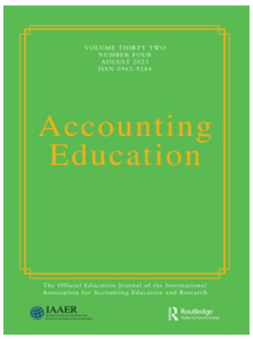

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Higher education students' perceptions of accounting online learning: the emergency context of the COVID-19 pandemic

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ABSTRACT

Emergency remote teaching (ERT) through online learning was adopted by the higher education system worldwide to provide students with ongoing education during the Covid-19 pandemic. This paper explores students' perceptions of the functioning of online classes during the ERT period and how these perceptions influenced their accounting teaching-learning process. A questionnaire was applied to management and economics students, enrolled in a Portuguese HEI, within the context of accounting course units. Applying the PLS method, a theoretical model was estimated. Our results suggest that HEIs should invest in easy access to online teaching platforms and conferencing systems and to promote collaborative and interactive learning. Since ERT contexts may become increasingly recurrent, online learning should provide students with appealing online classes, as part of an engaging educational experience. This study contributes to a research agenda on the impact of a disruptive event on the accounting teaching-learning process in a specific cultural setting.

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Introduction

On March 11 of 2020, the World Health Organization (WHO) declared the Covid-19 outbreak a global pandemic (Organisation for Economic Co-operation and Development [OECD], 2020). Education systems across the world felt an unparalleled strain as confinement measures caused extensive closures of education institutions (OECD, 2020). This was an unprecedented global event that required swift and decisive actions from the educational community (Fogarty, 2020). The sudden switch to emergency remote teaching (ERT) through online learning (Ezra et al., 2021) stretched the whole of the education community – faculty, students, administrative staff, support staff, and university management – beyond its comfort zone (Sangster et al., 2020). Accounting students and educators faced an extensive range of teaching and learning issues as a result of the change to ERT during the pandemic disturbance (Sangster et al., 2020). In this context, an important research question is formulated: What factors influence students' perceptions of the

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functioning of online accounting classes during the ERT period, and how do these perceptions influence their accounting teaching-learning process during this period?

The accounting education context is constantly changing and requires a continuous rethinking of how to encourage student learning (Potter & Johnston, 2006; Tharapos, 2022). The demand for better learning environments has become a major accounting policy concern with regard to accounting education (Teixeira et al., 2013). Accounting lectures have typically a content-intensive focus in which students take the role of passive and anonymous recipients of knowledge (Bonk & Smith, 1998; Fogarty, 2020; Frick et al., 2020). Previous literature indicates that approaches to learning and the discipline itself both have an effect on students' experiences of the teaching-learning environment (e.g. Entwistle & Peterson, 2004; Parpala et al., 2010).

Students' perceptions regarding online learning have gained considerable research attention over the past two decades, with a significant boost since the beginning of 2020 due to the Covid-19 pandemic (Reyneke et al., 2021; Rospigliosi, 2020). Recent literature stressed challenges in ERT through online learning experienced worldwide (Alshurafat et al., 2021; Ezra et al., 2021; Liguori & Winkler, 2020). The sudden change in the accounting education operating model meant a completely different learning experience for faculty and students. The general situation of isolation affected the entire educational community and might have had a particular impact in de-motivating students (Fogarty, 2020), who are the main focus from which success or failure of the learning experience needs to be measured (Fogarty, 2020).

Students' learning experience in ERT is not similar to typical online learning (Guo et al., 2022). The alterations in the rhythms of students' daily lives during the pandemic may have modified their level of engagement with their formal education (Fogarty, 2020). Accordingly, the quality of education and the level of achievement of the original learning goals may have been impacted during the pandemic (Sangster et al., 2020). Thus, 'understanding students' learning conditions and their experiences of online learning during the Covid-19 pandemic becomes imperative' (Yan et al., 2021, p. 3). There is a paucity of scholarly literature that focuses on crisis management in education in general and in accounting education, in particular (Sangster et al., 2020). Student learning behaviour in accounting education research is a topic of interest in light of the pandemic disturbance (Fogarty, 2020; Frick et al., 2020; Rinaldi et al., 2020), particularly considering that ERT involves unique challenges from the student perspective (Guo et al., 2022). These gaps are addressed in this study.

To address the research question, a questionnaire was administered to accounting students who are pursuing higher education at a Portuguese university. The questionnaire was conducted in April and May of 2021, following the second confinement period of Covid-19. Based on the theoretical background and the literature review, three factors were deemed relevant in influencing the students' perceptions of the functioning of online accounting classes during the ERT period: i) the student's assessment of the online learning platforms and video conferencing systems; ii) the student's attitude; and iii) the teacher's attitude. Thus, this study aims to gain insight into the influence of these three factors on the students' perceptions of the functioning of online accounting classes during the ERT period and how these perceptions influence their accounting teaching-learning process.

Amidst an unprecedented movement of lockdowns and social distancing measures around the world, the Portuguese government decided to close all educational institutions and urged the rapid provision of online learning options. Portuguese higher educational institutions (HEIs) were closed between mid-March 2020 and the end of the semester in June. During this time, there was a rapid transition to a phase of ERT through online learning (e.g. Ezra et al., 2021; Hodges et al., 2020), where the primary concern was to ensure the continuation of the teaching-learning process as seamlessly as possible considering the circumstances, by securing lectures and rescheduling assessments (Aguilera-Hermida et al., 2021; Basilaia et al., 2020; Dhawan, 2020; Hodges et al., 2020; Liguori & Winkler, 2020; Shin & Hickey, 2021). In September 2020, at the beginning of the 2020/21 academic year, most Portuguese HEIs adopted a blended learning system. However, as the country was hit by a second wave of Covid-19 from late January to May 2021, the system transitioned back to being fully online. Similarly to other countries, teachers in Portuguese HEIs mostly provided synchronous classes, in the same schedule of the previous face-to-face classes; without the necessary time to plan activities, traditional face-to-face classes were simply transferred to a virtual environment (Aguilera-Hermida et al., 2021; Crawford et al., 2020; Sangster et al., 2020).

Contribution

This study contributes to the accounting education literature and provides valuable insights into the issues students experienced during ERT through online learning in the pandemic context (e.g. Kelly et al., 2022; Lux et al., 2023; Rinaldi et al., 2020; Sangster et al., 2020). By providing empirical evidence on students' perception of the functioning of these classes during the Covid-19 pandemic, this study advances the knowledge on the main factors influencing the online teaching and learning process in the accounting field. The results revealed that the evaluation of the online learning platform and video-conferencing system used to deliver lectures and the attitude of accounting students and teachers in online accounting classes positively influenced the perception of the functioning of accounting classes during the ERT under the Covid-19 crisis. Further, the students' perceptions of the functioning of online classes had a positive influence on the teaching-learning process of accounting. These findings add to the existing evidence that the learning environment influences students' learning experience within higher education settings (e.g. Azzali et al., 2023; Entwistle & Peterson, 2004; Ma & Luo, 2022). A major contribution of this study is the novelty in terms of the cultural context. Learning environments tend to differ across countries and reflect national cultural heritage (e.g. Richardson, 1994; Teixeira et al., 2013). Our results provide an enhanced understanding of accounting teaching during ERT in the Portuguese higher education context, a specific setting of Southern Europe that remains under-researched. Our results also offer new insights into the challenges and opportunities in the demand for better learning environments in post-pandemic accounting education (Miihkinen, 2023). Overall, our findings can assist the global community of accounting educators, educational authorities, and higher educational institutions to better comprehend students' learning difficulties and to improve their learning experience within ERT in a challenging and uncertain social and economic context.

The remainder of this paper is organised as follows: the second section presents the theoretical background and develops a theoretical model based on the generated hypotheses, while the third section discusses the data collection process and the overall research method. The fourth section explains and discusses the empirical results. Finally, the last section presents the main conclusions, limitations, and future research avenues.

Theoretical background and hypotheses development

Online learning in an emergency context

Online learning can be defined as learning experiences with the use of technology tools and internet access to enhance learning and teaching (Moore et al., 2011; Shin & Hickey, 2021). It has been identified as a more recent version of distance learning which improves 'access to educational opportunities for learners described as both nontraditional and disenfranchised' (Moore et al., 2011, p. 2). It is argued that online learning provides higher education learners with an effective way to meet their distinct needs and expectations (e.g. Ma & Luo, 2022; Williamson et al., 2020). The use of technology in online courses was recognised as a means of deepening teaching and learning and increasing student participation and engagement in the courses (Lux et al., 2023). Engagement refers to students' active participation and concentration in class and their effort in studying the content of the course (Dowling et al., 2003; Frick et al., 2020; Struyven et al., 2005).

Information technology tools and other infrastructure used to support the teaching learning process are broadly classified into two main groups, asynchronous and synchronous (Larasati & Santoso, 2017; Turnbull et al., 2021). The first group encompasses learning management platforms that do not require time-sensitive interactions between stakeholders in the learning process (e.g. Moodle or Blackboard). The second group involves the real-time interchange of information, usually conducted via video conferencing tools such as Zoom, Skype or Microsoft Teams (Kohnke & Moorhouse, 2022). The literature recognises that a combination of the two groups is necessary to try to replicate face-to-face educational activities in an online environment (McDaniels et al., 2016). Furthermore, it has been claimed that blended formats merge the benefits of online teaching with traditional face-to-face classes (e.g. Aguilera-Hermida et al., 2021; Alshurafat et al., 2021; Kelly et al., 2022).

