

PRIMARY RESEARCH

Technostress and E-learning anxiety effects of teachers' satisfaction and performance in Morocco: The moderating role of teachers' efficacy

Malika AIT NASSER^{1*}, Khadija PRATIC², Loubna LARAICHI³, Achraf AHMINI⁴, Soukaina SOISSA⁵^{1,2,3}Laboratory Research Society, Language, Art, and Media; Ibn Zohr University, Agadir, Morocco^{4,5}Laboratory Research Language, Communication, Pedagogy and Development, Cadi Ayyad University, Marrakesh, Morocco

Keywords

E-Learning Anxiety
E-Learning Satisfaction
Teachers Self-Efficacy
Technostress
Teachers Performance
Self-Determination Theory

Received: 19 April 2023**Accepted:** 25 July 2023**Published:** 21 October 2023

Abstract

The study analyzed the fact that e-learning anxiety and technostress have a significant impact on e-learning satisfaction and teacher performance. Teachers' self-efficacy moderates e-learning anxiety, technostress e-learning satisfaction, and teacher performance. The data was gathered using the longitudinal time horizon, where the same respondents approached each other three times in different time frames. In the first phase of data collection, questions relevant to the independent variables were given to the respondents, which was considered. The second data collection phase was regarded as time 2, and only related to the moderator data was collected in this phase. The data concerning the outcome variables was collected in the third and last phase, time 3. Data were collected from 437 teachers teaching in higher secondary schools in Casablanca Morocco. Using Smart-PLS software and data processing tools, this study's approach is quantitative. Higher education instructors chosen by convenient sampling were given questionnaires, which were used to collect data. The data analysis process employed a search strategy based on the SEM-path analysis model. The route analysis technique was used to analyze the data. The proposed study framework was investigated using structural equation modeling (SEM) in SmartPLS 3.0. All hypotheses were accepted except one, which shows that teachers' self-efficacy has no significant impact on e-learning anxiety and e-learning satisfaction. The study includes recommendations for researchers as well. Modifying this framework for application in other scholarly research is also possible. Ease of use not only increases performance but also creates happiness. Therefore, to encourage student patronage, we advise schools to create regular training programs for both teachers and students and to implement user-friendly online platforms.

© 2023 The Author(s). Published by TAF Publishing.

INTRODUCTON

A lot of academics, philosophers, and politicians think that education is essential for growth. Excellent educational goals require, among other prerequisites, the following: a foundational infrastructure, skilled human resources, motivated students, and self-discipline (Zhou, Shu, Xu, & Padrón, 2023). Concerns regarding the incorporation of character education later in the Moroccan educational system have drawn unprecedented attention from Moroccan researchers, educators, practitioners, and policymakers in recent times. It stated that values education is one of the main tools for preparing and certifying human capital and ensur-

ing its continuous development (Hassine, 2022). It also emphasized that many other institutions working in the fields of education, culture, and mentoring, as well as families and schools, bear responsibility for the effective implementation of values education in Moroccan schools. This section addresses the fundamentals and consequences of character education and how it affects Moroccan pupils' behavior improvement (Dal Santo, Peña-Jimenez, Canzan, Saiani, & Battistelli, 2022; Hassine, 2022).

Education has long been seen as the most effective tool for bringing about global change, one of the most essential foundations of social life, and an investment in human

*corresponding author: Malika AIT NASSER

†email:m.aitnacer@uiz.ac.ma



capital (Azizi, Rezai, Namaziandost, & Tilwani, 2022; Chiu & Chai, 2020). An established organization that makes a significant contribution to this education and the development of a decent citizen is an educational institution, whether it be public or private. Nonetheless, establishing the most successful educational management strategies and the competent administration and leadership of educational institutions are critical to the success of education (Satuti, Sunaryanto, & Nuris, 2020). Morocco has always been a nation engaged in innovation and the creation of fresh approaches to scientific advancements in education and teaching. By 2030, education will be of higher quality thanks to systemic reforms outlined in the strategic vision 2015–2030 (Zhou et al., 2023). Thus, this study examines the best managerial practices for training to encourage academic achievement and establish effective Moroccan teaching and learning practices to serve the public interest.

Due to its economic, educational, and societal advantages, e-learning is regarded as the best way to address the main training difficulties, especially during health crises. However, the acceptance and success of this form of instruction depend heavily on how well the many stakeholders' wants and concerns are considered (Fawaz & Samaha, 2021; Salam, 2023). Higher secondary schools view their students as significant stakeholders in the form of clients. Since students are their final consumers, it is crucial that they meet their demands. These students attend schools since their main objective is to continue their studies there. However, according to Vidergor (2023), these institutions constantly work to satisfy students and match their expectations. It is also significant since student satisfaction is key to determining a school's performance. Ensuring student satisfaction is crucial in helping businesses identify their areas of strength and weakness. There are also more aspects that affect students' satisfaction in addition to the instruction (Kim & Park, 2021; Mohd Satar, Dastane, & Morshidi, 2021). The crucial component that links belief and desire to action is intention. It is critical that businesses realize that the only thing determining the success of online learning is the pleasure of students who may intend to use this mode of instruction in the future (Bossman & Agyei, 2022; Satuti et al., 2020). Schools must thus comprehend how students view the online learning environment. Furthermore, it is crucial to investigate the elements that satisfy students and encourage them to use e-learning again (Ali, Azeem, Marri, & Khurram, 2021; Erragcha & Babay, 2023).

An organization's ability to fulfill its established mission and vision is based on each individual's performance, including educational institutions (Bossman & Agyei, 2022).

Performance is characterized as a type of conduct that has the ability to direct employees toward proper or inappropriate behaviors (Magistra, Santosa, & Indriayu, 2021; Setyawan, Widayani, & Suardhika, 2022; Van Waeyenberg, Peccei, & Decramer, 2022). According to Kartini, Kristiawan, Fitria, Negeri, and Sugihan (2020), performance is commonly understood as achieving results in terms of both quantity and quality in accordance with assigned duties. Luo and Li (2024) assert that teacher effectiveness is a key component of academic success. Regarding Rasool, Warraich, and Arshad (2024), educators must be able to adjust to changing routines by learning a variety of new abilities, particularly those connected to advancements in information technology-based instruction that might boost output. Furthermore, as teachers generally find it difficult to adjust to what may become the "new normal" over an extended period of time, schools that use online learning generally face significant challenges (Van Waeyenberg et al., 2022).

Due to its flexible scheduling and ease of use, e-learning has become very popular.

The quick and inexpensive transfer of knowledge and skills is now achievable with e-learning (Magistra et al., 2021). In this case, self-efficacy is one of the most crucial learning components. Because they believe the groups are influential, they commit to them. People who are confident in their talents tend to have a high sense of efficacy. These individuals establish challenging objectives for themselves (Y. Wang & Pan, 2023; Zhou et al., 2023). According to (Rasool et al., 2024), self-efficacy is a reliable indicator of academic performance in the context of online learning in schools. Furthermore, the idea that has the power to influence students' perceptions is self-efficacy. Therefore, students' achievement could be impacted by their level of self-efficacy (Azizi et al., 2022; Magistra et al., 2021). Conversely, e-learning anxiety describes the tension and worry that certain people feel when participating in online learning activities (Almaiah et al., 2022).

Techno-stress is a term used to describe the negative impacts that employees experience because of variations in how they access and use technology. It is a form of stress brought on by modern technology that is not well-adapted (Jaiswal et al., 2024). Techno-stress is a term used to describe the detrimental effects of new technology or information technology adoption on productivity and efficiency (Sudjono, 2022; Z. Wang, Zhang, Wang, Liu, & Lv, 2023). According to Rasool et al. (2024), technostress results in overworking, low morale, despair, knowledge tiredness, motivation loss, and job discontent. These days, it is not unexpected that an increasing number of teachers have voiced

concerns about the negative affective response to using internet technology, given the high levels of acute stress reactions brought on by the ongoing health crisis. Effectiveness in online learning settings can only be achieved when the circumstances under which instructors can instruct are understood (Jaiswal et al., 2024; Khlaif, Sanmugam, Joma, Odeh, & Barham, 2023). The present study determines that technostress and e-learning anxiety affect teachers' satisfaction and performance in Morocco, the moderating role of teachers' self-efficacy, and the self-determination theory involved. Self-determination theory (SDT) is a multifaceted theoretical framework that illustrates how cognitive and emotional elements interact in challenging learning environments (Deci & Ryan, 2012). The majority of these study models are based on the Self-Determination Theory (SDT) Deci, Olafsen, and Ryan (2017), which distinguishes between autonomous and regulated motivation.

