

Article

Distance Learning of Financial Accounting: Mature Undergraduate Students' Perceptions

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Abstract: This research sought to explore self-reported satisfaction levels of mature students enrolled in the virtual financial accounting course of the first online-only bachelor's degree in Portugal. While doing so, it attempted to generate understanding of which factors may affect undergraduate mature students' engagement—herein measured in terms of overall satisfaction—with online learning, particularly, of financial accounting. Thereby, this research addresses several research gaps. First, unlike most recent empirical research, it provides evidence from a post-pandemic period, in 2022. Second, responding to calls for further education research in different contexts, Portugal poses a highly relevant, unexplored research setting since it was only in 2019 that the Portuguese government approved a legal regime to frame distance education at Higher Education Institutions (HEIs). Third, this research focuses on the overlooked, and yet growing, population of adult mature students. The research evidence emerges from 32 valid responses to a structured electronic questionnaire circulated to students at the end of a financial accounting module (in July 2022). Satisfaction rates from students' own perspectives were derived in terms of (i) overall satisfaction, (ii) learning outcomes, (iii) e-learning process, and (iv) pedagogical practices adopted. The assessment of satisfaction levels was determined through Likert-type items with responses ranging from a minimum score of 1 to the highest score of 5. Data gathered were subject to quantitative analysis: descriptive statistics, Pearson correlations, statistical tests, principal component analysis, and linear regression. High levels of satisfaction with distance education were uncovered. We found that pedagogical practices constitute the dimension that contributed the least (though, still importantly) to overall satisfaction as compared with learning outcomes and e-learning process. The results of this research offer the potential to contribute to the implementation of training offerings of online courses at other Portuguese HEIs as well as abroad.



Citation: Maldonado, Isabel, Ana Paula Silva, Miguel Magalhães, Carlos Pinho, Manuel Sousa Pereira, and Lígia Torre. 2023. Distance Learning of Financial Accounting: Mature Undergraduate Students' Perceptions. *Administrative Sciences* 13: 103. <https://doi.org/10.3390/admsci13040103>

Received: 18 February 2023

Revised: 20 March 2023

Accepted: 22 March 2023

Published: 2 April 2023



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Keywords: distance education; higher education; financial accounting education; online teaching and learning; student satisfaction; student perceptions

1. Introduction

In a society based on the knowledge economy, knowledge is power, and ignorance is dependence. Not surprisingly, there is an increasing demand for part-time/flexible

higher education by a large and growing group of busy working adults seeking to enhance their academic qualifications to advance their professional careers (Herrador-Alcaide et al. 2019; Holmberg 1986; van Rhijn et al. 2016). Delivering knowledge via World Wide Web allows enjoying interactivity via e-tools (e.g., digital whiteboards, chats, web conferences, web-videos) while overcoming barriers such as location and time zone (Bumblauskas and Vyas 2021; Conrad et al. 2022; Herrador-Alcaide et al. 2019; Nasseh 1997). Learning environments based on the web (virtual educational platforms)'s portability and equipment capacity (laptops, tablets, and smartphones) create learning opportunities for anyone, anywhere, and at any time (Herrador-Alcaide et al. 2019). Innovation through Information and Communication Technologies (ICT) and Virtual Learning Environments (VLE) have led distance education to become an educational model that is part of most educational agendas of higher education institutions (HEIs) worldwide (Cassidy 2016; Conrad et al. 2022; Elshami et al. 2022; Herrador-Alcaide et al. 2019). For the purposes of this paper, distance education refers to the use of ICT in a VLE. As the distance education domain rapidly grows in a global and connected world, so does the spectrum of embodied teaching ICT, which offer a broad range of possibilities to be applied in the teaching–learning process (Al Ghamdi et al. 2016; Herrador-Alcaide et al. 2019). This has caused growing research into the impact of pedagogical practices on VLE satisfaction levels (Al Ghamdi et al. 2016), though this remains under-researched (Al Ghamdi et al. 2016; Flores et al. 2022; Rienties and Toetenel 2016).

