STUDENTS' SATISFACTION WITH THE HYBRID LEARNING SYSTEM –
LEBANESE CONTEXT

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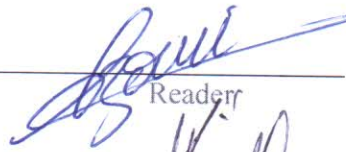Candidate for the degree of Master of Business Administration

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ABSTRACT

It is said, any newly implemented system will have some challenges to encounter and tune. In this research study, we did address the students' experience and satisfaction with the newly implemented hybrid learning system in distressed countries like Lebanon where different challenges are more significant due to the lack of proper IT infrastructure, poor internet connection, and challenging economic conditions. The aim of this study is to determine the level of students' satisfaction with the implemented hybrid learning system within the Lebanese private sector universities and to explore the key factors that most affect students' satisfaction with the current hybrid learning model implemented in Lebanon, that is forced by the COVID-19 pandemic and other social and economic challenging conditions. The research process has been done in two steps. The first step covered the most convenient literature review that helped us better understand the key measurable variables affecting students' satisfaction with the new learning method, then the second step followed was the quantitative approach, where a well-structured questionnaire was prepared and distributed to address the key factors influencing students' satisfaction from both the social and educational perspectives. Note that, a convenience sampling method was used, where a total of 232 students from five selected universities did participate in the study. This study found that the learning method efficacy, university support, students' adaptation, and social influence factors do have a significant effect on students' satisfaction with the implemented hybrid learning system. The learning method efficacy factor did show the highest impacting weight whereas the social influence found to be the least impacting among the 4 identified factors. In addition, no difference in opinion detected among the different gender groups. However, graduate students did show a higher level of satisfaction than under-graduate students. This study did only cover the private sector universities in Lebanon where public sector universities might need to be included in future studies with a wider sample size. In presence of all the challenging conditions that Lebanese students are experiencing due to the bad economic, political, and health conditions, this study will help universities to better identify the main factors that do influence students' satisfaction with the hybrid learning method so that a proper decisions and actions can be taken to better address the students' needs while ensuring the required level of learning among Lebanese universities.

Keywords – Hybrid learning, e-learning, students' satisfaction, university, UTAUT, technology acceptance.

CHAPTER 1
INTRODUCTION

After the COVID-19 was first reported on December 2019, and dramatically spread over the whole world, causing a death of millions of people, and was classified as pandemic by the world health organization forcing a new way of living affecting all aspects of human life including the education sector (Tarkar, P. 2020), the COVID-19 pandemic did force a tough shift from the traditional learning method which is based on face-to-face classes into online and hybrid learning concepts that is not well established in most of the developing countries. Such a sudden shift in the learning method, did raise high challenges to the educational sector including institutions, instructors, and students that is affected by the poor infrastructure and the bad economic and health conditions which makes this transition from the traditional to new learning methods a challenging tough-way or no-way choice to apply (Tadesse, S., & Muluye, W. 2020). For this, a deep analysis of the main influencing factors that do affect students' satisfaction with this new learning method is crucial for universities to secure a smooth and proper transition for years to come.

1.1 General background

The importance of implementing an efficient online learning model that is flexible enough to fit students' needs while securing a prominent level of learning quality has long been recognized by the education industry and has acquired a further focus with the current challenging health and economic conditions forced by the COVID-19 pandemic (Hatip, A. 2020). Since the COVID-19 pandemic first appeared in December 2019 and was declared by the World Health Organization as a global pandemic affecting all industries worldwide due to the lockdown and strict precautions to limit the spread of the Corona virus, remote concept has been arises dramatically affecting all industries (Yamoah, F. A., & ul Haque, A. 2022). Based on this, we have seen that the learning industry has experienced a major shift from in class learning system to online and mixed learning methods as an alternative learning strategy during the pandemic that was applied internationally. Such a sudden shift to online learning methods have produced a direct impact on students' satisfaction, (Naddeo, A., Califano, R., & Fiorillo, I. 2021), especially in the developing countries where the required IT infrastructure and the reliable internet connection are not available, add to this the low employment rate in developing

countries due to economic and political instability which further affect the purchasing power of students to secure the required online learning tools (Kundu, A., & Bej, T.; 2021).

Based on these challenges, some universities in developing and distressed countries like Lebanon, decided to implement the hybrid learning system which is a mixed of online and on campus learning method in order to accommodate the existing challenges and at the same time to secure the intended learning quality while keeping a good level of satisfaction not only for students but also for the institution itself and for lecturers as well who also suffer from the challenging conditions forced by different factors that negatively affect the means of living for Lebanese citizens.

1.2 Need for the study

Today, the implemented hybrid learning system is still a controversial topic in developing countries that needs further studies to clarify its effectiveness, where some students find concerns about the online learning in presence of the poor infrastructure and little face-to-face interaction, whereas other students mentioned a high level of satisfaction with the online and mixed learning method and showed a preference over the traditional learning method (Adam, S., & Nel, D.,2009). Institutions, students, and lecturers, all must work hand in hand to overcome the challenges that may interrupt the learning process.

Previous studies focused mainly on understanding the different methods of e-learning, online learning advantages and disadvantages, the effect of the online methods on the quality of learning and on students' satisfaction, e-learning challenges during the COVID-19, in addition to the institutional and students' readiness to handle the online learnings during the pandemic.

This study will provide a comprehensive and structured approach in addressing the hybrid-based learning system in developing countries, like Lebanon, where the financial crisis, the high level of corruption, low employment rates, and the critical security situation added a crucial factor to the challenging conditions forced by COVID-19 on the educational sector in Lebanon. This will be precisely tackled in this research study.

The Lebanese private sector universities are selected for this research in order to study the level of students' acceptance and satisfaction with the newly implemented hybrid learning

system, and to examine to what extent the Lebanese private sector institutions with the available lecturers and course contents are ready for this major shift. From the other side, this study will better examine the readiness of students to accept and smoothly respond to such a new learning method with all its technical and psychological implications affected by the economic and health challenges the country is facing.

1.3 The purpose of this study

Securing a successful implementation of the newly introduced hybrid learning method in developing country like Lebanon include high challenges and obstacles that requires intention and continuous process improvement to achieve the required smooth implementation that secure the needed level of satisfaction among all stakeholders. Accordingly, students are highly impacted in this newly implemented system and are vulnerable to dissatisfaction and rejection of the mixed learning method. Such a challenge requires an intensive study to determine the level of students' acceptance and satisfaction of the implemented hybrid learning model within the Lebanese private sector universities and to help those universities to better understand the most influencing factors that do affect students' satisfaction, in addition, to propose the proper decisions towards a healthy and efficient learning model. Based on the above explanation, a prominent question is the following:

Are students in the Lebanese private sector universities satisfied with the implemented hybrid-based learning system?

Objectives:

The main objectives of this study can be summarized as follows:

RO1: To identify the level of students' satisfaction with the implemented hybrid learning system

RO2: To identify the main factors that influence students' satisfaction with the hybrid learning system implemented at the Lebanese private sector universities

RO3: To help universities better understand the student's needs and take proper decisions to further improve the level of satisfaction while maintaining the required quality of education

The results of this study will add value to the Lebanese education system within the existing challenging conditions that Lebanese students are suffering from, aiming to explore the influence of hybrid learning system on students' acceptance and satisfaction to help universities better understand student's needs and take proper decisions to further improve the level of satisfaction while maintaining the required quality of learning among institutions.

In addition, this study will open the door for other succeeding studies that might target the public education sector in Lebanon and other developing countries who follow a similar hybrid learning system and experienced a similar economic and health conditions.

1.4 Overview

The structure of the remaining chapters of this study are organized as follows:

Chapter 2 covers the review of literature about previous research studies that have tackled the e-learning and mixed learning methods on higher education, with main focus on developing countries, in addition to covering the different theories related to the e-learning topic.

Chapter 3 displays the procedures and methodology that covers the research model and hypotheses, where the variables, procedures, methodology used, and the conceptual framework are discussed in detail.

Chapter 4 discusses the findings using the descriptive statistics, main results analysis, and analyze the findings to support or reject the highlighted hypotheses.

Chapter 5 covers the conclusions and recommendations where the main findings, triangulation check, limitation of the research, managerial implications, and final recommendations are addressed.

CHAPTER 2
REVIEW OF LITERATURE

This chapter will start by defining the e-learning and its benefits in addition to the different types of learning methods by going deep into its importance, especially in the presence of the unexpected COVID-19 pandemic. As a result of COVID-19, Institutions were forced towards a sudden shift from the traditional to online and hybrid learning methods, such unplanned shift has many challenges and complications on both, the educational institutions from one side and on the students' satisfaction from the other side that will be tackled in this chapter. Moreover, the online learning challenges in developing countries and the most impacted limitations that both educational institutions and students are facing will also be covered. In addition, this chapter will address the most important technology acceptance theories with high focus on the unified theory of acceptance and use of technology, UTAUT theory, that was considered as one of the most integrated technology acceptance theories used in this area.

2.1 State of knowledge in the area of interest

In order to better understand the main factors that have a significant influence on the hybrid-learning acceptance, we did consider two of the most widely used technology acceptance theories which are the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) with main focus on UTAUT as it is developed based on eight older technology acceptance theories that was unified to come up with the UTAUT model. UTAUT was widely applied in different domains since it was first introduced till present (Momani, A. M. 2020). We can define those foundation theories as follows:

2.1.1   Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is one of the famous theories that was developed to study the user behavior in accepting the use of new technology. TAM model

was first developed by Davis in 1985, where the main objectives of TAM were to better understand the user behavior to accept and use a new implemented technology by providing a new theoretical insight into a proper implementation and design of information system (Pham, Q. T., & Tran, T. P. 2020) In addition, the TAM model aimed to provide a theoretical basis to help designers to test and evaluate the success level of the proposed new technological systems before implementation (Davis, F. D. 1985).

2.1.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

The unified theory of acceptance and use of technology, UTAUT, was formulated by Venkatesh et al. (2003) based on different older theories and models of acceptance by considering the advantages of the following eight related theories (Momani, A. M. 2020):

- TRA: Theory of Reasoned Action
- TPB: Theory of Planned Behavior
- TAM: Technology Acceptance Model
- C-TAM-TPB: Combination of Technology Acceptance Model and Planned Behavior
- MPCU: Model of PC Utilization
- IDT: Innovation Diffusion Theory
- MM: Motivational Model
- SCT: Social Cognitive Theory

As a result of this Venkatesh and his research team, the UTAUT theory was proposed by taking the advantages from all the eight older theories where the most significant determinants and moderators were considered, and all other insignificant factors have been excluded.

The UTAUT model is based on four determinants covering the user expectation of the system performance and the effort required, in addition to the impact of social related aspects and other facilitating conditions that has direct effect on the behavioral intention (BI) as defined in Table 1. Moreover, the UTAUT model considered some of demographical variables like age, gender, experience, and voluntariness of use. UTAUT was considered as one of the most powerful theories addressing the technology acceptance and user's ability to adopt new technologies.

Table 1: *UTAUT definition of constructs*

Constructs	Definition
Performance Expectancy	The expected enhancing performance of the new technology to ensure the required level of benefits and usefulness that meets the user's expectation (Venkatesh et al. 2003).
Effort Expectancy	The expectation of users regarding the use of technology and the level of efforts required (Venkatesh et al. 2003).
Social Influence	The influence of others on the user to trigger the use of the technology and the motivation to continue using it (Venkatesh et al. 2003).
Facilitating Conditions	The expected level of support and technical facilities that can help and simplify the efficient use of technology (Venkatesh et al. 2003).
Behavioral Intention	The expected user's intention and his/her willingness to efficiently use the provided technology (Venkatesh et al. 2003).

*Reference: Momani, A. M. (2020).

2.2 Previous studies

Several previous studies did use UTAUT theory for exploring the technology acceptance in the e-learning system, where we did use the results obtained from previous related research as lessons learned, in addition to other primary data input, in order to craft our model that precisely fit the education system by identifying the most impacting determinants affecting user's acceptance of hybrid learning system implementation. In addition, the results obtained will be compared to the conclusion drafted from previous studies who did use the same UTAUT theory to test the user acceptance and adoption of technology use in learning systems.

Table 2 below, summarizes the list of previous technology acceptance related research done with the related topic, impact factors used, and results obtained.