Beyond contributing to an improvement in students' confidence in using technology, asynchronous and synchronous learning experiences may also increase their course satisfaction and motivation, and online learning attitudes (López-Pérez et al., 2011; Zhu et al., 2020). Attitude seems to play an important role in influencing learning (Prior et al., 2016) and achieving quality learning outcomes (Chapman & van Auken, 2001). In broad terms, attitude is understood as an 'individual's positive or negative evaluation of performing the behaviour' (Ajzen & Fishbein, 1980, p. 6; see also Kemp et al., 2019). Students' preference for a technology-based teaching-learning method implies a positive attitude towards it.

The change from a face-to-face format to a large-scale ERT, even if very abrupt, stressful, and chaotic, allowed for students to continue their study routine from home during the pandemic (Ezra et al., 2021; Guo et al., 2022; Trust & Whalen, 2020; Usher et al.,

2021). This unplanned and rapid shift to a new form of teaching is known as ERT through online learning (e.g. Bond et al., 2021; Ezra et al., 2021; Hodges et al., 2020; Shin & Hickey, 2021; Usher et al., 2021). Hodges et al. (2020, para.13) define it in the following terms:

> […] a temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances [which] involves the use of fully remote teaching solutions for instruction or education that would otherwise be delivered face-to-face or as blended or hybrid courses and that will return to that format once the crisis or emergency has abated.

ERT through online learning experiences is different from those resulting from carefully planned and designed online courses (Lux et al., 2023). The traditional online courses are intentionally designed to be delivered fully online and involve a timely and meticulous planning and instructional design from the very beginning (Hodges et al., 2020; Shin & Hickey, 2021). In emergency contexts, where motivating students is considered one of the major challenges (Shin & Hickey, 2021), the lecturer's main objectives are twofold: 'managing the crisis and maintaining the quality of learning' while balancing the 'compromise between fast online delivery and instructional design quality' (Guo et al., 2022, p. 12).

A student's perceived value of their learning experience, often referred to as the 'student perception' is deemed the most critical factor influencing their decision to proceed with their course (Ma & Luo, 2022; Vikas & Mathur, 2022; Vyatkina, 2016). Learning is a 'social and cognitive engagement' (Shin & Hickey, 2021, p. 984). Students' learning experience happens collaboratively and is realised within a community (Bamoallem & Altarteer, 2022). School settings are not a 'mere physical space, but a social hub of human interactions and connections that are essential to learning and development' (Shin & Hickey, 2021, p. 982). The dynamic and overlapping role of social, teaching and cognitive presence improves the online learning experience and learning outcomes in higher education (Bamoallem & Altarteer, 2022; Garrison et al., 2000; Usher et al., 2021). Teaching presence has been shown to be a critical factor of students' satisfaction, perceived learning, and sense of community with the technology-based learning experience (Bamoallem & Altarteer, 2022; Shea et al., 2005). However, according to Guo et al. (2022, p. 14), in emergency remote teaching 'it is not realistic and practical to expect that students will maintain the social and cognitive presence'. Pre-Covid-19 literature has provided evidence on accounting students' perceptions and attitudes regarding online learning (e.g. Aisbitt & Sangster, 2005; Dowling et al., 2003; Duncan et al., 2012; Herrador-Alcaide et al., 2019; Keller et al., 2009; Love & Fry, 2006; Perera & Richardson, 2010), however, this issue has not yet been sufficiently studied in ERT contexts.

Hypotheses development

The adoption of online learning platforms and video-conferencing systems was suddenly massified due to the necessity to continue students' teaching-learning process during the Covid-19 global pandemic (Aguilera-Hermida et al., 2021; Ali, 2020). Real-time video conference tools were required to complement the virtual infrastructure that was already in place. The quality of online learning is influenced in part by the robustness,

ease of use and reliability of online learning platforms and video-conferencing systems (Bączek et al., 2021; Islam, 2014; Jiang et al., 2021; Salam & Farooq, 2020; Yan et al., 2021; Yuen et al., 2019), critically influencing student satisfaction, which is crucial in online learning.

It is acknowledged that students who lack digital literacy to explore relevant information and communicate with others through technological devices could experience difficulties in online learning (Yan et al., 2021). Previous computer-related experiences in educational platforms have been considered a robust determinant for the use and acceptance of online learning (Liaw & Huang, 2011; Thongsri et al., 2020). For example, Liaw and Huang (2011) found that computer skills and previous online learning experience were indicators of student self-efficacy and motivation. Self-efficacy, the perception belief that an individual has the ability to perform a certain task or job well (Bandura, 1997), is regarded as 'the conduit to understanding why individuals initiate certain behaviour, the effort they expend in engaging in this behaviour, and their persistence in facing obstacles' (Viviers et al., 2022, p. 4). More recently, Aguilera-Hermida et al. (2021) demonstrated that the pre-Covid-19 use of online learning technology did not predict cognitive engagement while using online learning. Continuing in the context of the Covid-19 pandemic, Alzahrani and Seth (2021) analysed the critical factors influencing the satisfaction of first-year undergraduate students in a UK-based university with online learning management systems. They found that the quality of the online learning systems did not influence students' satisfaction, though information quality and self-efficacy significantly impacted satisfaction. Furthermore, neither self-efficacy nor satisfaction had a significant impact on expectations of personal outcomes, though previous experience and social influence did. In turn, Alshurafat et al. (2021) found that social trust impacted the perceived usefulness and perceived ease of use of the online learning systems of accounting students in Jordanian universities. Additionally, the authors reported that the perceived usefulness of the online learning platform was positively affected by the ease of use and subjective norms during the Covid-19 outbreak.

Technical problems were considered one of the most significant obstacles to the rapid adoption of ERT through online learning during the pandemic (Lux et al., 2023). Access to suitable technology for online learning became more important during the pandemic, as students had to use resources at home, namely computers and internet access, which proved to be potentially less robust than those they use at universities (Lux et al., 2023). Internet access was also overloaded with the exponential increase of online meetings with video- conferencing systems, leading to a lower performance of web-based technological systems (Ezra et al., 2021). Moreover, studies carried out during the pandemic showed that students from low-income backgrounds have inadequate digital devices with poor internet connection (e.g. Alam, 2020; Alipio, 2020), in which these students often preferred to use low- bandwidth consumption apps in online learning systems (e.g. Messenger) instead of more robust systems (Ezra et al., 2021). Poor internet quality deteriorates audio and image quality and may diminish students' concentration and comprehension of materials (Ezra et al., 2021). This also aggravates the 'psychological-communicational gap' imposed by the transactional distance (Karakaya, 2021, p. 296), which highlights the significance of the quality of online learning platforms and video conferencing systems when assessing the overall functionality of online classes. This becomes especially important in a context where students are isolated and eager for a productive, digitally

connected teaching and learning experience (Vikas & Mathur, 2022). In a study published in 2019, Chopra and colleagues found that the quality of the platforms, the internet service and the e-learning system were crucial for the effectiveness of e-learning from the perspectives of the students and consequentially their satisfaction with classes. Thus, the following hypothesis has been formulated:

> H1: A positive evaluation from accounting students on online learning platforms and the video-conferencing system during the ERT period positively influences their perception of the functioning of online accounting classes during the Covid-19 pandemic.

Accounting educators were faced with the challenge of altering overnight their approaches to teaching, learning, assessment, research, student support, and engagement, but also their personal lives (Bamoallem & Altarteer, 2022; Sangster et al., 2020; Shin & Hickey, 2021). Their job was abruptly redefined, and it was impossible to maintain the same pre- Covid-19 work-life balance (Sangster et al., 2020). Additionally, some lecturers seemed to be less than prepared when it came to adapting the pedagogical issues of face-to-face courses to ERT during the pandemic (Lux et al., 2023). Most of them were not at ease with online learning platforms, especially video-conferencing systems, and apart from technical issues, experienced difficulties in motivating and engaging with their students (Birch & Lewis, 2020; Kruszewska et al., 2022; Pokhrel & Chhetri, 2021). Fogarty (2020) argues that students would expect faculty members to possess more digital competency. In fact, the non-pandemic literature suggests that as students become more technologically adept, the demands on faculty to use available technologies in teaching strategies will increase (e.g. Paisey & Paisey, 2005; Potter & Johnston, 2006).