LITERATURE REVIEW

Self-Determination Theory

According to SDT, every person has three basic psychological needs: competence, relatedness, and autonomy. People are motivated to behave or not to act based on these needs Chiu and Chai (2020). The concept of autonomy pertains to the ability of individuals to govern and utilize their prerogative to move in a manner that best suits their preferences. The term "relatedness" describes the idea that people are interconnected, part of a community, and work for the same goals as the community (Ryan, 2023). Competence is the idea that someone possesses the information and abilities required to complete a task successfully. Teachers with all three psychological needs satisfied are naturally driven to maintain their personal development and well-being, which may improve curriculum development (Guay, 2022) Because of this, schools can support teachers' psychological requirements for autonomy, competence, and relatedness to encourage their intrinsic drive to teach and create the curriculum. School administrators are encouraged to employ autonomy-supportive tactics rather than controlling ones by the implications of SDT for adopting innovations (Deci & Ryan, 2012). School administrators should consider teachers' viewpoints, provide them flexibility when it comes to planning, and lessen the burden and obligations placed on them in an atmosphere that values autonomy. In order to feel empowered in the planning process, teachers should make their own decisions about the curriculum based on their anticipated development and sense of self-efficacy (Deci & Ryan, 2012; Ryan, 2023). Additionally, schools can enhance competency

by giving teachers the latitude and professional development they require (Guay, 2022). For instance, during school hours, schools can permit and encourage teachers to enroll in the courses they like. The final psychological need, relatedness, has gotten less attention in the literature and is frequently brought up in relation to group experiences, collaborative learning, and mentoring. According to Chiu and Chai (2020) and Deci et al. (2017), group experiences have a self-serving goal connected to the evaluation of individual advantages. Since research on SDT and education tends to focus more on a self-oriented goal (receiving from the community) than an other-oriented purpose (providing to the community), it follows that considering other viewpoints in relatedness is understudied. In order to better understand users' intrinsic and extrinsic motivation as important constructs in post-adoption situations, such as attending lectures (Ali et al., 2021; Chiu & Chai, 2020), using blogs for learning (Deci & Ryan, 2012), or using social networking sites Chiu and Chai (2020), the SDT has been employed extensively. While intrinsic motives were disregarded, an exaggerated impact of extrinsic motivations on technological acceptability. Self-determination theory (SDT) is a more comprehensive paradigm that draws from research on personality traits and human motivation (Deci & Ryan, 2012). SDT specifically uses meta-theory, an official theory that describes two kinds of motivation sources: internal and external. It also describes the specific roles people connected to these drives play in different growth domains and individual differences (Ryan, 2023). The approach emphasizes that extrinsic rewards should be weighed carefully and are significant for every workplace (Deci & Ryan, 2012; Ryan, 2023). Students may complete their schoolwork for a variety of reasons. These underlying causes of behavior are essential to SDT because they provide different, higher-quality results. Different kinds of reasons (referred to as motivation from now on) can be distinguished based on how differently they reflect self-determination or the degree to which a behavior comes from inside. As such, some of them are controlled, while others are autonomous. Self-sufficient, intrinsic motivation is the act of doing something for its own sake, that is, for the enjoyment and fulfillment it brings (Deci et al., 2017; Guay, 2022). For instance, students who have an interest in reading are said to have intrinsic motivation for this task. When someone performs an action for pragmatic rather than intrinsic reasons, they are said to be motivated by external factors. According to SDT, there are different kinds of intrinsic motivation, and they vary in how much autonomy or self-determination they possess. These include identifiable, integrated, interjected,

and external regulation, arranged from low to high autonomy (Deci et al., 2017; Guay, 2022). While recognized and integrated regulations are autonomous, external and introduced regulations are categorized as controlled grounds for acting. Accordingly, SDT classifies some extrinsic motivations as volitional, which implies that even in cases where students lack intrinsic motivation for a subject, they may nevertheless benefit cognitively, emotionally, and behaviorally if their extrinsic motivations are consistent with who they are (Deci & Ryan, 2012; Ryan, 2023).

Hypothesis Development

"e-learning anxiety" describes students' uneasiness or worry when utilizing digital learning environments (Salam, 2023). It can result from a number of things, such as loneliness when studying online, a fear of technology, and a lack of technological expertise (Kim & Park, 2021). Anxiety related to online learning significantly impairs the educational process, resulting in worse academic outcomes and increased rates of dropout. The degree to which workers participate in tasks, including coming up with fresh concepts, putting new procedures into place, and adjusting to change, is e-learning satisfaction (Fawaz & Samaha, 2021). Recently, there has been a surge in attention to both e-learning anxiety and e-learning satisfaction (Azizi et al., 2022). "E-learning anxiety" is the term used to describe people's uneasiness or worry when they use digital technology for training or learning (Almaiah et al., 2022). It includes worries about learning new programs or apps, anxiety about making mistakes, and anxiety over learning new material at a faster rate than you are used to. Anxiety over e-learning can reduce motivation to participate in digital learning, which can have an effect on creative work practices (Alkis, Kadirhan, & Sat, 2017). As a result, e-learning platforms and online learning have been used to mimic a virtual classroom where students and instructors can communicate and complete curriculum-based learning objectives from a distance. The curriculum has been delivered to the students using Zoom, Moodle, Blackboard, and Skype, where faculty members have become acquainted with innovative teaching techniques (Almaiah et al., 2022).

Many studies on online learning in higher education have been conducted in the last 20 years, since courses, up to and including entire degrees, are now offered entirely online (Ali et al., 2021). On the other hand, students enrolling in fully instruction-based programs who are not accustomed to this kind of experience encountered a system shock. Several scholars have studied satisfaction, considering its usefulness and connections to different learning environments.

In this sense, a student's understanding of the significance of their learning experiences within the classroom can be referred to as satisfaction. Student satisfaction is an important component to consider when assessing a course or program's efficacy (Riandi, Respati, & Hidayatullah, 2021; Satuti et al., 2020; Younas, Noor, Zhou, Menhas, & Qingyu, 2022). The five pillars of quality in e-learning are faculty satisfaction, institutional cost-efficiency, learning efficacy, and access; nevertheless, the e-learning structure is complex and involves many variables (Mohd Satar et al., 2021). Flexibility, computer proficiency, and usefulness are all related to students' happiness with online learning, according to Dal Santo et al. (2022). Numerous factors in the online environment, like engagement, reliable technology, and teacher behavior, impact students' satisfaction (Bossman & Agyei, 2022; Cahapay, Bangoc II, et al., 2021). Additionally, a student's social skills, task value, self-efficacy, and multimedia tutoring quality all play significant roles in the learning process (Innab & Alqahtani, 2023). Furthermore, Kim and Park (2021) discovered that self-efficacy had a significant impact on student satisfaction. Long-term increases in student satisfaction have been linked to improved motivation, performance, and learning.

Anxiety is thought to be a significant determinant of student's success in online courses. Salam (2023) defined anxiety as a conglomeration of unfavorable emotional reactions, such as worry, fear, apprehension, and agitation. Concerns and cognitive arousal are two different categories of anxiety (Kim & Park, 2021). One finds it difficult to concentrate on a task since worry stems from anxiety. However, anxiety causes cognitive arousal consequences when it negatively influences a person's ability and alertness to perform a task. Concerns and cognitive arousals together have an impact on a person's ability to process information efficiently. Consequently, worry negatively influences the processing capacity needed to complete activities quickly and effectively since it takes up a significant amount of attention. Anxiety related to online learning is known as "e-learning anxiety." The feelings of trepidation, worry, and unease associated with online learning are known as e-learning anxiety (Azizi et al., 2022; Fawaz & Samaha, 2021). E-learning anxiety is defined as "a feeling of fear from misuse of information technology compromising course performance," as (Almaiah et al., 2022). It can be suggested that eLearning anxiety may negatively influence students' thoughts, affect, and behavior in online classes, in accordance with the self-determination theory (Azizi et al., 2022; Kim & Park, 2021). Salam (2023) states that a high level of e-learning anxiety can lead to a variety of issues for students. For