Table 2: *Previous e-learning acceptance research based on UTAUT theory*

Author	Research topic	Impact factors
Kayali et al., 2020	Adoption of Cloud Based E-learning in Developing Countries: A Combination of DOI, TAM and UTAUT	. Relative advantage . Perceived ease-of-use (PEOU) . Social influence . User satisfaction **Mediating variable**: Attitude: Is proposed to mediate the effect of RA, PEOU, SI and user satisfaction on Behavioral Intention.
Results obtained:		*User satisfaction was detected to be the most identified factor affecting the Behavioral intention followed by relative advantage, social influence, and PEOU*
Abdou et al., 2020	The Use of the UTAUT in the Adoption of E-Learning Technologies: France Banks	. Performance expectancy . Effort expectancy . Social influence . Facilitating conditions . Top management support, . Attitude towards e-learning
Results obtained:		*All the identified factors found to be important in e-learning adoption where the EE (Effort expectancy) and PE (Performance expectancy) are the most identified factors affecting the intention to use E-learning in the banking sector.*

Table 2 (Continue)

Author	Research topic	Impact factors
Rahmaningtyas et al., 2020	Application of UTAUT to Understand the Acceptance and Use of the E-Learning System	This study aimed to analyze the source of the problems that affected use behavior, by exploring the factors of: . Performance expectancy (PE) . Effort expectancy (EE) . Social influence (SI) . Facilitating conditions (FC) **mediating variable**: Behavioral Intentions.
Results obtained:		*The results obtained showed a significant impact of PE, SI, and FC on use behavior. However, a limited effect of facilitating conditions FC detected on use behavior. In addition, the BI effectively mediated PE and SI but failed in moderating regarding the use behavior.*
Abbad et al., 2021	Using the UTAUT model to understand students' usage of e-learning systems in developing countries	Four principal determinants of intention and usage were explored: . Performance expectancy . Effort expectancy . Social influence . Facilitating conditions

Results obtained:	*Results showed that PE and EE have a significant effect on Behavioral Intentions (BI) but the social influence (SI) has no effect on BI. Moreover, it is confirmed that FC and BI have a direct impact on the use of e-learning among students.*

Table 2 (Continue)

Author	Research topic	Impact factors
Alshehri et al., 2020	The usability qualities and UTAUT effects on students towards the learning systems in Saudi tertiary education	. Performance expectancy . Effort expectancy . Social influence . Facilitating conditions . Behavioral intention (BI)
Results obtained:	*Results showed that the identified determinants are significant in influencing the students' usage behavior of the learning management system in KSA, where the PE was affected by the system interactivity and quality of information whereas the system navigation and learnability in addition to instructional assessment factors have a direct influence on effort expectancy.*	

| Marlina et al., 2021 | Factors affecting student performance in e-learning: a case study of higher educational institutions in Indonesia | . Social influence
. Facility conditions
. Effort expectancy
. Performance expectancy

Additional variables, including lecturer characteristics, external motivation, and organizational structure |

| *Results obtained:* | | *Results confirmed that SI, FC, and EE have a significant effect on students' behavior whereas no significant influence detected by the performance expectancy on students' behavior. In addition, the other additional variables showed a direct effect on user performance where students' motivation and related environment showed a high significant effect.* |

Table 2 (Continue)

Author	Research topic	Impact factors
Maphosa et al., 2021	Factors influencing student's perceptions towards e-learning adoption during COVID-19 pandemic: A developing country context	The model has five exogenous and two endogenous variables Exogenous variables: . Performance expectancy, . Effort expectancy, . Facilitating condition Support . Facilitating condition Access . Facilitating condition Efficacy Endogenous variables:

. Behavioral Intention

. Usage

Results obtained:

The results confirmed a positive influence of PE, EE, and FC on students' behavioral intentions in using the e-learning system. Whereas the unavailability of technology and high cost of data showed a significant loss of learning. In addition, the results reflected the importance of proper access to resources and materials for the e-learning adoption.

Table 2 (Continue)

Author	Research topic	Impact factors

Qiao et al., 2021

The development and adoption of online learning in pre-and post-COVID-19: Combination of technological system evolution theory and UTAUT theories

E-learning Adoption before COVID-19:

. Effort Expectancy (EE)

. Social Influence

. Facilitating Conditions

. Effects of Technology Development

E-Learning Adoption after COVID-19:

. Self-efficacy

. Performance Expectancy

. Effort Expectancy

. Facilitating Condition

  - Financial factor

  - Technology factor

. Social Isolation

  - Isolation due to lack of effective

   connections with others

Results obtained:

The results showed that a more focus on technology efficiency was considered after COVID-19 pandemic. In addition, a high focus on e-learning infrastructure towards reaching more users was considered as e-learning is a must to continue education in presence of COVID-19. Moreover, the results indicated that relationship between the external factors and BI of using e-learning is highly moderated by the COVID-19 fear, whereas the financial conditions have a significant effect on the implementation of the new technology and students' engagement in e-learning is affected by social isolation.

*References: (Kayali, M., & Alaaraj, S. 2020; Abdou, D., & Jasimuddin, S. M. 2020; Rahmaningtyas, W., Mulyono, K. B., Widhiastuti, R., Fidhyallah, N. F., & Faslah, R. 2020; Abbad, M. M. 2021; Alshehri, A., Rutter, M. J., & Smith, S. 2020; Marlina, E., Tjahjadi, B., & Ningsih, S. 2021; Maphosa, V. 2021; Qiao, P., Zhu, X., Guo, Y., Sun, Y., & Qin, C. 2021)

2.2.1 E-learning definition and benefits

Online learning, which is also known as e-learning, can be defined as the use of technology in order to achieve a learning outcome for the benefit of both the student and the academic institutions. E-learning does provide a wider reach, cost saving, and time efficient method of learning as compared to the traditional face to face learning method (Yuhanna, I., Alexander, A., & Kachik, A. 2020). E-learning do support an easy access to information and provides the corner block to transform the traditional way of teaching and studying towards a more efficient learning method, the intention is to develop the quality while decreasing the cost and time spent in the learning process (Ayu, M. 2020).

Many academic institutions have invested into online learning methods to convert the traditional learning methods into online or mixed mode learning, but the challenge is to properly implement and sustain a successful e-learning services especially in the presence of COVID-19 pandemic that forced the urgent need of applying e-learning as an alternative learning methods due to the lockdown and health related challenges (Alam, M. M., Ahmad, N., Naveed, Q. N., Patel, A., Abohashrh, M., & Khaleel, M. A. 2021). Furthermore, Ivanova in his study for e-learning informatics, did highlight the importance of information technologies to utilize and automate the key activities in the educational process starting from the learners, passing through the academic institutions till reaching parents and other affected stakeholders. This tight connection between learning and technologies did and will continue to enhance the teaching and learning processes to meet the wanted position in the presence of different challenging conditions that might encounter (Ivanova, M. 2020).

2.2.2 COVID-19 and e-learning

Since the lockdown started by 2020, the academic sector has been affected like other sectors pushing people towards online activities where possible. Based on this, we can see the academic institutions at different levels did forcefully apply online and mixed mode methods using the existing available platforms to secure the continuity of the education process and continues the effort to improve and stabilize the newly applied learning methods, especially in developing countries like Lebanon where different economic and political challenging conditions do exist in addition to the pandemic. Maatuk in his study done on 2021, did mention the potential challenges and opportunities facing the learning activities in a developing country during the COVID-19 pandemic based on students and instructors

perspectives, where the results obtained did support the e-learning method usefulness in keeping students and the teaching staff safe, but students claimed an increase in pressure while a decrease of workload on teaching staff (Maatuk, A. M., Elberkawi, E. K., Aljawarneh, S., Rashaideh, H., & Alharbi, H. 2021). In addition, Kulikowski tapped on the influence of the forced e-learning on academic teachers during COVID-19, especially in universities that went into emergency mode with a sudden switch from the traditional education method to online and e-learning methods. Therefore, Kulikowski highlighted the possible negative side-effects of COVID-19 forced e-learning on teacher's motivation that require a special attention to ensure the proper education environment affecting teachers and students (Kulikowski, K., Przytuła, S., & Sułkowski, Ł. 2022). Also, another study conducted by Mukhtar and his team in 2020, who claimed a high limitation in maintaining academic integrity that requires a proper training program for the faculty on using online modalities, in addition to a reduction in cognitive load and a high focus on interactivities when applying online teaching method (Mukhtar, K., Javed, K., Arooj, M., & Sethi, A. 2020).

Moreover, Baticulon and his team in their study done on 2021, did identify the barriers to online learning during COVID-19 in developing countries, where they have classified the barriers under five categories covering the technological, individual, domestic, institutional, and community related barriers. The results obtained showed that only 41% of students are considered as mentally and physically capable to get well engaged in the online learning method (Baticulon, R. E., Sy, J. J., Alberto, N. R. I., Baron, M. B. C., Mabulay, R. E. C., Rizada, L. G. T., ... & Reyes, J. C. B. 2021).

As the online learning becomes the only hope for the continuity of education system in the age of coronavirus, the education system including institutes, instructors, and students, as well as parents should all get used to this new learning environment, where there is a high responsibility on educators to optimize the online learning system in the best way possible to better fit the students and staff needs. As highlighted by (Martin, A. 2020), who proposed five key considerations for educators to consider to efficiently support students during online learning. These five considerations cover a well-organized online instruction, a high-quality content, students' motivation, interpersonal relationships, and the good mental health that all should be properly tackled to get the outmost benefit of the online learning while ensuring a high level of student's satisfaction.

2.2.3 Hybrid learning and the different types of learning methods

Apart from the traditional face-to-face learning, we have several learning methods that depends on the use of technology, and significantly applied by the educational system worldwide during the COVID-19 pandemic. The most commonly known systems are online learning, which is purely depends on remote lecturing using the information technology and online based tools without any face-to-face intervention, and the other widely applied learning method is the hybrid or the mixed learning method, that is based on the mix between online and in class learning practices to make a balance and get the outmost benefit of the two learning methods while securing a proper health conditions forced by the COVID-19 pandemic. Hybrid learning, which is a form of blended learning method that can be defined as a mixed method between the traditional in class teaching with online or remote learning using technological tools and infrastructure. Caner in his study about building effective blended learning programs, did define blended learning as mixed of face-to-face classrooms, online conferencing, self-paced study and efforts (Caner, M. 2012).

Alqahtani & Rajkhan did identify five different e-learning systems characterized by blended learning, flipped classroom, ICT Supported Face-to-Face Learning, Synchronous learning, and Asynchronous learning systems. Where Alqahtani & Rajkhan did define the blended learning system as a mix of traditional and online classes and was identified as the most suitable system to apply based on the analysis of ten different factors considered in their study that is mainly related to students and instructor characteristics, technology, course material, e-learning environment, and collaboration level (Alqahtani & Rajkhan 2020). Even though the hybrid learning and online learning concepts are now considered as emergency teaching methods during the COVID-19 pandemic, however, such learning methods should be well considered as a lifelong learning method beyond the pandemic, by considering the potential opportunities and benefits it is providing to the education system worldwide, especially with the increasing risk of new forms of Corona virus spread is expected to appear in the future, as the World Health Organization claimed. *British Journal of Educational Technology did post an article on May 19 2021 by* Nørgård, R. T. *highlighting the importance of lifelong hybrid learning method and answering the question of how we can apply the hybrid learning in ways that fits a lifelong concept rather than emergency need only.* Nørgård, R. T concluded that big efforts to be done in order to design a high-quality post pandemic hybrid lifelong learning method by considering the best practices

implemented, aiming to establish a tentative guidelines and design principles for future hybrid lifelong learning model to apply (Nørgård, R. T. 2021).

2.2.4 Online learning challenges in developing countries

Most of the developing countries are suffering from different uncertainties including the poor IT infrastructure, low purchasing power, limited focus on technology with high dependency on the traditional ways of working in most industries, especially the educational based ones as it is considered of a lower priority among the life basic needs of food, health, and shelter. All these challenging conditions that do exist in developing countries are considered as a serious obstacles facing the migration towards the new online learning system forced by COVID-19 pandemic in developing and distressed countries, where effective strategies should be crafted to help affected students encounter these challenges in a smooth way while securing a proper educational and health conditions. Barrot, Llenares, & Rosario found that the learning environment at home is considered as the greatest challenging factor to students in a developing country like Philippine, whereas the financial challenges are also identified as other challenges that affect students' satisfaction with online learning (Barrot, Llenares, and Rosario 2021).

In addition, Khlaif and his team, did investigate the challenges associated with online learning during COVID-19 pandemic in developing distressed countries of middle east, who claimed that the emergency e-learning teaching during the pandemic has deepened inequities across students and widened the digital gap among students and families, some students couldn't afford to have a proper technological devices and to well connect to internet especially in rural areas, also digital privacy was a concern for some parents and students that prevents them from opening the webcam, which reduce students engagement and negatively influence the online learning process (Khlaif, Salha, Fareed, & Rashed 2021)

2.2.5 Hybrid Learning System in Lebanon and middle east

In addition to the previous studies done on e-learning system acceptance, that listed above in Table 2, we will mention the following studies that are directly related to the hybrid learning system in Lebanon and middle east, which provide more insight about the implementation of the hybrid learning method in Lebanese universities that will be of high

added value to our research, especially in understanding the most impactful determinants that was identified by those previous studies and can be used as reference.

El Danaoui, M. (2021) conducted a study to explore the factors that impact students' satisfaction with online learning in Lebanon, in both private and public educational sectors, to assess their readiness in response to the COVID-19 pandemic. The results showed that the readiness of institutions to introduce online learning, the ability of lecturers to plan their courses through e-learning settings, and the preparedness of students to use e-learning are significantly and positively correlated to students' satisfaction with online learning.

Younis et al (2021) also conducted research to assess the factors that may lead to students' satisfaction, and the factors that may influence E-learning's success in Lebanese universities. The study found that the students' satisfaction is strongly affected by the following four factors: the computer skills, E-learning content & autonomy, infrastructure, and support from others.