Despite the COVID-19 pandemic's acceleration of the dissemination of online learning and awakening of attention to the peculiarities and potential benefits of distance education, it faces ongoing challenges, both at the level of instructors' training needs (namely, to improve ICT literacy skills and interpersonal communication with students) and differentiated learning models capable of drawing and securing students' engagement, satisfaction, and, thereby, academic success (Elshami et al. 2022). It is commonly acknowledged that the use of VLE may have several barriers (Kebritchi et al. 2017; Kurelovic 2016), such as information overload, students' unskillfulness toward ICT (Conrad et al. 2022), as well as instructors' shortage of techno-pedagogical skills to ensure students' engagement and, consequently, learning outcomes (Elshami et al. 2022). Such barriers may explain why some studies found higher satisfaction levels amongst students enrolled in campus-located face-to-face programs (Fishman et al. 2013). On the other hand, evidence exists suggesting that well-planned distance learning and conventional on-campus learning exhibit no significant differences (Rienties and Toetenel 2016).

Given the abovementioned, calls for further research on the teaching–learning process in higher education using VLE thrive (e.g., Al Ghamdi et al. 2016; Elshami et al. 2022; Flores et al. 2022; Herrador-Alcaide et al. 2019). This study addressed several research gaps.

First, most recent empirical studies on distance education derive their evidence from the pandemic period (e.g., Alves et al. 2021; Bisht et al. 2022; Flores et al. 2022; Conrad et al. 2022; Elshami et al. 2022; Krasodomska et al. 2022), when online learning was not adopted voluntarily and most lecturers at HEIs had no previous experience in online learning nor time to adapt conveniently. Yet, the literature emphasises the difference between “emergency remote teaching” following the COVID-19 pandemic and well-designed online higher education (e.g., Hodges et al. 2020; Conrad et al. 2022). In what follows, this research contributes to the literature on distance education by providing evidence collected during a post-pandemic period, in 2022.

Second, there is an acknowledged need for further research on education in different contexts (Elshami et al. 2022). Portugal provides a particularly relevant research setting because it has been under-researched (Flores et al. 2022) and, relatedly, because of the novelty of fully online higher education formal degrees in this country. It was only in 2019 that the Portuguese government approved a legal regime to frame distance education at HEIs (Decree-Law n.º 133/2019 as of 3 September) because of acknowledging distance-taught higher education degrees as an alternative and effective model for top-of-the-line qualification of Portuguese-speaking adult students worldwide. This was a breakthrough

towards distance education stimulation since, before this legal frame, the Portuguese Agency for Assessment and Accreditation of Higher Education in Portugal (A3ES) had no legal foundation to assess and accredit distance education degrees.

Third, mature students are a “growing and traditionally overlooked population” (van Rhijn et al. 2016, p. 29) that “should be given special attention” (Krasodomska et al. 2022, p. 132). Therefore, targeted participants in this research were adult mature students, who are often less skilled at and sympathetic about the use of online resources (Herrador-Alcaide et al. 2019; Krasodomska et al. 2022), which, in turn, may negatively impact their performance in a VLE as well as satisfaction levels (Conrad et al. 2022; Flores et al. 2022; Herrador-Alcaide et al. 2019; Krasodomska et al. 2022). For example, it has been found that older students are less engaged in online learning (Krasodomska et al. 2022). Yet, prior research has identified student acceptance or engagement (Elshami et al. 2022; Krasodomska et al. 2022; Martins and Kellermanns 2004) as a vital factor to the success of distance education. Considering that it is commonly accepted that student satisfaction is the most prominent way to measure success (Conrad et al. 2022), this research sought to analyse Portuguese mature accounting students’ self-reported satisfaction levels in an undergraduate distance education environment. The relevance of the evidence gathered is enhanced by the fact these were working students from the (private) Portuguese HEI that pioneered the first online-only bachelor’s degree in ‘Management and Business’ in 2022—*Atlântico Business School* (ABS). In what follows, this HEI provides an interesting context for the present study because prior research has been mostly directed towards highly experienced HEIs with distance education (e.g., Herrador-Alcaide et al. 2019; Rienties and Toetenel 2016), which, arguably, could be biasing results towards an enhanced level of student satisfaction. The targeted population was composed of 41 pioneering mature students enrolled in the online financial accounting course of the first online-only bachelor’s degree in Portugal. The motivation was to elicit fresh evidence from a unique, unrepeatable case study, designating a small research population, and therefore the evidence was exploratory in nature. Particularly, results emerged from 32 valid responses to a structured electronic questionnaire circulated to students at the end of the financial accounting module (in July 2022)—a subject demanding high numerical and analytical abilities. Satisfaction rates from students’ own perspectives were derived in terms of four dimensions: (i) overall satisfaction; (ii) learning outcomes, (iii) e-learning process, and (iv) pedagogical practices adopted. Thereby, we respond to research calls to further address the under-investigated distance education dimension concerning pedagogical practices (e.g., Al Ghamdi et al. 2016; Flores et al. 2022; Rienties and Toetenel 2016).

