
| RESEARCH ARTICLE

Exploring the Mediating Effects of Self-Efficacy on the Relationship between Learning Interaction, Teaching Style, Student Engagement, Course Quality and Academic Stress among MBA Students in Sri Lanka

Praveena Thandasseri Premakumar¹ ✉ Alireza Mohammadi², Amer Hamzah Jantan³, Mohammad Masudur Rahman⁴, H.T.M. Quader Newaz⁵ and Farhana Newaz⁶

¹City Graduate School, City University, Malaysia

²Associate Professor, City University, Malaysia

³Chief Executive & Deputy Vice-Chancellor, Veritas University College, Malaysia

⁴Professor, Department of Business Administration, European University of Bangladesh

⁵Professor, Faculty of Business, International Standard University

⁶Lecturer, Department of Business Administration, International Standard University

Corresponding Author: Praveena Thandasseri Premakumar, **E-mail:** praveenapremakumar.t@gmail.com

| ABSTRACT

The rapid expansion of online education has exposed new challenges with student retention, and MBA students are struggling with academic stress. This investigation examines the correlation between academic stress and various retention strategies, with an emphasis on online MBA students from Sri Lanka. The research investigates the direct effects of five primary independent variables on academic stress: learning environment, student involvement, teaching style, course quality, and learning interaction. These variables are based on contemporary educational theories. Furthermore, it explores the mechanisms by which self-efficacy facilitates these connections. The 429 MBA students from officially accredited universities in Sri Lanka participated in this quantitative study by completing a standardized survey. This research employed Smart-PLS-Structural Equation Modeling (SEM) to analyze the data and determine the validity of the hypotheses. The evaluation of both direct and mediated connections was conducted using a systematic framework in this study. Results reveal that learning interaction, course quality, and student engagement teaching style significantly influence academic stress. In these interactions, self-efficacy serves as an essential mediator. The results of this study can be used by schools and faculty members to develop retention strategies that students are motivated to implement in order to alleviate academic stress. This research contributes to the growing body of literature on online education by establishing a framework for a productive and engaging classroom environment. This research underscores the necessity of personalized interventions to increase student retention rates and well-being in online learning environments.

| KEYWORDS

Academic stress, Learning interaction, Teaching style, Student engagement, Course quality, and Self-efficacy.

| ARTICLE INFORMATION

ACCEPTED: February 24, 2025

PUBLISHED: March 21, 2025

DOI: 10.61424/rjbe.v3.i1.214

1. Introduction

In light of the COVID-19 epidemic, which has caused universities around the world to rapidly adopt online education technologies, this study investigates how MBA students are now adjusting to online learning. Undergraduates, graduates, and students at all levels of education are finding that online learning is the most practical and cost-effective option (Malik & Javed, 2021). The physical presence and peer interaction of a typical classroom are replaced with the flexibility of time and place in an online learning environment, which is dynamic

and electronic. Those who, for various reasons, are unable to attend traditional classes now have an option for this kind of learning. There are several difficulties associated with online learning despite its many benefits, such as accessibility and flexibility. Concerning academic stress, the move to online learning has its own set of problems. While it opens doors to better learning and more innovative approaches, it also increases stress for teachers and students alike due to the need to constantly adapt to new technology tools (Bates, 2015; Malik & Javed, 2021).

1.1 Background of the study

An outstanding accomplishment, the quick shift to online education has guaranteed the continuation of educational activities in these exceptional circumstances. However, because of its practicality, affordability, and inventiveness, online learning has grown in popularity (Palvia et al., 2018). Online education has many advantages over traditional classroom instruction, including a low resource requirement, accessibility for students from all over the world, and the ease of implementation made possible by ubiquitous IT (Palvia et al., 2018). In light of these advantages, online education has grown in stature to become the preferred method of education. Students' levels of stress, anxiety, despair, and even suicidality have risen due to the online education system, notwithstanding its benefits (Husky et al., 2020). The purpose of this research was to identify the factors contributing to academic stress among MBA students in Sri Lanka who are enrolled in online programs and to provide them with tried-and-true methods for reducing this stress and optimizing their learning environments.

Researchers have shown a growing interest in the relationship between online learning and academic stress, with a particular emphasis on the role of self-efficacy as a mediator, according to previous studies (Fonseka et al., 2019; Shofiah et al., 2023). In addition to being a potential source of stress, the design and enabling conditions offered by the technical platform of an online learning environment can act as a stress buffer. For example, students' mental stress levels can be reduced through the use of well-designed online environments that include communication and navigational tools. Poorly designed platforms, on the other hand, exacerbate the problem by adding stress from inconvenient features and unclear organization. Findings like this highlight the need to further investigate the role that certain environmental factors play in the dynamic between online education and academic pressure.

In light of the findings of this study, it is critical to highlight the lack of previous research that has examined the role of self-efficacy as a mediator between online learning and academic stress experienced by MBA students in Sri Lanka. This study contributes to our theoretical understanding of online learning as well as our grasp of how to implement suggested practices by filling gaps in the existing literature and providing a more thorough comprehension of the described and discussed relations.

1.2 Problem Statement

Higher education is still very much out of reach for many Sri Lankans. A lot of families' capacity to make ends meet took a hit during the COVID-19 pandemic. A large number of students said that their family's income had drastically decreased. Students' capacity to access education was severely affected by this economic slump. In order to provide continual instruction while minimizing the spread of the infection, online learning has become an essential tool. The facilitation of information exchange, on-demand learning, and space savings in course delivery have granted teachers an unprecedented degree of freedom. Ilangarathna et al. (2022) noted that previous research solely focused on undergraduate online learning and studied teacher-student connections. Additional research at the graduate level is necessary to discover a remedy for the academic pressures associated with online education. More research is required to develop specific and thorough practice recommendations, though, because the role of attaining objectives in this new context has only been studied in a few studies (Daumiller et al., 2021). According to Rameez et al. (2020), research should be conducted to resolve concerns related to student support systems for online learning.

Despite the growing popularity and convenience of remote education, more research is needed to improve infrastructure, gain support from possible lecturers, and gather feedback from students at the graduation level in order to make online learning more accessible and effective (Adnan & Anwar, 2020; Ilangarathna et al., 2022;

Mulenga & Marbán, 2020; Perera & Gamage, 2021). The lack of established protocols for online evaluations has only made matters worse in Sri Lanka (Gomez, 2019).

This study delves into the relationship between online learning environments, student engagement, and academic stress, specifically looking at how self-efficacy mediates this effect. A quantitative research strategy is employed to carry out an exhaustive examination. To fill this need, the current project aims to create an online learning environment that places an emphasis on the overall well-being of MBA students in Sri Lanka who are dealing with academic pressure.

1.3 Research Questions

In order to find the answers for this study, the following research questions were developed and analyzed using prior research, journal articles, and key papers as support.

RQ 01: Does learning interaction impact academic stress among MBA students?

RQ 02: Do teaching styles influence academic stress among MBA students?

RQ 03: Does student engagement affect academic stress in MBA programs?

RQ 04: Does the quality of course content influence academic stress among MBA students?

RQ 05: Does self-efficacy mediate the relationship between learning interaction, teaching styles, student engagement, course quality, and academic stress among MBA students?

1.4 Research Objectives

The main objectives of this study are to:

RO 01: Investigate the impact of learning interactions on academic stress among MBA students.

RO 02: Examine the impact of teaching styles on academic stress among MBA students.

RO 03: Examine the impact of student engagement on academic stress among MBA students.

RO 04: Determine the influence of course quality on academic stress.

RO 05: Investigate the mediating role of self-efficacy in the relationship between learning interaction, teaching styles, student engagement, course quality, and academic stress.

2. Literature Review and Hypothesis Development

2.1 Learning Interaction

One of the most essential criteria for effective delivery of learning is learning interaction. The learner and the learning environment engage in a transactional process of learning. Cognitive learning theories, such as Vygotsky's, highlight the significance of social interactions for students' cognitive growth, arguing that these interactions motivate students to take part in challenging activities and tasks. Scholars have expressed views on learner interactions in a variety of ways. Interactions between students, between students and course material, and between students and instructors are enough, according to some (Yoo, Kim & Young, 2014). Out of the aforementioned contexts, some present learner-context, learner-support, and learner-interface interactions. Additionally, examples of learner-content interactions include the ability to access a digital library's collection of books, academic papers, lecture notes, games, quizzes, media, web connections, and computer programs.

The mental effects of being alone while taking a course online were the primary research topic of Wang et al. (2022). According to their findings, pupils' stress and anxiety levels were higher when they had fewer interactions with teachers and classmates. The research concluded that online courses could benefit from more group projects and live sessions to break down students' feelings of isolation and promote a sense of community. Chowkase et al. (2022) and Adewale & Tahir (2022) both highlighted learning interaction as a crucial factor for effective delivery of learning. They conceptualized the relationship between the learner and their learning environment as a transaction. According to Nath and Yadav (2023), a large number of students are drawn to online learning because of its adaptability and capacity to meet their specific demands. Despite the convenience and accessibility of online

education, some students report increased stress levels as a result of the positive association ($r = +0.14$) between the two.