Bawa'aneh, M. S. (2021) investigated students' satisfaction, attitudes, and challenges in online learning in UAE public schools. The findings highlighted high students' satisfaction level, and positive attitudes and minimum challenges with online learning. This positive and strong correlation is related to the readiness of schools to face challenges such as exposing e-learning even before the pandemic, intensive training for students and instructors, and the strong infrastructure of the country.

Hadi & El-Jurdi (2020) reviewed literature on blended learning and highlighted a number of case studies and empirical research to indicate how blended learning has been introduced and utilized in the Middle East region, and particularly in Lebanon. They concluded that blended learning may be fulfilling the educational needs for both the students and instructors when compared with the traditional in-person learning. However, the students' experience will largely depend on connectivity and good infrastructure, since a secure and fast connection is essential for online programs.

2.3 Conclusion of previous studies

Based on those previous studies done and the results obtained from the selected literature review, which is based mainly on the UTAUT theory in studying and identifying the most impacting factors that do influence students' satisfaction with the new learning method, including e-learning and hybrid-based learning system in different countries, focusing more on developing countries like Lebanon who do suffer from different challenging conditions, we could clearly identify our variables, and developed our research questions and the related hypotheses that will be covered throughout this research study by focusing on students' satisfaction within the private sector of Lebanese universities, and to compare our results with the results obtained from the previous literature review, so that we can draw a solid conclusion that will be considered to better improve the learning conditions in developing countries.

CHAPTER 3
PROCEDURES AND METHODOLOGY

By referring to the selected literature review, that helped us get a deep understanding of the topic in study with a main focus on university students within the developing countries like Lebanon, this helped us to better understand the most impacting factors to be used in our study that is aligned with the UTAUT main determinants which covers the hybrid learning method efficacy, student adaptation, social influence, and university support impact on students' satisfaction, which is our aim to test and understand in this study. Such a detailed definitions and understanding of all key aspects related to the hybrid learning system, and its effect on students' satisfaction, especially in developing countries where many challenging conditions should be considered in the area of economy, health, politics, and security that will have a direct impact on the success and improvement of the implemented learning method. This will help us build the most appropriate conceptual model and hypotheses development that will be considered in this research study.

The research questions that will be addressed in this study:

RQ1: Are students in Lebanese private sector universities revealing acceptance and satisfaction with the currently implemented hybrid learning system?

RQ2: What are the main factors that affect students' satisfaction with the hybrid learning model?

RQ3: What are the key measures and actions that universities should undertake to improve the efficiency of the applied hybrid learning model?

3.1 Hypotheses

3.1.1 Learning method efficacy – Students' satisfaction

The effectiveness of the chosen learning method, like hybrid learning, by which in class and online methods combined has a direct influence on student satisfaction (Banerjee, G. 2011). E-learning tools, Course value, and session schedules are variables that can be used to measure the efficacy of learning method. Hypothesis H1 could be stated as follows:

H1: *The hybrid learning method efficacy has a positive influence on students' satisfaction*

3.1.2 Student's adaptation – Students' satisfaction

According to Younis et al (2021), with the research conducted to assess the factors that may lead to students' satisfaction, and do influence e-learning success in universities, found that computer skills and e-learning content do strongly affect students' satisfaction, that will help students better adapt to the newly implemented system. We also suspect that student's adaptation to e-learning tools and computer skills will further improves students' satisfaction with the hybrid learning method. Therefore, hypothesis H2 could be stated as follows:

H2: Student's adaptation to e-learning tools has a further positive influence on the effect of the learning method efficacy on students' satisfaction

3.1.3 Social influence – Students' satisfaction

Social interaction between student and student and between student and instructor, is an important factor that do help motivate and influence the level of satisfaction the student might achieve with any learning method. Therefore, with the newly implemented hybrid learning system in Lebanese universities, we suspect that social influence will have a high effect on the relation between the hybrid learning method and students' satisfaction. Besides, (Marlina et al.,2021) showed that the social influence factor does have a significant effect on students' behavior. Therefore, hypothesis H3 could be stated as follows:

H3: Social influence has a positive impact on the relation between the learning method efficacy and the overall students' satisfaction

3.1.4 University support – Students' satisfaction

To achieve the outmost benefit of any newly introduced learning system, an effective university support is a crucial factor that must be fulfilled, in order to help students better engaged in the learning system with no technical obstacles that might limit the efficient use of the e-learning tools to ensure the required level of students' satisfaction. Therefore, hypothesis H4 could be stated as follows:

H4: University support has a positive influence on the relation between the learning method efficacy and the overall students' satisfaction

3.2 Selected variables

Based on the literature review and on the UTAUT theory, we have identified the following determinants that we suspect will have a direct impact on students' satisfaction for the already implemented hybrid learning model.

Hybrid Method Efficacy (ME): Covering (E-learning tools efficacy, e-learning session schedule, hybrid courses flexibility (scheduling and content), Course value, and internet speed.

Student Adaptation (SA): Covering (competency of students with computers and online tools, students time management, collaboration of students, and student's interaction with the hybrid learning system).

Social Influence (SI): Covering (social interaction, lecturer teaching style and discussion skills, and health awareness)

University services and Support (US): Covering (library services, lecturer performance and availability, IT support, and supplementary trainings to e-learning tools).

Therefore, these four factors are suspected to influence the **Students' Satisfaction (SS)** of the implemented hybrid learning system. It is important to mention that the selected four determinants, identified in our proposed model, can be mapped to the UTAUT foundation theory used in this research as follows:

The Hybrid Method Efficacy (ME) represents the performance expectation (PE) factor used in UTAUT theory, Student adaptation (SA) represents the Effort expectancy (EE) factor in UTAUT model, Social Influence (SI) is represented the same in both models, University support (US) factor represents the facilitating conditions (FC) in the UTAUT model.

3.2.1 The independent, mediating, and moderating variables:

Learning method efficacy (ME): is identified as the independent variable that has a direct effect on the dependent variable

Students' adaptation (SA): is identified as a mediating variable

Social Influence (SI): is identified as moderating variable

University Support (US): is identified as moderating variable

3.2.2 Dependent variable:

Students' satisfaction (SS): is identified as the dependent variable

3.3 Methodology used

In this section, a detailed explanation of the methodology used to address the research questions and hypotheses presented will be provided.

3.3.1 Research process

The primary goal of this study is to examine students' satisfaction with the implemented hybrid learning system on Lebanese private sector universities, that was forced by the COVID-19 pandemic and continues afterward. For this purpose, the following research process was used in order to properly address the mentioned topic and ensure a reliable input and detailed data analysis.

Step 1: Reviewing the Literature. The most convenient literature review was checked and analyzed, that helped us better understand the key factors affecting student's satisfaction within the hybrid learning system, which helped us identify the main measurable variables of student's satisfaction with the implemented hybrid-based learning system, that were used in our quantitative testing and analysis.

Step 2: A quantitative approach, where a convenience sampling method was used due to the challenges in accessing the private sector universities in Lebanon to address such sensitive learning system topic. For this reason, a well-structured questionnaire was prepared and distributed to address the key factors influencing students' satisfaction from both social and educational perspectives. In our research, we have a total of 21 variables of measurement scales. Therefore, a minimum of 210 samples (= 21 x 10) is required to get enough samples to conduct a proper factor analysis.

3.3.2 Data collection and analysis method

A total of 232 students from different private sector universities did participate in the study by filling the survey prepared. Note that, the selection of the universities from the private sector, was done based on universities where the hybrid learning method was implemented during COVID-19 period, in addition to considering an easy to reach universities where we have a contact channel with students and/or Doctors to ensure a wider reach. Accordingly, students' responses were collected from Oct 8, 2022, until Nov 20, 2022, where random students from different Lebanese private sector universities and from different departments were enrolled in our study. A total of 232 students from different universities did fill out the online survey, where all participants were informed about the objectives of our study through the required statements highlighted at the top of our questionnaire stating the procedures, the benefits, and the confidentiality measures considered. The survey was communicated via e-form link, email, and WhatsApp groups among the selected universities.

Then, we did use the SPSS tool to analyze the data collected, where Cronbach alpha testing was done to check the level of reliability of the questions used in our survey, then KMO (Kaiser-Meyer-Olkin) testing was performed to check the level of correlation among the selected variables, then a factor analysis was performed in order to better group the different variables that will help us simplify our data analysis and better clarify the most impacting factors affecting students' satisfaction. In addition, linear regression analysis was done to test the highlighted hypotheses related to students' satisfaction with the hybrid learning method efficacy, and the effect of the selected moderators (University support and social influence), and mediator (student's adaptation) on the relation between the hybrid method efficacy and students' satisfaction. Moreover, the linear regression model was also executed to test the students' satisfaction with respect to the selected demographic variables (Gender and education level).

3.3.4 Measurement scales

The survey used in this research, included 25 questions, by which 21 questions are of type scale, that were used to measure the impact level of each of the selected variables on students' satisfaction with the implemented hybrid learning method. All scale type questions are of Likert scale type of 5-point ranges from 1 to 5, where "1" represent strongly disagree

and "5" represent the strongly agree rating. Then, 1 question of type nominal was used as a health-check to ensure that the respondent did get engaged in the hybrid learning system so that his/her input will be considered as reliable to our topic of study. In addition, 3 questions of type nominal, covering gender, marital status, and education level which was used for demographic analysis. The collected responses were used as an input to SPSS tool, where our data analysis was performed. Note that the source of the selected variables used are based on previous studies done in Lebanon, in addition to other studies done on similar developing countries who did use the UTAUT factors.

3.3.5 Conceptual framework

Our proposed conceptual model, figure 1, is based on UTAUT theory, however, some modifications has been done in terms of the determinant classification and relationships, where in our case, we are testing an already implemented hybrid learning system to understand its effectiveness and to what extent the students are satisfied in this implemented learning method, whereas the UTAUT model was mainly used to better understand the behavioral intention of users for a proposed new technological system to be implemented in future.
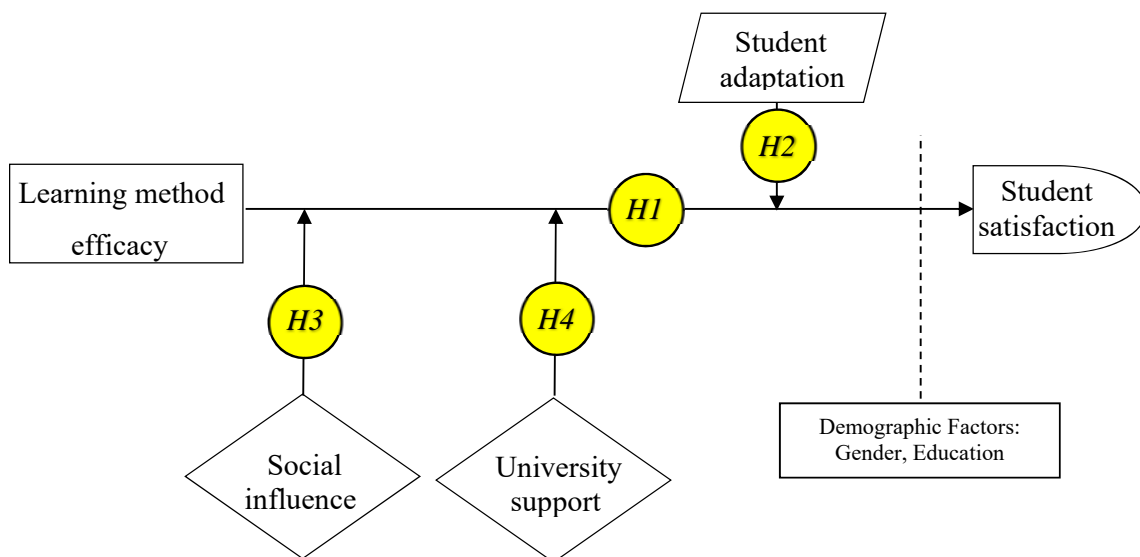
Figure 1: *Proposed conceptual model*

3.4 Conclusion

Based on the above conceptual model, figure 1, we can see that the "Student Adaptation (SA)" factor is identified as a mediating variable since we suspect, with time, if there is a proper university support and social influence in addition to more competency in using the e-learning tools, this will help students to smoothly adapt and become more familiar with the implemented hybrid learning system that will improve the level of collaboration and competency. Such a harmony in the learning system implementation flow that start with an efficient learning method accompanied with a positive social influence and effective university support, should ensure a fast student adaptation leading to the wanted level of student satisfaction. Therefore, the time factor in this model is crucial, the fastest the student do adapt with the implemented learning method the higher the level of satisfaction, since the social influence is a very sensitive factor that can be highly affected by the group impression of students and lecturer behaviors.

CHAPTER 4
FINDINGS

This chapter will cover the data analysis and results used to support or reject the 4 hypotheses highlighted in this research. Note that, the total survey results collected is 232 surveys, where 10 surveys were cancelled as 8 questionnaires are not applicable, since the respondents selected that they didn't participate in any hybrid learning method before, but they did fill the questionnaire, and 2 questionnaires were also cancelled due to suspicious of data accuracy, as the participants did give the same rating for all questions including the tricky question which was asked in a negative way. Therefore, a total of 222 questionnaires were considered valid and included in our analysis.