Online learning offers a set of opportunities to develop innovative pedagogical and student-centred approaches, and engaging teaching despite the peril of increasing the digital divide among students (Dhawan, 2020; Favale et al., 2020). Changes in modality could not occur without changes in content, resulting in faculty workload becoming heftier (Fogarty, 2020). The preparation of online classes revealed to be far more time-consuming than traditional face-to-face lectures (Almazova et al., 2020). Under these circumstances, it could be said that the delivery of high-quality materials, support, and assessments were at stake (Sangster et al., 2020). According to Guo et al. (2022), during the pandemic students expressed concerns about the quality of online learning materials, teachers' online teaching skills, and a deficiency in the organisation of online courses. Other studies suggest that the maintenance of good interaction and communication with students, the delivery of motivating and well-designed materials, and an optimistic attitude by teachers are all factors correlated with the effectiveness of online learning (Aristovnik et al., 2020; Cicha et al., 2021; Sun et al., 2008). Different modes of interaction and communication, such as teacher feedback, online discussion forums, and the design of course assignments and activities, can foster student engagement and satisfaction (Alsadoon, 2018; Fiock, 2020; Usher et al., 2021). Instructors' personal involvement in motivating students to participate in collaborative learning was also found to be of critical importance in the online learning experience (Appavoo et al., 2019; Reyneke et al., 2021; Vikas & Mathur, 2022). Given the importance of a teacher's attitude towards online teaching, as identified in previous studies in similar contexts, this factor arguably may influence students' perception of the functioning of online accounting classes in a positive manner. Therefore, the following hypothesis was formulated:

H2: A positive attitude of accounting teachers during the ERT period positively influences the students' perception of the functioning of online accounting classes during the Covid-19 pandemic.

In the pandemic context, students faced an abrupt transition from face-to-face to ERT causing extreme disruptions in their lives (Mohmmed et al., 2020), and requiring a rapid adaptation to the new learning environment (Ezra et al., 2021; Pokhrel & Chhetri, 2021). Ezra et al. (2021) discussed the difficulties perceived by students at a university in Israel in the ERT situation. They found that maintaining concentration was one of the biggest challenges of the new online learning environment, resulting from the long periods of time students spent in front of digital devices. Greater fatigue was also empirically confirmed by the authors, as a result of the students' persistent attempts to process non-verbal signals (Ezra et al., 2021). Consequently, many students found online classes to be 'emotionally and mentally draining' (Guo et al., 2022, p. 2). In contrast, Kelly et al. (2022) argued that online learning activities provided through a blended learning design can increase learners' levels of motivation, engagement and nurture a more positive attitude towards the accounting subject.

The lack of self-discipline, the inadequacy of learning support materials and the absence of an adequate learning environment are key problems identified by Ezra et al. (2021) when students are in an online learning environment. According to Bao (2020), students' self-discipline and the learning environment at home can positively influence their attitude toward online learning. However, the lower social presence in ERT during the Covid-19 pandemic had negative consequences on students' cognitive processes, which translated into a lower motivation to attend and engage in online classes and interact with pedagogical materials (Guo et al., 2022). Empirical research on students' online learning experience suggests a lack of interactivity, reduced learning motivation (Aristovnik et al., 2020; Shah & Cheng, 2019) and limited collaborative learning experiences (Bączek et al., 2021; Yan et al., 2021).

Prior literature establishes a significant link between active learning designed to encourage greater student participation and improved learning outcomes (e.g. Almusharraf & Khahro, 2020; Byrne et al., 2002; Potter & Johnston, 2006; Trigwell & Prosser, 1991). A student-focused teaching strategy has been identified as having the potential to improve students' satisfaction and engagement in a lecture (Exeter et al., 2010; Frick et al., 2020; Mulryan-Kyne, 2010). When students actively participate in the learning process instead of simply absorbing information passively, their learning is typically deeper and more effective (Frick et al., 2020; Moulding, 2010). The development of pervasive skills such as critical thinking, communication, information technology, negotiation, self-management, and integrity (Douglas & Gammie, 2019; Reyneke et al., 2021; Teixeira & Gomes, 2017) are believed to be the direction that student behaviour should be pushed towards and enhanced by through collaborative learning and groupwork (Reyneke et al., 2021). In addition, a significant finding from a study by Herrador-Alcaide et al. (2019) showed that students in a financial accounting course unit with high positive perceptions of their generic skills were satisfied with the virtual learning environment and the learning process. In this context, student satisfaction, engagement, and maintaining a positive attitude are all key factors to consider when analysing student perceptions of the functionality of online classes. Therefore, the following hypothesis was developed:

H3: A positive attitude of accounting students during the ERT period positively influences their perception of the functioning of online accounting classes during the Covid-19 pandemic.

The literature provides evidence of the benefits of online learning in HEIs, including cost-effectiveness (Moore et al., 2011), time-saving, flexibility, and control. These benefits are supported by the fact that online learning allows students to attend classes from anywhere and access previously recorded classes, as long as there is internet access (Bamoallem & Altarteer, 2022; Fortin et al., 2019; Guo et al., 2022; Hodges et al., 2020; Lall & Singh, 2020; Zhang et al., 2006). Additionally, online learning enables the customisation of procedures and processes based on the needs of students (Wagner et al., 2008) and can lead to increased attendance and participation, as it can be less intimidating (Mastilak, 2012). Furthermore, online learning promotes greater inclusivity by accommodating the needs of different populations facing physical, geographical, economic, and other limitations (Coelho & Martins, 2022).

Some authors argue that there are no significant differences in learning outcomes when comparing face-to-face with online learning modalities (e.g. Campbell et al., 2011; Holt et al., 2015). However, this issue remains controversial (Ismaili, 2021). For example, in the pre-Covid-19 context, Dowling et al. (2003) examined whether student learning outcomes differed when comparing traditional face-to-face classes with a blended learning model. The results suggested some negative results of the blended course, implying that students may need time to adapt to new teaching environments. Duncan et al. (2012) reported that accounting students' performance is improved during online exams, especially in courses that use both synchronous and asynchronous classes.

The Covid-19 pandemic made the effectiveness of online teaching and learning processes much more complex (Guo et al., 2022). It has imposed unprecedented challenges on students such as uncertainty, social and emotional isolation, and feelings of depression and anxiety (Aristovnik et al., 2020; Guo et al., 2022). In addition to the isolation from their peers and teachers, students were also isolated from their previous day-to-day routines. Negative emotions such as boredom, anxiety and frustration are commonly reported and associated with social isolation (Guo et al., 2022), as well as difficulties in time management and inadequate access to online resources, which can compromise academic performance (Cicha et al., 2021; Gillett-Swan, 2017; Shin & Hickey, 2021; Zapata-Cuervo et al., 2023). In a recent study of higher education students by Wang et al. (2020), it was shown that students experienced disproportionate levels of anxiety during the pandemic, of which affected their online learning experience and outcomes.

The quality of social interactions is considered crucial for student engagement and favourable learning outcomes (Lux et al., 2023). Research has shown that social interactions in ERT through online learning during the pandemic were not as effective as in a face-to-face learning environment (e.g. Bączek et al., 2021; Ezra et al., 2021; Ma & Luo, 2022). Student engagement is one of the critical antecedents that predict learning outcomes (Panigrahi et al., 2018) and learning engagement is generally lower in online environments than in face-to face classes (Aguilera-Hermida et al., 2021; Hu & Hui, 2012). In addition, an increase in task capacity in online learning during the pandemic

may have resulted in a heavier academic workload, which was not perceived positively by students, and suggests that more time was spent by students in the online learning setting, compared e to previous face-to-face classes (Ezra et al., 2021; Soffer & Nachmias, 2018).

An element that seems to also play a fundamental role in students' evaluation of the teaching and learning process is students' satisfaction or positive evaluation of online classes. Given the key role classes play in the teaching and learning process, student perceptions about online classes seem to be associated with achieving course learning outcomes (Vikas & Mathur, 2022), as well as the degree to which students feel comfortable with the design of online courses, engage with their peers and instructor, receive high-quality and sufficient course content, obtain technical support, and have a satisfactory overall experience with the delivery of online content (Young & Norgard, 2006).

During the time of the pandemic, HEIs offered classes to socially isolated students in lockdown, whose lives had been completely upended. In this context, a structured programme has arguably even more important. Therefore, it can be inferred that students' perception of the functioning of online classes can influence the teaching and learning process during ERT. Based on this inference the following hypothesis is formulated:

> H4: A positive evaluation of the functioning of online accounting classes by students, during the ERT period, positively influences their teaching and learning process during the Covid-19 pandemic.

From this review and the four stated hypotheses, the following theoretical model was developed (Figure 1):

In this theoretical model, five latent variables corresponding to five groups of questions in the questionnaire were created. A direct relationship was established between the evaluation of the latent variables of the online learning platform and the

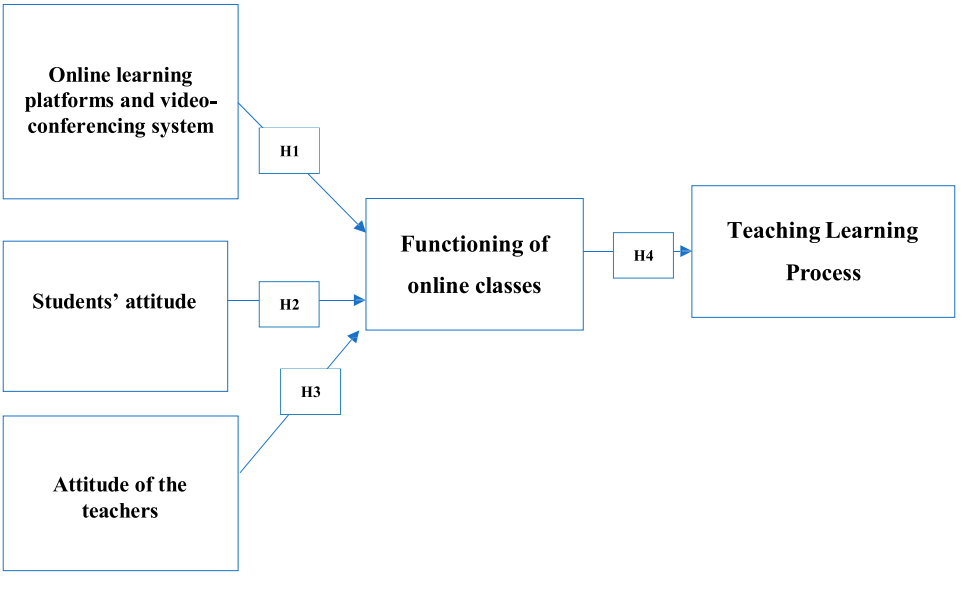

Figure 1. Theoretical model. Source: Own authors.

videoconferencing system, the attitude of students and teachers in online accounting classes and the students' perception of the functioning of online classes, and between the students' perception of how online classes work and the teaching and learning process of accounting in an online environment.