instance, individuals may experience physical discomfort (such as a racing heartbeat), maladaptive thought patterns (such as the belief that they cannot learn in online classes), or complete avoidance of taking online classes (such as the belief that they cannot learn anything new through online classes). Numerous variables may contribute to students' anxiety related to online learning (Azizi et al., 2022; Fawaz & Samaha, 2021). For instance, Salam (2023) found that college students' anxiety in online classrooms was mostly caused by inadequate learning efficiency and uncertainty. Other research by Luo and Li (2024) and Riandi et al. (2021) showed that other characteristics included insufficient computer confidence or skills, difficulty in managing the course tasks, lack of preparation for online courses, and low control of locus owing to online distractions. Furthermore, Mohd Satar et al. (2021) discovered that the rise in e-learning anxiety lowers students' confidence in finishing online programs. Lastly, Innab and Alqahtani (2023) discovered that e-learning anxiety had a negative impact on social support. The literature makes it abundantly evident that anxiety related to online learning is a significant element that can influence and be influenced by a variety of circumstances. According to Azizi et al. (2022) and Erragcha and Babay (2023), the word "performance" comes from the verb "perform," which means to carry out the desired object or work performance in carrying out tasks according to responsibilities in both quantity and quality. Almaiah et al. (2022) state that teacher performance is defined as the instructor's capacity to carry out learning tasks and demonstrate the presence of an action during the execution of learning activities. Teachers are expected to assume accountability for their students' education by raising learning achievement. Teachers must also approach their work with a serious, responsible, sincere, and careful approach Vidergor (2023). One component of the educational process is the instructor, who must perform well in order for graduates of educational institutions to meet expectations for quality (Fawaz & Samaha, 2021). Many teachers continue to perform below the expected level of work, not because they are unable to do so but rather because of a poorly developed work culture and low morale, which both contribute to a decline in performance (Azizi et al., 2022; Erragcha & Babay, 2023).

H1: There is a significant impact on e-learning anxiety and e-learning satisfaction.

H2: There is a significant impact on e-learning anxiety and teaching performance.

According to Rasool et al. (2024), technostress is a new adaptation disorder brought on by an incapacity to deal

with modern technology in a healthy way. According to Sudjono (2022), technostress is the anxiety, tension, and stress that arises when electronic devices malfunction regularly or repeatedly. Information and communication technologies are the source of this kind of stress, which also manifests as a negative perspective when people are unable to adapt to these technologies. Users are being given more work because they believe that using better technology can do tasks more quickly and easily, which could lead to stress (Khlaif et al., 2023; Sheikh, Jamshaid, & Eman, 2023; Z. Wang et al., 2023). Lack of experience and professional growth, inadequate training and resources, an overwhelming workload, inadequate lighting and technological setup, subpar equipment, a lack of human connection, noisy devices, and hesitancy are all potential causes of technostress (Fawaz & Samaha, 2021; Magistra et al., 2021). Additionally, there are a lot of factors to take into account, like having trouble remembering user credentials, hardware malfunctions, computer failures, growing expectations for tech skills, having too many emails, sophisticated computer terminology, slow Internet connections, slow computers, a lack of human interaction, and the high cost of computing. Another instance of technostress is using electronic devices (Jaiswal et al., 2024; Sudjono, 2022). Like many other fields, education is no exception when it comes to technostress. As is often the case with digital technologies, teachers are particularly vulnerable to technostress throughout the process of incorporating new technology. In addition, the constant demands on institutions and society for technological integration are causing technostress among instructors because of a lack of knowledge and assistance. Every institution must make difficult and unpredictable decisions in order to remain compliant with the circumstances because millions of people attend universities, colleges, and schools, rendering them susceptible to illness. Even though it has been around for decades, online learning has not received as much attention in higher education as traditional classroom instruction. In actuality, a number of nations are just now starting to integrate online learning into their official educational frameworks (Consiglio, Massa, Sommovigo, & Fusco, 2023). Flyers and posters have been used to encourage teachers and students to keep things tidy and to prevent close touch, especially face-to-face conversations (Khlaif et al., 2023).

For all institutions, colleges, and schools, offering online courses and working from home has become mandatory. In order to improve on-campus learning, educational institutions are using learning management systems such as online whiteboards, fast meetings, Moodle, and Udemy

(Azizi et al., 2022; Erragcha & Babay, 2023). Presently, lectures are given using online learning platforms and applications, and students are required to complete assignments and quizzes online using the university's suggested method. Learning management systems are beneficial for managing massive volumes of educational data and for disseminating information. The majority of pupils utilize their mobile phones to take classes (Khlaif et al., 2023; Kim & Park, 2021). In industrialized countries, e-learning is hardly a novel concept, unlike in developing nations where traditional classrooms remain highly crucial. However, the necessity for e-learning has increased because a rare coronavirus outbreak in recent years has compelled all educational institutions to close. Later, the government forced HEI to adopt online learning technology in order to maintain education and spread the curriculum. Because of this, educational institutions are now compelled to provide online courses, highlighting that these are less successful than traditional classroom settings (Fawaz & Samaha, 2021; Mohd Satar et al., 2021; Vidergor, 2023). Consequently, educational establishments are compelled to implement remote learning, bringing to light not only technological but also pedagogical, infrastructural, content-based, and health-related obstacles. Educational institutions, as part of their remote learning programs, frequently use platforms like YouTube, Learning Management Systems, Zoom, Google Classroom, and Meet. A number of factors, including worries about privacy, a lack of internet access, technological and financial challenges, and above all, a lack of timely and supportive family influence curriculum design. The mode of communication shifts from face-to-face to face-to-screen, making it impossible for teachers and staff to engage in face-to-face interaction. Some employees find this communication style challenging (Almaiah et al., 2022; Khlaif et al., 2023; Mohd Satar et al., 2021). Workers experience a form of stress related to all of these forms of technology, which is termed technostress. While many workers can handle this kind of stress, few see it as an additional task (Satuti et al., 2020). Two additional significant barriers that were not emphasized in the conceptual model are technostress and advancement in one's career.

According to Erragcha and Babay (2023), informal training was more effective than formal learning since each person is unique. Therefore, formal learning was not practical. Different teachers need different levels of assistance and expertise when it comes to technology. Undergraduate education is where professional development for teachers must start. Almaiah et al. (2022) assert that more technology needs to be incorporated into undergraduate education

programs. Another way to lessen apprehension about technology was to implement a "team system," which matched a more confident younger trainee with an older student who was less accustomed to it. Vidergor (2023) found that techno-anxiety (technostress) can be reduced with online training that enhances technical problem-solving abilities. Not only will professional advancement change in appearance but it will also be perceived differently. Mohd Satar et al. (2021) and Satuti et al. (2020) found that teachers' opinions on useful technology should be a major part of professional development in order to completely understand the meaningful use of technology. (Innab & Alqahtani, 2023) found that continuing professional development and training are necessary for teaching. Further software and hardware training and education regarding technostress should be given to staff members citeerragcha2023perceived. Professional development was a major component of technostress. An organization's members are diverse; thus, in order to meet everyone's needs, a leader must offer a range of support. As people feel supported, their stress levels decrease. Lastly, information technology mindfulness can aid in lowering levels of technostress. Research has demonstrated that practicing mindfulness in the information technology industry can enhance job satisfaction and performance. The investigation of IT utilization, skills, and consciousness was connected to an IT mindset (Dal Santo et al., 2022; Fawaz & Samaha, 2021; Vidergor, 2023). Changes are frequent in a corporation, and technology is integrated into operations. Technology adoption is more successful when the stress associated with it is managed. It is believed that having a heavy workload leads to more stress and less productivity. Salam (2023), there is a dearth of research on the connection between workload and work engagement as well as stress and workload. In the few research studies that are available, correlational, cross-sectional, and non-experimental methods are frequently employed. In tests of this hypothesis using correlational approaches, limited choice latitude and high job expectations were associated with mental strain and job unhappiness. As a result, numerous research has been conducted to quantify and describe that in relation to the use of goods and services (Riandi et al., 2021; Younas et al., 2022). The marketing approach suggests that students are also regarded as end-customers and that pleasure with an educational product or service is the consequence of an exchange between teachers and students, even though we situate ourselves in the specific context of learning (Erragcha & Babay, 2023). As a result, the traditional notions of consumer pleasure and learner satisfaction are comparable. From this angle, Satuti et al. (2020)

and Younas et al. (2022) described perceived learner satisfaction, also known as e-satisfaction and sometimes called web-based satisfaction Kim and Park (2021), as the entire impression of the online learners' experience using the e-Learning service. It is described as an effective response of variable intensity that goes along with asynchronous learning activities in e-learning and is triggered by a number of factors, including content, interface use, customization, and learning performance (Bossman & Agyei, 2022). In the context of e-learning, student satisfaction stems from a cumulative satisfaction that encapsulates a variety of learning phases, from the motivation phase to the evaluation phase, and can extend throughout the learner's complete academic journey. This is the rationale behind our decision to use the broad definition of satisfaction, whereby students are asked to indicate how satisfied they are with their overall online learning experience instead of only focusing on a single facet of it (Ali et al., 2021; Cahapay et al., 2021).