Specifically, we posited the following a priori hypotheses:

H1. *Overall, mature students of the first online-only bachelor’s degree in Portugal are satisfied with distance learning of financial accounting (DLFA).*

H2. *Sampled population satisfaction levels with DLFA differ by age group.*

H3. *Sampled population satisfaction levels with DLFA differ by gender.*

H4. *The sampled population is satisfied with the outcomes from DLFA.*

H5. *The sampled population is satisfied with the e-learning Process of DLFA.*

H6. *The sampled population is satisfied with the pedagogical practices adopted in DLFA.*

Finally, while exploring the aforementioned four dimensions, this research also attempted to generate understanding of which factors may affect undergraduate mature students’ engagement—herein measured in terms of overall satisfaction—with online learning, particularly, of financial accounting. To this end, through principal component analysis (PCA) and linear regression models employing the linear least squares method (OLS), we sought to understand deeper our research dimension, i.e., (i) overall satisfaction (the dependent variable). The independent variables were the three specific dimensions

indicated earlier—(ii) learning outcomes, (iii) e-learning process, and (iv) pedagogical practices. Thus, our last hypothesis is as follows:

H7. *All three dimensions (learning outcomes, e-learning process, and pedagogical practices) contribute importantly to explain the overall satisfaction level of the sampled population with DLFA.*

We expected to explore the relative contribution of each dimension to overall satisfaction. Thereby, we respond to recent calls to further investigate virtual students' engagement (e.g., [Elshami et al. 2022](#); [Flores et al. 2022](#); [Krasodomska et al. 2022](#))—herein proxied by satisfaction—specifically focusing on HEIs and students of different backgrounds ([Elshami et al. 2022](#)). The remainder of this paper is organised as follows. Section 2 is the literature review, followed by the design of the research methodology in Section 3. Section 4 presents the results and their discussion. Finally, Section 5 closes the paper with concluding remarks, including contributions, acknowledgment of the main study's limitations, and suggestion of avenues for further research.

2. Literature Review

Distance education is a centenary teaching and learning methodology that evolved from 19th century courses by mail correspondence ([Baker 1999](#); [Moore and Kearsley 1996](#)) to a wide set of highly sophisticated methods, techniques, and resources made available to students.

The ultimate landmark in the evolution of distance education was the widespread adoption of the internet in the 1990s, leading to the proliferation of personal computers and to an explosive growth in the distribution of educational content over the internet. This allowed HEIs to benefit from a medium that could make the most of the power, ubiquity, and interactive potential of videoconferences combined with low-cost printing technology ([Baker 1999](#)). Thus, from then on, HEIs were able to simulate the face-to-face conventional classroom in a web environment, whereby the lecturer and the students were brought closer and enjoyed an experience similar to in-person classes—they became able to exchange messages, to participate fairly, and to contribute ideas and comments in real time.

