning gateway any time, strength of the server, information quality with impeccable, up-to-date information, well-structured data, content quality, plus the module materials pertaining to online learning gateway usage for new users training, and uninterrupted feedback by the user.

The Field Training Unit at Sultan Qaboos University in Oman Royalty developed an elaborate teaching hands-on training plan aimed at students to get the required level of practical training and have subjected to the online learning experience Osman (2020). For his part, (Tonsmann, 2014) recommended to the previous training over usage of the

systems should be taken place to avoid delays in keeping up with educational lessons. It is advisable as he suggested, provision of educational materials prior to the beginning of the class sessions to enable the students to be ready for class and to return to them later on.

Hall (2006) argued that student engagement and staff support contribute considerably to the successful implementation of BLS. Tümen Akyildiz (2020) proposed that handling of deficiency with lecturers in using LMS leads to improve effectively pandemic distance learning implementation. Addressing challenges in near future to evolve the experience of online learning (Al-Balas, et al., 2020)

Some future studies should be given consideration to enrich information about LMSs in a bid to provide the appropriate solutions confronting the probable problems, which will be reflecting positively on the satisfaction with the LMS usage. Of which:

An expansion of this study can include academic staff and staff.

It can be considered some other variables such as technology infrastructure support, system change, and technical expertise.

The existing study has researched the satisfaction with full-fledged online learning delivery via BLS; this gives an opportunity to conduct studying blended learning environments.

There need exists to study the satisfaction of LMS for international higher education students in Turkish universities.

It needs to verify students' perception about how satisfactory between the required courses and selective courses in the context of the BLSs.

The different cultural and educational constraints of International students to learning online through LMS in Turkish instructional institutes should be more paid into consideration by scholars to grasp effects of cultural dimensions over online higher education learners, notably, in the scope of sophisticated settings.

Survey of the satisfaction with BLS before and after COVID-19 pandemic can be suggested to be conducted over higher education students in terms of online and hybrid learning modality.

Studying the implications of parental control and stereotypical images and the restrictions on the utilization of technologies that various category (cultural, gender, and

social groups) may face for adults and educators should be carried out (Ferraro, et al., 2020).

4.3 Limitations of Study

- The study has been undertaken in only one private university in Istanbul, thereby, the results of the study may not offer an adequate reflection of the attitudes of students' perceptions towards the satisfaction with the full-fledged shifting to BLS.
- The existing study centered on just one defined LMS, which is BLS. Thus, students' opinions might change in case studying other LMSs like Moodle, Canvas, WebCT or other.
- In addition, this study has been conducted during exceptional situation due to the pervasiveness COVID-19 disease, therefore, students' impressions and passionate may differ when it is carried out under normal conditions and situations.
- An exclusive implementation of this literature only for higher education students at one in Turkey limits the possibility of generalizing the results.
- It is difficult for research to get to know whether the respondents' responses on the self-administrated survey were built on the honest and truthful basis.

REFERENCES

Abbasi, S., Ayoob, T., Malik, A., & Memon, S. I. (2020). Perceptions of students regarding E-learning during Covid-19 at a private medical college. Pakistan Journal of Medical Sciences, 36(COVID19-S4), S57.

Aboagye, E., Yawson, J. A., & Appiah, K. N. (2021). COVID-19 and E-learning: The challenges of students in tertiary institutions. Social Education Research, 1-8.

ACAR, A., & KAYAOGLU, M. N. (2020). MOODLE as a Potential Tool for Language Education under the Shadow of COVID-19. Eurasian Journal of Educational Research (EJER), (90).

Adam Hayes (2021). Demographics, retrieved from https://www.investopedia.com/terms/d/demographics.asp.

Adams, K., Hean, S., Sturgis, P., & Clark, J. M. (2006). Investigating the factors influencing professional identity of first-year health and social care students. Learning in health and social care, 5(2), 55-68.

Adnan, M., & Anwar, K. (2020). Online Learning amid the COVID-19 Pandemic: Students' Perspectives. Online Submission, 2(1), 45-51.

Agarwal, M. S., & Dewan, D. J. (2020). An Analysis of the Effectiveness of Online Learning in Colleges of Uttar Pradesh during the COVID 19 Lockdown. Journal of Xi'an University of Architecture & Technology, ISSN, (1006-7930), 2957-2963.

Aggarwal, S., & Jca, O. (2010). Teacher And Education In A Developing So. Vikas Publishing House.

Aguilera-Hermida, A. P. (2020). College students' use and acceptance of emergency online learning due to COVID-19. International Journal of Educational Research Open, 1, 100011.

Aguilera-Hermida, A. P., Quiroga-Garza, A., Gómez-Mendoza, S., Villanueva, C. A. D. R., Alecchi, B. A., & Avci, D. (2021). Comparison of students' use and acceptance of emergency online learning due to COVID-19 in the USA, Mexico, Peru, and Turkey. Education and Information Technologies, 1-23.

Ahmed, N. J., Alkhawaja, F. Z., Alrawili, A. S., & Alonazi, W. (2021). Pharmacy Students' Perceptions towards Online Learning. Journal of Pharmaceutical Research International, 88-93.

Akdeniz, G., Kavakci, M., Gozugok, M., Yalcinkaya, S., Kucukay, A., & Sahutogullari, B. (2020). A survey of attitudes, anxiety Status, and protective behaviors of the university students during the COVID-19 outbreak in Turkey. Frontiers in Psychiatry, 11.

Akinbadewa, B. O., & Sofowora, O. A. (2020). The effectiveness of multimedia instructional learning packages in enhancing secondary school students' attitudes toward Biology. International Journal on Studies in Education (IJonSE), 2(2), 119-133.

Al Rawashdeh, A., Syam, M., & Serhan, D. (2020). TRANSITIONING FROM FACE-TO-FACE TO ONLINE LEARNING: STUDENTS'ACHIEVEMENTS AND PERCEPTIONS OF LEARNING CALCULUS DURING COVID-19 PANDEMIC. Educational Practices during the COVID-19 Viral Outbreak: International Perspectives, 221.

Al-Balas, M., Al-Balas, H. I., Jaber, H. M., Obeidat, K., Al-Balas, H., Aborajooh, E. A., ... & Al-Balas, B. (2020). Distance learning in clinical medical education amid COVID-19 pandemic in Jordan: current situation, challenges, and perspectives. BMC medical education, 20(1), 1-7.