H3: There is a significant impact on technostress and e-learning satisfaction. H4: There is a significant impact on technostress and teaching performance. Furthermore, self-efficacy is linked to a person's belief in their ability to use their talents in a given scenario and their variety of skills (Rasool et al., 2024). "Peers' beliefs about their capacities to produce designated levels of performance that exercise influence over events that affect their lives" is the definition of self-efficacy. Prior research by Purwanto (2022) and Vidergor (2023)) demonstrated the relationship between instructors' efficacious views and their actual instruction, time invested in teaching, and objectives they established. They also discovered that teachers with high levels of self-efficacy are more approachable, flexible, and eager to try new things, which helps them create a supportive learning environment for their pupils. Y. Wang and Pan (2023) investigated secondary teachers' perceptions of their own efficacy in the areas of computer abilities, classroom management, student engagement, and instructional techniques when they were teaching in a very online environment during the epidemic. The findings show a correlation between having completed online courses and professional development sessions and higher online teaching efficacy scores. The skills needed to teach in a virtual environment differ from those required for in-person instruction, according to a number of scholars (Ali et al., 2021; Azizi et al., 2022; Consiglio et al., 2023). These skills include managing an online classroom, developing a curriculum for the platform, inspiring and involving students who learn online, instructional design in the virtual environment, and cultivating a social and learner presence in the virtual setting. (Sheikh

et al., 2023) who studied computer-supported education, argued that to implement computer-supported education effectively, which entails the use of technology, teachers need to possess high levels of academic and computer self-efficacy. Luo and Li (2024) and Zhou et al. (2023) discovered that while self-efficacy for technology applications increased significantly, self-efficacy for teaching did not significantly rise for online training. Magistra et al. (2021) and Vidergor (2023) examined instructors' attitudes and opinions toward online instruction, as well as the difficulties and triumphs they faced when implementing it during the pandemic. The findings showed that teachers felt under-supported and encountered a wide range of difficulties that had a negative impact on their attitudes and perceptions of online instruction. Although they were not enough to change their ideas, teachers' experiences, self-efficacy, and technological proficiency improved their opinions of online instruction somewhat. To help instructors make the shift and improve their attitudes regarding teaching online, researchers advise providing them with quality professional development and support. Additionally, it was discovered that teachers' self-efficacy and accountability were related (Innab & Alqahtani, 2023). Hassine (2022) defined satisfaction as an assessment of a particular service. A complete sense of fulfillment or contentment with the transaction's components can be used to gauge satisfaction. When students compare the services they receive to their expectations, they can determine whether they are satisfied or not. Students are more likely to be satisfied with the university if they obtain higher-quality services (Dal Santo et al., 2022; Purwanto, 2022). Teachers must be able to pick up new habits by learning a variety of new abilities, particularly those connected to innovative teaching methods based on information technology that might boost student performance. Furthermore, as teachers generally find it difficult to adjust to what may become the "new normal" over an extended period, schools that use online learning generally face significant challenges (Hamydy & Mehdi, 2022; Khlaif et al., 2023).

All facets of society can actively benefit from the information that e-learning provides. In addition to saving users time and boosting productivity, this tactic gives knowledge access in isolated places without sufficient educational resources (Alkis et al., 2017; Rasool et al., 2024). As a result, a national plan was created with the goal of boosting teaching strategies, fostering innovation and creativity, and improving the educational environment (Mohd Satar et al., 2021; Vidergor, 2023). According to Mohd Satar et al. (2021), a few of these difficulties include students' perceptions of

being cut off from well-known teaching and learning techniques, a lack of personal attention, and a dearth of feedback for teachers to assist them in becoming better teachers. According to Mohd Satar et al. (2021), stress occurs when a person feels more pressure than they can handle. Because stress is always felt rather than actual, a situation may be unpleasant for a particular person if they are unable to handle it. The subject, or afflicted individual, may only assert that they are stressed if a medical diagnosis is made, indicating that stress is the root cause of the subject's symptoms. As a result, it can be concluded that the subject has indeed felt stress. This implies that the impacted person is not only applying an external label. As a result, it is possible to say that a scenario that stresses out one student might not stress out another. Certain studies assert that improved infrastructure, course design, delivery schedules, and other factors can reduce the stress associated with online learning. There is a dearth of existing literature regarding stress in online or distance learning. According to Mohd Satar et al. (2021), time restrictions can lead to stress when it comes to collaborative work and blended learning. While stress is discussed in relation to distant learning, Alkis et al. (2017) concentrated more on stress management than on examining the effects of stress. Nonetheless, in the context of the present study, stress is not limited to that which results from the aforementioned factors.

According to Mohd Satar et al. (2021), a teacher's performance is the activity they engage in while carrying out their primary duty. Teacher tasks are associated with the primary tasks of the teacher. This entails organizing lessons, carrying them out, evaluating student learning, instructing and preparing pupils, and carrying out additional tasks that are essential to a teacher's job (Brigui et al., 2022) When it comes to responsibilities, such as the kind of labor a teacher does, the caliber of their work can help them feel less stressed. According to (Hassine, 2022), entrepreneurship is making an attempt to solve issues and knowing how to pursue them successfully, especially under challenging and stressful circumstances when completing work. A teacher who feels independent will be more motivated to fulfill his obligations as a licensed professional educator. Instructors who have confidence in their ability to execute projects will be more successful as they possess the ability to confront and conquer any challenges that may arise. Kim and Park (2021) found a direct correlation between teacher performance and qualification level. An instructor with an excessive amount of experience will perform well; conversely, an instructor with little competence will do poorly. Self-efficacy demonstrates that human ideas that

they can accomplish tasks are linked to the attribute of autonomy (Kartini et al., 2020). Individuals typically have lower quality, which shows in their own work. Individuals with integrity consistently finish their tasks and strive to overcome obstacles. One significant factor is human behavior (Innab & Alqahtani, 2023). However, technology is advancing quickly, making it possible to operate more productively and efficiently. However, technological improvement is useless without the participation of humans. In order to adapt and develop technology, human resources, especially educators, need to become proficient in the field of technology. Change is unavoidable as technology's role continues to advance. Of course, issues might arise when educators are unable to keep up with the quick speed at which technology is developing. Even if you have a problem or lack the skills to handle it, technological advancements might still have an impact on your productivity. It will be simpler for teachers to worry (Cheah, Thurasamy, Memon, Chuah, & Ting, 2020; Setyawan et al., 2022; Y. Wang & Pan, 2023). Technostress is the term for annoyance brought on by technology. Technostress is a depressive state that arises from an individual's incapacity to adjust to technological advancements and/or their over-reliance on technology, leading to both physical and psychological distress. The fundamental cause of the mismatch between humans and their surroundings is technostress (Z. Wang et al., 2023). It also has an impact on a high standard of personal morality, which stands for sound structural order. Technostress lowers productivity, which might result in ineffectiveness, lower job satisfaction, and higher production from employees (Erragcha & Babay, 2023; Van Waeyenberg et al., 2022).

H5: There is a significant impact of teacher's self-efficacy moderating impact on e-learning anxiety and e-learning satisfaction.

H6: There is a significant impact of teacher's self-efficacy moderating impact on e-learning anxiety and teaching performance.

H7: There is a significant impact of teacher's self-efficacy moderating impact on technostress and e-learning satisfaction.