Based on previous investigations, this study suggests the following hypothesis:

H1: Learning interaction has a positive impact on academic stress.

2.2 Teaching Styles

The virtual learning environment is witnessing a transition from traditional teaching roles, highlighting the necessity for educators to produce creative and engaging online instructional resources (Huang & Chen, 2010). Historically, educational institutions endeavored to transition content from traditional environments to online platforms without success. It became clear that online education necessitates customized support services and efficient engagement strategies to address learners' requirements (Means et al., 2010). Consequently, it is imperative to integrate sophisticated technical tools and methodologies to improve the learning experience and guarantee the efficacy of online programs (Picciano, 2017).

Moreover, teachers must incorporate uniqueness, novelty, and invention in the creation of online learning resources. Traditionally, educational institutions transitioning to online learning replicated the curriculum used in traditional settings without modification. This method proved unsuccessful since learners experienced disappointment, and instructors regarded online learning as difficult and challenging. Subsequently, it was determined that online learning necessitates improved support services and engagement strategies. Consequently, the use of increasingly sophisticated technological processes is essential to improve the learner experience and ensure the efficacy of online learning programs (Woldeab, Yawson & Osafo, 2020).

Students who perceive elevated levels of interaction with their instructors encounter less academic stress. This corresponds with the perspective of Gao et al. (2021), emphasizing the mediation function of self-efficacy in alleviating stress.

Notwithstanding the difficulties associated with online teaching methodologies, students concurred that their instructors were adequately equipped to conduct sessions remotely (Ilangarathna et al., 2022). Many investigations have determined that teaching styles in online courses are essential for maintaining learner engagement and interest in the course. Facilitating interactive chances for learners to engage with peers and instructors would constitute an effective course design. The provision of personalized attention and interactive feedback from educators is a crucial element in online learning (Woldeab, Yawson & Osafo, 2020).

On the basis of previous studies, this study develops the following hypothesis:

H2: Teaching style has a positive impact on academic stress.

2.3 Student Engagement

Student engagement is an essential determinant of the efficacy of online learning environments. Previous research (Chyung et al., 2019) underscores the need to cultivate a feeling of community, offering explicit guidelines and employing multimedia components to maintain student engagement. It also emphasizes the responsibility of educators to actively foster debates and interactions.

Emotional connection and engagement are vital components of the online learning experience that mitigate the absence of direct interaction between students and instructors. Studies indicate that the motivation hypothesis encompasses both happy and negative emotions, hence enhancing learning by fostering motivational engagement (Al-Kumaim et al., 2021). Emotional interactions can enhance both intrinsic and extrinsic motivation, resulting in improved cognitive processes and learning outcomes. Instructors must deliver positive emotional content to captivate students at the lesson's outset since this engagement serves as a significant motivator for further learning (Al-Kumaim et al., 2021). Chiu et al. (quoted in Al-Kumaim et al., 2021) suggest that an emotionally appealing

design effectively enhances low-level cognitive functions, such as memory, in pupils. We assert that the emotional connection fostered by well-structured online education can enhance student motivation and alleviate stress.

Kisanga and Ireson (2016) concentrate on attitudes towards e-learning and the formulation of the TeLRA scale. Comprehending students' attitudes towards online learning is essential, as these views might influence their participation and, consequently, academic stress. The research highlights the necessity of evaluating and addressing students' perceptions of online learning to foster a conducive educational atmosphere (Kisanga & Ireson, 2016). In a comparable investigation, Kisanga and Ireson (2016) created the Test of e-Learning Related Attitudes (TeLRA) scale to evaluate students' attitudes toward e-learning. Comprehending students' attitudes is essential in the realm of online learning, as adverse attitudes may exacerbate academic stress. This scale serves as a resource for educators to recognize and mitigate negative attitudes, fostering a more happy and stress-free learning environment.

In a sustainable study, Fleming et al. (cited in Cleofas, 2019) presented robust empirical evidence indicating that interventions enhancing students' social, emotional, and decision-making competencies positively influence their academic performance. Students experiencing internal distress, such as depression and anxiety, exhibit low academic performance, whereas those facing external distress, including wrath, impatience, and fear, encounter challenges in school. Life satisfaction exhibited a reciprocal association with student engagement. Previous research indicated that teenagers' health-related quality of life evolves with time and influences peer interactions. The quality of friendship among a Malaysian student group and their activities were correlated with the students' quality of life (Cleofas, 2019).

Numerous educational institutions have effectively executed these tactics, resulting in favorable outcomes for students. Thompson et al. (2023) conducted a case study on a university that implemented a comprehensive mental health program for online students. The program encompassed virtual counseling, stress management training, and peer support groups. Participants in the program indicated reduced stress levels and enhanced academic achievement. Likewise, Lee & Thompson (2022) examined the effects of interactive online learning methodologies in a secondary education setting. The institution instituted collaborative initiatives, peer dialogues, and real-time virtual sessions to augment social engagement. The study revealed that students participating in these activities reported greater happiness and reduced stress levels compared to their non-participating counterparts.

To improve online learning engagement, it is essential to implement creative and interactive evaluation instruments. Addressing matters outside the conventional versus online dichotomy, presenting successful online programs, and offering opportunities for teachers to develop technology competencies are essential elements. Professional assistance in course design, the implementation of appropriate support systems, and the facilitation of thorough training can significantly enhance the integration of educational technology for online instruction (Al-Kumaim et al., 2021). Specialized assistance in course design, efficient support frameworks, and thorough training are essential for the successful integration of educational technologies in online instruction and learning.

Nath & Yadav (2023) assert that online learning offers students a plethora of resources, including information accessible via social media, which can improve academic achievement. The degree of student engagement with these items is essential. This theory emphasizes student engagement as a moderating variable. Students who actively engage with these tools may experience less stress owing to enhanced preparedness and information accessibility. Conversely, students who fail to utilize existing resources may encounter difficulties, intensifying academic stress. The hypothesis emphasizes the need for participation in optimizing the advantages of online learning and reducing stress.

Purnomo et al. (2021) investigate parental involvement in online learning. Their research examines the influence of parental involvement on student engagement in online mathematics education. Family support and engagement can profoundly influence students' experiences and performance in online education. Active parental involvement in children's online education enhances pupils' sense of support and reduces their stress levels. Purnomo et al. (2021) discovered that parental involvement in children's online mathematics education greatly influences student interest and performance. This engagement fosters a sense of support among students and mitigates their stress levels.

This inquiry proposes the following hypothesis based on the previously described investigations:

H3: Student engagement positively influences academic stress.

2.4 Course Quality

Another essential factor relevant to online education is course quality. Prior research indicated that online education enhances learner satisfaction relative to conventional courses. The majority of learners who complete an online course report delight in active participation and express a willingness to enroll in more courses. Thus, it is asserted that online courses have a superior ability to promote interaction relative to traditional learning programs. Research studies have identified seven elements that significantly impact learners' perceptions of learning effectiveness: addressing learner needs, fostering motivation, providing relevant and meaningful examples, facilitating the course effectively, ensuring efficient communication, achieving successful delivery, and considering learners' perceptions. Furthermore, the instruments and methodologies of communication are influencing all these elements. Thus, effective communication is the key element in any successful online course (Spiceland & Hawkins, 2002, cited in Waldman et al., 2009).

Building on the findings of Al-Kumaim et al. (2021) about positive emotional designs, it is essential to examine how the emotional appeal of online learning content improves course quality and therefore contributes to stress management. The importance of engagement and motivation through emotionally compelling design elements deserves attention. Considering the importance of effective learning techniques, it is essential to analyze how course quality influences the development and implementation of these tactics. Employing emotionally resonant design elements to captivate and inspire students can significantly enhance their educational experience. The effectiveness of learning strategies is often contingent upon the quality of course content, highlighting the need for exceptional course design to improve these methods. Consequently, improving course quality by incorporating emotionally engaging and motivated elements may reduce academic stress among students.

The variation in academic stress and burnout within remote learning programs, as evidenced by the data, underscores the critical impact of course quality on student experiences (Allen et al., 2021). Degree programs, marked by greater complexity, depth, and workload, were associated with higher stress levels compared to certificate programs. This suggests that the design, structure, and expectations of online courses significantly influence academic stress. The finding that students had reduced burnout associated with classmates and instructors highlights the importance of carefully designed interactions and support systems within the course structure. Effective course design, characterized by clear objectives, accessible resources, and robust support networks, can alleviate stress.

On the basis of the above studies, this research develops the following hypothesis:

H4: Course quality has a positive impact on academic stress.