Research method

Sample

The sample was collected through a questionnaire made available online to students of management and economics courses, enrolled in a private Portuguese university. This institution was closed between March and June of 2020 (first confinement) and between the end of January and April 2021 (second confinement). During this period, the teaching- learning process involved mainly the simple transfer of educational contents to ERT through online learning using the Zoom video-conferencing system, and not the adoption of specific online teaching and delivery methods. In most cases, classes were not recorded.

The choice of students from the Portuguese university was for convenience, and the questionnaire was sent to all 714 students who attended these two degrees, from April to May 2021. These degrees have mandatory accounting curricular units in their study plan. It should be noted that these students were in ERT between March and June 2020 and between January and April 2021, the two general periods of confinement in Portugal. Thus, all of them experienced ERT in at least one of the two time periods. In addition, all the students surveyed have also had face-to-face accounting classes, at least in the previous semester, even students attending the first year of the courses. A total of 342 valid responses were obtained (47.9% response rate).

A pre-test was performed with the responses of 25 participants, and the sample was validated with Cronbach's Alpha ($C\alpha = 0.975$; the reference value is 0.70 according to Hair et al., 2019). Thus, the sample showed a good internal consistency.

The applied questionnaire consisted of 49 questions divided into six groups and assessing students' perceptions on: (G1) the functioning of online learning platform and video-conferencing system used in accounting classes, with eleven questions; (G2) the functioning of online accounting classes, with seven questions; (G3) the attitude of accounting teachers, with seven questions; (G4) the attitude of students in online accounting classes, with four questions; (G5) the teaching and learning process in online accounting classes, with thirteen questions. The latter group (G6) comprised seven questions about the participants, namely: gender, age, year of attendance, professional status, difficulties with the accounting unit, mode of connection and type of equipment used to attend online accounting classes.

All responses to the questions, with the exception of the seven questions relating to the profile of the respondents, were measured using a 5-point Likert scale. In G1, regarding the evaluation of the online learning platform and the video-conferencing system used in accounting classes, the scale of 1 – Bery bad to 5 – Very Good was used, and in the other groups (G2 to G5) the scale of 1 – Totally Disagree to 5 – Totally Agree. The question related to the difficulties experienced in the accounting course units was measured using the Likert scale from 1 – Many Difficulties to 5 – No Difficulties.

The statistics on the profile of the participants were calculated in SPSS v25 and are presented in Table 1. 53.51% of respondents are men and the average age of participants is 19.78 years, with 73.10% of respondents between 18 and 20 years old. All respondents are undergraduate students and 46.78% are students in the 1st year, 33.92% in the 2nd year and 19.30% in the 3rd year (in Portugal the undergraduate degree is 3 years). In professional terms, 89.77% are students and 9.94% are working students. Before the pandemic, 65.79% of respondents had never done online courses, training, or webinars, among others. During the confinement, higher education students mainly used a laptop (84.50%) and a wireless Internet connection (83.63%) to attend online classes.

Regarding the difficulties felt in the accounting course units, in average terms, the participants reveal 'difficulties' (2.22).

The collected sample was validated in terms of reliability, having the Cronbach's Alpha been calculated for the entire sample. The Cronbach's Alpha of the sample is 0.948 (reference value is 0.70) revealing, according to Hair et al. (2019), a high degree of reliability, or internal consistency.

Methods

Considering its main objective and the hypotheses formulated, this study uses a quantitative approach, which allows one to test and validate theoretical relationships established between variables and indicators, generalising results and replicating the same models,

Table 1. Sample participant profile statistics.

Variable	Frequency	Valid Percent
Gender		
Male	183	53.51
Female	159	46.49
Age		
Between 18–20 years	250	73.10%
Between 21–25 years	89	26.02%
More than 25 years	3	0.88%
Professional situation		
In curricular internship	1	0.29%
Student	307	89.77%
Student worker	34	9.94%
Degree Year		
1st year	160	46.78%
2nd year	116	33.92%
3rd year	66	19.30%
Attendance of online courses before the pandemic		
No	225	65.79%
Yes	117	34.21%
Link used to watch online classes during the pandemic		
Wireless	286	83.63%
Cable	52	15.20%
Mobile Data	3	0.88%
Other	1	0.29%
Equipment used to attend online classes during the pandemic		
Desktop computer	41	11.99%
Portable computer	289	84.50%
Tablet	5	1.46%
Mobile phone	7	2.05%

Source: Own authors.

methods and techniques for different samples (Gittings et al., 2020; Newman & Gough, 2020).

A statistical description of the constructs included in the theoretical model and the items that measure them was carried out. Afterward, a factorial analysis was performed in SPSS (V.25), having implemented an exploratory factor analysis (EFA) with varimax-rotated factor matrices to divide the indicators of latent variables by factors and a confirmatory factor analysis (CFA) to confirm the reflective nature of the model. The relationships established in the theoretical model were tested by applying the Partial Least Squares (PLS) method, and the analysis was performed using the Smart PLS 3.0 software. The PLS combines factor analysis with regression estimation by the Ordinary Least Square (OLS) method, being a base covariance model. Since the sample data were collected through questionnaires, they do not have a normal distribution, which is one of the presuppositions for the application of this method. On the other hand, this method allows, even in small samples, to estimate complex relationships defined by theoretical models and enhances the relationships between latent variables, and between these and indicators when significant relationships exist (Hair et al., 2019; Ringle et al., 2020). The model obtained after applying the PLS method was evaluated in terms of reliability, convergence and discriminant validity using the measures suggested by Hair et al. (2019): (i) Cronbach's Alpha measures ($C\alpha > 0.70$); (ii) composite reliability ($CR > 0.70$); (iii) Average Variance Extracted ($AVE > 0.50$) and (iv) discriminant validity tested using the Fornell-Larcker criterion. After model validation, a bootstrap analysis was performed in Smart PLS 3.0 taking into account the relationships established in the theoretical model in order to obtain the path coefficients. For this, a bootstrap analysis with 500 samples was used.

Factor analysis

EFA with varimax rotation was performed using SPSS (v.25). The results of the EFA implementation (Appendix A) divided the initial items into five factors, each factor corresponding to one of the constructs contained in the theoretical model. One survey question was eliminated due to low factor loadings and communalities (EO13, from scale 5 - Teaching and learning process in online accounting classes). These five factors have a cumulative variance of 72.75%, with none of the factors individually explaining more than 50% of the variance.

CFA using PLS structural equation modelling (PLS-SEM) (Ringle et al., 2015) was conducted given that item distributions were non-normal, according to kurtosis and skewness

Table 2. Considerations for the formative or reflexive nature of the constructs.

Reflexive Model	Formative Model
Construct influences the indicators (Diamantopoulos & Winklhofer, 2001)	Indicators influence construct (Diamantopoulos & Winklhofer, 2001)
Construct explains the indicator (Fornell & Bookstein, 1982)	Construct is a combination of the indicators (Fornell & Bookstein, 1982)
A change in the construct brings a simultaneous change in the value of the items (Chin, 1998)	
Items are interchangeable (Jarvis et al., 2003)	

Source: Adapted from Lux et al. (2023)

statistics (Ringle et al., 2020). The reflexive or formative nature of each construct was analysed, for which several criteria were considered, as can be observed in Table 2.

The analysis led us to confirm our five scalar models as reflexive. Table 3 presents item loadings for reflexive constructs generated by CFA.

Reliability, convergence and validity of PLS model

An internal consistency reliability assessment using Cronbach's alpha and composite reliability (CR) is used to assess the properties of the scales used in this study. All five scales revealed good properties, including high percentages of variance explained (ranging between 47.66% and 66.98%) further confirmed by reliability assessed with Cronbach's alpha which yielded values above 0.70 for all scales (Hair et al., 2019) and CR values above 0.80 for all scales except one that yielded a value of 0.76, which is less desirable, but still acceptable (Garson, 2016).