Albashtawi, A., & Al Bataineh, K. (2020). The effectiveness of google classroom among EFL students in Jordan: an innovative teaching and learning online platform. International Journal of Emerging Technologies in Learning (IJET), 15(11), 78-88.

Albelbisi, N. A., & Yusop, F. D. (2019). Factors influencing learners' self–regulated learning skills in a massive open online course (MOOC) environment. Turkish Online Journal of Distance Education, 20(3), 1-16.

Al-Hadrami, A. H. (2012). Factors that Affect Learners' Performance in Web-Based Courses: The Case of the Accounting Courses at the Hashemite University (Doctoral dissertation, Coventry University).

Al-hawari, M. A., & Mouakket, S. (2010). The influence of technology acceptance model (TAM) factors on students'e-satisfaction and e-retention within the context of UAE e-learning. Education, Business and Society: Contemporary Middle Eastern Issues.

Alharthi, M. (2020). Students' Attitudes toward the Use of Technology in Online Courses. International Journal of Technology in Education, 3(1), 14-23.

Ali, W. (2020). Online and remote learning in higher education institutes: A necessity in light of COVID-19 pandemic. Higher Education Studies, 10(3), 16-25.

Alim, N., Linda, W., Gunawan, F., & Saad, M. S. M. (2019). The effectiveness of Google classroom as an instructional media: A case of state islamic institute of Kendari, Indonesia. Humanities & Social Sciences Reviews, 7(2), 240-246.

AlKarani, A. S., & Thobaity, A. A. (2020). Medical Staff Members' Experiences with Blackboard at Taif University, Saudi Arabia. Journal of Multidisciplinary Healthcare, 13, 1629.

AlKhunzain, A., & Khan, R. (2021). The Use of M-Learning: A Perspective of Learners' Perceptions on M-Blackboard Learn.

Allo, M. D. (2020). Is the online learning good in the midst of Covid-19 Pandemic? The case of EFL learners. Jurnal Sinestesia, 10(1), 1-10.

Almaghaslah, D., Ghazwani, M., Alsayari, A., & Khaled, A. (2018). Pharmacy students' perceptions towards online learning in a Saudi Pharmacy School. Saudi pharmaceutical journal, 26(5), 617-621.

Almarzooq, Z. I., Lopes, M., & Kochar, A. (2020). Virtual learning during the COVID-19 pandemic: a disruptive technology in graduate medical education.

Al-Nuaim, H. A. (2012). The use of virtual classrooms in e-learning: A case study in King Abdulaziz University, Saudi Arabia. E-Learning and Digital Media, 9(2), 211-222.

Alokluk, J. A. (2018). The Effectiveness of Blackboard System, Uses and Limitations in Information Management. Intelligent Information Management, 10(06), 133.

Al-Salamat, M. K., Al-sowat, H., & Al-roqi, R. (2020). The Effectiveness of Distance Learning (BlackBoard) in Pursuing the Educational Process at Taif University during the COVID-19 Pandemic from the Viewpoints of Teachers and Students. PalArch's Journal of Archaeology of Egypt/Egyptology, 17(7), 13814-13825.

Al-Samarraie, H., Teng, B. K., Alzahrani, A. I., & Alalwan, N. (2018). E-learning continuance satisfaction in higher education: a unified perspective from instructors and students. Studies in higher education, 43(11), 2003-2019.

Alsobahi, G. (2017). What Are Saudi Students' Perceptions Toward Using Blackboard as a Learning-Management System in United States Universities? (Doctoral dissertation, Indiana State University).

Alturise, F. (2020). Difficulties in Teaching Online with Blackboard Learn Effects of the COVID-19 Pandemic in the Western Branch Colleges of Qassim University. Int. J. Adv. Comput. Sci. Appl, 11, 74-81.

Anadolu Agency (2020b). Turkey to air remote school lessons amid COVID- 19 fears. Retrieved from https://www.aa.com.tr/en/latest-on-coronavirus-outbreak/turkey-to-air-remote-school-lessons-amid-covid-19-fears/1764165 .

Anderson, R. M., Heesterbeek, H., Klinkenberg, D., & Hollingsworth, T. D. (2020). How will country-based mitigation measures influence the course of the COVID-19 epidemic?. The lancet, 395(10228), 931-934.

Azhari, F. A., & Ming, L. C. (2015). Review of e-learning Practice at the Tertiary Education level in Malaysia. Indian Journal of Pharmaceutical Education and Research, 49(4), 248-257.

Baber, H. (2020). Determinants of students' perceived learning outcome and satisfaction in online learning during the pandemic of COVID-19. Journal of Education and E-Learning Research, 7(3), 285-292.

Bączek, M., Zagańczyk-Bączek, M., Szpringer, M., Jaroszyński, A., & Wożakowska-Kapłon, B. (2021). Students' perception of online learning during the COVID-19 pandemic: a survey study of Polish medical students. Medicine, 100(7).

Bali, S., & Liu, M. C. (2018, November). Students' perceptions toward online learning and face-to-face learning courses. In Journal of Physics: Conference Series (Vol. 1108, No. 1, p. 012094). IOP Publishing.

Balkaya, S., & Akkucuk, U. (2021). Adoption and Use of Learning Management Systems in Education: The Role of Playfulness and Self-Management. Sustainability 2021, 13, 1127.

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. Psychological review, 84(2), 191.

Bao, W. (2020). COVID-19 and online teaching in higher education: A case study of Peking University. Human Behavior and Emerging Technologies, 2 (2), 113–115.

Basilaia, G., & Kvavadze, D. (2020). Transition to online education in schools during a SARS-CoV-2 coronavirus (COVID-19) pandemic in Georgia. Pedagogical Research, 5(4).

Basilaia, G., Dgebuadze, M., Kantaria, M., & Chokhonelidze, G. (2020). Replacing the classic learning form at universities as an immediate response to the COVID-19 virus infection in Georgia. Int. J. Res. Appl. Sci. Eng. Technol, 8(3), 101-108.

Bataineh, K. B., Atoum, M. S., Alsmadi, L. A., & Shikhali, M. (2021). A silver lining of coronavirus: Jordanian Universities turn to distance education. International Journal of Information and Communication Technology Education (IJICTE), 17(2), 1-11.