4.1 Descriptive statistics

As per table 3 below, we have a total of 222 valid questionnaire were collected and answered by graduate and undergraduate students, where 52% of them were female and 48% were male. Among those 222 respondents, we have 62% graduate students with majority of female and 38% are undergraduates with majority of male students. Regarding the marital status, we have most of the respondents are single students with 79% and 20% married students, whereas only 2 female students with status divorced or separated.

Table 3: *Descriptive statistics summary by demographic factors*

		Count	%	Majority
Gender	Female	116	52%	Female
	Male	106	48%	
Education level	Graduate	138	62%	Female
	Undergraduate	84	38%	Male
Marital status	Single	176	79%	Female
	married	44	20%	Male
	divorced or separated	2	1%	Female

Table 4 below, shows the descriptive statistics summary of the main factors covered in our studies, which are (Learning method efficacy, student's adaptation, social influence, university support, and the overall satisfaction). The overall satisfaction was shown a mean of 4.07 which reflects a high level of satisfaction with the hybrid learning system among students who did participate in this study, with a standard deviation of 0.63, whereas among the five different factors we have student's adaptation shows a high mean of 3.75 with a standard deviation of 1.12, stating that students have a good knowledge and experience in online tools and other IT tools, that can participate in achieving a high level of satisfaction with the hybrid learning system the students did engage in. Regarding the learning method efficacy, we can see that the average level of respondents is 3.4 with standard deviation of 1.04, and the social influence factor shows a mean of 3.6 with standard deviation of 0.96, where as a mean of 3.48 and standard deviation of 1.02 was shown for the university support factor.

Table 4: *Descriptive statistics summary by main factors*

Factor	Min	Max	Mean	Standard Deviation
Learning method efficacy	1	5	3.40	1.04
Student's adaptation	1	5	3.75	1.12
Social influence	1	5	3.60	0.96
University support	1	5	3.48	1.02
Overall satisfaction	3	5	4.07	0.63

4.2 Main results (Data Analysis using SPSS tool)

SPSS tool was used for data analysis as per the following steps and outcomes:

Step 1: Import the Data file into SPSS:

- From the "Data view" SPSS page, we could see that a study was done on 222 students who completed the survey where we have, from the "Variable view", a 25 different variables or specific questions included, where 4 of them are Nominal variables that are Descriptive variables, which mainly used for demographic related questions for non-parametric testing which indicates a status and not a level. Whereas we have 21 variables with measure type "Scale", which is mainly a Likert type questions that will be used in Factor Analysis for Parametric testing and those represent a level and not a status.

4.2.1 Cronbach's Alpha reliability check per Factor

Cronbach Alpha was used to measure if our groups of questions (items) that were considered to represent our 4 selected variables (ME, SA, SI, US) are homogeneous enough and are well related to the variables we are studying. The Cronbach alpha should be higher than 0.5 and preferred to be above 0.7. Therefore, the following results were obtained after several actions taken on SPSS to end up with the required Cronbach Alpha level.

4.2.1.1 Cronbach Alpha analysis for Variable (ME) "Learning method efficacy"

A total of 5 items included under this variable: E-learning tools, E-learning Session Schedule, E-books, Internet Speed, and Course value.

Table 5: *Cronbach Alpha of variable (ME) "Learning method efficacy"*

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.790	.796	5

Cronbach Alpha for variable (ME), table 5, is showing 0.79 which is higher than 0.7 this means that all the 5 items used under the ME variable are well selected to describe the learning method efficacy.

4.2.1.2 Cronbach Alpha analysis for variable (SA): "Student's adaptation"

A total of 5 items included under this variable which are: Student's Experience in Computer, Student's Experience in e-learning tools, Student's Time management, Student's Participation level, and Student's Engagement in class Discussion

Table 6: *Cronbach Alpha analysis of variable (SA) "Student's adaptation"*

	Reliability Statistics	
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.207	.324	5

Cronbach Alpha for variable (SA) is showing 0.20, table 6, which is less than 0.7 this means that some of the selected 5 items used under this (SA) variable are not well fitting and shows a low level of homogeneity, therefore, some items should be removed from this SA variable as per the following "Item-Total Statistics", table 7, that shows the "Student's participation level" item if deleted then Cronbach alpha will improve.

Table 7: *Item-Total Statistics of variable (SA) "Student's adaptation"*

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Student's Experience in Computer	14.44	4.067	.389	.479	-.074[a]
Student's Experience in e-learning tools	14.65	4.265	.272	.486	.017
Student's Time management	14.91	4.734	.010	.184	.260
Student's Participation level	16.01	5.095	-.134	.151	.447
Student's Engagement in class Discussion	15.05	4.250	.122	.174	.141

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

Therefore, after we removed the student's participation level item from SA variable, then the Cronbach alpha, table 8, improved to become 0.44 but still < 0.7 so we need to delete more item that is also not fitting to identify this SA variable.

Table 8: *Cronbach Alpha of variable (SA) after student's participation item was removed*

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.447	.519	4

Also, by using the "Item-Total Statistics", table 9 below, we can see that if we delete the Student's Engagement in class Discussion item from this SA variable, we will get a Cronbach

alpha improvement of 0.66 but still < 0.7 and more items are not homogeneous with the group of items under this SA variable, therefore, should be also deleted.

Table 9: *Item-Total Statistics of SA variable after student's participation item was removed*

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Student's Experience in Computer	11.68	2.968	.588	.477	.082
Student's Experience in e-learning tools	11.89	2.975	.517	.472	.127
Student's Time management	12.15	3.479	.143	.183	.499
Student's Engagement in class Discussion	12.30	4.156	-.032	.111	.665

Table 10: *Cronbach Alpha of SA variable after the Student's Engagement item was removed*

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.665	.693	3

Therefore, since the Cronbach alpha, table 10, is still showing < 0.7 then we checked again the Item-Total Statistics after removing Student's Engagement in class Discussion item, where the below table 11 reflects the need to delete the "Student's time management" item so that will get the required Cronbach Alpha of 0.79 as per the below results on table 12.

Table 11: *Item-Total Statistics of SA variable after Student's Engagement item was removed*

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Student's Experience in Computer	7.97	2.307	.546	.446	.500
Student's Experience in e-learning tools	8.18	2.085	.597	.470	.420
Student's Time management	8.44	2.076	.341	.122	.798

Table 12: *Cronbach Alpha of SA variable after Time management item was removed*

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.798	.799	2

Therefore, Cronbach Alpha for SA variable is now showing 0.79, table 12, which is higher than 0.7 this means that only the 2 remining items "Student's Experience in Computer" and "Student's Experience in e-learning tools", are the well selected items to describe the student's adaptation factor.

4.2.1.3 Cronbach Alpha analysis of SI variable: "Social influence"

A total of 5 items included under this SI variable: Instructor's discussion skills, Instructor's teaching style, Interaction with Instructors and students, Instructor's encouragement skills, and Health and Safety measures.

Table 13: *Cronbach Alpha analysis of variable (SI) "Social influence"*

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.758	.751	5

The Cronbach Alpha result of SI variable, table 13, shows a level of 0.75 which is higher than 0.7 but a better level of homogeneity can be reached if we deleted the "Health and safety measures" item as per the below Item-Total Statistics table 14.

Table 14: *Item-Total Statistics of variable (SI) "Social influence"*

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Instructor's discussion skills	14.03	8.556	.409	.183	.751
Instructor's teaching style	14.72	6.955	.591	.393	.689
Interaction with Instructors and students	14.55	6.710	.643	.588	.668
Instructor's encouragement skills	14.43	6.581	.723	.631	.637
Health and Safety measures	14.33	8.837	.281	.107	.792

Therefore, after we deleted the "health and safety measures" items, we got an improved Cronbach alpha of 0.79, table 15. However, the Item-Total Statistics table 16 below, is still showing a further improvement in Cronbach alpha can be reached if we deleted one more item which is the "Instructor's discussion skills".

Table 15: *Cronbach Alpha of variable (SI) after Health and Safety item was removed*

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.792	.784	4

Table 16: *Item-Total Statistics of variable (SI) after Health and Safety item was removed*

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Instructor's discussion skills	10.35	6.707	.363	.142	.839
Instructor's teaching style	11.03	5.053	.616	.392	.733
Interaction with Instructors and students	10.86	4.769	.692	.588	.691
Instructor's encouragement skills	10.74	4.735	.755	.627	.658

So, after removing the "Instructor's discussion skills" item in addition to health and safety from the group of items representing SI variable, then a further improvement of Cronbach alpha detected with a level of 0.83 as shown in the below table 17.

Table 17: *Cronbach Alpha of variable (SI) after Instructor's Discussion skills was removed*

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.839	.839	3

Therefore, since Cronbach Alpha for SI variable, table 17, is now showing 0.839 which is higher than 0.7 this means that Instructor's teaching style, Interaction with Instructors and students, and Instructor's encouragement skills are the main items that are well homogeneous to properly describe the "Social influence" variable.

4.2.1.4 Cronbach Alpha analysis for variable (US): "University support"

A total of 5 items included under this variable: Library availability and support, Instructor's competency, IT Support, and Supplementary trainings

Table 18: *Cronbach Alpha of variable (US) "University support"*

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.820	.825	5

Table 19: *Item-Total Statistics of variable (US) "University support"*

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Instructor's Availability and support	13.52	10.459	.572	.374	.797
Library availability and support	13.89	9.563	.598	.388	.789
Instructor's competency	13.80	9.988	.680	.499	.770
IT Support	14.12	9.335	.615	.419	.785
Supplementary trainings	14.25	8.787	.630	.466	.783

The Cronbach alpha of US variable, table 18, shows a very good level of 0.82 which is > 0.7 and the related Item-Total Statistics, table 19, is not showing any further improvement of the Cronbach alpha more than the achieved 0.82, this means that all the 5 items selected do properly describe the university support variable and are well homogeneous.

4.2.2 Factor Analysis

Now, after we have done a reliability check using the Cronbach alpha analysis on each of the 4 selected variables, where we did identify which items do properly represents the identified variables separately that should be kept for our factor analysis, and which items should be removed. Therefore, we can now proceed by our factor analysis steps in order to group all the items that are well related under each factor and showing a high homogeneity in order to simplify our work as per the following steps. Note that, we will run the factor analysis by considering all variables of type scale then based on the testing output on each stage we will start excluding any affected item and compare it with the outcome obtained from the per variable reliability test that was done previously under section 4.3.1, in order to make sure that we are not deleting any important item from each factor.

4.2.3 Checking the Cronbach Alpha Reliability analysis for the whole items

We did check the Cronbach Alpha Reliability analysis, table 20, for all the items of type scale to make sure if factor analysis can be applied on those variables or not. Where Cronbach Alpha is a measure of scale reliability of the variables or questions used to know if they are logic and well related, where Cronbach alpha should be higher than 0.5 and preferred to be above 0.7. The results obtained are reflected in the below tables:

Table 20: *Case Processing Summary-overall*

		N	%
Cases	Valid	222	100.0
	Excluded[a]	0	.0
	Total	222	100.0

a. Listwise deletion based on all variables in the procedure.

Table 21: *Cronbach Alpha Reliability analysis for all items of type scale*

	Reliability Statistics	
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.856	.869	20

From table 20, "Case Processing Summary" we have a total of N= 222 observations and zero excluded which constitute a 100% of our samples.

Then we considered the reliability statistics, table 21, to check the Cronbach Alpha value that is showing 0.856 which is higher than the recommended 0.7 value. This means that the coherence between our selected questions is very good. Therefore, we are now confident that our questionnaire results are reliable, so we can proceed to perform factor analysis.

4.2.4 Factor Analysis (KMO testing)

We used the KMO testing to check the level of correlation, which represents the level of success in factorization where the recommended KMO should be greater than or equal to 0.7. This means that the variables used will factor properly and will be well grouped under a small number of factors, which is the aim of data simplification. The KMO test results obtained are as follows:

Table 22: *KMO and Bartlett's Test*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.795
Bartlett's Test of Sphericity	Approx. Chi-Square	2006.130
	df	190
	Sig.	.000

The KMO and Bartlett's test result, table 22, shows that we have a KMO result of 0.795 which is > 0.7 and Bartlett's result of 0.000 Sig. level which is less than 5%, this means that we do reject the Bartlett's Null hypothesis which says that "Variables are not correlated", this

means with sig. level of 0.000 our selected variables are well correlated, and we can proceed by Factor analysis process.

4.2.5 Anti-Image correlation check:

Since the KMO and Bartlett's Sig. table 22, are within the required level then we can proceed by analyzing the Anti-Image correlation, where we check the diagonal of Anti-image values so that any variable has this value less than 0.5 then we should remove it, since this variable is not doing correlation with others and should be deleted.

Note: Anti-image correlation matrix is used to check if we have the recommended partial correlations that is required for factor analysis. Above 0.5 is considered as acceptable correlation but recommended above 0.7.

So, in our case we have detected one item "Student's engagement in class discussion "of value 0.431 < 0.5 that should be removed. Therefore, we did remove this item, then we did check the KMO and communalities as per the below table 23 and table 24 respectively.

4.2.6 Perform a communalities check:

Communalities check: This indicates the level of relationship for each variable with other variables. This means that any variable has an Extraction communalities value less than 0.5 then we should delete it.