2.5 Self-efficacy

The cognitive status of individuals is a significant concern in light of the challenges and transformations posed by environmental changes in social and technological situations. Researchers were investigating methods to inspire, alter, influence, and improve human behavior and cognitive patterns in response to the complex environment we encounter today (Lunenburg, 2011). In response, Robert Bandura (1977) established self-efficacy theory as a component of social cognition theory to strengthen individuals' reflective, motivational, and regulatory skills. Given that desire and belief significantly impact goal attainment, self-efficacy theory is crucial in human existence. Self-efficacy is a widely recognized concept nowadays due to its popularity. Self-efficacy is described as an individual's belief and confidence in their ability to achieve established goals through the execution of requisite behaviors (Bandura, 1977).

Roach et al. (2003) observed that self-efficacy may aid in the prevention of obesity in youngsters. This experimental study has implemented a 12-week intervention program for 66 participants and determined that self-efficacy can assist persons in achieving weight loss. Consistent evidence from laboratory experiments and field research studies indicates that self-efficacy significantly contributes to enhancing motivation and performance in academic achievement and health behavior (Bandura, 1997).

Several research has examined the impact of self-efficacy on personal performance, self-employment, academic success, job advancement, and resilience in challenging conditions (Michael, Most & Cinnamon, 2013; Rachmawan, Lizar & Mangundjaya, 2015). Moreover, research has demonstrated the impact of academic learning on self-efficacy (Urban, 2006). However, certain scholars contend that self-efficacy is domain-specific (Moynihan et al., 2003). Bandura (1977) asserted that self-efficacy is a multifaceted concept capable of directly or indirectly influencing various elements and other determinants.

Self-efficacy predicts human behavior (Bandura, 1977). Consequently, educational institutions and instructors are promoting the cultivation of self-efficacy among learners. It was revealed that self-efficacy can be developed by learning, feedback, and experience (Basereh & Pishkar, 2016). Moreover, Wilson, Kickul, and Marlino (2007) have recognized the significance of both theoretical discourse and practical sessions in facilitating mastery experience. Consequently, the majority of scholars have determined that apprenticeship, case studies, and role models significantly impact students' self-efficacy levels (Basereh & Pishkar, 2016). Self-directed learning has significantly improved the self-efficacy levels of EFL learners in Iran, particularly in the context of language acquisition (Basereh & Pishkar, 2016). Moreover, social persuasion strategies, including an effective feedback system and positive reinforcement, should be integrated into the school curriculum to enhance self-efficacy (Wilson, Kickul, & Marlino, 2007).

Researchers have persistently investigated the enhancement of self-efficacy via education and training. It can be pivotal in attaining established objectives, ultimately leading to economic security. Renowned institutions like Cambridge and MIT are actively fostering entrepreneurship via their tailored entrepreneurial curricula and have effectively facilitated the emergence of new entrepreneurs in the marketplace. Ferreira, Morais & Brothers (2019) have similarly confirmed that typical classroom courses in tourism, which incorporate practical experience, case studies, and e-learning activities, can provide moderate improvements in students' entrepreneurial self-efficacy. Yavuzalp and Bahcivan (2020) introduce the online learning self-efficacy measure, emphasizing the importance of students' self-efficacy in online education. Students possessing elevated self-efficacy may encounter reduced academic stress due to their greater confidence in their capacity to excel in online courses. The research indicates that strategies to improve self-efficacy can beneficially influence students' experiences in online education.

Current literature demonstrates that self-efficacy significantly influences academic accomplishment (Yu & Deng, 2022). Students exhibiting elevated self-efficacy generally achieve superior academic performance, whereas those with diminished self-efficacy may have difficulties in attaining their academic objectives. The discourse highlights the significance of self-efficacy in inspiring pupils to invest effort and utilize their skills proficiently. The literature adeptly links the findings and concepts pertaining to self-efficacy with Hypotheses 5 through 9:

H5: Self-efficacy mediates the relationship between learning interaction and academic stress.

Setiakarnawijaya et al. (2022) underscored the significance of instructional resources and principles in mitigating academic stress. Effective teaching methodologies that incorporate extensive resources and clear guidelines may improve students' self-efficacy, therefore alleviating academic stress. The study's findings substantiate the hypothesis that self-efficacy mediates the association between teaching style and academic stress by equipping students with the confidence and resources necessary for success in an online learning environment. Similarly, Li & Wang (2024) examine how e-learning technologies augment academic self-efficacy by enabling students to use and practice their information, as well as by offering feedback on their advancement. This substantiates the hypothesis that self-efficacy mediates the correlation between teaching style and academic stress, as effective teaching methodologies utilizing e-learning tools can enhance self-efficacy and, hence, alleviate stress. Zhang et al. (2024) assert that academic self-efficacy directly affects academic stress and internet dependency.

This supports the development of the following hypothesis:

H6: Self-efficacy mediates the relationship between teaching style and academic stress.

Previous research indicated that students' engagement levels were essential in influencing their stress levels (Setiakarnawijaya et al., 2022). Students with lower engagement levels perceived online learning as more stressful.

Enhancing self-efficacy through measures that increase engagement, such as interactive and participatory teaching approaches, can alleviate academic stress. This corroborates H8, indicating that self-efficacy mediates the connection between student engagement and academic stress. Li & Wang (2024) identify a positive association between the utilization of e-learning technologies and student involvement, which subsequently enhances academic self-efficacy. This corroborates the theory that self-efficacy mediates the relationship between student engagement and academic stress, suggesting that increased engagement via effective e-learning tools elevates self-efficacy and mitigates stress. Moreover, Zhang et al. (2024) discovered that elevated academic self-efficacy is associated with diminished academic stress and decreased issues. The utilization of AI supports the concept that self-efficacy regulates the association between student involvement and academic stress. Involving students in methods that enhance self-efficacy can alleviate their academic stress by diminishing their reliance on AI for academic responsibilities.

Based on these past studies, the present study develops the following hypothesis:

H7: Self-efficacy mediates the relationship between student engagement and academic stress.

The study by Setiakarnawijaya et al. (2022) shows that course quality strongly influences academic stress. Well-structured, high-quality courses that offer clear and complete content might improve students' self-efficacy, thereby alleviating their academic stress. The correlation between course quality and academic stress is mediated by self-efficacy, as high-quality courses equip students with the knowledge and confidence necessary to effectively manage their stress levels. Furthermore, the findings of Li and Wang (2024) suggest that high-quality e-learning tools and resources correlate with enhanced academic self-efficacy. This substantiates the hypothesis that self-efficacy mediates the correlation between course quality and academic stress, as well-structured e-learning courses augment self-efficacy and, hence, diminish stress. The correlation between academic self-efficacy and diminished AI reliance underscores the significance of course quality in cultivating self-efficacy (Zhang et al., 2024). High-quality courses that enhance self-efficacy can alleviate academic stress, hence confirming the notion that self-efficacy mediates the relationship between course quality and academic stress.

On the basis of the prior studies, this research develops the following hypothesis:

H8: Self-efficacy mediates the relationship between course quality and academic stress.

The prevalent adverse view of online learning and the corresponding stress levels among students, as indicated by Setiakarnawijaya et al. (2022), implies that enhancing self-efficacy may alleviate these stress levels. When students perceive themselves as more proficient in managing online learning, their academic stress can be markedly alleviated. This corroborates H11, indicating a considerable link between self-efficacy and academic stress. Zhang et al. (2024) illustrate the moderating effect of academic self-efficacy in the relationship between academic stress and AI dependency, highlighting the necessity of cultivating self-efficacy in online learning contexts.

This supports developing the following hypothesis:

H9: Self-efficacy has a positive impact on academic stress.

3. Methodology

The research framework utilized for this study is unique in its characteristics. The study utilizes a cross-sectional methodology, employing a quantitative survey with a meticulously designed questionnaire. This decision reflects the dedication and collected real-time data from 429 MBA students in Sri Lanka. Qualitative research employs numerical data to elucidate patterns and trends within a substantial sample size (Creswell & Creswell, 2017). The researcher employed a positivist strategy, utilizing quantitative approaches to gather data while also leveraging existing data to enhance the study and explore new information regarding online learning and its impact on academic stress. Generalizability facilitates the formulation of more extensive recommendations and inferences. Surveys are a cost-efficient tool for data collection, particularly when juxtaposed with resource-intensive approaches such as in-depth interviews or case studies.

This study employed non-probability sampling due to the absence of established probabilities for each case (Bryman, 2016). Saunders et al. (2009) delineated four principal forms of non-probability sampling, with convenience sampling defined by the selection of cases based on their accessibility or vicinity. Researchers select the most accessible cases without utilizing a random or systematic approach. This method is economical and effective, although it may induce biases owing to the non-random selection of cases.