Beltekin, E., & Kuyulu, I. (2020). The Effect of Coronavirus (COVID19) Outbreak on Education Systems: Evaluation of Distance Learning System in Turkey. Journal of Education and Learning, 9(4),1-9.

Bender, L. (2020). Key messages and actions for COVID-19 prevention and control in schools. https://www.who.int/docs/default-source/coronaviruse/key-messages-and-

actions-for-covid-19-prevention-and-control-in-schools-march-2020.pdf?sfvrsn=baf81d52_4, accessed 21 April 2020.

Bentata, Y. (2020). COVID 2019 pandemic: a true digital revolution and birth of a new educational era, or an ephemeral phenomenon?. Medical education online, 25(1).

Boateng, R., Mbrokoh, A. S., Boateng, L., Senyo, P. K., & Ansong, E. (2016). Determinants of e-learning adoption among students of developing countries. The International Journal of Information and Learning Technology.

Bolliger, D. U. (2004). Key factors for determining student satisfaction in online courses. International Journal on E-learning, 3(1), 61-67.

Bradford, P., Porciello, M., Balkon, N., & Backus, D. (2007). The Blackboard learning system: The be all and end all in educational instruction?. Journal of Educational Technology Systems, 35(3), 301-314.

Brown, S. (2010). From VLEs to learning webs: the implications of Web 2.0 for learning and teaching. Interactive Learning Environments, 18(1), 1-10.

Bullen, M., & Janes, D. (Eds.). (2006). Making the Transition to E-Learning: Strategies and Issues: Strategies and issues. IGI Global.

Butola, L. K. (2021). E-learning-A New Trend of Learning in 21st Century During Covid-19 Pandemic. Indian Journal of Forensic Medicine & Toxicology, 15(1), 423.

Çalışkan, F., Mıdık, Ö., Baykan, Z., Şenol, Y., Tanrıverdi, E. Ç., Tengiz, F. I., & Gayef, A. (2020). The knowledge level and perceptions toward COVID-19 among Turkish final year medical students. Postgraduate Medicine, 132(8), 764-772.

Carleschi, E., Chrysostomou, A., Cornell, A. S., & Naylor, W. (2021). Does transitioning to online classes mid-semester affect conceptual understanding?. arXiv preprint arXiv:2101.09908.

Carvalho, A., Areal, N., & Silva, J. (2011). Students' perceptions of Blackboard and Moodle in a Portuguese university. British Journal of Educational Technology, 42(5), 824-841.

Chakanyuka, S., Chiome, C., & Chabaya, O. (2010). Staff related factors contributing to quality in Open and Distance Learning.

Chen, E., Kaczmarek, K., & Ohyama, H. (2020). Student perceptions of distance learning strategies during COVID-19. Journal of dental education.

Clark, J. T. (2020). Distance education. In Clinical engineering handbook (pp. 410-415). Academic Press.

CoHE. (2020a). English university students allowed to suspend studies and postpone enrollment. CoHE. Retrieved from https://www.yok.gov.tr/en/Sayfalar/news/2020/University-Students-Allowed-to-Suspend-Studies-and-Postpone-Enrollment.aspx.

CoHE. (2020b). Saraç made a statement on the distance education. CoHE. Retrieved from https://www.yok.gov.tr/en/Sayfalar/news/2020/Sarac-made-a-statement-on-the-distance-education.aspx .

CoHE. (2021). Results of Survey on Higher Education Announced (February 18, 2021). Retrieved from https://www.yok.gov.tr/en/Sayfalar/news/2021/survey-results-announced.aspx .

Conrad, D. (2004). University instructors' reflections on their first online teaching experiences. Journal of Asynchronous Learning Networks, 8(2), 31-44.

Daniel, J. (2020). Education and the COVID-19 pandemic. Prospects, 49(1), 91-96.

Daroedono, E., Siagian, F. E., Alfarabi, M., Cing, J. M., Arodes, E. S., Sirait, R. H., ... & Hutabarat, R. S. (2020). The impact of COVID-19 on medical education: our students perception on the practice of long distance learning. International Journal of Community Medicine and Public Health, 7(7), 2790-2796.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS quarterly, 319-340.

Davis, J., Lennox, S., Walker, S., & Walsh, K. (2007). Exploring staff perceptions: Early childhood teacher educators examine online teaching and learning challenges and dilemmas. International Journal for the Scholarship of Teaching and Learning, 1(2), n2.

De, S. (2020). Impacts of the Covid-19 pandemic on global education.

DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. Journal of management information systems, 19(4), 9-30.

DeNeui, D. L., & Dodge, T. L. (2006). Asynchronous learning networks and student outcomes: The utility of online learning components in hybrid courses. Journal of Instructional Psychology, 33(4).

Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. Journal of Educational Technology Systems, 49(1), 5-22.

Dickey, M. (2004). The impact of web-logs (blogs) on student perceptions of isolation and alienation in a web-based distance-learning environment. Open Learning: The Journal of Open, Distance and e-Learning, 19(3), 279-291.

Dillenbourg, P. (2016). The evolution of research on digital education. International Journal of Artificial Intelligence in Education, 26(2), 544-560.

Duin, A. H., & Tham, J. (2020). The current state of analytics: Implications for learning management system (LMS) use in writing pedagogy. Computers and Composition, 55, 102544.

Elçi, A. (2021). Academics' professional development needs and gains during COVID-19 distance education emergency transition in Turkey: Academics' professional development needs and gains. International Journal of Curriculum and Instruction, 13(1), 343-358.

Elizabeth Gonzalez (2020). Blackboard Learn Review. Retrieved from https://www.fool.com/the-blueprint/blackboard-learn-review/ .

Elsamanoudy, A. Z., Al Fayz, F., & Hassanien, M. (2020). Adapting blackboard-collaborate ultra as an interactive online learning tool during the COVID-19 pandemic. Journal of Microscopy and Ultrastructure, 8(4), 213.

Emaliana, I. (2017). Teacher-centered or student-centered learning approach to promote learning?. Jurnal Sosial Humaniora (JSH), 10(2), 59-70.

Emine, C. A. B. I., & Kalelioglu, F. (2019). A fully online course experience from students' perspective: readiness, attitudes and thoughts. Turkish Online Journal of Distance Education, 20(3), 165-180.