Table 23: *KMO and Bartlett's Test after "Student's engagement" item was removed*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.805
Bartlett's Test of Sphericity	Approx. Chi-Square	1929.568
	df	171
	Sig.	.000

Table 24: *Communalities after "Student's engagement" item was removed*

	Initial	Extraction
E-learning tools	1.000	.528
E-learning Session Schedule	1.000	.674
E-books	1.000	.664
Internet Speed	1.000	.382
Course value	1.000	.686
Student's Experience in Computer	1.000	.762
Student's Experience in e-learning tools	1.000	.787
Student's Time management	1.000	.396
Student's Participation level	1.000	.542
Instructor's discussion skills	1.000	.482
Instructor's teaching style	1.000	.540
Interaction with Instructors and students	1.000	.659
Instructor's encouragement skills	1.000	.693
Instructor's Availability and support	1.000	.540
Library availability and support	1.000	.595
Instructor's competency	1.000	.710
IT Support	1.000	.699
Supplementary trainings	1.000	.626
Health and Safety measures	1.000	.263

So, we detected 3 variables showing a low extraction level under communalities, table 24, of 0.382 for "Internet Speed" and 0.396 for "Student's Time management" and 0.263 for "Health and Safety" items; Therefore, after we did remove these items the below results obtained where the new KMO testing did further improved from 0.805 to 0.823, table 25, reflecting a very good level of correlation among the selected items and all items did pass the communalities check as per the below table 26. We only detected minor communalities effect on items "E-learning tools" and "Instructor's discussion skills" of

0.497 and 0.490 which are very close to 0.5 and we decided to keep it in our analysis to avoid losing more data especially that the level of communalities is almost 0.5.

Table 25: *KMO and Bartlett's Test after "Internet speed", Student's time management", and Health and safety" items were removed*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.823
Bartlett's Test of Sphericity	Approx. Chi-Square	1667.863
	df	120
	Sig.	.000

Table 26: *Communalities after "Internet speed", Student's time management", and Health and safety" items were removed*

	Initial	Extraction
E-learning tools	1.000	.497
E-learning Session Schedule	1.000	.700
E-books	1.000	.673
Course value	1.000	.622
Student's Experience in Computer	1.000	.795
Student's Experience in e-learning tools	1.000	.774
Student's Participation level	1.000	.666
Instructor's discussion skills	1.000	.490
Instructor's teaching style	1.000	.554
Interaction with Instructors and students	1.000	.677
Instructor's encouragement skills	1.000	.755
Instructor's Availability and support	1.000	.558
Library availability and support	1.000	.596
Instructor's competency	1.000	.731
IT Support	1.000	.695
Supplementary trainings	1.000	.652

4.2.7 Component matrix

Now we check the "Component matrix" that will show us how many variables did park within each Factor. So that we can detect if any variable did cross-load by parking under two different factors at the same time, so that we must take a corrective action to fix this issue by using "Rotations" as each factor should not have any variable in common with other factors. So, in our case, we detected 6 variables having a cross-loading as per table 27. Therefore, variable deletion or rotation must be done to remove cross-loading effect.

Table 27: *Component Matrix*

	Component			
	1	2	3	4
E-learning tools	.590			
E-learning Session Schedule	.792			
E-books	.679			.420
Course value	.615			
Student's Experience in Computer	.543		.605	
Student's Experience in e-learning tools	.559		.602	
Student's Participation level				.601
Instructor's teaching style	.642			
Interaction with Instructors and students	.677			
Instructor's encouragement skills	.674			
Instructor's Availability and support	.666			
Library availability and support	.553	.555		
Instructor's competency	.648	.499		
IT Support	.579		.431	
Supplementary trainings	.681			

After several trials of rotation techniques, we found that Promax with Kaiser Normalization rotation method was the most appropriate one to use, where variables are now properly grouped under 4 different Factors as per the results reflected under the following table 28.

Table 28: *Pattern Matrix_Promax rotation method used*

	Component			
	1	2	3	4
E-learning tools	.571			
E-learning Session Schedule	.656			
E-books	.820			
Course value				.662
Student's Experience in Computer			.876	
Student's Experience in e-learning tools			.845	
Student's Participation level				-.874
Instructor's discussion skills		.423		
Instructor's teaching style	.725			
Interaction with Instructors and students	.705			
Instructor's encouragement skills				.688
Instructor's Availability and support		.574		
Library availability and support		.808		
Instructor's competency		.799		
IT Support		.778		
Supplementary trainings		.709		

Rotation Method: Promax with Kaiser Norm.[a]

a. Rotation converged in 6 iterations.

4.2.8 Health-check using regression analysis

To make sure that the Promax rotation technique used was a correct decision, before drawing any conclusion, we did a health-check for each Factor by using regression analysis, to make sure that the rotation method we have chosen was the most appropriate.

The linear regression analysis results obtained for the four Factors with the Sig. level and Coefficients, are displayed under the below testing results.

4.2.8.1 Regression Analysis for Factor 1 health-check

Regression analysis was done for Factor 1 (Learning method efficacy) to make sure that all the selected items (Interaction with Instructors and students, E-learning tools, Instructor's teaching style, E-books, E-learning Session Schedule), as a result of Promax rotation, are properly park under this Factor 1 and do represent the Learning method efficacy.

Table 29: *Model Summary for Factor 1 health-check*

	R	R Squ.	Adjusted R Squ.	Std. Error of the Est.	Change Statistics					Durbin-Watson
					R Squ. Change	F Change	df1	df2	Sig. F Change	
1	.977ª	.954	.953	.21669114	.954	898.126	5	216	.000	1.996

a. Predictors: (Constant), Interaction with Instructors and students, E-learning tools, Instructor's teaching style, E-books, E-learning Session Schedule

b. Dependent Variable: REGR factor score 1

Table 30: *ANOVA and Coefficients for Factor 1 health-check*

		Sum of Squ.	df	Mean Squ.	F	Sig.
1	Regression	210.858	5	42.172	898.126	.000ᵇ
	Residual	10.142	216	.047		
	Total	221.000	221			

a. Dependent Variable: REGR factor score1

b. Predictors: (Constant), Interaction with Instructors and students, E-learning tools, Instructor's teaching style, E-books, E-learning Session Schedule

Table 30 *(continue):*

Coefficients^a

		Unstandardized Coef.		Standardized Coef.		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-5.146	.084		-61.614	.000
	E-learning tools	.208	.020	.178	10.201	.000
	E-learning Session Schedule	.239	.023	.219	10.207	.000
	E-books	.311	.021	.296	14.895	.000
	Instructor's teaching style	.323	.022	.270	14.491	.000
	Interaction Instructors and students	.327	.020	.307	16.634	.000

a. Dependent Variable: REGR factor score1

4.2.8.2 Regression Analysis for Factor 2 health-check:

Regression analysis was done for Factor 2 (University support) to make sure that all the selected items (Supplementary trainings, Instructor's Availability and support, Library availability and support, Instructor's discussion skills, IT Support, Instructor's competency), as a result of Promax rotation, are properly park under this Factor 2 and do represent the university support.

Table 31: *Model Summary for Factor 2 health-check*

		R	Adjusted R	Std. Error of	Change Stat.					Durbin-
	R	Squ.	Squ.	the Est.	R Squ. Change	F Change	df1	df2	Sig. F Change	Watson
1	.996^a	.992	.992	.08809565	.992	4710.215	6	215	.000	1.643

a. Predictors: (Constant), Supplementary trainings, Instructor's Availability and support, Library availability and support, Instructor's discussion skills, IT Support, Instructor's competency

b. Dependent Variable: REGR factor score 2

Table 32: *ANOVA and Coefficients for Factor 2 health-check*

		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	219.331	6	36.555	4710.215	.000[b]
	Residual	1.669	215	.008		
	Total	221.000	221			

a. Dependent Variable: REGR factor score 2

b. Predictors: (Constant), Supplementary trainings, Instructor's Availability and support, Library availability and support, Instructor's discussion skills, IT Support, Instructor's competency

Coefficients[a]

		Unstandardized Coef.		Standardized Coef.		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-4.857	.036		-134.617	.000
	Instructor's discussion skills	.151	.009	.120	15.983	.000
	Instructor's Availability and support	.196	.009	.169	22.089	.000
	Library availability and support	.272	.007	.278	36.719	.000
	Instructor's competency	.293	.010	.250	29.690	.000
	IT Support	.269	.007	.283	36.381	.000
	Supplementary trainings	.194	.008	.222	25.123	.000

a. Dependent Variable: REGR factor score 2

4.2.8.3 Regression Analysis for Factor 3 health-check:

Regression analysis was done for Factor 3 (Student's adaptation) to make sure that all the selected items (Student's Experience in e-learning tools, Student's Experience in Computer), as a result of Promax rotation, are properly park under this Factor 3 and do represent the student's adaptation.

Table 33: *Model Summary for Factor 3 health-check*

					Change Stat.					
	R	R Squ.	Adjusted R Squ.	Std. Error of the Est.	R Squ. Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.965[a]	.931	.930	.26479410	.931	1466.462	2	219	.000	1.477

a. Predictors: (Constant), Student's Experience in e-learning tools, Student's Experience in Computer

b. Dependent Variable: REGR factor score 3

Table 34: *ANOVA and Coefficients for Factor 3 health-check*

		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	205.645	2	102.822	1466.462	.000[b]
	Residual	15.355	219	.070		
	Total	221.000	221			

a. Dependent Variable: REGR factor score 3

b. Predictors: (Constant), Student's Experience in e-learning tools, Student's Experience in Computer

Coefficients[a]

		Unstandardized Coef.		Standardized Coef.		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-5.676	.107		-53.081	.000
	Student's Experience in Computer	.721	.031	.550	23.036	.000
	Student's Experience in e-learning tools	.621	.029	.507	21.222	.000

a. Dependent Variable: REGR factor score 3

4.2.8.4 Regression Analysis for Factor 4 health-check:

Regression analysis was done for Factor 4 (Social influence) to make sure that all the selected items (Student's Participation level, Course value, Instructor's encouragement skills), as a result of Promax rotation, are properly park under this Factor 4 and do represent the social influence.

Table 35: *Model Summary for Factor 4 health-check*

					Change Stat.					
	R	R Squ.	Adjusted R Squ.	Std. Error of the Est.	R Squ. Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.983[a]	.966	.966	.18433693	.966	2095.269	3	218	.000	1.875

a. Predictors: (Constant), Student's Participation level, Course value, Instructor's encouragement skills

b. Dependent Variable: REGR factor score 4

Table 36: *ANOVA and Coefficients for Factor 4 health-check*

		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	213.592	3	71.197	2095.269	.000[b]
	Residual	7.408	218	.034		
	Total	221.000	221			

a. Dependent Variable: REGR factor score 4

b. Predictors: (Constant), Student's Participation level, Course value, Instructor's encouragement skills

Coefficients[a]

		Unstandardized Coef.		Standardized Coef.		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-1.578	.074		-21.185	.000
	Course value	.343	.016	.344	22.005	.000
	Instructor's encouragement skills	.427	.017	.412	25.776	.000
	Student's Participation level	-.393	.011	-.479	-34.783	.000

a. Dependent Variable: REGR factor score 4

As we can see, from the above **ANOVA** tables (30, 32, 34, 36), we have the Significance level of <5% for all 4 Factors, this means that our regressions are significant as we reject the null hypothesis of insignificant.

Then from the **Model summary** tables (29, 31, 33, 35), we can check the R-Squared that are showing a value > 0.94 for all Factors, which means that the selected variables do properly represent the independent variables, which are the factors we are selecting for this regression analysis test. In addition, we can see that the Adjusted R-squared which is used as a double control of P-Value, that tells us to what extent our model do represents the reality, where the difference between the R-Squared and the Adjusted R-squared is showing a value of less than 10% for all factors tested above, all this means that the data resulted from the Promax rotation do properly represent the identified factors.

Now, since we did make sure that our rotation decision was a correct one, where all variables do park under the proper Factor, then we can start our result analysis as follow:

4.2.9 Factor analysis using the "Total Variance explained" Table:

From table 37, we can conclude the total number of factors generated, the percentage of variations captured in our study, in addition to the weight or effect of each factor and variable within those factors.

Table 37: *Total Variance Explained*

Component	Total	Initial Eigen values % of Variance	Cumulative %	Total	Extraction Sums of Squared Loadings % of Variance	Cumulative %	Rotation Sums of Squared Loadings[a] Total
1	6.242	39.010	39.010	6.242	39.010	39.010	4.818
2	1.610	10.064	49.074	1.610	10.064	49.074	4.512
3	1.401	8.756	57.830	1.401	8.756	57.830	3.061
4	1.183	7.393	65.223	1.183	7.393	65.223	3.269
5	.840	5.250	70.473				
6	.834	5.213	75.686				
7	.615	3.842	79.528				
8	.563	3.520	83.048				
9	.513	3.205	86.253				
10	.470	2.938	89.191				
11	.413	2.581	91.772				
12	.364	2.274	94.046				
13	.304	1.898	95.943				
14	.274	1.713	97.656				
15	.203	1.271	98.928				
16	.172	1.072	100.000				

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

4.3 Discussion of the findings

Based on the above factor analysis and from "Total Variance Explained" table we can conclude the following:

We have grouped or summarized our list of scale type variables into only 4 different Factors that are ranked from highest to lowest importance, and the variables within each factor can be ranked from the highest to lowest importance based on the identified weights so that we can draw the following analysis:

We have a total of 4 main factors that affect the opinion of our students, they are "Learning Method efficacy" (Factor 1), "University Support" (Factor 2), "Student's Adaptation" (Factor 3), and "Social Influence" (Factor 4) where based on our statistics, we have the most affecting or impacting factor that affect our students' satisfaction is the "Learning Method efficacy" with variance percentage of 39.01%, then on the second level, we have the "University Support" with variance percentage of 10.06%, then the "Student's Adaptation" with variance percentage of 8.75%, and the least impacting factor is the "Social Influence" with variance percentage of 7.39%. Where Variance percentage represents the weight of each factor in capturing the variations. Also, we can find that the cumulative variation percentage of all 4 factors is 65.22%, which means that the total factors accumulated were able all together to explain 65.22% which are the common variance of the variations, whereas the remaining 34.78% are those of the unexplained factors, or those related to unknown plus specific variance that are not explainable or not captured in our data.