H8: There is a significant impact of teacher's self-efficacy moderating impact on technostress

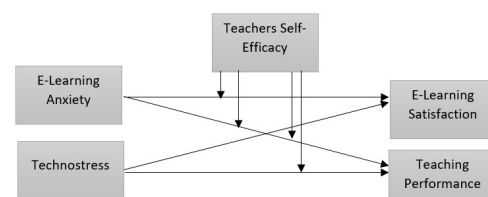


FIGURE 1. Conceptual Model

METHODOLOGY

This study was based on e-learning satisfaction and teaching performance in the context of E-learning anxiety and technostress. Meanwhile, teachers' self-efficacy was the moderating variable among all the relationships in the study. To measure the proposed hypotheses in this research, primary data was collected, and the research was quantitative. The approach used for this research was descriptive in nature, whereas the survey approach was used for data collection. To gather the data under the survey approach, a questionnaire was used as an instrument. The data was gathered by using the longitudinal time horizon, where the same respondents were approached three times in different time frames. In the first phase of data collection, questions relevant to the independent variables were given to the respondents, and this was considered time 1. The second phase of data collection was considered time 2, and in this phase, only data related to the moderator was collected. In the third and last phase, which was time 3, the data was collected with reference to the outcome variables. To collect the data, a total of 500 employees working as teachers in higher secondary schools in Casablanca Morocco were considered. However, the response was 437, and these were received properly, filled out, and returned. The respondent rate of returning the instrument was more than 87 percent, and it was considered significant for this research. The analysis was conducted to draw a conclusion based on the gathered data. After gathering the data, statistical analysis was performed, and for that instance, SMART PLS was used. According to the study model, all the required tests were performed using the mentioned tool.

Data Collection and Instrumentation

The data was collected by using the survey approach, and the method for reaching the respondents was the adapted questionnaires. The instrument was designed so that the data could be collected in three phases due to the longitudinal time horizon. The population was unknown as it was difficult to know the exact number of employees and access the data. This was the reason that the non-probability sampling technique was applied in this study, whereas the method of choosing the sample was convenient sampling to access the available respondents. The instrument contained the information regarding the study, demographical close-ended questions, and items against the variables, which were adapted from different sources according to the nature and context of the study. To measure the predictor variable E-learning anxiety, the scale of Salam (2023) was used, and 6 items were adapted. Techno stress was also

measured as a predictor variable, and it was measured by adapting the 5 items from the developed scale of Consiglio et al. (2023). The teacher's self-efficacy was the moderating variable, which was measured in the second phase of the data collection, and 5 items were adapted by using the scale of (Sheikh et al., 2023).. E-learning satisfaction was the outcome variable, and it was measured in the third and last phase of the data collection along with the other outcome variable, which was teaching performance. To measure E-learning satisfaction, the scale of Mohd Satar et al. (2021) was used, and 7 items were adapted. Teaching performance was measured by adapting the 5 items-based scale of Luo and Li (2024). All the items were based on 5 5-point Likert scale, where 5 indicated the highest one (strongly agree), and 1 was the lowest (strongly disagree) option in the instrument for the respondents. All the respondents were assured that the information provided in terms of filling out the questionnaires would remain secret and that the purpose was just to use the data for this research. It was also ensured that the provided information would not be used for any other purpose in the future as well. Ethical aspects were taken well into consideration in this research. All the respondents were requested to fill out the questionnaire at their convenience, and no one was forced to provide the time to give away the responses.

Analysis

SPSS was used in this study's first data screening. Following the preliminary test, PLS 3.0 was used. The two steps of PLS assessment are the inner model and the outer model. According to J. F. Hair, Risher, Sarstedt, and Ringle (2019) and Hair Jr, Howard, and Nitzl (2020), the outer model is also referred to as a measuring model, whereas the inner model is also known as a structural model. A structural model is employed to validate the suggested associations. Thus, PLS is used to evaluate the study's hypothesized causal linkages.

Measurement Model

Factor loading, discriminant validity, and reliability and validity of the gathered data are evaluated during the PLS measurement model phase. Prior to verifying the study's stated hypothesis, these tests must to be analyzed (J. Hair, Hollingsworth, Randolph, & Chong, 2017). Construct validity is confirmed by means of discriminant validity and convergent validity. The current study's measuring model is displayed in Figure 2.

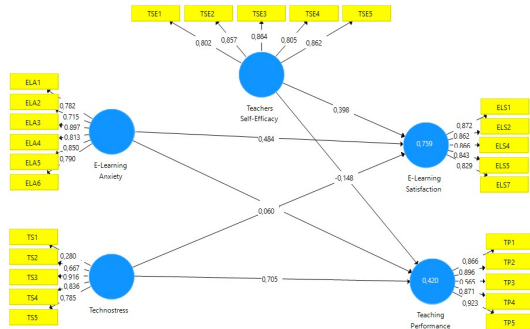


FIGURE 2. Measurement model

Convergent Validity and Composite Reliability

The first stage in the measurement model is to evaluate the factor loading of the study's item pool. J. Hair et al. (2017) and J. F. Hair et al. (2019) state that a minimum factor loading of 0.708 is required for an item to be kept. The factor loading in Table 2 of the current study indicates that this

threshold level is met in the current investigation. The calculation of the data's validity and reliability is the next step in the measurement methodology. This stage involves computing the data's AVE, composite reliability, and Cronbach alpha. For additional testing, Cronbach Alpha and CR indicate that the data is trustworthy. It demonstrates how consistently the study's items were used (Cheah et al., 2020; Hair Jr et al., 2020). 0.70 is the minimal figure that must be met for CR and Cronbach alpha to be acceptable. Table 2 indicates that this condition is also met by the current investigation. The data's average variance extracted (AVE) is also computed during this phase. All AVE values must be more than 0.50 in order for AVE to be considered acceptable (J. Hair et al., 2017; J. F. Hair et al., 2019). This criterion is also met in the current investigation. Additionally, Table 2 displays the AVE values, indicating that the AVE requirements are met.

TABLE 1. Reliability and validity

Construct	Item	Loadings	CA	CR	AVE
E-Learning Anxiety	ELA1	0.782	0.894	0.919	0.656
	ELA2	0.715			
	ELA3	0.897			
	ELA4	0.813			
	ELA5	0.850			
	ELA6	0.790			
E-Learning Satisfaction	ELS1	0.872	0.908	0.931	0.730
	ELS2	0.862			
	ELS4	0.866			
	ELS5	0.843			
	ELS7	0.829			
Teaching Performance	TP1	0.866	0.884	0.918	0.696
	TP2	0.896			
	TP3	0.665			
	TP4	0.871			
	TP5	0.923			
Technostress	TS1	0.680	0.742	0.839	0.535
	TS2	0.667			
	TS3	0.916			
	TS4	0.836			
	TS5	0.785			
Teachers Self-Efficacy	TSE1	0.802	0.894	0.922	0.703
	TSE2	0.857			
	TSE3	0.864			
	TSE4	0.805			
	TSE5	0.862			

Discriminant Validity

The present investigation employed the J. Hair et al. (2017) and J. F. Hair et al. (2019) methodology to establish discriminant validity. Table 3 demonstrates that every value

on the diagonal is higher than every other number. It was demonstrated that notions with no conceptual relationship might be quantified using discriminant validity. According to J. Hair et al. (2017) and J. F. Hair et al. (2019), discrimi-

nant validation seeks to demonstrate any instances of discrimination based on the variations among all the components. Unrelated constructs were evaluated and described using discriminant validity. Additionally, discriminant validity provides verification for every metric related to component dissimilarity. In order to define measure correspon-

dence, discriminant validity requires assessing components that are not statistically connected. An AVE factor can be used to compute discriminant validity. The discriminant validity demonstrated that each construct's square root and AVE had a larger relationship with other constructs than with any other construct.

TABLE 2. Discriminant validity

	ELA	ELS	TSE	TP	TS
E-Learning Anxiety	0.810				
E-Learning Satisfaction	0.841	0.855			
Teachers Self-Efficacy	0.839	0.825	0.839		
Teaching Performance	0.017	0.003	-0.011	0.835	
Technostress	0.397	0.395	0.359	0.597	0.732

Structural Model

The structural model is evaluated in the current study once the measurement model has been established. Both the direct and indirect hypotheses of the current investigation are tested in this step. The bootstrapping process is used for this reason (Risher & Hair Jr, 2017).

The *t*-value and *p*-values from the bootstrapping method

indicate whether a suggested hypothesis is accepted or rejected. However, the relationship's direction is shown by the beta value. The current study's structural model is depicted in Figure 3, and the outcomes of the suggested direct correlations are displayed in Tables 4 and 5.