Internal consistency reliability of the latent constructs was supported by Cronbach's alpha greater than 0.85, except for G4 - student attitude in online accounting classes at 0.70, which is also an acceptable value (Hair et al., 2019) (Table 4). Composite reliability achieved a desirable value of greater than 0.80 for all scales, safe for G1 - Online learning platforms and video conferencing (0.76) which is still well above the cut point of 0.70 (Garson, 2016) (Table 4), indicating a range of acceptable to very good reliability for the scales. The reference value for the AVE is 0.50 (Chin, 1998), fulfilled by all constructs (G1 has an AVE of 0.49 and G5 of 0.48, close to the reference value) (Table 4). In addition, we used the Fornell and Larcker (1981) criterion to assess discriminant validity. The square root of AVE (elements in bold on the diagonal in Table 4) for reflexive constructs is greater than the correlations between constructs, thus suggesting discriminant validity (Fornell & Larcker, 1981).

The standardised root mean square residual (SRMR) of the final model, a measure of fit of a PLS-SEM model, is 0.067. As the SRMR is less than 0.08, the model is a good fit (Garson, 2016). Finally, we calculated the coefficient of determination (R2) of the endogenous latent variables and the predictive relevance (Stone-Geisser Q2) based on the cross-validated redundancy approach. Regarding the assessment of predictive accuracy, it is performed by analysing the R Square (R2) values of the endogenous (dependents) latent variables, that is, functioning of online classes and teaching-learning process. According to the values of R2 and the criterion of Chin (1998), an R2 of 0.67, 0.33 and 0.19 are, respectively, described as substantial, moderate or weak. We can conclude that the latent variables functioning of online classes ($R2 = 0.662$) and teaching-learning process ($R2 = 0.345$) present moderate R2. Further, the model is relevant to predict the constructs functioning of online classes and teaching- learning process since the predictive relevance is greater than zero ($Q2 = 0.382$ and $Q2 = 0.147$, respectively).

Results and discussion

A statistical analysis of the answers to the questions from G1 to G5 was carried out, and the mean and standard deviation of each answer was calculated in SPSS v25 (Table 5).

The results of the estimated PLS-SEM model paths are shown in Figure 2.

Table 3. Loadings and regression coefficients for constructs.

	Online learning platforms and video- conferencing system assessment	Evaluation of the functioning of online accounting classes	Teacher attitude in online accounting classes	Student attitude in online accounting classes	Teaching and learning process in online accounting classes
P1 – Access	0.700				
P2 – Ease and comfort of use	0.765				
P3 – Features	0.806				
P4 – Graphic appearance	0.805				
P5 – Video-conferencing system and platforms motivation for its use	0.712				
P6 – Suitability to the course unit of accounting	0.591				
P7 – Difficulties and complexity of the learning process with the use of the video-conferencing system and platforms	0.386				
P8 – Connection stability during videoconferences and utilisation of platforms	0.407				
P9 – Timely viewing of chat messages	0.447				
P10 – Sound clarity	0.461				
P11 – Overall satisfaction	0.655				
F1 – The methods and/or strategies are suitable for the course unit		0.784			
F2 – There is a good interaction between teachers and students		0.642			
F3 – The quality of the teaching-learning process is guaranteed		0.755			
F4 – The workload of the course unit outside of class hours is adequate		0.654			
F5 – I'm satisfied with the way the course unit was taught		0.893			
F6 – The assessment was adequate to the functioning of the course unit		0.762			
F7 – Online assessment times are adequate		0.488			
D1 – The teacher motivated and encouraged participation			0.859		
D2 – The teacher was supportive in the clarification of doubts			0.763		
D3 – The teacher was available to support the students outside of class time			0.720		
D4 – The teacher was attentive to the students' difficulties			0.810		
D5 – The teacher was clear in the presentation of the contents			0.814		
D6 – The teacher promoted the interaction between everyone			0.742		
D7 – The teacher valued the participation of students in the promoted online activities			0.699		
E1 – During online classes I actively participated and answered the teacher's questions				0.474	
E2 – I carried out the proposed activities according to the deadlines				0.346	

(*Continued*)

Table 3. Continued.

	Online learning platforms and video- conferencing system assessment	Evaluation of the functioning of online accounting classes	Teacher attitude in online accounting classes	Student attitude in online accounting classes	Teaching and learning process in online accounting classes
E3 – I felt involved in the online activities				0.871	
E4 – I am very satisfied with the online accounting classes				0.723	
EO1 – Online accounting teaching and learning is more efficient than face-to-face teaching					0.682
EO2 – Online accounting teaching and learning is more appealing than face-to-face teaching					0.718
EO3 – Online accounting teaching and learning is more flexible					0.573
EO4 – My participation in online accounting classes was higher when compared to face-to-face classes					0.755
EO5 – I felt more motivated with online accounting classes					0.856
EO6 – I felt autonomous and self-taught					0.484
EO7 – I became more involved in the activities promoted in online accounting classes					0.717
EO8 – My educational outcomes improved with online accounting classes					0.793
EO9 – The accounting teacher provided more support to clarify students' questions in online classes					0.428
EO10 – The accounting teacher was more attentive to the difficulties of students in online classes					0.468
EO11 – The accounting teacher motivated the students more in online classes					0.520
EO12 – The materials available in online accounting classes were better than those that would be available in face-to-face classes					0.550

Source: Own authors.

Table 4. Internal consistency reliability values assessed with Cronbach's Alpha, Composite Reliability, AVE and discriminant validity assessed by Fornell-Larcker Criterion for the five scales.

Constructs	Cronbach's Alpha	Composite Reliability	AVE	G1	G2	G3	G4	G5
Online learning platforms and video-conferencing system assessment (G1)	0.88	0.91	0.49	**0.700**				
Evaluation of the functioning of online accounting classes (G2)	0.88	0.90	0.59	0.581	**0.768**			
Teacher attitude in online accounting classes (G3)	0.92	0.93	0.67	0.475	0.711	**0.818**		
Student attitude in online accounting classes (G4)	0.70	0.81	0.52	0.503	0.690	0.608	**0.721**	
Teaching and learning process in online accounting classes (G5)	0.90	0.92	0.48	0.403	0.588	0.522	0.653	**0.693**

Note: AVE Square Root in bold.
Source: Own authors.

According to the estimated PLS-SEM model, we conclude that the positive evaluation of accounting students on the online learning platform and the video-conferencing system used in accounting classes, during the ERT, contributed positively ($\beta = 0.214$) to the perception on the functioning of these classes during the Covid-19 pandemic, confirming Hypothesis 1. Regarding the assessment of student satisfaction with the online learning platform and video-conferencing system, in average terms, the questions that had better classification were questions P1 (4.09), P2 (3.99), P3 (3.87) and P4 (3.75). In other words, respondents rated them in terms of access, ease and comfort in use, features and graphic appearance, in average terms, as 'good'. Previous studies had already identified satisfaction with the online learning platform and video-conferencing system as a determinant of student satisfaction with ERT during the Covid-19 pandemic. Our findings confirm the results reported in the literature suggesting that student satisfaction in relation to online learning was strongly influenced by the robustness of the web-based technological systems used and its ease of access and use (e.g. Bączek et al., 2021; Jiang et al., 2021; Salam & Farooq, 2020).

Concerning the group of questions referring to the attitude of accounting teachers in online classes, questions D2 (3.85) and D4 (3.45) were the ones that obtained the most agreement, that is, the respondents valued the support of the teacher in the clarification of doubts and attention to the students' difficulties. According to the results, we found that the positive attitude of accounting professors during the ERT period contributed positively ($\beta = 0.436$) to the students' perception of the functioning of these classes during the Covid-19 pandemic, confirming Hypothesis 2. Our findings support the argument that one of the main factors influencing student satisfaction in online classes is the attitude of teachers (e.g. Lux et al., 2023; Sun et al., 2008) and that teacher involvement influences the success of ERT during the pandemic (Ismaili, 2021). The maintenance of good communication and interaction between teachers and students are factors contributing to effective online learning, as suggested by Aristovnik et al. (2020). Therefore, we recommend an active virtual presence on the part of teachers, namely by providing feedback on activities requested by students and by creating online forums and blogs that encourage the active participation of students, as shown in prior research (e.g. Alsadoon, 2018; Fiock, 2020; Garrison et al., 2000; Usher et al., 2021). The proximity between teachers and students facilitates the support to those who have more difficulties, by

Table 5. Mean and standard deviation of answers to questions from groups G1 to G5.