Emiroglu, T., Ozkul, A. E., & Sozudogru, O. (2021). Investigation of Views of Students Majoring in History on Distance Education during the Period of Pandemic (COVID-19). Revista Argentina de Clínica Psicológica, 30(1), 114.

Eraslan Yalcin, M., & Kutlu, B. (2019). Examination of students' acceptance of and intention to use learning management systems using extended TAM. British Journal of Educational Technology, 50(5), 2414-2432.

Erin Duffin (2020). E-learning and digital education – statistics & facts. Retrieved from https://www.statista.com/topics/3115/e-learning-and-digital-education/ .

EVİŞEN, N., AKYILMAZ, Ö., & TORUN, Y. A Case Study of University EFL Preparatory Class Students' Attitudes towards Online Learning during Covid-19 in Turkey. Gaziantep Üniversitesi Eğitim Bilimleri Dergisi, 4(2), 73-93.

Fang, C., Wang, G., & Huang, B. (2019). Can information technology promote the development of students' cognitive ability. An estimate based on the net effect of educational value-added measurements. Open Edu Res, 25(4), 100-110.

Fawaz, M., & Samaha, A. (2021, January). E-learning: Depression, anxiety, and stress symptomatology among Lebanese university students during COVID-19 quarantine. In Nursing Forum (Vol. 56, No. 1, pp. 52-57).

Ferraro, F. V., Ambra, F. I., Aruta, L., & Iavarone, M. L. (2020). Distance Learning in the COVID-19 Era: Perceptions in Southern Italy. Education Sciences, 10(12), 355.

Financesonline. Blackboard Review. Retrieved from https://reviews.financesonline.com/p/blackboard-learn/ .

Findik-Coşkunçay, D., Alkiş, N., & Özkan-Yildirim, S. (2018). A structural model for students' adoption of learning management systems: An empirical investigation in the higher education context. Journal of Educational Technology & Society, 21(2), 13-27.

Francis, R., & Raftery, J. (2005). Blended learning landscapes. Brookes eJournal of learning and teaching, 1(3), 1-5.

Freeze, R. D., Alshare, K. A., Lane, P. L., & Wen, H. J. (2010). IS success model in e-learning context based on students' perceptions. Journal of Information systems education, 21(2), 173-184.

García-Alberti, M., Suárez, F., Chiyón, I., & Mosquera Feijoo, J. C. (2021). Challenges and Experiences of Online Evaluation in Courses of Civil Engineering during the Lockdown Learning Due to the COVID-19 Pandemic. Education Sciences, 11(2), 59.

Gautam, D. K., & Gautam, P. K. (2020). Transition to Online Higher Education during COVID-19 Pandemic: Turmoil and Way Forward to Developing Country-Nepal.

Giray, G. (2021). An assessment of student satisfaction with e-learning: An empirical study with computer and software engineering undergraduate students in Turkey under pandemic conditions. Education and Information Technologies, 1-23.

Goi, C., & Ng, P. Y. (2008). E-learning in Malaysia: Success factors in implementing e-learning program. International Journal of Teaching and Learning in Higher Education, 20(2).

González Rogado, A. B., Rodríguez Conde, M. J., Olmos Migueláñez, S., Borham Puyal, M., & García Peñalvo, F. J. (2014). Key factors for determining student satisfaction in engineering: A regression study.

Goodman, L. A. (1961). Snowball sampling. The annals of mathematical statistics, 148-170.

Graham, C., Cagiltay, K., Lim, B. R., Craner, J., & Duffy, T. M. (2001). Seven principles of effective teaching: A practical lens for evaluating online courses. The technology source, 30(5), 50.

Guarner, J. (2020). Three emerging coronaviruses in two decades: The story of SARS, MERS, and now COVID-19. American Journal of Clinical Pathology, 153(4), 420–421. https://doi.org/10.1093/ajcp/aqaa029.

Gulbinskienė, D., Masoodi, M., & Šliogerienė, J. (2017). Moodle as virtual learning environment in developing language skills, fostering metacognitive awareness and promoting learner autonomy. Pedagogika, 127(3), 176-185.

GÜRLER, C., Tuğçe, U. S. L. U., & DAŞTAN, İ. Evaluation of Distance Learning from Student Perspective in Covid-19 Pandemic. Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 24(4), 1895-1904.

Hakim, A. A., & Kawamorita, H. (2020). A comparative study of satisfaction in pre and mid COVID-19 pandemic: A case study of international students in Ondukuz Mayis University, Turkey. Social Sciences, 32, 21-67.

Haleem, U., Asim, M., & Manzoor, S. (2021). IMPACT OF ONLINE EDUCATION'S COMPATIBILITY ON STUDENT'S SATISFACTION IN UNIVERSITIES OF PAKISTAN BY USING TAM MODEL. Pakistan Journal of Educational Research, 4(2).

Hall, C. (2006). Lighting a fire or filling a pail? Users' perceptions of a virtual learning environment. Survey Report, University of Swansea. Retrieved February, 28, 2008.

Hamid, M. A., Salleh, S., & Laxman, K. (2020). A Study on the Factors Influencing Students' Acceptance of Learning Management Systems (LMS): A Brunei Case Study. International Journal of Technology in Education and Science, 4(3), 203-217.

Hammond, D., Louca, C., Leeves, L., & Rampes, S. (2020). Undergraduate medical education and Covid-19: engaged but abstract. Medical Education Online, 25(1), 1781379.

Hebebci, M. T., Bertiz, Y., & Alan, S. (2020). Investigation of views of students and teachers on distance education practices during the coronavirus (COVID-19) pandemic. International Journal of Technology in Education and Science, 4(4), 267-282.

Heggart, K. R., & Yoo, J. (2018). Getting the most from google classroom: A pedagogical framework for tertiary educators. Australian Journal of Teacher Education, 43(3), 9.

Heirdsfield, A., Walker, S., Tambyah, M., & Beutel, D. (2011). Blackboard as an online learning environment: What do teacher education students and staff think?. Australian Journal of Teacher Education (Online), 36(7), 1-16.

Hill, P. (2017, May 15). State of higher ed LMS market for US and Canada: Spring 2017 edition [Blog post]. Retrieved from http://mfeldstein.com/state-higher-ed-lms-market-us-canadaspring- 2017-edition.