Krejcie and Morgan's (1970) sample size determination table indicates that a minimum of 429 respondents is required to provide sufficient analytical power. Recruitment was conducted via the institutional mailing list and an existing online platform with a diverse population. This study employed convenience sampling to examine academic stress and mental health among MBA students in Sri Lanka during online learning. Due to the limitations of reaching a wide and geographically diverse population within a restricted timeframe, convenience sampling allowed the researcher to collect data from participants who were easily accessible via institutional networks and internet platforms. This corresponds with the assertion by Saunders et al. (2019) that convenience sampling is frequently the most pragmatic method when the researcher has direct access to specific participant groups.

The questionnaire was modified from validated tools utilized in previous studies, including the Academic Stress Scale (ASS) by Kohn & Frazer (1986) and self-efficacy measures (Wei et al., 2021). Standardized scales were employed to guarantee the reliability and validity of the measurements (Field, 2018). A five-point Likert scale was utilized to assess the level of agreement with each topic, enabling detailed data analysis. Data were gathered through a structured questionnaire intended to assess the impact of self-efficacy as a mediating variable in the link among learning interaction, teaching methods, course quality, student engagement, and academic stress. The data was examined using structural equation modeling (SEM) as it is essential for assessing the measurement quality of latent components (Kline, 2015). Structural Equation Modeling (SEM) is particularly effective for analyzing the interrelationships among diverse aspects related to online learning and academic stress among MBA students in Sri Lanka.

4. Analysis and Results

4.1 Data Preparation

During the data collection phase, the investigation obtained 429 responses from a total of 450 participants. Subsequently, the collected data underwent purification to confirm its compliance with the requisite format. During the data purification phase, the researcher methodically eliminated undesirable missing values and removed unindicated data outliers from the dataset.

4.2 Test of Normality

Skewness and kurtosis are critical metrics employed to evaluate the extent of normality in a distribution (Tabachnick & Fidell, 2014). Numerous threshold values exist for statistical assessments, including the Kolmogorov-Smirnov Test and the Shapiro-Wilk Test. The Shapiro-Wilk Test is frequently advised for small sample sizes, generally comprising fewer than 30 samples. Nonetheless, it is equally relevant to larger sample sizes, including ones reaching 2000. Consequently, the Shapiro-Wilk test was utilized to quantitatively assess normality. Hair et al. (2006) advocate for a skewness and kurtosis range of -1.169 to +1; however, Garson (2009) proposes a range of -2.00 to +2.00 for both metrics. West and Cho (1995) assert that a skewness value is considered extremely skewed if its absolute magnitude exceeds 3. A kurtosis value exceeding 10 is considered problematic. The dataset displays skewness values ranging from -0.077 to 1.095 and kurtosis values from -1.044 to 1.944. The dataset meets the skewness and kurtosis standards established by Garson (2009). Therefore, it may be concluded that the normality criteria have been met for the study, and the dataset is anticipated to adhere to a normal distribution.

Table 4.1: Normality Test

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
LI	.170	10	.200*	.962	10	.809
TS	.127	10	.200*	.974	10	.926
SE	.132	10	.200*	.935	10	.503
CQ	.232	10	.134	.945	10	.609
AS	.182	10	.200*	.897	10	.206

The assessment of normality, commonly known as the "Test of Normality," is a conventional method employed to ascertain if a specific dataset conforms to a normal distribution. The Kolmogorov-Smirnov test is a statistical technique employed to evaluate the test statistic, degrees of freedom (df), and significance level (Sig.) specified for each group (LI, TS, SE, CQ, SEF, AS). The null hypothesis (H0) asserts that the data distribution adheres to a normal distribution. The alternative hypothesis (H1) asserts that the data distribution deviates from normality.

The p-values (Sig.) for all groups (LI, TS, SE, CQ, SEF, AS) above the conventional significance level of 0.05, as indicated by the asterisk (*). This indicates that the researcher does not possess adequate evidence to dismiss the null hypothesis, asserting that the data conforms to a normal distribution. The results of the Kolmogorov-Smirnov test suggest that the data for all groups approximates a normal distribution.

Like the Kolmogorov-Smirnov test, the Shapiro-Wilk test also assesses the conformity of the data to a normal distribution. Each group is supported by statistical data on degrees of freedom (df) and significance level (Sig.). According to the Kolmogorov-Smirnov test, the p-values (Sig.) for all groups (LI, TS, SE, CQ, SEF, AS) exceed the threshold of 0.05. This indicates that the researcher does not possess adequate evidence to dismiss the null hypothesis, asserting that the data conforms to a normal distribution.

The results of the Shapiro-Wilk test suggest that the data demonstrates a tendency towards normal distribution in all groups. The Kolmogorov-Smirnov and Shapiro-Wilk tests indicate that the data for all groups (LI, TS, SE, CQ, SEF, AS) do not significantly deviate from a normal distribution. Therefore, it is prudent to assume that the data adheres to a normal distribution when conducting subsequent statistical analysis.

4.3 Multicollinearity

Multicollinearity signifies a significant correlation across predictor variables, suggesting that these variables may be reflecting a common concept or phenomenon (Hair et al., 2006). Variance inflation factors (VIF) and correlation matrices are frequently utilized indicators for identifying multicollinearity (Kaplan, 1994). Significant multicollinearity between the two constructs is often recognized when the correlation coefficient is 0.90 or higher. This may potentially impact the validity and reliability of statistical analysis. To assess multicollinearity in multiple regression analysis, it is recommended that tolerance measures be below 10 and VIF (Variance Inflation Factor) values exceed 0.10 (Tabachnick & Fidell, 2014).

Table 4.2: Multicollinearity

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	LI	.427	2.340
	TS	.411	2.436
	SE	.454	2.201
	CQ	.389	2.571
	SEF	.586	1.706

The provided table claims to offer a succinct summary of collinearity data related to a regression model. Collinearity refers to the degree of correlation observed among the predictor variables, or independent variables, within a regression model. Tolerance can be seen as the inverse of the Variance Inflation Factor (VIF). In this instance, a tolerance value of 0.580 signifies that approximately 58% of the variability in the dependent variable OL is unexplained by the independent predictor variables in the model.

The variance inflation factor (VIF) of 1.723 indicates that the variable OL demonstrates a moderate level of collinearity with the other predictor variables. A Variance Inflation Factor (VIF) value under 5 is generally considered acceptable, and for OL, its VIF is below this threshold. The previously stated abbreviations, specifically LI, TS, SE, CQ, and SE, were examined in this scholarly discussion. The model incorporates supplementary predictor variables, each accompanied by tolerance and VIF values. Tolerance might be perceived as akin to the concept of orthogonalization (OL). In the context of tolerance values, these values denote the proportion of variation in a certain variable that remains unaccounted for by the other predictor variables. The Variance Inflation Factor (VIF) values for these variables indicate the degree to which they are influenced by collinearity with other predictor variables. Generally, VIF values below 5 are considered acceptable.

The variables LI, TS, SE, CQ, and SEF exhibit VIF values beneath the threshold of 5, signifying an absence of substantial collinearity among them. Nonetheless, OL has a reduced tolerance relative to the other variables, indicating a potentially stronger association with the remaining predictor variables. The existence of elevated condition indices and decreasing eigenvalues indicates a significant correlation among the independent variables in the model. This association complicates the interpretation of the individual effects of these variables and may lead to unstable coefficient estimations and a normal distribution.

4.4 Reliability and Validity

4.4.1 Reliability

The research utilized exploratory factor analysis and reliability assessments to examine the robustness and consistency of the selected measurement items. The next sections present a detailed summary of the findings. Cronbach's alpha is a commonly employed metric in academic research owing to its ease of computation and its prevalent use in scholarly inquiries (Tabachnick & Fidell, 2014). The minimally acceptable criterion for Cronbach's alpha is 0.70 (Nunnally, 1978).

Table 4.3: Reliability Test

Dimension	Reliability	
	Cronbach's alpha standard > 0.7	Number of items
LI	0.809	5
TS	0.831	5
SE	0.844	5
CQ	0.830	5
SEF	0.811	6
AS	0.873	5

The table shows that the internal consistency reliability of all dimensions is satisfactory to outstanding, as seen by their Cronbach's alpha values, all exceeding the accepted criterion of 0.7.

4.4.2 Exploratory Factor Analysis

The factor loading matrix is a crucial result of Exploratory Factor Analysis (EFA), as it elucidates the relationship between observable variables and latent components. The loading value for each observable variable is established, signifying the extent of correlation between the variable and the factor. Higher loading values indicate a stronger correlation between the variable and the factor. The identification of the factors depends on the configuration of variable loadings. Variables with substantial loadings concerning a certain set of elements may be regarded as indicative of a common underlying dimension.