G1 – Platforms and video-conferencing system assessment	Mean	Std. Deviation
P1 – Access	4.09	0.648
P2 – Ease and comfort of use	3.99	0.710
P3 – Features	3.87	0.752
P4 – Graphic appearance	3.75	0.807
P5 – Video-conferencing system and platforms motivation for its use	3.34	0.952
P6 – Suitability to the course unit of accounting	3.09	1.123
P7 – Difficulties and complexity of the learning process with the use of the video-conferencing system and platforms	2.81	1.106
P8 – Connection stability during videoconferences and utilisation of platforms	3.39	0.886
P9 – Timely viewing of chat messages	3.61	0.895
P10 – Sound clarity	3.69	0.833
P11 – Overall satisfaction	3.28	0.956
G2 – Evaluation of the functioning of online accounting classes		
F1 – The methods and/or strategies are suitable for the course unit	3.03	0.953
F2 – There is a good interaction between teachers and students	3.19	1.030
F3 – The quality of the teaching-learning process is guaranteed	2.61	1.015
F4 – The workload of the course unit outside of class hours is adequate	3.16	1.032
F5 – I'm satisfied with the way the course unit was taught	2.95	1.075
F6 – The assessment was adequate to the functioning of the course unit	2.98	1.091
F7 – Online assessment times are adequate	3.24	1.149
G3 – Teacher attitude in online accounting classes		
D1 – The teacher motivated and encouraged participation	3.32	1.049
D2 – The teacher was supportive in the clarification of doubts	3.85	0.924
D3 – The teacher was available to support the students outside of class time	3.64	0.964
D4 – The teacher was attentive to the students' difficulties	3.45	1.005
D5 – The teacher was clear in the presentation of the contents	3.34	1.034
D6 – The teacher promoted the interaction between everyone	3.19	1.114
D7 – The teacher valued the participation of students in the promoted online activities	3.35	1.061
G4 – Student attitude in online accounting classes		
E1 – During online classes I actively participated and answered the teacher's questions	2.57	1.02
E2 – I carried out the proposed activities according to the deadlines	3.80	0.89
E3 – I felt involved in the online activities	2.84	1.021
E4 – I am very satisfied with the online accounting classes	2.64	1.152
G5 – Teaching and learning process in online accounting classes		
EO1 – Online accounting teaching and learning is more efficient than face-to-face teaching	1.73	1.123
EO2 – Online accounting teaching and learning is more appealing than face-to-face teaching	1.76	1.174
EO3 – Online accounting teaching and learning is more flexible	2.50	1.299
EO4 – My participation in online accounting classes was higher when compared to face-to-face classes	1.98	1.087
EO5 – I felt more motivated with online accounting classes	1.96	1.109
EO6 – I felt autonomous and self-taught	2.98	1.046
EO7 – I became more involved in the activities promoted in online accounting classes	2.32	1.067
EO8 – My educational outcomes improved with online accounting classes	2.01	1.067
EO9 – The accounting teacher provided more support to clarify students' questions in online classes	3.04	0.956
EO10 – The accounting teacher was more attentive to the difficulties of students in online classes	2.96	1.001
EO11 – The accounting teacher motivated the students more in online classes	2.82	1.025
EO12 – The materials available in online accounting classes were better than those that would be available in face-to-face classes	2.50	1.146

Source: Own authors.

clarifying their doubts, and motivates and encourages students' active participation in online teaching (Reyneke et al., 2021). On the other hand, this proximity encourages the development of student-centered pedagogical strategies and practices (e.g. Dhawan, 2020; Favale et al., 2020). Our findings are consistent with Guo et al. (2022), who emphasised that socialisation becomes a significant concern during times of ERT and the Covid-19 crisis. They highlighted the importance of student interaction in understanding the learning conditions, emphasising the need for teachers to maintain a positive attitude (Aristovnik et al., 2020).

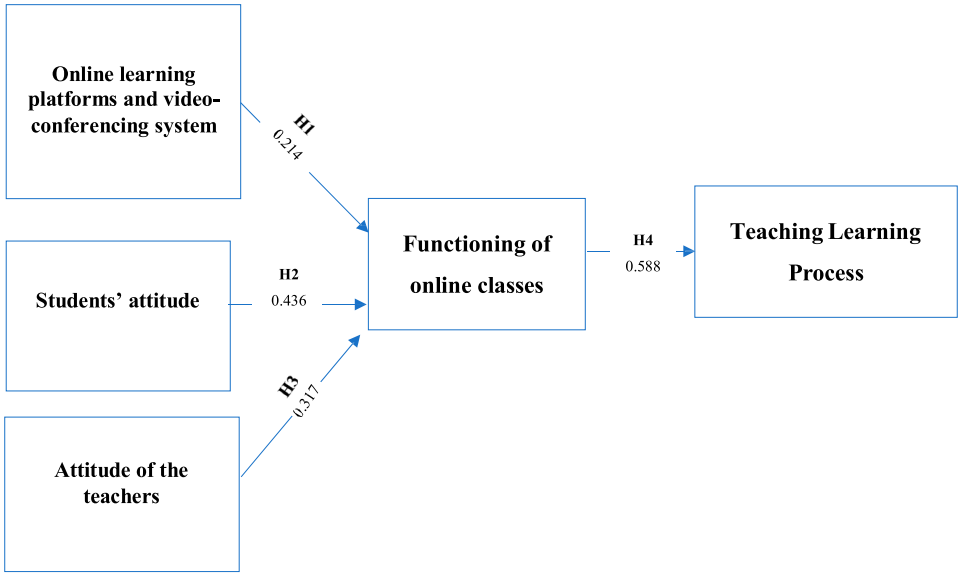

Figure 2. Results of the estimation of the theoretical model. Source: Own authors.

In the group of questions about the attitude of students in online accounting classes, question E2 (3.80) was, on average, the one that obtained the most agreement, and is related to meeting deadlines in the proposed learning activities. It should also be mentioned that active participation, answering questions posed by the teacher (E1 – 2.57) and satisfaction with the online accounting classes (E4 – 2.64) were the questions that generated, in average terms, the least agreement. The results reveal that a positive attitude of students in online accounting classes during the ERT period, contributed positively ($\beta = 0.317$) to the perception of how these classes work during the Covid-19 pandemic, confirming Hypothesis 3. Given the sudden switch to ERT, the students' attitude in online classes, namely self-preparation and motivation, are essential factors for the success of online classes (Ismaili, 2021). The students' self-discipline and a good learning environment at home were also identified as positively influencing students' attitude towards online learning (Bao, 2020). The fact that students carry out the activities proposed by the teachers with prior knowledge of the deadlines allows online learning and teaching to be more flexible and controllable (Fortin et al., 2019; Zhang et al., 2006), encouraging students to have a more positive attitude in online classes. Consequently, a positive and active attitude of students in online classes seems to increase participation and concentration in classes (Frick et al., 2020), and decrease feelings of abandonment, lack of motivation, and academic failure (Aristovnik et al., 2020; Shah & Cheng, 2019). It should be noted that the students' ability to concentrate during ERT in the pandemic context is one of the biggest challenges of online learning (Ezra et al., 2021), and, as suggested by prior research, can lead to students' mental and emotional exhaustion (Guo et al., 2022).

It is noteworthy that in relation to the student's perception of the functioning of online accounting classes, in average terms, questions F7 (3.24), F2 (3.19) and F4 (3.16) were the ones that obtained the greatest agreement. However, with the maximum mean value of

3.24 (F7), we can conclude that the questions relating to the assessment of the functioning of online accounting classes did not obtain a high level of agreement from respondents. Our results suggest that the positive evaluation of the functioning of online accounting classes by students, during the ERT period, has a positive contribute ($\beta = 0.588$) to their teaching- learning process during the Covid-19 pandemic, confirming Hypothesis 4. However, student satisfaction with the functioning of online accounting classes is low due to dissatisfaction with the way the classes are taught (F5), the adequacy of the assessment (F6), the lack of quality assurance in ensuring the teaching-learning process (F3) and the low interaction between teachers and students (F2). Several benefits of online learning were identified in the pre-Covid-19 literature, but also in ERT empirical research in a pandemic context (e.g. Bamoallem & Altarteer, 2022; Fortin et al., 2019; Guo et al., 2022; Hodges et al., 2020). It is widely recognised that the learning environment significantly affects students' learning experience and outcomes (e.g. Ma & Luo, 2022) and that the combined use of synchronous, asynchronous or blended formats optimises the benefits of online classes (Aguilera-Hermida et al., 2021; Alshurafat et al., 2021). Consequently, it was suggested that higher levels of motivation and engagement can be achieved in blended learning (Frick et al., 2020; Kelly et al., 2022). Accordingly, we believe that a blended learning environment can reduce the lack of interactivity as well as learning demotivation identified in ERT research (e.g. Aristovnik et al., 2020). Additionally, our results demonstrate that Portuguese accounting students are dissatisfied with the adequacy of the assessment during the ERT. Importantly, according to Struyven et al. (2005), students' approach to the teaching and learning process is influenced by their perceptions about assessment. Although most Portuguese student assessments continued to be based on a written final exam carried out in-person, alternative evaluation practices and assessment methods could have been introduced to improve both the adequacy of assessment in this ERT and student satisfaction, namely project presentations, case studies, oral exams and small assignments, as proposed in prior research (e.g. Almusharraf & Khahro, 2020).

The group of questions about the teaching and learning process in online accounting classes (the dependent variable), obtained, on average, little agreement among respondents, demonstrating that higher education students effectively disagreed with the online accounting teaching-learning process during the ERT. The questions related to the fact that online teaching is more effective and appealing compared to on-site teaching, respectively, EO1 (1.73), EO2 (1.76), are those with the lowest levels of agreement, which is consistent with the findings of Zapata-Cuervo et al. (2023). In line with Mohmmed et al. (2020), we believe that this result may be partially explained by the abrupt switch to ERT. The students might have better accepted online learning, had it not been adopted so suddenly. This dissatisfaction of students with the online accounting teaching and learning process, motivated by the fact that they consider online teaching less effective and appealing, has an impact on motivation (EO5 - 1.96), on student performance in class (EO8 - 2.01), participation in online classes (EO4 - 1.98), involvement with the proposed activities (EO7 - 2.32) and the feeling of students being autonomous and self-taught (EO6 - 2.98). The lack of motivation and the feeling of isolation had already been identified by Aristovnik et al. (2020) and Guo et al. (2022) as one of the main problems of ERT through online learning during the pandemic. Thus, our

findings reinforce the preference of accounting students for on-site teaching in relation to ERT online learning in the Covid-19 crisis environment.