Holmberg, B. (2005). Theory and practice of distance education. Routledge.

Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., ... & Cao, B. (2020a). Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. The lancet, 395(10223), 497-506.

Huang, R. H., Liu, D. J., Tlili, A., Yang, J. F., & Wang, H. H. (2020). Handbook on facilitating flexible learning during educational disruption: The Chinese experience in maintaining undisrupted learning in COVID-19 Outbreak. Beijing: Smart Learning Institute of Beijing Normal University.

Ibrahim, N. K., Al Raddadi, R., AlDarmasi, M., Al Ghamdi, A., Gaddoury, M., AlBar, H. M., & Ramadan, I. K. (2021). Medical students' acceptance and perceptions of e-learning during the Covid-19 closure time in King Abdulaziz University, Jeddah. Journal of infection and public health, 14(1), 17-23.

Iie.widen (2020). Global Mobility Trends. Retrieved from https://iie.widen.net/s/rfw2c7rrbd/project-atlas-infographics-2020 .

Isik, A. H., Karakis, R., & Güler, G. (2010). Postgraduate students' attitudes towards distance learning (The case study of Gazi University). Procedia-Social and Behavioral Sciences, 9, 218-222.

Iskander, M. (Ed.). (2008). Innovative techniques in instruction technology, e-learning, e-assessment and education. Springer Science & Business Media.

İstatistik (2020). Higher Education Information Management System. Retrieved from Number of Students by Level of Education, https://istatistik.yok.gov.tr/ .

Ituma, A. (2011). An evaluation of students' perceptions and engagement with e-learning components in a campus based university. Active Learning in Higher Education, 12(1), 57-68.

Jackowski, M. B., & Akroyd, D. (2010). Technology usage among community college faculty. Community College Journal of Research and Practice, 34(8), 624-644.

Jenkins, M., Browne, T., Walker, R., & Hewitt, R. (2011). The development of technology enhanced learning: findings from a 2008 survey of UK higher education institutions. Interactive Learning Environments, 19(5), 447-465.

Kado Kado, N. D., & Yonten, S. (2020). EFFECTIVENESS OF GOOGLE CLASSROOM AS AN ONLINE LEARNING MANAGEMENT SYSTEM IN THE WAKE OF COVID-19 IN BHUTAN: STUDENTS'PERCEPTIONS. Educational practices during the COVID-19 viral outbreak: International perspectives, 121.

Karadağ, E., & YUCEL, C. (2020). Yeni tip Koronavirüs pandemisi döneminde üniversitelerde uzaktan eğitim: Lisans öğrencileri kapsamında bir değerlendirme çalışması. Yükseköğretim Dergisi, 10(2), 181-192.

Kathryn Zawisza (2017). Blackboard Collaborate Ultra - Sharing a Whiteboard. Retrieved from https://bbhelp.uark.edu/blackboard-collaborate-ultra-sharing-a-whiteboard/.

Kaur, R., Garg, A., & Kaur, P. (2021). Case study: Student's response towards online learning in Engineering Education during COVID-19 Pandemic. Journal of Engineering Education Transformations, 34(3), 62-69.

Kearsley, G., & Shneiderman, B. (1998). Engagement theory: A framework for technology-based teaching and learning. Educational technology, 38(5), 20-23.

Kemp, A., Palmer, E., & Strelan, P. (2019). A taxonomy of factors affecting attitudes towards educational technologies for use with technology acceptance models. British Journal of Educational Technology, 50(5), 2394-2413.

Koh, J. H. L., & Kan, R. Y. P. (2020). Perceptions of learning management system quality, satisfaction, and usage: Differences among students of the arts. Australasian Journal of Educational Technology, 36(3), 26-40.

Koirala, D., Silwal, M., Gurung, S., Bhattarai, M., & KC, V. K. (2020). Perception towards online classes durin g COVID-19 among nursing students of a medical college of Kaski District, Nepal. Journal of Biomedical Research & Environmental Sciences, 1(6), 249-255.

Lai, C. C., Shih, T. P., Ko, W. C., Tang, H. J., & Hsueh, P. R. (2020). Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. International journal of antimicrobial agents, 55(3), 105924.

Lee, B. C., Yoon, J. O., & Lee, I. (2009). Learners' acceptance of e-learning in South Korea: Theories and results. Computers & education, 53(4), 1320-1329.

Lee, J., Cerreto, F. A., & Lee, J. (2010). Theory of planned behavior and teachers' decisions regarding use of educational technology. Journal of Educational Technology & Society, 13(1), 152-164.

Lee, Y., & Choi, J. (2011). A review of online course dropout research: Implications for practice and future research. Educational Technology Research and Development, 59(5), 593-618.

Lewis Keegan (2020). 79+ Staggering Online Learning Statistics (All You Need To Know!). Retrieved from https://skillscouter.com/online-learning-statistics/ .

Liaw, S. S. (2008). Investigating students' perceived satisfaction, behavioral intention, and effectiveness of e-learning: A case study of the Blackboard system. Computers & education, 51(2), 864-873.

Littlefield, J. (2018). The difference between synchronous and asynchronous distance learning. Retrieved from May, 4, 2020. https://www.thoughtco.com/synchronous-distance-learning-asynchronous-distancelearning-1097959.

Mahalakshmi, K., & Radha, R. COVID 19: A MASSIVE EXPOSURE TOWARDS WEB BASED LEARNING. Journal of Xidian University, 14(4), https://doi.org/10.37896/jxu14.4/266.

Maity, S., Sahu, T. N., & Sen, N. (2021). Panoramic view of digital education in COVID-19: A new explored avenue. Review of Education, 9(2), 405-423.

Malikowski, S. R., Thompson, M. E., & Theis, J. G. (2007). A model for research into course management systems: Bridging technology and learning theory. Journal of educational computing research, 36(2), 149-173.

Maqableh, M. (2015). The acceptance and use of computer based assessment in higher education. Journal of Software Engineering and Applications, 8(10), 557.

Marikar, F. M., & Jayarathne, N. (2016). Effectiveness of Moodle in education system in Sri Lankan University. International Journal of Modern Education and Computer Science, 8(2), 54.

Matar, H. M., & Samour, A. I (2015). The Impact of Strategic Thinking on Decision Making Case study: UNRWA Gaza-Field Office.