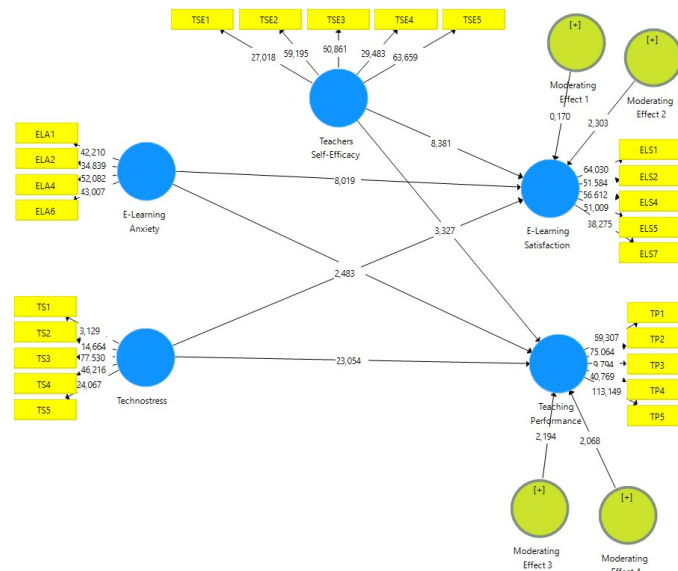


FIGURE 3. Structural model

Assessment of SRMR

According to J. Hair et al. (2017) and J. F. Hair et al. (2019), the structural model provides the theoretical foundation for applying structural equations to evaluate the inner path model. All presumptions were verified using SmartPLS 3.0's (SEM). Standardized root-mean-square residual (SRMR), a standardized-residuals index that assesses model fitness, chi-square, and normed fit index were used to quantify the

model's fit (Cheah et al., 2020). The measured covariance is compared to the anticipated matrix using the SRMR value. It is possible to use SRMR values of 0.124 or less.

TABLE 3. Assessment of SRMR

	SRMR
SRMR	0.124

Hypothesis Testing

The significance of the hypotheses was assessed using the standard beta, which shows the potential differences between various variables. The standardized beta (β) value for every connection was determined using the proposed research model (Table 5). A large and substantial beta (β) value will be considered as critical evidence of the importance of endogenous latent variables. T-statistics was used to assess each path's beta value's significance. To ascertain the significance of the beta (β) value and assess the applicability of postulated links, the bootstrapping technique was employed. The suggested structural model connections and (β) statistics are shown in Table 5. The research variables' SmartPLS bootstrapping t-values are displayed in Figure 3, together with other relevant data. Because the value achieved is less than 0.5, all associations have an impact. The results of the p-value test are displayed in the table. Additionally, the goal of bootstrapping, or using the T-Statistic, is to determine the significance value between constructs.

(J. Hair et al., 2017) and J. F. Hair et al. (2019) offer guidance on how to implement bootstrapping techniques using a 5,000 resample value. The cutoff point for accepting and rejecting hypothetical submissions is ± 1.96 , and the hypothesis is rejected or identified by accepting the zero hypotheses (H_0) if the t-statistical value falls between -1.96 and 1.96 values. Since the value of t-statistics table 4.14 is more than 1.96, it is possible to conclude that all relationships have a significant relationship direction based on the test findings. When one variable changes, there is a predictable, reciprocal change in the other variable in the same direction. This kind of interaction is known as a direct relationship. The moderating effect, which happens when a third variable affects the relationship between an independent and dependent variable, was then investigated in the study. A 95% confidence interval is used to determine the importance of the moderating effects (equivalent to a $p < 0.05$ value).

TABLE 4. Hypothesis Testing

	Relationships	β values	t value	p Values	Decision
H1	E-Learning Anxiety -> E-Learning Satisfaction	0.484	10.579	0.000	Supported
H2	E-Learning Anxiety -> Teaching Performance	-0.139	2.286	0.023	Supported
H3	Technostress -> E-Learning Satisfaction	0.060	2.069	0.039	Supported
H4	Technostress -> Teaching Performance	0.705	22.060	0.000	Supported
H5	Moderating Effect 1 -> E-Learning Satisfaction	0.004	0.170	0.865	Not Supported
H6	Moderating Effect 2 -> E-Learning Satisfaction	-0.076	2.303	0.022	Supported
H7	Moderating Effect 3 -> Teaching Performance	-0.062	2.194	0.029	Supported
H8	Moderating Effect 4 -> Teaching Performance	0.090	2.068	0.039	Supported

DISCUSSION

The present study determines that technostress and e-learning anxiety affect teachers' satisfaction and performance in Morocco and the moderating role of teachers' self-efficacy, as well as the self-determination theory involved.

The results show that e-learning anxiety has a significant impact on e-learning satisfaction and teaching performance. The satisfaction of distance learners was found to be significantly predicted by factors related to the instructor. Specifically, distance learners are satisfied when they receive prompt responses from their instructors, when the instructors enjoy using the e-learning platform, and when the instructor has access to a variety of assessments. For example, Consiglio et al. (2023) hypothesized that teacher apprehension about e-learning influences e-learning adoption and, if accepted, e-learner satisfaction. Additionally, there is a strong tendency for students enrolled in distance learn-

ing programs to wait for their instructors or facilitators to respond before continuing their studies. Salam (2023) suggests that prompt responses from facilitators would enable distance learners to promptly resume their studies. Furthermore, as demonstrated by Z. Wang et al. (2023), distance learners realize they are connected to their facilitators and that their efforts are properly assessed when a variety of assessment options are available. This highlights the need to investigate how anxiety related to e-learning affects creative work practices, especially in modern workplaces where e-learning is becoming more and more common. By addressing e-learning fear and offering the required training and support to improve satisfaction and e-learning skills, employers may help create a supportive work environment that encourages creativity and problem-solving among employees.

The results show that technostress has significant impact on e-learning satisfaction and teaching performance. Tech-

nology has made it easier to work from anywhere, at any time, but it has also eroded the barriers that individuals set up to keep their personal and business lives apart. In a traditional office setting, workers concentrate on their work during business hours and their personal life after they get home. However, because of mobile devices with internet access, people's lives are constantly interrupted by work, whether on weekends, holidays, or leave. The quality of learning can be raised by academic supervision, which will enhance teacher performance. The presence of principal-led academic supervision will encourage educators to up their game because they will feel supported and cared for by their superiors. The research's indications for professional qualifications give insight into the need for teachers to master their subjects' content, structure, and concepts, as well as their core competencies and fundamental skills (Hamydy & Mehdi, 2022; Khlaif et al., 2023). They also need to develop their subject matter imaginatively. Teachers must be proficient in information and technology use and engage in long-term professional development activities if they are to produce high-quality instruction. For learning to be of high quality, teachers must perform in a variety of ways. These include preparing and carrying out lessons, fostering positive interpersonal interactions, assessing learning outcomes, and providing remediation and enrichment. According to (Kim & Park, 2021), stress is a problem for workers in various organizations. These pressures lead to a decline in staff turnover, a decline in organizational performance, a decline in employee performance overall, a decline in job quality, and absenteeism as a result of health issues like anxiety, sadness, headaches, and backaches. According to the findings, employees experience high levels of stress from all stressors, which subsequently lowers their performance (Setyawan et al., 2022).

The results show that a teacher's self-efficacy has a moderating impact on e-learning anxiety, technostress, e-learning satisfaction, and teaching performance. On the one hand, there is a noteworthy correlation between e-learning anxiety and teachers' self-efficacy. According to research by (Innab & Alqahtani, 2023), while using e-learning tools, teachers who have higher levels of self-efficacy typically display lower levels of fear. This is explained by their assurance that they can use and navigate these technology efficiently, which lessens feelings of fear and uncertainty. Furthermore, in e-learning contexts, the influence of technostress is mitigated by teachers' self-efficacy. Teachers with strong self-efficacy are better able to handle and overcome the difficulties presented by technology use, reducing the detrimental impacts of technostress on their well-

being and performance on the job, according to Mohd Satar et al. (2021). Additionally, both educators and students' happiness with online learning is influenced by teachers' self-efficacy. Research by Fawaz and Samaha (2021) and Zhou et al. (2023) has demonstrated that instructors who have faith in their ability to apply e-learning strategies successfully are more likely to design dynamic and captivating online learning environments, which raises satisfaction levels for both themselves and their students. Lastly, there is a favorable correlation between a teacher's self-efficacy and their ability to teach in online learning environments. Teachers with high self-efficacy exhibit more perseverance, effort, and resilience in confronting difficulties, which enhances the quality of their instruction and improves student outcomes (Rasool et al., 2024). Furthermore, their self-assurance makes it easier for them to adjust to new pedagogical ideas and technological advancements, which raises their level of effectiveness as teachers overall. Technostress has a negative impact on teachers' and students' happiness with online learning. According to research by Fawaz and Samaha (2021) and Zhou et al. (2023), technostress lowers users' perceptions of the utility and usability of technology, which lowers their satisfaction with e-learning platforms. Furthermore, users' participation and enjoyment of online learning experiences may be hampered by the worry and annoyance brought on by technostress. Technostress hence lowers general levels of satisfaction with e-learning resources and systems.