In addition, we can do a further dig deep to check which variable within each factor is the most important to our students in the private sector universities of Lebanon as follows:

Factor 1 (Learning Method efficacy**)** with Variance percentage of 39.01%, and within this factor we have the following variables listed from highest to lowest priority based on the weight displayed under factor 1:

      1.1 E-books: with weight of 0.82

      1.2 Instructor's teaching style: with weight of 0.73

      1.3 Interactions between Instructor and students: with weight of 0.71

      1.4 E-learning session schedule: with weight of 0.66

      1.5 E-learning tools: with weight of 0.57

This means that for those students who did this survey, the most important thing to them is Factor 1 (Learning Method efficacy**),** since it has the highest variance percentage from the "Total variance explained" table and within this factor of "Learning Method efficacy", we can conclude that in order for universities to improve the level of learning methods efficacy, they should focus more on the quality and accessibility to E-books being provided to students, as this variable has the highest weight and impact on our students, where if the quality of the E-books used in the e-learning method is improved and accompanied with a better instructor's teaching style which will get the outmost benefit of the e-books used through a proper interaction between instructors and students, then universities will achieve a higher level of students' satisfaction with the hybrid learning system that will be valued by students in the Lebanese private sector universities.

Factor 2 (University Support**)** with Variance percentage of 10.06%, and within this factor we have the following variables are listed from highest to lowest priority based on the weight displayed for each variable under this factor 2:

2.1 Library availability and support: with weight of 0.81

2.2 Instructor's competency: with weight of 0.80

2.3 IT Support: with weight of 0.78

2.4 Supplementary trainings: with weight of 0.71

2.5 Instructor's availability and support: with weight of 0.57

2.6 Instructor's discussion skills: with weight of 0.42

This means that for those students who did this survey, we can conclude that the "Library availability" variable has the highest weight and impact, where if universities did improve the level of support provided to their students with a high focus on the library availability and instructor's competency, followed by a proper technical support from the IT department with high focus on e-learning tools availability and reliability, in addition to proper supplementary trainings and knowledge share to be provided to all students who do participate in the online and hybrid based courses, this will achieve a higher level of students' satisfaction that can also be guided and monitored by a proper support from the participated instructors, who should take the lead in helping students get engaged and smoothly enrolled in the newly introduced hybrid learning system.

Factor 3 (Student's Adaptation**)** with Variance percentage of 8.76% and within this factor we have the following variables are listed from highest to lowest priority.

3.1 Student's experience in computer: with weight of 0.88

3.2 Student's experience in e-learning tools: with weight of 0.85

This means that for those students who did response to our survey, we can conclude that the level of student satisfaction and adaptation to the implemented hybrid learning system is highly impacted by the level of experience or familiarity the students do have with computers and other e-learning tools. For this, a high focus from universities should be put on e-learning tools related trainings and guidance, to make sure all students do have the proper knowledge and experience in dealing with the required e-learning tools that will ensure a higher level of trust with time, this will further improve students' satisfaction with the implemented hybrid learning system. This factor can be seen as a complementary item for the university support, that is needed to help students to buy-in smoothly in the newly implemented learning method.

Factor4 (Social Influence**)** with Variance percentage of 7.40% and within this factor we have the following variables are listed from highest to lowest priority:

4.1 Student's participation level: with weight of -0.87

4.2 Instructor's encouragement skills: with weight of 0.69

4.3 Course value: with weight of 0.66

This means that for those students who did this survey, we can conclude that in order to improve the social influence that will better help student's to accept the hybrid learning system, and get the outmost benefit out of it, universities should focus more on the level of participation and ensure the required encouragement from instructors who do have the big hand in making this newly implemented hybrid learning system a successful transition through securing a proper delivery of the online courses, so that students will get the intended benefits. Therefore, if universities do focus on the power skills of their instructors, to help their students better engaged in class discussions with high level of encouragement, then they will achieve a higher level of students' satisfaction and acceptance to the hybrid learning system that will be appreciated by the university students in Lebanon.

4.4 Discussion of the hypotheses and conclusions

In this hypothesis testing part, we will focus on testing the impact and the relationship of the construct characterized by the 4 identified different factors on the dependent variable, which is students' satisfaction, as highlighted in our model in section 2.1, where this model was constructed to test the hypotheses H1, H2, H3, and H4, which state a positive relationship between the highlighted 5 factors and students' satisfaction. In addition, ANOVA test will be done to check the relationship of the identified demographic factors, gender and education level, on students' satisfaction.

4.4.1 H1 testing: Learning method efficacy → Students' satisfaction
H1: The hybrid learning method efficacy has a positive influence on students' satisfaction

H1 Testing results:

To estimate the direct effect of Factor 1 (Learning method efficacy) on the students' satisfaction (dependent variable).

Table 38: *Linear regression Coefficients to estimate the direct effect of Factor 1 on students' satisfaction*

		Unstandardized Coef.		Standardized Coef.		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.649	.029		126.594	.000
	REGR factor score 1	.436	.029	.713	15.096	.000

a. Dependent Variable: Overall Students' satisfaction

From the coefficients table 38 above, we have the P-Value which is under Sig. level column of value 0.00 which is <0.05, this indicates that the total effect of Factor 1 is significant. This implies that the independent variable learning method efficacy do have a positive influence on the overall students' satisfaction, therefore, this result supports our hypothesis H1, which is also aligned with the results obtained by Kayali, M., & Alaaraj, S. (2020), and Kayali, M., & Alaaraj, S. (2020) in the literature who found that the content readiness and the relative advantage of the e-learning method and its efficiency, has a positive influence on students' satisfaction among students in the universities of Lebanon.

4.4.2 H2 testing: Student's adaptation → Students' satisfaction (Mediator check)

H2: Student's adaptation to e-learning tools has a further positive influence on the effect of the learning method efficacy on students' satisfaction

This mediation analysis will be done to investigate the effect of the independent variable (Hybrid method efficacy) on the Dependent variable (Students' satisfaction) via a third mediating variable (Student's adaptation):

H2 Testing results:

This hypothesis testing will be done in 4 steps, where the direct effect of factor 1 (Learning method efficacy) on the Dependent variable and the indirect effect of Factor 1 on the dependent variable through the mediator (Student's adaptation) will be tested in order to check if there is any statistical significance for the indirect effect.
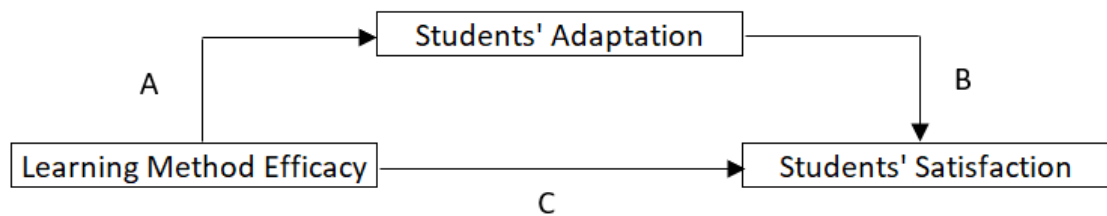
Figure 2: *Students' Adaptation as mediator*

Where:

Path A and B is the indirect effect

Path C is the direct effect

Step 1: Test the direct impact of Factor 1 (Learning method efficacy) on Students' satisfaction. (Factor 1 → Students' satisfaction) using the linear regression in SPSS

The regression analysis results already obtained, based on the Coefficients table 38, shows that we do have a significant effect between the independent variable factor 1 and the dependent variable students' satisfaction where the Sig. value of 0.000 which is < 0.05

Step 2: Test the direct impact of Factor 1 (Learning method efficacy) on factor 3 (Student adaptation). (Factor 1 → Factor 3) which is needed to calculate the indirect effect of the independent variable on the dependent variable.

Table 39: *Linear regression Coefficients to test the direct impact of Factor 1 on factor 3*

	Unstandardized Coef.		Standardized Coef.		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	-7.558E-17	.064		.000	1.000
REGR factor score 1	.308	.064	.308	4.807	.000

a. Dependent Variable: REGR factor score3

Based on the linear regression Coefficients table 39, we can see that the effect of factor 1 on factor 3 (mediator) is significant with Sig. value of 0.000 < 0.05 with unstandardized Coeff. Beta of 0.308 and with Std. Error of .0064

Step 3: Test the direct effect of Factor 1 (Learning method efficacy) and factor 3 (Student adaptation) on the dependent variable, which is needed to calculate the related Coef. Beta in order to calculate the indirect effect of factor 1 on the dependent variable.
(Factor 1 & Factor 3 → Students' satisfaction)

Table 40: *Linear regression Coef. Factor 1and factor 3 effect on the dependent variable*

	Unstandardized Coef.		Standardized Coef.		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	3.649	.025		145.028	.000
REGR factor score 1	.368	.027	.602	13.877	.000
REGR factor score 3	.221	.027	.362	8.351	.000

a. Dependent Variable: Overall Students' satisfaction

Based on the output Coefficients table 40, we can see that Factor 1 has an unstandardized Coef. Beta of 0.368 with Std. Error of .0027, and that Factor 3 has an unstandardized Coef. Beta of 0.221 with Std. Error of .0027, that will be used to run the Sobel Test.

Step 4: Use the Sobel Test to check the indirect effect for statistical significance

We did use the *Unstandardized Coef. Beta* and Std. Error coefficients as tested above, for the effect of Factor 1 on Factor 3 and for the effect of Factor 3 on the dependent variable, to run the Sobel Test where the obtained result is shown in the following table 41.

Table 41: *Sobel test results*

	Test statistic	**Std. Error**	***p-value***
Sobel test:	4.148	0.016	0.00003

The Sobel test result obtained, shows that we have a P-value of 0.000 which is < 0.05, so we conclude that the effect of the independent variable (Learning method efficacy) on the dependent variable (students' satisfaction) through the mediator (student's adaptation) is statistically significant. Therefore, our hypothesis number 2 H2 is not rejected and do confirm that *student's adaptation to e-learning tools has a further positive influence on the effect of the learning method efficacy on students' satisfaction.* This result does concur with Pham, Q. T., & Tran, T. P. (2020) in the literature, who found that the there is a significant relationship between the students' competency in computer and e-learning tools towards the overall students' satisfaction with the e-learning system that depends on computer skills.

4.4.3 H3 testing: Social influence → Students' satisfaction (Moderator check)
H3: Social influence has a positive impact on the relation between the learning method efficacy and the overall students' satisfaction

Based on our hypothesis H3, we suspect that the level of change in the relationship between the independent variable (Learning method efficacy) and the dependent variable (Students' satisfaction) is affected by the social influence factor that acts as moderator in this relationship. For this, we will apply the moderation testing using SPSS in order to test the effect of Factor 4 (Social influence) on the relation between the learning method efficacy and the overall students' satisfaction, where we will calculate the interaction effect on the dependent variable by computing the product of Factor 1 (Independent variable) by Factor 4

(Moderator), then do a regression analysis to check the P-value to determine whether this moderator has a significant effect on the relation between the learning method efficacy and students' satisfaction.

H3 Testing results:

Table 42: *ANOVA and Coefficients to test the effect of Factor 4 (SI) on the relation between the Independent (ME) and the Dependent variable (SS)*

		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43.287	2	21.644	120.588	.000[b]
	Residual	39.307	219	.179		
	Total	82.595	221			

a. Dependent Variable: Overall Students' satisfaction

b. Predictors: (Constant), FAC1xFAC4, REGR factor score1

Coefficients[a]

		Unstandardized Coef.		Standardized Coef.		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.615	.031		116.046	.000
	REGR factor score 1	.456	.030	.746	15.467	.000
	FAC1xFAC4	.079	.030	.128	2.653	.009

a. Dependent Variable: Overall Students' satisfaction

Therefore, based on the above ANOVA table 42 we can conclude that there is a strong causal relationship effect between Factor 1 and the dependent variable Students' satisfaction, where the P-Value is showing less than 0.05. Then, from the Coefficient table 42, we can check the moderation effect results, where, based on the obtained P-value of the interaction term FAC1xFAC4, we have a sig. value of 0.000 which is less than 0.05 indicating that our social influence moderator has a significant effect on the relationship between learning method efficacy and the students' satisfaction. Therefore, H3 hypothesis is not rejected. This result is also aligned with the results obtained by Kayali, M., & Alaaraj, S. (2020), and El Danaoui, M. (2021) in the literature, who found that the social influence with lecturer's readiness have a significant positive influence on e-learning among university students of Lebanon.