MEB (2020). MINISTER SELÇUK TALKS ABOUT TURKEY'S COVID-19 EXPERIENCE TO G20 COUNTRIES. Retrieved from http://www.meb.gov.tr/minister-selcuk-talks-about-turkeys-covid-19-experience-to-g20-countries/haber/21202/en.

Moore, J. L., Dickson-Deane, C., & Galyen, K. (2011). e-Learning, online learning, and distance learning environments: Are they the same?. The Internet and Higher Education, 14(2), 129-135.

Morgan, G. (2003) Faculty Use of Course Management Systems. http://www.educause.edu/ir/library/pdf/ecar_so/ers/ers0302/ekf0302.pdf.

Muftahu, M. (2020). Higher education and covid-19 pandemic: Matters arising and the challenges of sustaining academic programs in developing African universities. International Journal of Educational Research Review, 5(4), 417-423.

Mulenga, E. M., & Marbán, J. M. (2020). Prospective teachers' online learning Mathematics activities in the age of COVID-19: A cluster analysis approach. EURASIA Journal of Mathematics, Science and Technology Education, 16(9), em1872.

Murphy, M. P. (2020). COVID-19 and emergency eLearning: Consequences of the securitization of higher education for post-pandemic pedagogy. Contemporary Security Policy, 41(3), 492-505.

Muthuprasad, T., Aiswarya, S., Aditya, K. S., & Jha, G. K. (2021). Students' perception and preference for online education in India during COVID-19 pandemic. Social Sciences & Humanities Open, 3(1), 100101.

Naresh, R. (2020). Education after COVID-19 Crisis Based on ICT Tools. UGC CARE Journal, 31(37), 464-468.

Nayak, M. K., & Suesaowaluk, P. (2007, November). Advantages and disadvantages of eLearning management system. In Fourth International Conference on eLearning for Knowledge-Based Society (pp. 1-7).

Nestor Gilbert (2021). 76 Essential LMS & eLearning Statistics: 2020/2021 Market Share & Data Analysis. Retrieved from https://financesonline.com/25-essential-learning-management-system-e-learning-statistics-analysis-of-trends-data-and-market-share/ .

Ngai, E. W., Poon, J. K. L., & Chan, Y. H. (2007). Empirical examination of the adoption of WebCT using TAM. Computers & education, 48(2), 250-267.

Noe, R. A., Hollenbeck, J. R., Gerhart, B., & Wright, P. M. (2017). Human resource management: Gaining a competitive advantage. New York, NY: McGraw-Hill Education.

Nurakun Kyzy, Z., Ismailova, R., & Dündar, H. (2018). Learning management system implementation: a case study in the Kyrgyz Republic. Interactive Learning Environments, 26(8), 1010-1022.

Ong, C. S., Lai, J. Y., & Wang, Y. S. (2004). Factors affecting engineers' acceptance of asynchronous e-learning systems in high-tech companies. Information & management, 41(6), 795-804.

Osman, M. E. (2020). Global impact of COVID-19 on education systems: the emergency remote teaching at Sultan Qaboos University. Journal ucation for Teaching, 46(4), 463-471.

Parisio, M. L. (2011). Engaging students in learning through online discussion: A phenomenographic study. Changing Demands, Changing Directions. Proceedings ascilite, 989-993.

Parker, M. A., & Martin, F. (2010). Using virtual classrooms: Student perceptions of features and characteristics in an online and a blended course. MERLOT Journal of Online Learning and Teaching, 6(1), 135-147.

Parkes, M., Stein, S., & Reading, C. (2015). Student preparedness for university e-learning environments. The Internet and Higher Education, 25, 1-10.

Phillips, S. K. (2010). Providing access to developmental reading courses at the community college: An evaluation of three presentation modes (pp. 1-457). George Fox University.

Preiser, W., Van Zyl, G., & Dramowski, A. (2020). COVID-19: getting ahead of the epidemic curve by early implementation of social distancing. SAMJ: South African Medical Journal, 110(4), 0-0.

Prescott, D., Gunn, C., Alieldin, W., Botter, K., Baghestani, S., & Saadat, H. (2013). Faculty use of the course management system (CMS) iLearn at the American University of Sharjah.

Radha, R., Mahalakshmi, K., Kumar, V. S., & Saravanakumar, A. R. (2020). E-Learning during lockdown of Covid-19 pandemic: A global perspective. International journal of control and automation, 13(4), 1088-1099.

Rafi, A. M., Varghese, P. R., & Kuttichira, P. (2020). The pedagogical shift during COVID 19 pandemic: online medical education, barriers and perceptions in central Kerala. Journal of medical education and curricular development, 7, 2382120520951795.

Reushle, S., & McDonald, J. (2004, November). Role of the educator in supporting learning in an online environment: vision for the future. In International Conference on Computers in Education 2004: A Conference of the Asia-Pacific Society for Computers in Education (APSCE) (pp. 1117-1126). Common Ground Publishing.

Rhode, J., Richter, S., Gowen, P., Miller, T., & Wills, C. (2017). Understanding faculty use of the learning management system. Online Learning, 21(3), 68-86.

Rohman, M., Marji, D. A. S., Sugandi, R. M., & Nurhadi, D. (2020). Online learning in higher education during covid-19 pandemic: students' perceptions. Journal of Talent Development and Excellence, 12(2s), 3644-3651.

Rovai, A. P., & Barnum, K. T. (2007). On-line course effectiveness: An analysis of student interactions and perceptions of learning. International Journal of E-Learning & Distance Education/Revue internationale du e-learning et la formation à distance, 18(1), 57-73.

Ruzgar, N. S. (2004). Distance education in Turkey. Turkish Online Journal of Distance Education, 5(2).

Ryabov, I. (2012). The effect of time online on grades in online sociology courses. MERLOT Journal of Online Learning and Teaching, 8(1), 13-23.

Sahin, I., & Shelley, M. (2008). Considering students' perceptions: The distance education student satisfaction model. Journal of Educational Technology & Society, 11(3), 216-223.

Sahu, P. (2020). Closure of universities due to coronavirus disease 2019 (COVID-19): impact on education and mental health of students and academic staff. Cureus, 12(4).