Conclusion

Although the transition to ERT through online learning allowed for the maintenance of academic activities during the worst months of the Covid-19 pandemic, it was surrounded by uncertainties, difficulties and challenges. Apart from technical issues, the lack of interaction, socialisation and motivation are some of the main problems that students associate with online learning during ERT and that can compromise their teaching and learning process. Thus, it becomes relevant to understand, in empirical terms, which factors influence the students' perceptions of the functioning of online classes during the ERT period and how these perceptions influence their accounting teaching-learning process.

This study explores how the student's assessment of the online learning platforms and video conferencing systems, the student's attitude and the teacher's attitude influence the students' perceptions of the functioning of online accounting classes during the ERT period and how these perceptions influence their teaching-learning process. According to our results, the evaluation of accounting students on the online teaching platforms and the videoconferencing system during the ERT period contributed positively to their perception of the functioning of the online classes, but it is not the most important factor. As argued by Aguilera-Hermida et al. (2021, p. 4), 'the potential for having an effective online higher education depends more on the practices and the initiatives of the faculty and institutions than on the technology'. Students' positive attitudes during the ERT period positively influenced their perceptions of how online accounting classes work. Taking into account the three determinants of students' perception of the functioning of the online accounting classes considered in this study, the students' attitude was statistically the factor that most influenced the students' perception of the functioning of the online classes. Thus, in this study, students' positive attitudes are the main predictor of accounting students' perception of the functioning of online classes. Even so, the teachers' positive attitude remains very important, positively influencing the student's perception of the functioning of online accounting classes. In addition, the results showed that a positive evaluation of the functioning of online classes by students positively influenced their overall teaching and learning process. Thus, it is in the improvement of these factors that HEIs should invest more.

These last years have shown that students need to develop certain skills such as adaptability and problem-solving to deal with the virtual environment and new modes of education. In particular, Portuguese higher education programmes still struggle with a lack of attention to developing the key competences that students need for the modern economy. (OECD, 2019). An OECD Review of Portugal's higher education (OECD, 2019, p. 43) recommended that the Portuguese government include 'improvement of learning and teaching as a core objective in its national strategy for higher education' and to define as key objectives 'increasing uptake of effective pedagogical approaches for skills development (problem-based learning, flipped classroom, use of technology etc.)'. Nevertheless, despite the differences between ERT during crisis circumstances and online learning in 'normal' times (Ezra et al., 2021; Guo et al., 2022; Hodges et al.,

2020), there are opportunities in online learning that are surely going to be explored by higher education institutions (HEIs) worldwide, especially as they rapidly evolve towards blended learning systems.

One of the main challenges for HEIs going forward is going to be the development of appropriate and effective contents for online lectures, that motivate and engage students in the teaching and learning process, ensuring to foster the development of students' soft skills. The probable endemic nature of Covid-19 will likely mean that online learning will coexist in the future with face-to-face classes. Furthermore, the increase in frequency and intensity of extreme natural events and of international or internal armed conflict is likely to make ERT a recurring situation in the future. This educational trend requires that 'online courses should be made dynamic, interesting, and interactive', student-centred and fostering a collaborative learning environment Dhawan, 2020, p. 9). One of the core missions of the Bologna process, to which Portugal is a signatory, is to enhance the quality and relevance of teaching and learning by creating a student-centred learning environment and involving students in the quality assurance process.

This paper contributes to a whole research agenda in terms of improving online teaching and assessment work during times of ERT (e.g. Azzali et al., 2023; Kelly et al., 2022; Lux et al., 2023; Rinaldi et al., 2020; Sangster et al., 2020). It enriches the field of accounting education research by extending our understanding of the impacts of the Covid-19 pandemic in a specific cultural and academic setting. This study addresses the call for further research on the specific effects of ERT during the Covid-19 pandemic on the students' perceptions of the teaching-learning process of accounting subjects (e.g. Lux et al., 2023; Sangster et al., 2020). Understanding the students' experience of emergency online learning during the Covid-19 pandemic is crucial to be well-prepared for future emergencies (Aguilera-Hermida et al., 2021). We provide new insights to inform the accounting teaching and learning literature on the uncertainties and challenges posed by ERT environments and to build a more inclusive and sustainable academic world.

The academic community as a whole – educators and students, senior management in higher education and curriculum developers – will benefit from this research given the need to refine educational strategies and to provide students with better ERT online learning contents and curricula. Specifically, the results provide important insights to accounting faculty and serve as a predictor of prospective students' attitudes and perceptions regarding ERT through online learning. The virtual classroom may become recurrent in accounting education in emergency contexts, but ERT through online learning should provide students with appealing classes, as part of a motivating and engaging educational experience. The use of online delivery to increase student numbers with the associated economies of scale raises important questions about the future of accounting education (Sangster et al., 2020). We strengthen the position of Fogarty (2020, p. 570) that this trend can be seen 'as a serious threat to a discipline like accounting which might struggle to find sufficient qualitative variation to justify continuing to build locally.'

This paper presents some limitations and potentially some further developments. First, the use of a convenience sample from economic and management undergraduate students at a Portuguese private university implies that generalisations to other environments must be made with caution. The socio-economic and cultural context and the technology infrastructure play a relevant role, within and between countries and

different HEIs. Specifically, future research should increase sample size, validating the results with student attainment and failure rates, and analysing this issue in other HEIs, in particular, undergraduate accounting students from public institutions. Second, our results are based on students' perspectives obtained from a self-reporting questionnaire directed to them. Since 'students' attitude' is the main factor influencing students' perception of the functioning of online accounting classes, it would be interesting for future studies to assess how HEIs are developing specific strategies to increase students' involvement and motivation in online contexts, such as the adoption of suitable pedagogical strategies for online teaching, promotion of discussion forums and the development of online tools for active student monitoring. Future studies should extend research to analyse teachers' perceptions, helping to understand the issues faced by instructors regarding online accounting education. More research is needed to examine comprehensively how teachers could integrate microlearning strategies in a blended learning environment to improve accounting students' acceptance and learning outcomes. Third, since our results are interpreted against the backdrop of an emergency online learning process, they are not representative of students' perceptions if a robust and well-designed online learning process was adopted. This research could be repeated in the near future in order to determine the changes in students' perceptions regarding online learning, as a result of improvements made by the institution and its faculty. Finally, an alternative qualitative approach with a detailed and in-depth analysis could expand our understanding of the factors influencing online learning systems, providing a better description of the relationship between the proposed constructs.

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Appendix A

Exploratory and confirmatory factor analyses

G1 – platforms and video-conferencing system assessment

Table A1. Varimax rotated component matrix based on correlations among the items of the platforms and video-conferencing system assessment scale and communalities (h^2).

	score	h^2
P1 – Access	0,796	0.655
P2 – Ease and comfort of use	0.791	0.777
P3 – Features	0.783	0.766
P4 – Graphic appearance	0.760	0.692
P5 – Video-conferencing system and platforms motivation for its use	0.759	0.577
P6 – Suitability to the course unit of accounting	0.730	0.701
P7 – Difficulties and complexity of the learning process with the use of the video-conferencing system and platforms	0.698	0.671
P8 – Connection stability during videoconferences and utilisation of platforms	0.555	0.323
P9 – Timely viewing of chat messages	0.544	0.318
P10 – Sound clarity	0.529	0.745
P11 – Overall satisfaction	0.796	0.655
% of Variance accounted for	49.29%	

Table A2. GFI obtained in the CFA of the platforms and video-conferencing system assessment scale.

	χ2	df.	χ2/df	GFI	CFI	RMSEA	Confidence interval (90%)
Structure derived from the exploratory analysis (11 items)	177.83***	32	5.56	0.91	0.91	0.12	0.120.10–0.13

Note: *$p < 0.05$; **$p < 0.01$; ***$p \leq 0.001$

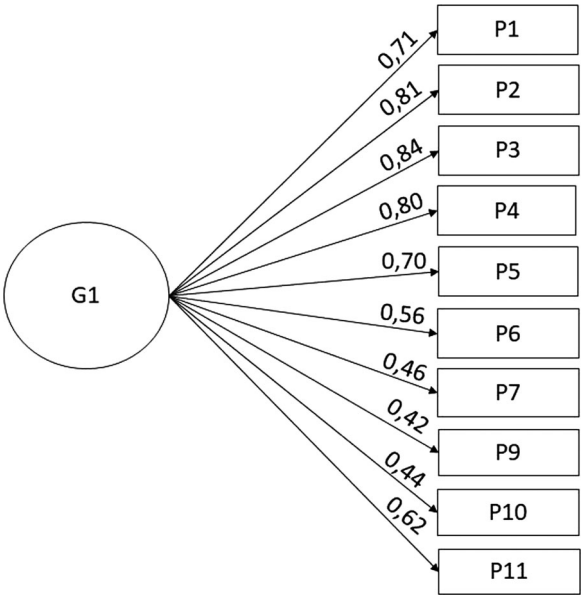

Figure A1. CFA of the platforms and video-conferencing system assessment scale model obtained with the EFA procedures.