4.4.4 H4 testing: University support → Students' satisfaction (Moderator check)

H4: University support has a positive influence on the relation between the learning method efficacy and the overall students' satisfaction

Based on our hypothesis H4, we suspect that the level of change in the relationship between the independent variable (Learning method efficacy) and the dependent variable (Students' satisfaction) is affected by the university support factor, that acts as moderator in this relationship. For this, we will apply the moderation testing using SPSS in order to test the effect of Factor 2 (University support) on the relation between the learning method efficacy and the overall students' satisfaction, where we will calculate the interaction effect on the dependent variable by computing the product of Factor 1 (Independent variable) by Factor 2 (Moderator), then do a regression analysis to check the P-value to determine whether this moderator has a significant effect on the relation between the learning method efficacy and students' satisfaction.

H4 Testing results:

Table 43: *ANOVA and Coefficients to test the effect of Factor 2 (US) on the relation between the Independent (ME) and the Dependent variable (SS)*

		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.702	2	21.351	117.209	.000[b]
	Residual	39.893	219	.182		
	Total	82.595	221			

a. Dependent Variable: Overall Students' satisfaction

b. Predictors: (Constant), FAC1xFAC2, REGR factor score1

Table 43 *(Continue):*

Coefficients[a]

		Unstandardized Coef.		Standardized Coef.		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.623	.032		114.942	.00
	REGR factor score 1	.450	.030	.737	15.186	.00
	FAC1xFAC2	.053	.027	.094	1.929	.05

a. Dependent Variable: Overall Students' satisfaction

Therefore, based on the above ANOVA table 43, we can conclude that there is a strong causal relationship effect between Factor 1 and the dependent variable Students' satisfaction where the P-Value is showing less than 0.05.

Then, from the Coefficient table 43, we can check the moderation effect results, where based on the obtained P-value of the interaction term FAC1XFAC2, we have a sig. value of 0.05 which is equal to 0.05 indicating that our university support (US) moderator has an effect on the relationship between learning method efficacy and the students' satisfaction. Therefore, H4 hypothesis is not rejected. This obtained result in addition to the factor analysis performed that ranked the university support factor as a second priority level in influencing the students' satisfaction, is aligned with El Danaoui, M. (2021) in the literature who did find a positive effect of institutional readiness and support on students' satisfaction with online learning. Also, the findings of Pham, Q. T., & Tran, T. P. (2020) in their study of students' satisfaction relationship with university support, is aligned with our finding that university support has a positive influence on students' acceptance and satisfaction with the new learning method.

It is worth it to mention here, that the level of significance is a bit low where the P-Value is showing a value of 0.05 which means that this moderator university support factor might be fitting more to be as a standalone independent variable rather than a moderator especially that this factor does have a high influence on the dependent students' satisfaction variable as shown in the factor analysis results section under "Total Variance Explained" table 37.

Figure 3 below, shows a summary plot of the hypotheses testing results where we can see that all the 4 highlighted hypotheses are marked in green which indicates that, based on our result analysis, those hypotheses are not rejected.
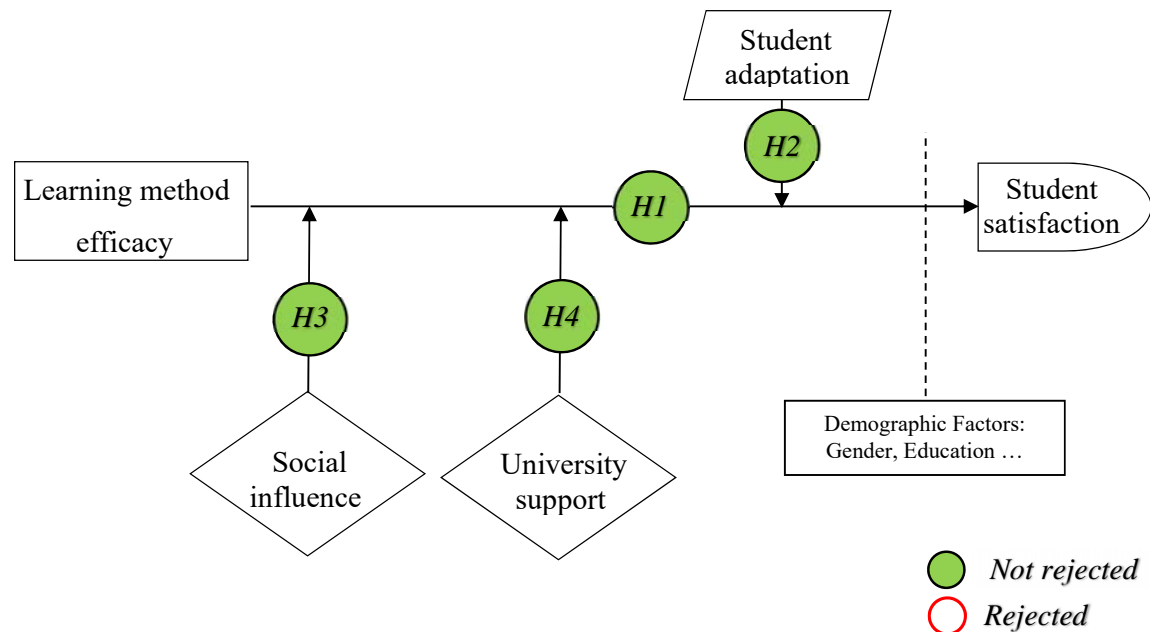
Figure 3: *Hypotheses testing results plot*

4.4.5 Non-Parametric testing

Now we can do non-parametric testing or demographic testing, by using the nominal variables in order to check for each factor how does the interviewee answers are distributed among the demographic based on the selected nominal demographic questions of Gender, Education level, and marital status.

Note that for Gender and education level demographic testing, we did use the 2 Independent variables option with Mann-Whitney test, since those nominal variables have only 2 possible options for selection, where Mann-Whitney null hypothesis states that the two groups do think the same. Therefore, if in the T-statistics table we have the sig. level of any variable <5% this means that we reject the null hypothesis, which indicates that the two groups do not think the same and do have different opinion regarding this specific factor.

Whereas, for the marital status nominal variable testing, we did use the K Independent Samples option with Kruskal Wallis H test, since this marital status nominal variable has more than 2 possible options for selection, where Kruskal Wallis null hypothesis states that "groups do think the same".

4.4.5.1 Demographic Factor gender – Students' satisfaction

Using the **Mann-Whitney** test we got the following results as per table 44.

Table 44: *Mann-Whitney test statistics and Ranks – Gender demographic factor*

	REGR factor score 1	REGR factor score 2	REGR factor score 3	REGR factor score 4	Overall Students' satisfaction
Mann-Whitney U	5820.000	5676.000	5064.000	5508.000	5654.000
Wilcoxon W	12606.000	11347.000	10735.000	12294.000	11325.000
Z	-.686	-.987	-2.268	-1.339	-1.174
Asymp. Sig. (2-tailed)	.493	.323	.023	.181	.240

a. Grouping Variable: Gender

Ranks

	Gender	N	Mean Rank	Sum of Ranks
REGR factor score 1	Male	106	114.59	12147.00
	Female	116	108.67	12606.00
	Total	222		
REGR factor score 2	Male	106	107.05	11347.00
	Female	116	115.57	13406.00
	Total	222		
REGR factor score 3	Male	106	101.27	10735.00
	Female	116	120.84	14018.00
	Total	222		
REGR factor score 4	Male	106	117.54	12459.00
	Female	116	105.98	12294.00
	Total	222		
Overall Students' satisfaction	Male	106	106.84	11325.00
	Female	116	115.76	13428.00
	Total	222		

We first look at the Test statistics table, where we can check for each variable what is the Sig level so that if sig level is <5% this means we reject the null hypothesis, so that students or observations we got under this Nominal groups (gender) are having different opinions, and they don't think in the same way regarding those 4 factors highlighted, else if sig. value is >5% this means we do not reject the null hypothesis which means those groups (males and females) do think the same regarding these factors.

Therefore, in our case for this Nominal variable (Gender) check, we can see that we have a Sig value <5% only for factor 3 "Student's adaptation", this means that we have different opinion between male and female students who did reply to these questions of factor 3, and from the other side, we can see that the Sig. value of all other factors are higher than 5% which means that both male and female students do have the same opinion regarding the questions related to factor 1 (learning method efficacy), factor 2 (university support), and factor 4 (student's adaptation).

Furthermore, Factor 3 (Student's adaptation), that shows a difference in opinion between male students and female students, we can check the Ranks table to see the total number of interviewees who are under each set of the demographic split highlighted in this nominal variable, and identify which group, male or female students, are showing a higher level of satisfaction with the learning method efficacy factor.

So, from ranks table 44 we have a total of **106** male students and **116** female students, where the Mean ranking of replies from each demographic set to this specific factor is **101.27** for male students and **120.84** for female students, this indicates that among those students who did participate in this study, we have the level of satisfaction for female students is impacted more by the student's adaptation factor as compared to a lower level of impact by this factor for male students with mean rank level of **101.27**. Therefore, universities should put more focus to get female students better adapt to the e-learning tools to get them properly engaged in the hybrid learning method that best fit their needs and expectations.

The overall students' satisfaction based on gender group:

The **Mann-whitney** test is showing no difference in the opinion between male and female students, as the Sig value is higher than 5%; Therefore, we have no significant difference

between the responses of the two groups, even though the mean rank numbers for the Overall students' satisfaction are showing a slightly higher level of satisfaction of 115.76 for female students than male students with 106.84 mean rank level as per Ranks table 44.

4.4.5.2 Demographic Factor education level – Students' satisfaction

Table 45: *Mann-Whitney test statistics and Ranks – Education level demographic factor*

	REGR factor score 1	REGR factor score 2	REGR factor score 3	REGR factor score 4	Overall Students' satisfaction
Mann-Whitney U	3648.000	4940.000	5412.000	4648.000	4698.000
Wilcoxon W	7218.000	8510.000	8982.000	8218.000	8268.000
Z	-4.628	-1.844	-.827	-2.474	-2.687
Asymp. Sig. (2-tailed)	.000	.065	.408	.013	.007

a. Grouping Variable: Education level

Ranks

	Education level	N	Mean Rank	Sum of Ranks
REGR factor score 1	Under-Graduate	84	85.93	7218.00
	Graduate	138	127.07	17535.00
	Total	222		
REGR factor score 2	Under-Graduate	84	101.31	8510.00
	Graduate	138	117.70	16243.00
	Total	222		
REGR factor score 3	Under-Graduate	84	106.93	8982.00
	Graduate	138	114.28	15771.00
	Total	222		
REGR factor score 4	Under-Graduate	84	97.83	8218.00
	Graduate	138	119.82	16535.00
	Total	222		
Overall Students' satisfaction	Under-Graduate	84	98.43	8268.00
	Graduate	138	119.46	16485.00
	Total	222		

Based on the statistics table 45 we have Factor 1 (Learning method efficacy), Factor 4 (Social influence), and Factor 5 (Overall students' satisfaction) are showing Sig. value of <5%, this means that students with different level of education do have different opinion regarding the implemented hybrid learning system, specifically in terms of Learning method efficacy, social influence, and overall satisfaction with the hybrid learning system. Whereas the other factors which are factor 2 (University support) and factor 3 (Student's adaptation) shows no difference in opinion between graduate and under-graduate students.

Furthermore, by checking the Mean Rank values for those factors that shows difference in opinion between graduate and under-graduate students, we can draw the following analysis:

Factor 1 (Learning method efficacy): We have a total of 84 under-graduate students and 138 graduate students, where the Mean ranking of replies from each demographic set to this specific factor is 85.93 for under-graduate students and 127.07 for graduate students. This indicates that among those students who did participate in this study, we have the graduate students showing a higher level of impact with the implemented hybrid learning method efficacy factor as compared to a lower level of impact for under-graduate students.

Factor 4 (Social influence): We have a total of 84 under-graduate students and 138 graduate students, where the Mean ranking of replies from each demographic set to this specific factor is 97.83 for under-graduate students and 119.82 for graduate students. This indicates that among those students who did participate in this study, we have the graduate students showing a higher level of impact with the social influence that is accompanied with the implemented hybrid learning system as compared to a lower level of impact for under-graduate students whose level of satisfaction is not impacted much by the Social influence.

Overall students' satisfaction based on the education level: We have a total of 84 under-graduate students and 138 graduate students, where the Mean ranking of replies from each demographic set to this specific factor is 98.43 for under-graduate students and 119.46 for graduate students. This indicates that among those students who did participate in this study, we have the graduate students showing a higher level of overall satisfaction with the

implemented hybrid learning system as compared to a lower level of satisfaction for under-graduate students.

Therefore, the Lebanese private sector universities should put more focus to better understand the needs of under-graduate students by getting them properly engaged in the hybrid learning method through proper training and proper instructor support, where those under-graduate students needs more attention and more encouragement driven by instructors, especially for e-learning session accompanied with a good quality of e-books used and easy to use e-learning tools that best fit their needs and expectations.