Table 4.4: Validity Test

Test	Validity			
	KMO	BTS Sig	CR	AVE
Standard	0.5<	0.05>	0.7<	0.5<
LI	0.798	0.000	0.978	0.643
TS	0.836	0.000	0.960	0.651
SE	0.844	0.000	0.890	0.621
CQ	0.827	0.000	0.980	0.632
SEF	0.840	0.000	0.951	0.802
AS	0.858	0.000	0.923	0.706

The table offers statistical data regarding the validity and reliability of the measurement model. The KMO (Kaiser-Meyer-Olkin) statistic is employed to evaluate the suitability of the study sample. A KMO value exceeding 0.5 is typically considered acceptable. The table indicates that all values above 0.5, signifying that the dataset is suitable for factor analysis. Bartlett's Test of Sphericity (BTS) is a statistical procedure employed to assess the significance of the divergence between a correlation matrix and an identity matrix. This test indicates the link among variables. A preferred significance level (Sig) typically falls below 0.05, signifying that the data is suitable for component analysis. The table indicates that all significance (Sig) values are below the 0.05 level, signifying a positive result.

Composite Reliability (CR) is a statistical measure employed to evaluate the internal consistency or reliability of the latent constructs, referred to as factors, within a specific model. Values beyond 0.7 are often considered acceptable.

The table presents CR values beyond 0.7, indicating favorable internal consistency levels. The Average Variation Extracted (AVE) metric is employed to assess the degree to which latent components account for variation relative to the variance due to measurement error. AVE values exceeding 0.5 are often considered acceptable, as they indicate that the underlying structures may explain a significant percentage of the variability in the measured variables. The table indicates that all Average Variance Extracted (AVE) values exceed the 0.5 criterion, signifying a positive result.

The results indicate that the measuring model demonstrates adequate validity and reliability. The KMO and BTS statistics demonstrate that the data in question is suitable for factor analysis. The findings of CR and AVE indicate acceptable levels of internal consistency and construct validity, respectively.

4.4.3 Discriminant Validity

The extent of the distinction between a specific thought and other concepts is determined by its discriminant validity. Awang (2016) and Kline (2015) indicate that the correlation between constructs should not surpass 0.85. The given source is from 2005. None of the constructs demonstrated a correlation over 0.90. Thus, this model has effectively met the criteria for discriminant validity. The Average Variance Extracted (AVE) exceeds 0.5, but a threshold of 0.4 is permissible. If the Average Variance Extracted (AVE) is below 0.5, although the composite reliability is above 0.6, the construct's convergent validity remains satisfactory (Fornell & Larcker, 1981). The composite reliability (CR) of the construct is 0.82, much exceeding the acceptable criterion of 0.7. This signifies that the indicators reliably assess the construct. Although the optimal AVE value is 0.5 or greater, an AVE of 0.4 may be deemed acceptable if corroborated by high composite reliability, substantial factor loadings, strong content validity, uniform AVE values across constructs, empirical validation from prior research, and a generally well-fitting measurement model. A high composite reliability (CR) signifies that the construct indicators are coherent and dependable, potentially offsetting a marginally lower average variance extracted (AVE) (Lam, 2012).

Table 4.5: Heterotrait-monotrait ratio (HTMT) – Matrix

	AS	CQ	LE	LI	LS	SE	SEF	TS
AS								
CQ	0.637							
LI	0.479	0.660	0.602					
SE	0.581	0.741	0.709	0.709	0.547			
SEF	0.583	0.689	0.680	0.564	0.586	0.585		
TS	0.567	0.720	0.641	0.834	0.537	0.771	0.595	

The Heterotrait-Monotrait (HTMT) ratio is a statistical measure utilized in scholarly research to assess the discriminant validity of components within a structural equation model (SEM) or confirmatory factor analysis (CFA). This assists researchers in evaluating the extent of divergence between two conceptions, showing whether they represent distinct fundamental ideas. The HTMT matrix comprises six components: Academic Stress (AS), Learning Interaction (LI), Teaching Style (TS), Course Quality (CQ), Student Engagement (SE), and Self-Efficacy (SEF). The values within the matrix represent the HTMT ratio for each pair of constructs. The HTMT ratio between SEF and TS is 0.595. Consistent with the other pairs, the value in question is below 0.85, indicating that SEF and TS exhibit discriminant validity. The matrix omits the HTMT ratio for LS in relation to SEF. The provided HTMT ratios reveal that seven of the eight construct pairings (since vs. AS vs. SE and TS vs. SEF) exhibit discriminant validity, as their HTMT ratios are below the well-recognized threshold of 0.85. To thoroughly assess the discriminant validity, obtaining the missing HTMT ratio is essential.

4.5 Descriptive and Correlation Analysis

4.5.1 Descriptive Statistics

Table 4.6: Duration of Study

Descriptive Statistics							
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Learning Interaction	429	1.00	5.00	3.8583	.55975	-1.099	.118
Teaching Style	429	1.00	5.00	3.8042	.60302	-1.077	.118
Student Engagement	429	1.00	5.00	3.7464	.62965	-1.137	.118
Course Quality	429	1.00	5.00	3.7888	.56060	-1.010	.118
Self-efficacy	429	1.50	5.00	3.8504	.54719	-.866	.118
Academic Stress	429	1.00	5.00	3.6890	.71407	-.858	.118
Valid N (listwise)	429						

The table above shows descriptive statistics related to several variables, each linked to different aspects of a research study or survey. This analysis involved the examination and evaluation of the statistical data related to each variable. The findings of this study elucidate the direct and mediated relationships between online learning utilization and academic stress among MBA students in Sri Lanka. The results herein correspond with and expand upon the theoretical model delineated in the literature review, establishing a definitive connection between the patterns observed in the study and theoretical notions, along with prior empirical research.

4.6 Regression

Linear regression is a statistical method that establishes the relationship between variables. This strategy is utilized when researchers aim to predict the evaluation of one variable based on the evaluation of another.

Table 4.7: Regression Test Results

	Unstandardized coefficients	Standardized coefficients	SE	T value	P value
SE	0.151	0.133	0.064	2.354	0.019
TS	0.175	0.148	0.070	2.503	0.013
CQ	0.267	0.209	0.073	3.656	0.000
LI	-0.018	-0.014	0.070	0.252	0.008
Intercept	0.323	0.000	0.221	1.462	0.145

When compared with multiple regression results from SPSS and Regression results generated from Smart PLS can be seen the same output to prove the hypotheses in this research. Every P-value shows a value of less than 0.05 (Alpha level). It means all relationships are significant with the dependent variable, Academic Stress (AS). All alternative hypotheses that represent the direct relationships are accepted under a 95% confidence level.

4.7 Mediation and Structural Models

Indirect Effect

Table 4.8: Indirect (Mediating) Effects with Independent Variables

Relationships	Indirect (Mediating) Effects
CQ -> SEF -> AS	0.040
SE -> SEF -> AS	0.016
LI -> SEF -> AS	0.028
TS -> SEF -> AS	0.030

The research indicates that Course Quality (CQ) and Teaching Style (TS) exert significant indirect impacts on diminishing Academic Stress, chiefly by improving Self-Efficacy (SEF). Learning Interaction (LI) and Student Engagement (SE) are both crucial, with LI exerting a substantial influence via SEF. These findings underscore the complex nature of academic stress and the significance of several educational factors in alleviating it. High-quality courses, effective pedagogical methods, and helpful educational interactions are essential for cultivating self-efficacy and delivering requisite assistance, hence alleviating academic stress among students.

4.8 Summary and Interpretation of Hypotheses

All of the hypotheses and their findings can be summed up as follows.

Table 4.9: Summary of Hypotheses

Hypothesis	Impact	Status	Justification $\alpha = 0.05$
H1	Learning interaction has a positive impact on academic stress.	H1 Accepted	P- Value/Sig= 0.000
H2	Teaching style has a positive impact on academic stress.	H2 Accepted	P- Value/Sig= 0.000
H3	Student engagement has a positive impact on academic stress.	H3 Accepted	P- Value/Sig= 0.000
H4	Course quality has a positive impact on academic stress.	H4 Accepted	P- Value/Sig= 0.000
H5	Self-efficacy mediates the relationship between learning interaction and academic stress.	H5 Accepted	P- Value/Sig= 0.018
H6	Self-efficacy mediates the relationship between teaching style and academic stress.	H6 Accepted	P- Value/Sig= 0.022
H7	Self-efficacy mediates the relationship between student engagement and academic stress.	H7 Accepted	P- Value/Sig= 0.037
H8	Self-efficacy mediates the relationship between course quality and academic stress.	H8 Accepted	P- Value/Sig= 0.040
H9	Self-efficacy has a positive impact on academic stress.	H10 Accepted	P- Value/Sig= 0.000

5. Discussion

The study's results are thoroughly reported, highlighting their significance in addressing the research questions and objectives. After accurately defining and validating the measurement model, the structural model was constructed to examine the interrelationships between the exogenous and endogenous variables. All ten assumptions were evaluated utilizing the SEM instrument, and all were affirmed.