Saidi, R. M., Sharip, A. A., Abd Rahim, N. Z., Zulkifli, Z. A., & Zain, S. M. M. (2021). Evaluating Students' Preferences of Open and Distance Learning (ODL) Tools. Procedia Computer Science, 179, 955-961.

Salisbury, L. E. (2018). Just a tool: Instructors' attitudes and use of course management systems for online writing instruction. Computers and Composition, 48, 1-17.

Salloum, S. A., Alhamad, A. Q. M., Al-Emran, M., Monem, A. A., & Shaalan, K. (2019). Exploring students' acceptance of e-learning through the development of a comprehensive technology acceptance model. IEEE access, 7, 128445-128462.

Salter, S. M., Karia, A., Sanfilippo, F. M., & Clifford, R. M. (2014). Effectiveness of E-learning in pharmacy education. American journal of pharmaceutical education, 78(4).

Santoso, S. (2021). Factors influencing the formation of consumer engagement and consumer satisfaction with e-learning activities. Innovative Marketing, 17(2), 137.

Saputro, B., & SUSİLOWATİ, A. T. (2019). Effectiveness of Learning Management System (LMS) on In-Network Learning System (SPADA) Based on Scientific. Journal for the Education of Gifted Young Scientists, 7(3), 481-498.

Saputro, B., Tortop, H. S., Zuhri, M., Mansur, M., & Saerozi, M. (2021). The Effectiveness of the Learning Management System of Saqural Learning Application on the Scientific Interpretation Learning Outcomes. Jurnal Pendidikan IPA Indonesia, 10(1), 111-120.

Sari, T., & Nayır, F. (2020). Challenges in Distance Education During the (Covid-19) Pandemic Period. Qualitative Research in Education, 9(3), 328-360.

Sarikhani, R., Salari, M., & Mansouri, V. (2016). THE IMPACT OF E-LEARNING ON UNIVERSITY STUDENTS'ACADEMIC ACHIEVEMENT AND CREATIVITY. Journal of Technical Education and Training, 8(1).

Saykili, A. (2018). Distance education: Definitions, generations, key concepts and future directions. International Journal of Contemporary Educational Research, 5(1), 2-17.

Schullo, S., Hilbelink, A., Venable, M., & Barron, A. E. (2007). Selecting a virtual classroom system: Elluminate live vs. Macromedia breeze (adobe acrobat connect professional). MERLOT Journal of Online Learning and Teaching, 3(4), 331-345.

Senel, S., & Senel, H. C. (2021). Remote Assessment in Higher Education during COVID-19 Pandemic. International Journal, 8(2), 181-199.

Senyuva, E. (2011). Trends towards distance education of nursing education in Turkey. Turkish Online Journal of Distance Education, 12(4), 147-156.

Serhan, D. (2019). Web-Based Homework Systems: Students' Perceptions of Course Interaction and Learning in Mathematics. International Journal on Social and Education Sciences, 1(2), 57-62.

Serhan, D. (2020). Transitioning from face-to-face to remote learning: Students' attitudes and perceptions of using Zoom during COVID-19 pandemic. International Journal of Technology in Education and Science, 4(4), 335-342.

Shahzad, A., Hassan, R., Aremu, A. Y., Hussain, A., & Lodhi, R. N. (2020). Effects of COVID-19 in E-learning on higher education institution students: the group comparison between male and female. Quality & quantity, 1-22.

Shannon, L. J. Y., & Rice, M. (2017). Scoring the open source learning management systems. International Journal of Information and Education Technology, 7(6), 432-436.

Sharpe, R., & Benfield, G. (2005). The student experience of e-learning in higher education. Brookes eJournal of Learning and Teaching, 1(3), 1-9.

Shereen, M. A., Khan, S., Kazmi, A., Bashir, N., & Siddique, R. (2020). COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. Journal of advanced research, 24, 91.

Siagian, S., Sinambela, P. N. J. M., & Wau, Y. (2020). Effectiveness and efficiency of e-learning in Instructional Design. World Transactions on Engineering and Technology Education, 18(1), 73-77.

Şimşek, Ö. F. (2012). Higher-order factors of personality in self-report data: Self-esteem really matters. Personality and Individual Differences, 53(5), 568-573.

Sinclair, J., & Aho, A. M. (2018). Experts on super innovators: understanding staff adoption of learning management systems. Higher Education Research & Development, 37(1), 158-172.

Singh, N., & Phirriyalatha, A. S. Impact of COVID-19 on Education and New Opportunities in Online Teaching. regulation, 26, 30.

Singh, V., & Thurman, A. (2019). How many ways can we define online learning? A systematic literature review of definitions of online learning (1988-2018). American Journal of Distance Education, 33(4), 289-306.

So, H. J., & Brush, T. A. (2008). Student perceptions of collaborative learning, social presence and satisfaction in a blended learning environment: Relationships and critical factors. Computers & education, 51(1), 318-336.

Sofi, A., & Laafou, M. (2020). Effect of using the online learning platform in teaching during the COVID-19 pandemic. Educational practices during the COVID-19 viral outbreak: International perspectives, 167.

Soroka, V. (2019). Digital Education in the International Pedagogical Discourse. Comparative Professional Pedagogy, 9(4), 74-81.

Studyinturkey (2020). Higher Education in Numbers, Retrieved from Higher Education in Numbers https://www.studyinturkey.gov.tr/StudyinTurkey/_PartStatistic .

Tarhini, A., Hone, K., & Liu, X. (2015). A cross-cultural examination of the impact of social, organisational and individual factors on educational technology acceptance between B ritish and L ebanese university students. British Journal of Educational Technology, 46(4), 739-755.

Tarhini, A., Hone, K., Liu, X., & Tarhini, T. (2017). Examining the moderating effect of individual-level cultural values on users' acceptance of E-learning in developing countries: a structural equation modeling of an extended technology acceptance model. Interactive Learning Environments, 25(3), 306-328.

Teaching Excellence in Adult Literacy. (2010). TEAL Center Fact Sheet No. 6: Student-Centered Learning. Literacy Information and Communication System. Retrieved from https://lincs.ed.gov/sites/default/files/6%20_TEAL_Student-Centered.pdf .

Tella, A. (2012). System-related factors that predict students' satisfaction with the Blackboard Learning System at the University of Botswana. African Journal of Library, Archives & Information Science, 22(1), 41-52.