4.4.5.3 Demographic Factor Marital status testing

Using the Kruskal-Wallis test the following results, table 46, obtained:

Table 46: *Kruskal-Wallis test statistics and Ranks – Marital status demographic factor*

	REGR factor score 1	REGR factor score 2	REGR factor score 3	REGR factor score 4	Overall Students' satisfaction
Kruskal-Wallis H	6.371	5.187	1.903	13.904	11.434
df	2	2	2	2	2
Asymp. Sig.	.041	.075	.386	.001	.003

a. Grouping Variable: Marital status

Table 46 *(continue):*

Ranks

	Marital status	N	Mean Rank
REGR factor score 1	Single	176	105.95
	Married	44	132.32
	Separated	2	141.50
	Total	222	
REGR factor score 2	Single	176	106.52
	Married	44	131.14
	Separated	2	117.50
	Total	222	
REGR factor score 3	Single	176	112.39
	Married	44	110.77
	Separated	2	49.50
	Total	222	
REGR factor score 4	Single	176	103.64
	Married	44	143.77
	Separated	2	93.50
	Total	222	
Overall Students' satisfaction	Single	176	104.97
	Married	44	135.95
	Separated	2	148.50
	Total	222	

Based on the statistics table 46, we have Factor 1 (Learning method efficacy), Factor 4 (Social influence), and the (Overall students' satisfaction) are showing Sig. value of <5%, this means that students with different marital status do have different opinion regarding the implemented hybrid learning system specifically in terms of Learning method efficacy, social influence, and overall satisfaction with the hybrid learning system. Whereas the other factors which are factor 2 (University support) and factor 3 (Student's adaptation), shows no difference in opinion between single, married, and separated or divorced students. Furthermore, by checking the Mean Rank values for those factors that shows difference in opinion among students with different marital status, we can draw the following analysis:

Factor 1 (Learning method efficacy): We have a total of 176 single students and 44 married students and 2 Divorced or separated students, where the Mean ranking of replies from each demographic set to this specific factor is 105.95 for single students and 132.32 for married students and 141.50 for divorced or separated students. This indicates that among those students who did participate in this study, we have the divorced or separated students showing a higher level of satisfaction impact affected by the hybrid learning method efficacy as compared to married students who showed a lower level of satisfaction impact but higher than single students who showed the lowest level of satisfaction impact affected by the hybrid learning method efficacy factor.

Factor 4 (Social influence): We have a total of 176 single students and 44 married students and 2 Divorced or separated students, where the Mean ranking of replies from each demographic set to this specific factor is 103.64 for single students and 143.77 for married students and 93.50 for divorced or separated students. This indicates that among those students who did participate in this study, we have the married students showing a higher level of satisfaction impact affected by the social influence as compared to single students who showed a lower level of satisfaction impact but higher than divorced students who showed the lowest level of satisfaction impact by this social influence factor.

Therefore, we can say that married students do value the provided level of social influence and instructor's encouragement and support than single and separated students who do need more attention from universities to get them well engaged in the implemented hybrid learning system.

Overall students' satisfaction among different marital status: We have a total of 176 single students and 44 married students and 2 Divorced or separated students, where the Mean ranking of replies from each demographic set to this specific factor is 104.97 for single students and 135.95 for married students and 148.5 for divorced or separated students. This indicates that among those students who did participate in this study, we have the divorced students showing a higher level of overall satisfaction with the implemented hybrid learning system as compared to a lower level of satisfaction for married students followed by single students who showed the lowest level of overall satisfaction with the learning method. Therefore, the university attention should focus more on single students especially from the

social influence and learning method efficacy perspective to help them improve their experience with the new learning method towards a higher level of satisfaction and benefits.

4.4.5.4 Overall students' satisfaction percentages

Table 47 below, shows that a total of 61% of students showed a good level of satisfaction with the implemented hybrid learning system, they selected a rating of 4 or 5 in the provided questionnaire, whereas 37% of the students who participated in this study are indifference, which means that they are neither satisfied nor dissatisfied with the new learning method, and only 2% of students did show a low level of satisfaction by selecting a rating of 2 in the provided questionnaire.

Table 47: *Overall distribution of students' satisfaction percentages*

Not satisfied	Indifference	Satisfied	Strongly satisfied
2%	37%	56%	5%

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Most of the developing countries did suffer in implementing the new learning method that is based on e-learning and/or hybrid learning systems that was forced by the COVID-19 pandemic, where developing and distressed countries like Lebanon, are not ready to properly implement such a change in the education system with all the economic, social, and health challenging conditions. The aim of this study is to test the most impacting factors that do influence students' satisfaction with the hybrid learning system, so that to help the education system in Lebanon, especially the private universities sector, to better handle the challenging situation and properly stand beside their students by understanding their needs, and the required support they are expecting to receive from their universities to get them smoothly engaged in the new learning method which is expected to be needed for the years to come in presence of the challenging health and economic conditions.

5.1 Main findings

The findings for this research led to a framework that best fit the Lebanese context, where we did identify the most impacting factors and items that do influence the students' satisfaction with the hybrid learning system as per Figure 4. Our model was validated with descriptive statistics, factor analysis, and regression analysis, where factor analysis was used to simplify and group our 25 items into only 4 factors based on the data collected from the 222 participants representing 5 different private sector universities in Lebanon. Among those 4 identified factors, we did rank the most important ones and the most important items within each factor was also identified so that our findings will be precise at the key item level that university students do consider as the most important variables for their satisfaction. Moreover, in order to complete our triangulation check, our results obtained were compared to previous results from similar studies done for students' satisfaction in Lebanese universities, that was mainly focused on the following 3 studies from the literature, who also did target the students' satisfaction measure using the UTAUT theory for university students in Lebanon and other similar developing countries. These 3 studies were done by El Danaoui, M. (2021) who did investigate the factors that affect students' satisfaction to e-learning in

both private and public education sectors in universities of Lebanon. Also, we did focus on another study done by Kayali, M., & Alaaraj, S. (2020), who did tackle the factors that do affect e-learning adoption among university students in Lebanon. In addition, we did compare our results with a similar study done in Vietnam, that is considered a developing country like Lebanon, by Pham, Q. T., & Tran, T. P. (2020), who did focus on studying the influencing factors that do affect the students' satisfaction of e-learning systems at universities of Vietnam.

The most important factors identified in this study, and the most critical items that do influence students' satisfaction with the hybrid learning system in Lebanon, are displayed in the following framework figure 4, with all the needed details that can be used as a corner stone for new similar studies that tackle the hybrid learning system in Lebanon and other developing countries.
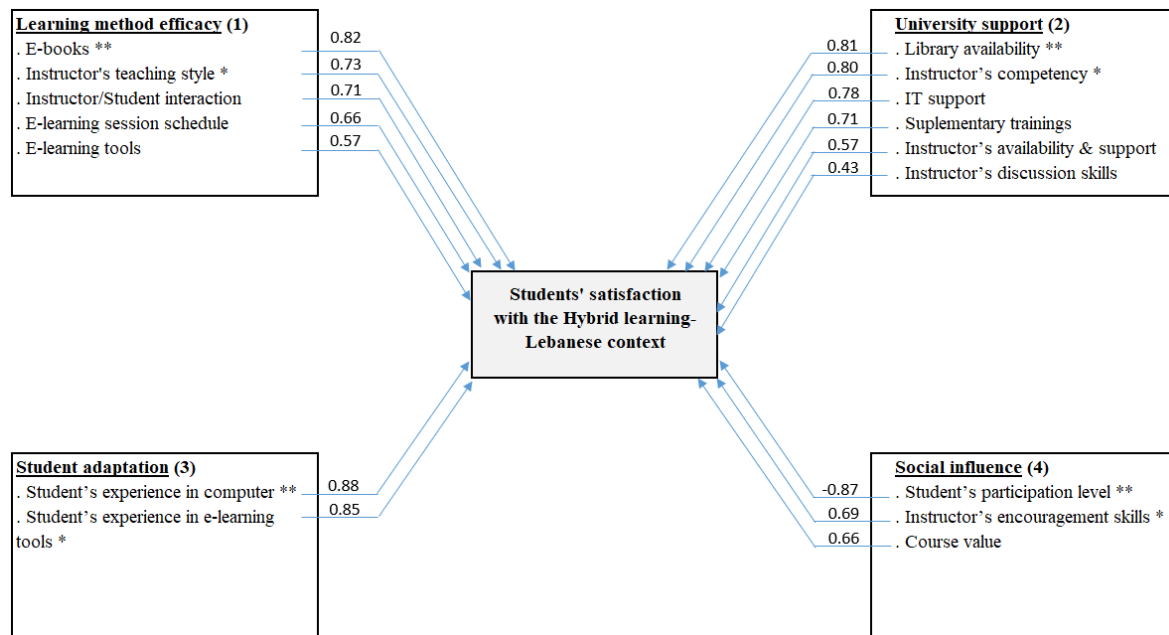

Figure 4: *Resultant framework-Lebanese content*

Therefore, based on the derived framework, figure 3, we have the Learning method efficacy representing the most important factor in influencing students' satisfaction to the hybrid learning system, with E-books quality and instructor's teaching style of weights 0.82 and 0.73

respectively, then as a second priority we have university support with library availability and instructor's competency of weights 0.81 and 0.80 respectively, then as a third priority we have student's adaptation with student's experience in computer use and student's experience in e-learning tools of weights 0.88 and 0.85 respectively. Then, as a fourth priority, we have the social influence factor with student's participation and instructor's encouragement skills of weights -0.87 and 0.69 respectively.

5.2 Limitation of the research

This research study has some limitations to be highlighted and should be considered in future research. Qualitative approach was not considered in this study to avoid handpicked students, as we faced a lack of students' cooperation from different universities that prevented us from securing a reliable number of interviews that do represent the population. The qualitative approach would have added value to properly shape the survey questions that best fit the Lebanese context. In addition, this study did cover only private sector universities, where public sector students might need to be included in future studies with wider sample size that would expand the scope of this research and might cover other developing countries as well. Also, some additional factors can be considered in future studies, like the effect of COVID-19 on the psychological and mental health of students as there might be some post COVID-19 effect that has a direct impact on people attitude and mental health (Li, H. Y., Cao, H., Leung, D. Y., & Mak, Y. W. (2020)).

5.3 Managerial implications

The new learning methods that were forced by the COVID-19 pandemic did has an effect on the education sector in all directions, including students, lecturers, and institutes; However, the main focus in all related researches studying the new learning methods was specifically on students' satisfaction, as the main concern of all education systems is to help students get the outmost benefit of any educational program that will bring benefit to societies overall. Based on this, our study was focused on identifying the key influencing factors that do affect students' satisfaction with the hybrid learning method, that was implemented by different Lebanese private sector universities in order to overcome the tough learning conditions forced by COVID-19. The results obtained from this study, which is aligned with many other

similar studies done in Lebanon and many other developing countries, aiming to help universities better understand their student's needs, and take proper decisions related to the newly implemented learning system towards a more satisfied students and to maximize the benefit out of the educational program delivered.

Our results obtained, will add value to the educational sector in Lebanon and other developing countries, as it clearly identified the significant effect of learning method efficacy on students' satisfaction, where e-books quality and instructors' teaching style are among the top priority items that should be considered by universities. Moreover, students' adaptation to tools and social influence in addition to university support are also identified as affecting factors that do impact students satisfaction with the hybrid learning system and should be considered by universities of Lebanon. However, our findings obtained from this study are based on private sector universities in Lebanon, therefore, the results cannot be over-generalized since we didn't tackle the public sector universities, in addition, our focus was on Lebanon country only, which is considered as a developing country, but also we cannot generalize our result to all other developing countries as there are many additional and specific factors including social, economic, health, political, and safety conditions that should be considered per each country for any coming researches to be done in this area.

5.4 Recommendations

As per the findings and conclusion drawn, where all the factors considered in the developed hypotheses were proven to be significantly affecting students' satisfaction with the implemented hybrid learning system at private universities of Lebanon. Therefore, based on these hypotheses test results, and based on Table 47 that shows the overall satisfaction percentage distribution, where a total of 61% of students showed a good level of satisfaction with the implemented hybrid learning system, and 37% of the students who participated in this study are indifference, which means that they are neither satisfied nor dissatisfied with the new learning method, and only 2% of students did show a low level of satisfaction. This drive us towards the following recommendations where a high focus is needed from universities to further increase the level of satisfaction from 61% to above 80% as this result is alerting from one side and promising from the other side, since the majority of students who didn't show a high level of satisfaction are in difference, which means that they are still

within the storm of the change and couldn't recognize whether they will be able to fit into the new learning system or they will reject this change, and here is the responsibility of universities to help and support those students, to bring them from the indifference stage towards the high satisfaction stage, through focusing on our recommendations and the findings of this study that did identify the most impacting factors that those students did highlight as important to them, where if universities did improve the level of the learning method efficacy and properly prepared their professors to efficiently deal with the e-learning approach and encourage students to get more engaged in the new learning method, in addition to providing a high level of technical and social support that will be valued by students, this will definitely improves further their level of satisfaction with the newly implemented learning system that will leverage up the overall education system in the country.

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