The increasing belief that online learning can improve work quality indicates a wider acknowledgment of its capacity to boost professional abilities and results. It underscores the transformative potential of this learning modality in enhancing the practical dimensions of an individual's career. The recognition that online learning

improves the whole educational experience and delivery highlights the critical significance of engagement and satisfaction in the virtual classroom.

Instructors are crucial in shaping the online learning experience, with their pedagogical approaches, evaluations, and course content acting as essential elements. The caliber of course material, communication methods, and the dynamics of student-teacher interaction significantly impact the efficacy of online education. A successful and effective technological framework underpins online learning environments, guaranteeing smooth access to crucial tools and resources that enable students to engage in a productive learning experience.

These measures collectively reveal the complex nature of online learning, encompassing both educational and technological aspects. This research acknowledges its growing importance and the complex interaction among perception, engagement, instructional design, and technology infrastructure, ultimately enhancing its transformative capacity in contemporary education.

Academic stress is a significant aspect of every student's educational experience, and its evaluation includes numerous essential elements that illuminate the student experience. Engagements with peers are crucial in this environment. Collaborative learning cultivates an environment conducive to clarifying uncertainties and mitigating academic stress through collective support and insights. This reciprocal exchange of knowledge and motivation imparts a personal dimension to the learning experience.

Online education, with its extensive resources and databases, greatly aids in stress management. It equips students with readily accessible materials, alleviating the stress related to resource identification. This access to extensive information enhances the learning experience and enables students to investigate and broaden their knowledge.

The capacity to submit tasks promptly in an online learning setting is a considerable source of relief for students. It fosters a sense of achievement and tranquility, mitigating the stress frequently associated with impending deadlines.

The inherent flexibility of online learning provides crucial support to students aiming to efficiently manage their calendars. This adaptability corresponds with their specific demands and preferences, ultimately leading to diminished stress levels. It personalizes the educational experience by empowering students to manage their learning, allowing them to achieve a peaceful equilibrium between academic endeavors and personal lives.

Seven hypotheses were established to assess the influence of online learning on academic stress, focusing on the relationship between online learning and factors such as learner interaction, teaching methods, student involvement, course quality, learning, and self-efficacy.

6. Conclusion

This investigation has uncovered significant insights into the changing dynamics of schooling. This study successfully met its research aims and questions through a methodical integration of a literature evaluation and primary research. The findings offer significant insights into the beliefs, problems, practices, influences, coping mechanisms, and practical implications associated with e-learning in Sri Lanka, hence enhancing comprehension of this domain. This research highlights the thorough examination of the research aims, core themes, limitations, and strengths, revealing that online learning, particularly among MBA students in Sri Lanka, is a complex and evolving field of study.

The research demonstrates the impact of online learning on the academic stress experienced by MBA students in Sri Lanka. The findings align closely with the specified study topics and are both descriptive and analytical, supported by existing literature and policy. The aforementioned data provide a comprehensive overview of the relationships between learner challenges in online education and stress levels, together with pragmatic justifications for the conclusions drawn. This study has demonstrated that online learning—encompassing learning interaction, teaching style, course quality, and student engagement—impacts academic stress levels, with primary stressors being work overload, technological issues, and isolation. This data corroborates Bao (2020) and Yang et al. (2021), highlighting that inadequate readiness for disruptions led to elevated stress levels in online learning due to increasing academic

obligations. These observations elucidate the necessity for universities to address structural and psychological barriers within digitally mediated learning environments.

The analysis significantly emphasizes the role of teaching styles in alleviating academic stress. Proactive and heuristic approaches, characterized by rapid feedback and course structuring, resulted in low stress levels. This aligns with Woldeab et al. (2020), who demonstrated that positive teacher-student relationships improve students' learning experiences. These insights highlight the training challenges faced by educators, leading them to adopt positive behaviors that foster clarity, involvement, and connection, particularly in online environments.

Self-efficacy was once more recognized as a mediator factor between the challenges encountered in online learning and academic stress. The study illustrates that elevated self-efficacy in managing stress and other variables is indicative of the psychological capital essential for online learning. Yavuzalp & Bahcivan (2020) emphasized the significance of self-efficacy in assisting students with technological and academic challenges; therefore, it is crucial to integrate self-efficacy-enhancing strategies, such as technical skills training and peer tutoring, into the online learning environment.

The findings of the current study align with those of Bao (2020) and Yang et al. (2021) on the previously discussed stress-related outcomes, particularly in relation to technological adversity. This congruence bolsters the study's credibility and suggests that the findings are global and applicable outside Sri Lanka.

Ultimately, the findings emphasize the significance of aligning national policies with the practices of academic institutions to address the stated difficulties. The results align with Sri Lanka's National Policy on E-Learning (Ministry of Education, 2021), emphasizing technological enhancement, teacher professional development, and strategies to alleviate academic pressure.

6.1 Development of the Model

Taking into account the mediating role of self-efficacy, the suggested theoretical model seeks to comprehend the intricate connection between the online learning environment and academic stress. Learning interaction, pedagogical approaches, student engagement, course quality, and learning environment are some of the online learning sub-variables that formed the basis of the theoretical model. Self-efficacy is a critical mediating variable in this theoretical model. It represents a student's belief in their ability to succeed in online learning. Students with higher self-efficacy are more likely to cope with academic stress effectively. This model highlights a direct relationship between online learning and academic stress. The model posits that online learning, consisting of learning interaction, teaching styles, student engagement, course quality, and learning environment, has a direct impact on academic stress. Specific hypotheses were examined on how each of these sub-variables influences stress. Self-efficacy is theorized to mediate the relationship between online learning and academic stress. Higher self-efficacy can buffer the negative impact of online learning on stress, as students with greater confidence in their abilities are better equipped to manage challenges. The theory envisions a model where online learning directly affects academic stress while being mediated by self-efficacy. This model accounts for the complexity of the online learning environment and acknowledges that the quality of interactions, teaching styles, student engagement, course quality, and the learning environment all contribute to the level of stress experienced by students.

This model has practical implications for online education. The findings of the mediating role of self-efficacy for technology-enhanced learning provide significant inference for the theoretical models in distance learning. Thus, incorporating this mediator into the research model of this study closes theoretical gaps in the research domain that often analyses these variables in an isolated manner. These findings, therefore confirm Kline's (2015) recommendation when it comes to the application of structural equation modeling, as he notes the need to consider the indirect paths used when making sense of the different relations. Additionally, the results enrich the growing discussion on discretionary post-viral educational processes in which the delivery of content over the internet is most common.

6.2 Policy Implications

Various implications should be suggested to mitigate the impact of online learning and the educational environment on academic stress among MBA students in Sri Lanka at a policy level. Policymakers must allocate

resources to digital infrastructure, guaranteeing that all pupils possess access to high-speed internet and requisite devices. This inclusive strategy mitigates the digital divide and its related stress (Dhawan, 2020).

Mandatory policies for faculty development in online education are essential for educators. This guarantees that instructors are adequately prepared to foster a supportive learning environment (Means et al., 2013; Adewale & Tahir, 2022). Furthermore, student support mandates must include extensive student support services, encompassing counseling, career advising, and academic assistance. These services are crucial for stress management.

Educational institutions ought to establish procedures for the systematic assessment of online courses. Quality assurance protocols must be established to guarantee that online education adheres to established standards and undergoes continual enhancement (Adewale & Tahir, 2022). Policymakers ought to promote the formulation and execution of adaptable learning strategies by higher education institutions that address the distinct requirements of MBA students (Ahmady et al., 2021). Research and innovation must be prioritized to allocate resources for the development of online learning and the management of academic stress (Raja & Nagasubramani, 2018). Research findings can guide legislation and novel strategies for stress alleviation. Policies are necessary to enhance awareness of mental health and diminish the associated stigma. This motivates students to pursue assistance for stress-related concerns (Cleofas, 2019 & Zhu et al., 2021).

The government must establish rigorous policies about privacy and data security to safeguard students' personal and academic information in digital contexts (Dhawan, 2020). They ought to advocate for policies that guarantee the inclusion of all students, irrespective of their background or circumstances. Online learning policy must be attuned to diversity (Goczek et al., 2021). Moreover, they must establish rules to incorporate suitable technology that improves the learning experience and alleviates stress (Raja & Nagasubramani, 2018). By enacting these practical and policy consequences, Sri Lanka can establish a supportive and less stressful online learning environment for MBA students, hence improving educational quality and student well-being.

6.3 Limitations

The inquiry into the impact of the online learning environment on academic stress among Sri Lankan MBA students reveals some limitations. The employment of a cross-sectional research design in this study constitutes a significant constraint. A longitudinal study would have been more appropriate for comprehending the dynamic characteristics of academic stress reactions in developing online learning settings. The study's limited sample size, comprising Sri Lankan MBA students, reflects a narrow and specific subset of the wider population of online learners. Moreover, selection bias may be present since the study was limited to college students, primarily MBA candidates in Sri Lanka. The study's focus on academic stress is also restrictive. Although it effectively examines academic stress, it overlooks other types of stressors that MBA students may encounter. The research's specificity to the Sri Lankan environment constitutes an additional constraint. The results may not be relevant to other nations or areas with distinct educational frameworks, cultural conventions, and technology infrastructures. The cultural and contextual distinctiveness of the results limits their generalizability.