G2 – evaluation of the functioning of online accounting classes

Table A3. Varimax rotated component matrix based on correlations among the items of the evaluation of the functioning of online accounting class scale and communalities (h^2).

	Score	h^2
F1 – The methods and/or strategies are suitable for the course unit	0.886	0.683
F2 – There is a good interaction between teachers and students	0.826	0.531
F3 – The quality of the teaching-learning process is guaranteed	0.811	0.658
F4 – The workload of the course unit outside of class hours is adequate	0.793	0.515
F5 – I'm satisfied with the way the course unit was taught	0.729	0.785
F6 – The assessment was adequate to the functioning of the course unit	0.717	0.629
F7 – Online assessment times are adequate	0.551	0.303
% of Variance accounted for	58.62%	

Table A4. GFI obtained in the CFA of the evaluation of the functioning of online accounting class scale.

	χ2	df.	χ2/df	GFI	CFI	RMSEA	Confidence interval (90%)
Structure derived from the exploratory analysis (7 items)	36.28**	36.28	2.79	0.97	0.98	0.07	0.08–0.10

Note: *$p < 0.05$; **$p < 0.01$; ***$p \leq 0.001$

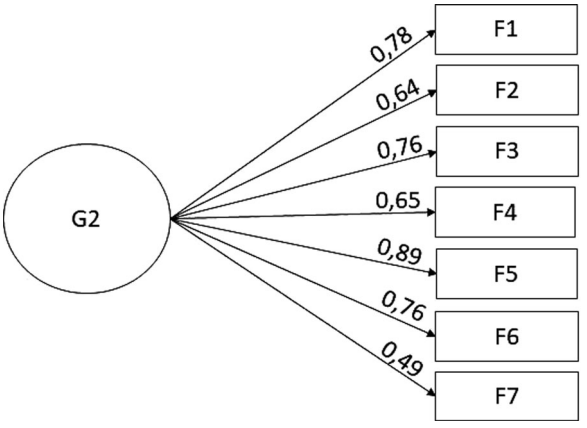

Figure A2. CFA of the evaluation of the functioning of online accounting class scale model obtained with the EFA procedures.

G3 – teacher attitude in online accounting classes

Table A5. Varimax rotated component matrix based on correlations among the items of the teacher attitude in online accounting classes scale and communalities (h^2).

	Score	h^2
D1 – The teacher motivated and encouraged participation	0.863	0.745
D2 – The teacher was supportive in the clarification of doubts	0.852	0.647
D3 – The teacher was available to support the students outside of class time	0.825	0.649
D4 – The teacher was attentive to the students' difficulties	0.805	0.727

(*Continued*)

Table A5. Continued.

	Score	h^2
D5 – The teacher was clear in the presentation of the contents	0.804	0.681
D6 – The teacher promoted the interaction between everyone	0.795	0.631
D7 – The teacher valued the participation of students in the promoted online activities	0.781	0.609
% of Variance accounted for	66.98%	

Table A6. GFI obtained in the CFA of the teacher attitude in online accounting classes scale.

	χ2	df.	χ2/df	GFI	CFI	RMSEA	Confidence interval (90%)
Structure derived from the exploratory analysis (7 items)	46.11***	11	4.19	0.96	0.98	0.10	0.07–0.13

Note: *$p < 0.05$; **$p < 0.01$; ***$p \leq 0.001$

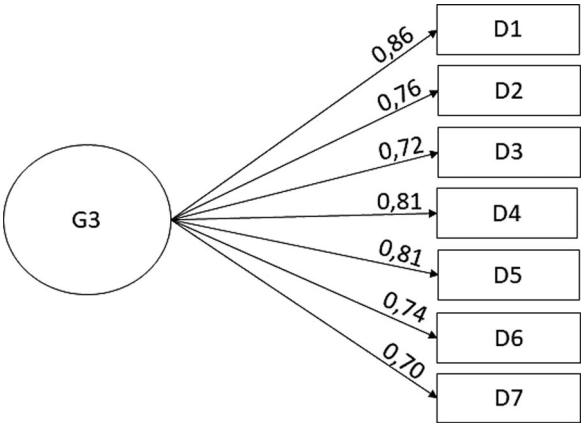

Figure A3. CFA of the teacher attitude in online accounting classes scale model obtained with the EFA procedures.

G4 – student attitude in online accounting classes

Table A7. Varimax rotated component matrix based on correlations among the items of the student attitude in online accounting classes scale and communalities (h^2).

	Score	h^2
E1 – During online classes I actively participated and answered the teacher's questions	0.851	0.442
E2 – I carried out the proposed activities according to the deadlines	0.807	0.287
E3 – I felt involved in the online activities	0.665	0.725
E4 – I am very satisfied with the online accounting classes	0.536	0.651
% of Variance accounted for	52.64%	

Table A8. GFI obtained in the CFA of the student attitude in online accounting classes scale.

	χ2	df.	χ2/df	GFI	CFI	RMSEA	Confidence interval (90%)
Structure derived from the exploratory analysis (4 items)	1.61*	2	0.81	0.997	1.00	0.00	0.00–0.10

Note: *$p < 0.05$; **$p < 0.01$; ***$p \leq 0.001$

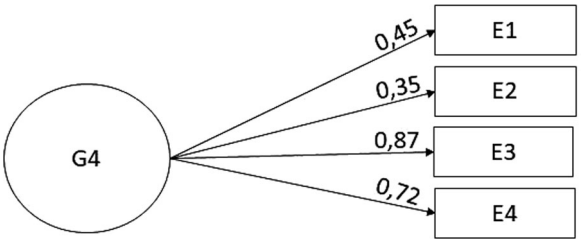

Figure A4. CFA of the student attitude in online accounting classes scale model obtained with the EFA procedures.

G5 – teaching and learning process in online accounting classes

Table A9. Varimax rotated component matrix based on correlations among the items of the teaching and learning process in online accounting classes scale and communalities (h^2).

	Score	h^2
EO1 – Online accounting teaching and learning is more efficient than face-to-face teaching	0.829	0.534
EO2 – Online accounting teaching and learning is more appealing than face-to-face teaching	0.776	0.561
EO3 – Online accounting teaching and learning is more flexible	0.749	0.372
EO4 – My participation in online accounting classes was higher when compared to face-to-face classes	0.749	0.560
EO5 – I felt more motivated with online accounting classes	0.731	0.687
EO6 – I felt autonomous and self-taught	0.724	0.286
EO7 – I became more involved in the activities promoted in online accounting classes	0.663	0.524
EO8 – My educational outcomes improved with online accounting classes	0.636	0.603
EO9 – The accounting teacher provided more support to clarify students' questions in online classes	0.628	0.353
EO10 – The accounting teacher was more attentive to the difficulties of students in online classes	0.610	0.394
EO11 – The accounting teacher motivated the students more in online classes	0.594	0.440
EO12 – The materials available in online accounting classes were better than those that would be available in face-to-face classes	0.535	0.405
% of Variance accounted for	47.66%	

Table A10. GFI obtained in the CFA of the teaching and learning process in online accounting classes scale.

	χ2	df.	χ2/df	GFI	CFI	RMSEA	Confidence interval (90%)
Structure derived from the exploratory analysis (12 items)	225.62*	51	4.24	.90	0.92	0.10	0.09–0.11

*$p < 0.05$; ** $p < 0.01$; ***$p \leq 0.001$

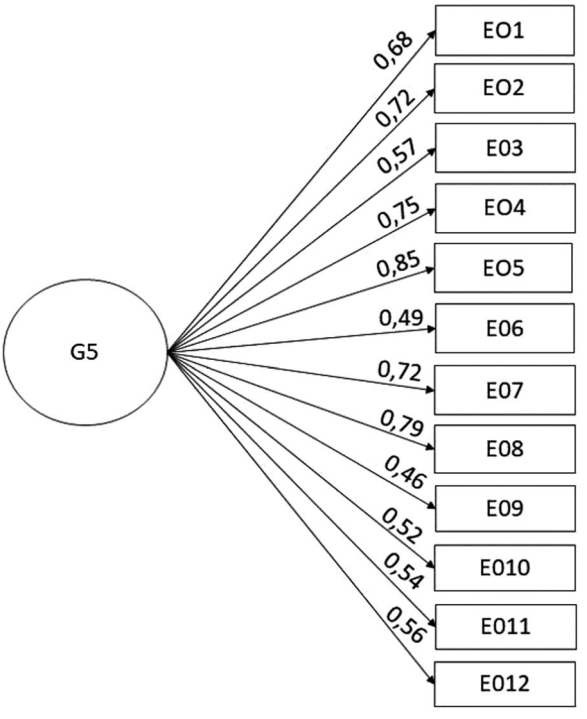

Figure A5. CFA of the teaching and learning process in online accounting classes scale model obtained with the EFA procedures.