Implications of Study

Theoretical and practical implications are drawn from the moderating role of teachers' self-efficacy and self-determination theory. Applying self-determination theory theoretically aids in clarifying the motivational mechanisms behind teachers' use of technology in online learning environments. According to the notion, people are motivated by innate demands for relatedness, competence, and autonomy. These fundamental psychological demands might be compromised by technostress and e-learning anxiety, which can lower motivation, disengagement, and satisfaction levels in educators. Additionally, teachers' self-efficacy a subjective conviction in one's capacity to overcome obstacles—serves as a critical mediator in this relationship. High levels of self-efficacy may help Moroccan instructors become more resilient, motivated, and satisfied with their jobs by mitigating the negative effects of technostress and e-learning anxiety. From a practical standpoint, these theoretical insights provide invaluable direction when creating interventions and support systems meant to raise teacher

effectiveness and satisfaction in online learning environments. Morocco's educational institutions can put in place training programs aimed at increasing teachers' technological competence and self-efficacy, giving them the knowledge and assurance they need to use e-learning platforms successfully. Furthermore, it is crucial to create an environment that is empowering and encouraging while also acknowledging the psychological requirements of educators. This can entail giving instructors the freedom to be creative with their instructional designs, encouraging a sense of competence through professional development and feedback, and building a friendly community of practice where educators can exchange ideas and resources. Incorporating the principles of self-determination theory into the design of e-learning environments can also improve teachers' intrinsic motivation and engagement, which will ultimately result in higher levels of satisfaction and performance. Self-efficacy refers to an individual's judgment of their ability to plan and carry out a sequence of actions required to handle ambiguous, uncertain, and potentially stressful situations. This phenomena is explained in detail by Fawaz and Samaha (2021) and Zhou et al. (2023), who claim that anxiety acts as a warning sign of impending issues or dangers, increasing people's vigilance to prevent unanticipated events. As a result, people who think something is significant often experience anxiety, which makes them work harder and longer to accomplish their objectives. In the end, this anxiety-facilitating quality encourages perseverance and high levels of drive, which are linked to better results and performance. Since anxiety is frequently perceived only as a negative component that contributes to subpar performance, failing to take into account the possibility of facilitating anxiety leads to an inaccurate understanding of anxiety. Because the current study does not distinguish between enabling and incapacitating anxiety, the accuracy of the findings may be compromised. As a consequence, distance learning students are expected to utilize top-notch courses and e-learning resources to their fullest potential once they have grown to enjoy or find value in them. When pupils possess the necessary knowledge regarding the system's utilization, they will be able to utilize it to its full potential.

However, in addition to demographic and experience/skill characteristics Fawaz and Samaha (2021) and Zhou et al. (2023) argue that system security also predicts user happiness and that system developers and/or implementers should take this into account.

Limitations and Future Studies

Although this study has provided insightful information, it is not without limits. First off, the main quantitative approach used in this study restricts the range of interpretations possible for the eight hypotheses of which just one was ruled out. Even though we added participant interactions to these conclusions, these justifications do not have the same level of accuracy as information gathered through thorough data collecting. Future study could use a mixed sequential strategy, incorporating qualitative and quantitative methods. By using the explanatory mixed sequential approach, researchers can investigate the interactions between variables using a quantitative analysis first, and then they can investigate the underlying causes of these relationships or discoveries using a qualitative investigation. It is also crucial to remember that the information gathered for this study was limited to schools, so care should be taken when generalizing the results to other areas. The generalizability of these results should be improved in future research by including more variables, increasing the sample size, and enlisting volunteers from different nations and cultural backgrounds. Future studies may include more e-learning dimensions to ascertain their impact on e-learning satisfaction and performance in the modern day. These dimensions would be based on a holistic systems success model that incorporates a number of interconnected characteristics. The research could be conducted again in different settings to evaluate conceivable variations or support our conclusions. Future research may also concentrate on e-learning system instructors or facilitators rather than students. The small sample size of the study is a major constraint. We were unable to visit as many Higher Secondary schools as we would have liked because we were serving in the military at the same time as administering the questionnaire. Because of this, the data-gathering process was extremely constrained and produced just 437 copies, which further hampered the findings' ability to be generalized. The primary research design constraint is that we analyzed the proposed correlations in a longitudinal sample using structural equation modeling. This is an intriguing new research direction where scientists can investigate the short-term impacts of teachers in greater detail by conducting a cross-sectional study. Furthermore, although teacher self-efficacy is recognized for its moderating role, its processes and boundary conditions are still little understood. Subsequent research endeavors may aim to conduct more comprehensive analyses of the precise mechanisms by which self-efficacy impacts the correlation between technostress, e-learning anxiety, and teacher results. Further research

into potential modifiers, such as professional development opportunities and organizational support, may yield important insights into what aspects lessen the detrimental impacts of e-learning anxiety and technostress on teacher satisfaction and performance.

CONCLUSION

The results indicate the importance of focused interventions and support systems to lessen the negative impacts of technostress and e-learning anxiety on teacher performance and satisfaction. Our findings support the notion that Moroccan teachers' job happiness and performance are severely impacted by technostress and e-learning anxiety. High technostress and e-learning anxiety educators are likely to report poorer job satisfaction and may find it difficult to carry out their teaching duties in an efficient manner. These results highlight how crucial it is to deal with psychological and technological obstacles in order to establish a supportive online learning environment that supports teachers' success. Additionally, our research shows how teachers' self-efficacy might moderate the detrimental impacts of technostress and e-learning anxiety on their performance and happiness. Higher self-efficacy teachers are more resilient and better able to handle the difficulties presented by technology use and online learning, which lessens the negative effects on their effectiveness and well-being. Furthermore, the use of self-determination theory yields significant understandings into the motivational mechanisms that underpin the involvement of teachers in online learning settings. Teachers' motivation, job satisfaction, and performance can be improved in Morocco by educational institutions fostering a supportive and empowered environment that acknowledges and addresses their intrinsic requirements for autonomy, competence, and re-

latedness. It was recommended that people utilize technology responsibly both at home and at work. Educators, parents, and children should discuss this topic. There was technostress, and it was important to make sure that everyone understood the lingo. One must be aware of the issue before understanding the repercussions and how to make improvements. Throughout the era of technology deployment, provide academics with research and professional development opportunities. Given how much technology they use on a daily basis, educators need to be trained in its effective use. It is necessary to provide individualized training beyond the first lesson in order to promote ongoing technology use. Since each educator is different, they will require different kinds of support. In order to give faculty members continuous support and technical direction, educational institutions require mentors. Technology integration success requires resources like time, people, and money to maintain effective and efficient utilization for an extended period. Each study project has advantages and disadvantages of its own. The study's technique represents a notable advantage. To start, quantitative data were used and formed the basis of this investigation. Results from the appropriate analysis of quantitative data can be generalized to the whole population. Secondly, the researcher's influence over the data and results was restricted. The quantitative approach lessens the researcher's subjective opinions while fostering objectivity. Lastly, quantifiable data may be acquired fast. Throughout the course of four weeks, the data was gathered. The strengths of the research make it worthwhile. On the other hand, there were some problems with the study. The primary flaws are the population and the survey. The interests of the participants had a significant impact on the questionnaire survey's response rate.

REFERENCES

- Ali, J., Azeem, M., Marri, M. Y. K., & Khurram, S. (2021). University social responsibility and self efficacy as antecedents of intention to use e-learning: Examining mediating role of student satisfaction. *Psychology and Education, 58*(2), 4219-4230.
- Alkis, Y., Kadirhan, Z., & Sat, M. (2017). Development and validation of social anxiety scale for social media users. *Computers in Human Behavior, 72*, 296-303.
- Almaiah, M. A., Alfaisal, R., Salloum, S. A., Hajje, F., Thabit, S., El-Qirem, F. A., ... others (2022). Examining the impact of artificial intelligence and social and computer anxiety in e-learning settings: students' perceptions at the university level. *Electronics, 11*(22), 3662.
- Azizi, Z., Rezai, A., Namaziandost, E., & Tilwani, S. A. (2022). The role of computer self-efficacy in high school students' e-learning anxiety: A mixed-methods study. *Contemporary Educational Technology, 14*(2).
- Bossmann, A., & Agyei, S. K. (2022). Technology and instructor dimensions, e-learning satisfaction, and academic performance of distance students in Ghana. *Heliyon, 8*(4).