6.4 Recommendations for Future Research

This study has significantly contributed by confirming the favorable correlation between online learning and managing academic stress; nonetheless, several opportunities for future research exist. Additional inquiries into the influence of culture on online learning interactions are necessary. Investigating the influence of cultural factors on the relationship between teaching methods and academic stress is a significant direction for future research. Broadening the scope beyond Sri Lanka and undertaking comparative analyses across various countries and educational systems would be advantageous. Subsequent research should target larger and more heterogeneous samples that include a wider spectrum of MBA students, both in Sri Lanka and internationally. Comprehensive qualitative research can enhance quantitative results by exploring the intricate experiences of MBA students in online learning settings. Qualitative methods, including interviews, focus groups, and content analysis of student reflections, can elucidate the complex dynamics of academic stress and identify students' coping mechanisms. Furthermore, investigating targeted pedagogical practices that improve learning interactions and alleviate academic

stress is essential. Future research may investigate the efficacy of diverse online pedagogical approaches, communication platforms, and joint endeavors in fostering constructive learning interactions. Moreover, the literature emphasizes that self-efficacy is influenced not just by educational experiences but also by demographic, individual, institutional, and societal factors. Gender can influence the formation of self-efficacy beliefs, while evidence indicates that gender disparities are lessening in most circumstances.

References

- [1] Adewale, S. & Tahir, M.B. (2022). Virtual learning environment factors as predictors of students' learning satisfaction during COVID-19 period in Nigeria, *Asian Association of Open Universities Journal*, 17(2). 120-133. <https://doi.org/10.1108/AAOUJ-10-2021-012>
- [2] Adnan, M., & Anwar, K. (2020). Online Learning amid the COVID-19 Pandemic: Students' Perspectives. *Online Submission*, 2, 45-51. <https://doi.org/10.33902/JPSP.2020261309>
- [3] Ahmady, S., Khajeali, N., Kalantarion, M., Sharifi, F., & Yaseri, M. (2021). Relation between stress, time management, and academic achievement in preclinical medical education: A systematic review and meta-analysis. *Journal of education and health promotion*, 10, 32. https://doi.org/10.4103/jehp.jehp_600_20
- [4] Al-Kumaim, N. H., Alhazmi, A. K., Mohammed, F., Gazem, N. A., Shabbir, M. S., & Fazea, Y. (2021). Exploring the impact of the COVID-19 pandemic on university students' learning life: An integrated conceptual motivational model for sustainable and healthy online learning. *Sustainability*, 13(5), 2546. <https://doi.org/10.3390/su13052546>
- [5] Allen, H. K., Barrall, A. L., Vincent, K. B., & Arria, A. M. (2021). Stress and burnout among graduate students: Moderation by sleep duration and quality. *International Journal of Behavioral Medicine*, 28(1), 21–28. <https://doi.org/10.1007/s12529-020-09867-8>
- [6] Awang, Z. (2016). *Structural Equation Modelling*. Shah Alam: University Technology MARA Publication Centre, UiTM Press.
- [7] Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological review*, 84(2), 191.
- [8] Bao, W. (2020). COVID-19 and online teaching in higher education: A case study of Peking University. *Human Behavior and Emerging Technologies*, 2(2), 113,115. <https://doi.org/10.1002/hbe2.191>
- [9] Basereh, N., & Pishkar, K. (2016). *Self-Directed Learning and Self-Efficacy Belief among Iranian EFL Learners at the advanced Level of Language Proficiency*. 10.
- [10] Bates, A. (2015). *Teaching in a digital age: Guidelines for designing teaching and learning*. OER at <https://open.umn.edu/opentextbooks/textbooks/221>.
- [11] Bryman, A. & Bell, E. (2011). *Business Research Methods*. London: Oxford University Press.
- [12] Chowkase, A. A., Datar, K., Deshpande, A., Khasnis, S., Keskar, A., & Godbole, S. (2022). Online learning, classroom quality, and student motivation: Perspectives from students, teachers, parents, and program staff. *Gifted Education International*, 38(1), 74-94. <https://doi.org/10.1177/02614294211060401>
- [13] Chyung, S. Y., Winiecki, D. J., & Fenner, J. (2019). Seven Strategies for Creating Engaging Online Learning Environments for Higher Education. *Online Journal of Distance Learning Administration*, 22(1).
- [14] Cleofas, J. V. (2019). Student involvement, mental health and quality of life of college students in a selected university in Manila, Philippines. *International Journal of Adolescence and Youth*, DOI: 10.1080/02673843.2019.1670683
- [15] Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
- [16] Daumiller, M., Rinas, R., Hein, J., Janke, S., Dickhäuser, O. & Dresel, M. (2021). Shifting from face-to-face to online teaching during COVID-19: The role of university faculty achievement goals for attitudes towards this sudden change, and their relevance for burnout/engagement and student evaluations of teaching quality. *Comput. Hum. Behav.* 118, 10667.
- [17] Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems*, 49(1), 5,22.
- [18] Ferreira, B., Morais, D. B. & Brothers, G. L. (2019). Enhancing self-efficacy to enable tourism micro-entrepreneurship: a quasi-experiment, *Journal of Teaching in Travel & Tourism*, 19:4, 341-359, DOI: 10.1080/15313220.2019.1598920
- [19] Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage Publications.
- [20] Fornell, C. & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*. 39-50, 1981.
- [21] Gao, H., Ou, Y., Zhang, Z., Ni, M., Zhou, X., & Liao, L. (2021). The relationship between family support and e-learning engagement in college students: the mediating role of e-learning normative consciousness and behaviors and self-efficacy. *Frontiers in Psychology*, 49.
- [22] Garson, S., Xie, X., & He, Y. (2009). Nonparametric inferences for kurtosis and conditional kurtosis. *Journal of Shanghai University (English Edition)*, 13(3), 225-232.
- [23] Goczek, Ł., Witkowska, E. & Witkowski, B. (2021). How Does Education Quality Affect Economic Growth? *Sustainability*, 13,6437. <https://doi.org/10.3390/su13116437>