Terzi, B., Azizoğlu, F., & Özhan, F. (2021). Factors affecting attitudes of nursing students towards distance education during the COVID-19 pandemic: A web-based cross-sectional survey. Perspectives in Psychiatric Care.

Tezer, M., & Çimşir, B. T. (2018). The impact of using mobile-supported learning management systems in teaching web design on the academic success of students and their opinions on the course. Interactive Learning Environments, 26(3), 402-410.

Thomas, M. (2011). Digital education: Opportunities for social collaboration. Springer.

Tichavsky, L. P., Hunt, A. N., Driscoll, A., & Jicha, K. (2015). " It's Just Nice Having a Real Teacher": Student Perceptions of Online versus Face-to-Face Instruction. International Journal for the Scholarship of Teaching and Learning, 9(2), n2.

Tonsmann, G. (2014). A Study of the Effectiveness of Blackboard Collaborate for Conducting Synchronous Courses at Multiple Locations. InSight: A Journal of Scholarly Teaching, 9, 54-63.

Tubagus, M., Muslim, S., & Suriani, S. (2020). Development of learning management system-based blended learning model using claroline in higher education.

Tümen Akyildiz, S. (2020). College Students' Views on the Pandemic Distance Education: A Focus Group Discussion. International Journal of Technology in Education and Science, 4(4), 322-334.

Turkish Ministry of Health (2020). COVID-19 Information Page. Retrieved from General Coronavirus Table https://covid19.saglik.gov.tr/EN-69532/general-coronavirus-table.html .

Vasanth, S., & Sumathi, C. S. (2020). Learning management systems through Moodle and Google classroom for education. Advances in Research, 32-37.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS quarterly, 425-478.

Walliman, N. (2010). Research methods: The basics. Routledge.

Weeden, K. A., & Cornwell, B. (2020). The small-world network of college classes: implications for epidemic spread on a university campus. Sociological science, 7, 222-241.

West, R. E., Waddoups, G., & Graham, C. R. (2007). Understanding the experiences of instructors as they adopt a course management system. Educational Technology Research and Development, 55(1), 1-26.

WHO (2013). Pandemic phase descriptions and main actions by phases. Retrieved from https://www.who.int/influenza/resources/documents/pandemic_phase_descriptions_and_actions.pdf?ua=1 .

WHO (2020a). Coronavirus Disease (COVID-19). Retrieved from https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/coronavirus-disease-covid-19#:~:text=symptoms.

WHO (2020b). Transmission of SARS-CoV-2: implications for infection prevention precautions. Retrieved from https://www.who.int/news-room/commentaries/detail/transmission-of-sars-cov-2-implications-for-infection-prevention-precautions.

Worldometers (2021). Turkey Population. Retrieved from https://www.worldometers.info/world-population/turkey-population/ .

Yakubu, M. N., & Dasuki, S. I. (2019). Factors affecting the adoption of e-learning technologies among higher education students in Nigeria: A structural equation modelling approach. Information Development, 35(3), 492-502.

Yekta Saraç M. A. (2021). ANALYSIS - The impact of online education during COVID-19 Pandemic in Turkish higher education. Retrieved from https://www.aa.com.tr/en/analysis/analysis-the-impact-of-online-education-during-covid-19-pandemic-in-turkish-higher-education/2163525# .

APPENDIX A

Appendix A.1: Questionnaire

First Part: Demographic Dimensions

Age	18-29
	30-39
	40 & above
Gender	Male
	Female
The current program you study	Bachelor
	Master
	PhD
Where do you live?	City
	Village
	Others
The device you prefer to use for Blackboard	Mobile
	Laptop
	Desktop
	Tablet
How long would you like the online classes (per class) to be?	45 Min
	60 Min
	90 Min
	More than two hours

How many classes per day would you like to take on Blackboard collaborate?	Only one class
	Two classes
	Three classes
	Over three classes
What kind of exams would you like?	Take home
	Multiple choice & true-false
	Both
What kind of subjects do you study?	Practical and Theoretical
	Only theoretical
Are you willing to continue the classes through Blackboard system in the future after COVID-19?	Yes
	No
	Not sure
I have a previous experience in using the Learning Management Systems (Blackboard).	Yes
	No

Second Part: Students' Perceptions' Items

	Item	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
Self-efficacy	1. I feel confident using the Blackboard system.					
	2. Blackboard enabled me to organization and time management.					
	3. Blackboard helped me with knowledge of new tools.					
	4. Blackboard added value to your learning skills.					
Engagement	5. Blackboard increased the level of involvement activities.					

	6. Blackboard encouraged me on the class attendance more than face-to-face.					
	7. Blackboard aided me to concentrate more than traditional learning.					
	8. Blackboard improved my grades.					
Usefulness	9. Blackboard increased my productivity.					
	10. I believe Blackboard can assist learning efficiency.					
	11. I believe Blackboard can assist learning performance.					
	12. I believe Blackboard can assist learning motivation.					
	13. I believe Blackboard can assist learning assessment / evaluation (quizzes / surveys / self-tests).					
Communication and Ease of Use	14. Posting announcements, other timely news and information by your instructor or department were in time.					
	15. I got feedback from instructors/staff immediately.					
	16. Discussions and Submissions (email, chat, post, etc.) were active and effective.					
	17. Blackboard Collaborate (virtual classroom) is very beneficial.					
	18. Blackboard enables me to access to learning resources / materials (files / content/ assignments / learning modules).					
	19. It was difficult for me to use Blackboard.					
Challenges	20. I felt time-consumption.					
	21. I felt isolated.					

	22. I was ready to study using Blackboard system (Having intention).					
	23. Using Blackboard was costly of internet access.					
	24. Blackboard increased family time during COVID-19.					
	25. Blackboard helped me with personal improvement during COVID-19.					
	26. Blackboard allowed me to practice new activities during COVID-19.					
Satisfaction	27. I am satisfied with using Blackboard as a learning assisted tool.					
	28. I am satisfied with Blackboard functions.					
	29. I am satisfied with Blackboard contents.					
	30. I am satisfied with Blackboard interaction.					

CURRICULUM VITAE

* ”6689 Sayılı Kişisel Verilerin Korunması Kanunu Hükümlerine Göre Çevrimiçi Yayın Dosyasında Bulunan Kişisel Veriler Ve Islak İmzalar Silinmiştir.”