- Brigui, H., et al. (2022). The impact of self-discipline on classroom management in casablanca-settat middle/high schools. *International Journal of English Language Studies*, 4(4), 01-07.
- Cahapay, M. B., Bangoc II, N. F., et al. (2021). Technostress, work performance, job satisfaction, and career commitment of teachers amid covid-19 crisis in the philippines. *International Journal of Educational Research and Innovation*(16), 260-275.
- Cheah, J.-H., Thurasamy, R., Memon, M. A., Chuah, F., & Ting, H. (2020). Multigroup analysis using SmartPLS: Step-by-step guidelines for business research. *Asian Journal of Business Research*.
- Chiu, T. K., & Chai, C.-s. (2020). Sustainable curriculum planning for artificial intelligence education: A self-determination theory perspective. *Sustainability*, 12(14), 5568.
- Consiglio, C., Massa, N., Sommovigo, V., & Fusco, L. (2023). Techno-stress creators, burnout and psychological health among remote workers during the pandemic: The moderating role of e-work self-efficacy. *International Journal of Environmental Research and Public Health*, 20(22), 7051.
- Dal Santo, L., Peña-Jimenez, M., Canzan, F., Saiani, L., & Battistelli, A. (2022). The emotional side of the e-learning among nursing students: The role of the affective correlates on e-learning satisfaction. *Nurse Education Today*, 110, 105268.
- Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017). Self-determination theory in work organizations: The state of a science. *Annual review of organizational psychology and organizational behavior*, 4(1), 19-43.
- Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. *Handbook of theories of social psychology*, 1(20), 416-436.
- Erragcha, N., & Babay, H. (2023). Perceived quality and satisfaction with e-learning during covid-19: Moderating role of co-production. *International Journal of Information and Education Technology*, 13(1), 64-72.
- Fawaz, M., & Samaha, A. (2021). E-learning: Depression, anxiety, and stress symptomatology among lebanese university students during covid-19 quarantine. In *Nursing forum* (Vol. 56, p. 52-57).
- Guay, F. (2022). Applying self-determination theory to education: Regulations types, psychological needs, and autonomy supporting behaviors. *Canadian Journal of School Psychology*, 37(1), 75-92.
- Hair, J., Hollingsworth, C. L., Randolph, A. B., & Chong, A. Y. L. (2017). An updated and expanded assessment of pls-sem in information systems research. *Industrial management & data systems*, 117(3), 442-458.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of pls-sem. *European business review*, 31(1), 2-24.
- Hair Jr, J. F., Howard, M. C., & Nitzl, C. (2020). Assessing measurement model quality in pls-sem using confirmatory composite analysis. *Journal of business research*, 109, 101-110.
- Hamydy, E., & Mehdi, E. (2022). The impact of self-discipline on classroom management in casablanca-settat middle and high schools. *The Impact of Self-discipline on Classroom Management in Casablanca-Settat Middle and High Schools* (September 29, 2022).
- Hassine, R. (2022). Implementing character education and behavior improvement in moroccan secondary schools. *European Journal of Education and Pedagogy*, 3(2), 128-134.
- Innab, A., & Alqahtani, N. (2023). The mediating role of e-learning motivation on the relationship between technology access and satisfaction with e-learning. *Nursing Open*, 10(4), 2552-2559.
- Jaiswal, A., Sengupta, S., Panda, M., Hati, L., Prikshat, V., Patel, P., & Mohyuddin, S. (2024). Teleworking: Role of psychological well-being and technostress in the relationship between trust in management and employee performance. *International Journal of Manpower*, 45(1), 49-71.
- Kartini, D., Kristiawan, M., Fitria, H., Negeri, S., & Sugihan, M. (2020). The influence of principal's leadership, academic supervision, and professional competence toward teachers' performance. *International Journal of Progressive Sciences and Technologies (IJPSAT)*, 20(1), 156-164.
- Khlaif, Z. N., Sanmugam, M., Joma, A. I., Odeh, A., & Barham, K. (2023). Factors influencing teacher's technostress experienced in using emerging technology: A qualitative study. *Technology, Knowledge and Learning*, 28(2), 865-899.
- Kim, S.-H., & Park, S. (2021). Influence of learning flow and distance e-learning satisfaction on learning outcomes and the moderated mediation effect of social-evaluative anxiety in nursing college students during the covid-19 pandemic: A cross-sectional study. *Nurse Education in Practice*, 56, 103197.
- Luo, Z., & Li, H. (2024). Competence, preparation, and relaxation: Contributing factors to efl student teachers' self-efficacy and teaching performance in microteaching training. *Heliyon*, 10(4).

- Magistra, S. N., Santosa, S., & Indriayu, M. (2021). Effect of self-efficacy and technostress on teacher performance through organizational commitments. *Dinamika Pendidikan*, 16(1), 75-82.
- Mohd Satar, N. S., Dastane, D. O., & Morshidi, A. H. (2021). E-learning satisfaction during covid-19 pandemic lockdown: analyzing key mediators. *International Journal of Management, Accounting and Economics*, 8(8), 542-560.
- Purwanto, A. (2022). Elementary school teachers performance: how the role of transformational leadership, competency, and self-efficacy? *International Journal Of Social And Management Studies (IJOSMAS)*.
- Rasool, T., Warraich, N. F., & Arshad, A. (2024). Assessing the relationship between information overload, role stress, and teachers' job performance: Exploring the moderating effect of self-efficacy. *Information Development*, 02666669241232422.
- Riandi, M. H., Respati, H., & Hidayatullah, S. (2021). Conceptual model of user satisfaction as mediator of e-learning services and system quality on students' individual performance. *International Journal of Research in Engineering, Science and Management*, 4(1), 60-65.
- Risher, J., & Hair Jr, J. F. (2017). The robustness of pls across disciplines. *Academy of Business Journal*, 1, 47-55.
- Ryan, R. M. (2023). *The oxford handbook of self-determination theory*. Oxford:Oxford University Press.
- Salam, A. (2023). Navigating the digital landscape: exploring the interplay of digital leadership, e-learning anxiety, and innovative behavior. *Journal of Digitovation and information system*, 3(1), 32-46.
- Satuti, J. R., Sunaryanto, S., & Nuris, D. M. (2020). Does student satisfaction mediate the correlation between e-learning service quality, academic engagement and academic achievement? *Journal of Accounting and Business Education*, 5(1), 38-53.
- Setyawan, F. G., Widyani, A. A. D., & Suardhika, I. N. (2022). Model of digital literacy and organizational support in determining teacher performance: An empirical study. *International Journal of Multidisciplinary Research and Analysis*, 5(11), 3033-3042.
- Sheikh, M. Z. A., Jamshaid, S., & Eman, N. E. (2023). Impact of techno stress on work engagement with mediating role of workload and moderating role of computer self-efficacy. *Journal of Xidian University*, 17(2). doi:<https://doi.org/10.37896/jxu17.2/038>
- Sudjono, S. (2022). Work stress mediates motivation and discipline on teacher performance: Evidence work from home policy. *Journal of Educational and Social Research*, 12(3), 80-89.
- Van Waeyenberg, T., Peccei, R., & Decramer, A. (2022). Performance management and teacher performance: the role of affective organizational commitment and exhaustion. *The International Journal of Human Resource Management*, 33(4), 623-646.
- Vidergor, H. E. (2023). The effect of teachers' self-innovativeness on accountability, distance learning self-efficacy, and teaching practices. *Computers & Education*, 199, 104777.
- Wang, Y., & Pan, Z. (2023). Modeling the effect of chinese efl teachers' self-efficacy and resilience on their work engagement: A structural equation modeling analysis. *Sage Open*, 13(4), 21582440231214329.
- Wang, Z., Zhang, L., Wang, X., Liu, L., & Lv, C. (2023). Navigating technostress in primary schools: a study on teacher experiences, school support, and health. *Frontiers in Psychology*, 14, 1267767.
- Younas, M., Noor, U., Zhou, X., Menhas, R., & Qingyu, X. (2022). Covid-19, students satisfaction about e-learning and academic achievement: mediating analysis of online influencing factors. *Frontiers in psychology*, 13, 948061.
- Zhou, X., Shu, L., Xu, Z., & Padrón, Y. (2023). The effect of professional development on in-service stem teachers' self-efficacy: a meta-analysis of experimental studies. *International Journal of STEM Education*, 10(1), 37.