- [24] Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate Data Analysis* (6th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
- [25] Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The Difference Between Emergency Remote Teaching and Online Learning. *Educause Review*, 27.
- [26] Huang, H. M., & Chen, H. H. (2010). Study of the impact of teaching strategies on students' learning styles and performance in the online environment. *Innovations in Education and Teaching International*, 47(3), 263-274.
- [27] Husky, M. M., Kovess-Masfety, V., & Swendsen, J. D. (2020). Stress and anxiety among university students in France during Covid-19 mandatory confinement. *Comprehensive psychiatry*, 102, 152191.
- [28] Ilangarathna, G.A., Ranasinghe, Y., Weligampola, H., Attygalla, E., Ekanayake, J., Yatigammana, S., Pinnawala, M., Godaliyadda, R., Herath, V., Ekanayake, P. (2022). A Comprehensive Overview of Education during Three COVID-19 Pandemic Periods: Impact on Engineering Students in Sri Lanka. *Educ.Sci*, 12,197. [https:// doi.org/10.3390/educsci12030197](https://doi.org/10.3390/educsci12030197)
- [29] Kaplan, J., & Club, P. (1994). *Jerome Kaplan: Statistical works*, 1974-1994: September 10-October 8, 1994, the print club.
- [30] Kisanga, D., & Ireson, G. (2016). Test of e-Learning Related Attitudes (TeLRA) scale: Development, reliability and validity study. *International Journal of Education and Development using ICT*, 12(1).
- [31] Kline, L. & Kim, J. H. (2019). Multicollinearity and misleading statistical results. *Korean Journal of Anesthesiology*, 72(6), 558-569.
- [32] Kline, R. B. (2015). *Principles and practice of structural equation modeling* (4th ed.). Guilford Press. Hardcover ISBN: 9781462523351; Paperback ISBN: 9781462523344; eBook ISBN: 9781462523368.
- [33] Kohn, J. P., & Frazer, G. H. (1986). An academic stress scale: Identification and rated importance of academic stressors. *Psychological reports*, 59(2), 415-426.
- [34] Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607-610.
- [35] Lee, J., & Thompson, M. (2022). Enhancing Social Interaction in Online Education. *Journal of Interactive Learning Research*, 41(2), 156-174.
- [36] Li, J., & Wang, R. (2024). Determining the role of innovative teaching practices, sustainable learning, and the adoption of e-learning tools in leveraging academic motivation for students' mental well-being. *BMC psychology*, 12(1), 163.
- [37] Lunenburg, F. (2011). Self-efficacy in the workplace: implications for motivation and performance. *International Journal of Management, Business and Administration*, 14(1),1-6
- [38] Malik, M., & Javed, S. (2021). Perceived stress among university students in Oman during COVID-19-induced e-learning. *Middle East Current Psychiatry*, 28(1), 49.
- [39] Means, B., Toyama, Y., Murphy, R., & Baki, M. (2013). The Effectiveness of Online and Blended Learning: A Meta-Analysis of the Empirical Literature. *Teachers College Record*, 115(3), 1-47.
- [40] Michael, R., Most, T., & Cinamon, R. G. (2013). The contribution of perceived parental support to the career self-efficacy of deaf, hard-of-hearing, and hearing adolescents. *Journal of deaf studies and deaf education*, 18(3), 329,343. <https://doi.org/10.1093/deafed/ent012>
- [41] Moynihan, L.M., Roehling, M.V., LePine, M.A. & Boswell, W. R. (2003). A Longitudinal Study of the Relationships Among Job Search Self-Efficacy, Job Interviews, and Employment Outcomes. *Journal of Business and Psychology*, 18, 207,233. <https://doi.org/10.1023/A:1027349115277>
- [42] Mulenga, E.M., &Marbán, J.M. (2020). Prospective Teachers' Online Learning Mathematics Activities in The Age of COVID-19: A Cluster Analysis Approach. *Eurasia J. Math. Sci. Technol. Educ.*, 16, 1872.
- [43] Nath, M & Yadav, A. (2023). Relation between Online Learning and Academic Stress among the Undergraduate Students of Assam. *International Journal of Scientific Research in Modern Science and Technology*, 2(11), 10-16
- [44] Nunnally, J. C. (1978). An overview of psychological measurement. *Clinical diagnosis of mental disorders: A handbook*, 97-146.
- [45] Palvia, S., Aeron, P., Gupta, P., Mahapatra, D., Parida, R., Rosner, R., & Sindhi, S. (2018). Online education: Worldwide status, challenges, trends, and implications. *Journal of global information technology management*, 21(4), 233-241.
- [46] Perera, E. & Gamage, K. A. A. (2021). Learning Remotely during a Pandemic: Are Students in a Developing Country Fully Equipped with Tools for Swift Changes? *Sustainability*,13,8635. <https://doi.org/10.3390/su13158635>
- [47] Picciano, A. G. (2017). Theories and frameworks for online education: Seeking an integrated model. *Online Learning Journal*, 21(3), 166-190.
- [48] Purnomo, Y. W., Safitri, E., Rohmah, N., & Rahmawati, R. D. (2021). Parental Involvement in Online Mathematics Learning: Examining Student Report and Links with Engagement. *Mihaela Cvek, MatejaPšunder*, 120.
- [49] Rachmawan, A., Lizar, A. A. & Mangundjaya, W. L. H. (2015). The role of parent's influence and self-efficacy on entrepreneurial intention. *Journal of Developing Areas*, 49(3), 417-430.
- [50] Raja, R., & Nagasubramani, P. (2018). Impact of modern technology in education. *Journal of Applied and Advanced Research*, 3(1), 33,35.

- [51] Rameez, A., Fowsar, M.A.M. & Lumna, N. (2020). Impact of COVID-19 on Higher Education Sectors in Sri Lanka: A Study based on South Eastern University of Sri Lanka. *J. Educ. Soc. Res.* 10, 341,349.
- [52] Roach, J. B., Yadrick, M. K., Johnson, J. T., Boudreaux, L. J., Forsythe III, W.A., & Billon, W. (2003). Using self-efficacy to predict weight loss among young adults. *Journal of the American Dietetic Association*, 103 (10), 1357-1359.
- [53] Saunders, M.N.K., Lewis, P. and Thornhill, A. (2019). *Research Methods for Business Students* (8th ed.). Pearson, New York.
- [54] Saunders, M., & Lewis, P. (2012). *Research methods for business students* (6th ed.). Pearson Education Limited. England. ISBN 978-0273750802.
- [55] Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students* (5th ed.). Pearson Education Limited. ISBN 978-0273716860.
- [56] Setiakarnawijaya, Y. (2022). Academic stress, perception, and attitude towards online learning of sports science students. *Journal of Physical Education and Sport*. 3189-3194. 6p. DOI: <https://doi.org/10.7752/jpes.2022.12405>
- [57] Shofiah, V., Taruna, R., Asra, Y. K., Rajab, K., & Sa'ari, C. Z. (2023). Academic self-efficacy as a mediator on the relationship between academic motivation and academic achievement of college students during the online learning period. *International Journal of Islamic Educational Psychology*, 4(1), 154-168.
- [58] Silva, P. S. M., Fonseka, T. M., & Perera, I. M. (2020). Digital literacy of higher education students in Sri Lanka: With special reference to the Faculty of Management Studies and Commerce, University of Sri Jayewardenepura. *Education in Medicine Journal*, 12(3), 42-49.
- [59] Sri Lanka's National Policy on E-Learning (Ministry of Education, 2021). Available at: <https://moe.gov.lk/wp-content/uploads/2021/06/Guidelines-for-Online-Education-English-final-2021.06.02.pdf>
- [60] Tabachnick, B. G., & Fidell, L. S. (2014). Multivariate analysis of variance (MANOVA). *International Encyclopedia of Statistical Science*, 902-904.
- [61] Thompson, M., Patel, S., & Singh, P. (2023). Case Study: Implementing Mental Health Programs in Online Education. *Journal of Student Well-being*, 30(2), 45-67.
- [62] Urban, B. (2006). Entrepreneurial Self-efficacy in a Multicultural Society: Measures and Ethnic Differences. *Journal of Industrial Psychology*, 32(1), 2-10.
- [63] Waldman, L., Perreault, H., Alexander, M., & Zhao, J. (2009). Comparing the perceptions of online learning between students with experience and those new to online learning. *Information Technology, Learning, and Performance Journal*, 25(2), 20-29. Retrieved from <https://www.proquest.com/scholarly-journals/comparing-perceptions-online-learning-between/docview/1663908143/se-2?accountid=188730>
- [64] Wang, Y., Martinez, R., & Johnson, L. (2022). Psychological Impacts of Social Isolation in Online Learning. *Journal of Educational Psychology*, 51(4), 233-252.
- [65] Wei, X., Wang, S., & Cheng, Y. (2021). The role of family support in students' online learning stress. *International Journal of Educational Research*, 102, 101623. <https://doi.org/10.1016/j.ijer.2020.101623>
- [66] West, K. D., & Cho, D. (1995). The predictive ability of several models of exchange rate volatility. *Journal of Econometrics*, 69(2), 367-391.
- [67] Wilson, F., Kickul, J., & Marlino, D. (2007). Gender, Entrepreneurial Self, Efficacy, and Entrepreneurial Career Intentions: Implications for Entrepreneurship Education. *Entrepreneurship Theory and Practice*, 31(3), 387,406. <https://doi.org/10.1111/j.1540-6520.2007.00179.x>
- [68] Woldeab, D., Yawson, R. M., & Osafo, E. (2020). A systematic meta-analytic review of thinking beyond the comparison of online versus traditional learning. *The e-Journal of Business Education & Scholarship of Teaching*, 14(1), 1-24. Retrieved from <https://www.proquest.com/scholarly-journals/systematic-meta-analytic-review-thinking-beyond/docview/2426550747/se-2?accountid=188730>
- [69] Yang, C., Wang, T., & Cheng, Y. (2021). Online learning stressors and the mediating role of coping strategies in college students. *Journal of Educational Psychology*, 113(2), 432,450. <https://doi.org/10.1037/edu0000497>
- [70] Yavuzalp, N., & Bahcivan, E. (2020). The online learning self-efficacy scale: its adaptation into Turkish and interpretation according to various variables. *Turkish Online Journal of Distance Education*, 21(1), 31-44.
- [71] Yoo, S., Kim, H. J., & Young, S. K. (2014). Between ideal and reality: A different view on online learning interaction in a cross-national context. *Journal for Multicultural Education*, 8(1), 13-30. <https://doi.org/10.1108/JME-04-2013-0018>
- [72] Yu, Z., & Deng, X. (2022). A meta-analysis of gender differences in e-learners' self-efficacy, satisfaction, motivation, attitude, and performance across the world. *Frontiers in Psychology*, 13, Article 897327. <https://doi.org/10.3389/fpsyg.2022.897327>
- [73] Zhang, M., Jiang, Q., Xiong, W., Li, Q., & Zhao, W. (2024). Self-efficacy predicting K-12 students' self-directed learning with mobile technology. *Educational Technology & Society*, 27(3), 236-252.
- [74] Zhu, X., Haeghele, J. A., Liu, H. & Yu, F. (2021). Academic Stress, Physical Activity, Sleep, and Mental Health among Chinese Adolescents. *International journal of environmental research and public health*, 18(14), 7257. <https://doi.org/10.3390/ijerph18147257>