Following ICT developments and web 2.0 technologies, distance education has evolved exponentially over the past two decades ([Al Ghamdi et al. 2016](#); [Elshami et al. 2022](#)). The effectiveness of synchronous and asynchronous communication between the teacher and the student in a VLE has become a fundamental element for the success of distance education, where audio–visual media have played a crucial role ([Al Ghamdi et al. 2016](#); [Conrad et al. 2022](#); [Elshami et al. 2022](#); [Moore 1990](#)). Innovative and multiple forms of distance education have been emerging according to the resources owned and mastered by HEIs, their philosophies, and the targeted students. Many HEIs, whether public or private, offer self-development and self-motivating distance education courses or programs. In addition to relying on self-study, these may comprise synchronous and asynchronous classes/communication resorting to conference calls and/or internet platforms; study content in digital or printed format may be distributed digitally or by correspondence; and students may benefit from the tutorial and timely support of teachers via multiple electronic communication means (e.g., platforms, discussion boards, platform announcements, emails, telephone) ([Al Ghamdi et al. 2016](#); [Sherry 1996](#)). Lecturers' support and availability have been identified as key promoters of higher education students' adaptation to online teaching (e.g., [Flores et al. 2022](#)).

Both HEIs and companies (e.g., IBM, Kodak) have long been acknowledging several advantages of distance education over traditional teaching in a classroom setting ([Feasley 1983](#); [Frick 1991](#); [Nasseh 1997](#); [Sharples 2000](#); [Zigerell 1984](#)). These include, for example, (i) greater level of students' participation in debates ([Frick 1991](#)); (ii) improvement in the time of reflection and research due to asynchronous learning ([Frick 1991](#); [Krasodomska et al. 2022](#)); (iii) increased enactment of students' responsibility due to greater requirement of autonomous study and time management ([Feasley 1983](#); [Gonzalez et al. 2020](#); [Nasseh 1997](#)); (iv) ameliorated education quality through technology ([Cassidy 2016](#); [Frick 1991](#));

and (v) greater sense of closeness between HEIs and students (Zigerell 1984). Importantly, it is recognised that the use of ICT in VLE democratises access to higher education by accommodating students with special educational needs such as working mature students, making adult learning a lifelong learning (Feasley 1983; Herrador-Alcaide et al. 2019; Sharples 2000; Zigerell 1984). The flexible and time- and cost-effective approach of distance education is appealing to such a population, often excluded from higher education because of “significant challenges with balancing their multiple roles and responsibilities” (van Rhijn et al. 2016, p. 29).

Overall, there is growing awareness about the importance of prompting efficient pedagogical approaches to secure successful distance education experiences (Al Ghamdi et al. 2016; Elshami et al. 2022). It is commonly accepted that student’s satisfaction is the most prominent way to measure success (Conrad et al. 2022). Recent research has emphasised the relationship between virtual students’ engagement, satisfaction, and academic performance (e.g., Elshami et al. 2022). Additionally, evidence exists suggesting that a crucial determinant of such engagement resides in techno-pedagogical skills (e.g., Elshami et al. 2022)—the skills related to the use of ICT in VLE by effectively integrating pedagogical with technological aspects (Elshami et al. 2022).

Problem-based learning (PBL) has been found to be the most effective method for e-learning from the students’ perspectives (Elshami et al. 2022). Moreover, collaborative learning—consisting of project-based learning, inquiry-based learning, peer teaching, and assessment—was found to be highly appreciated by students (Elshami et al. 2022; Munoz-Escalona et al. 2020). For example, Munoz-Escalona et al. (2020) found collaborative e-learning activities to improve students’ confidence and communication skills by 80%.

Previous research has identified powerful learning tools for VLE such as video visualisation (Elshami et al. 2022; Henderson et al. 2017), chats, and discussion forums (Elshami et al. 2022; Potter and Johnson 2006). For example, discussion forums have been widely used to support collaborative learning among students in a VLE (Elshami et al. 2022).

Despite enormous benefits from the wide range of e-tools that may support education in a VLE, prior research has also indicated the dangers of information overload, the consequent increased perceived difficulty of online learning, and, thereby, decreased online learning satisfaction (Conrad et al. 2022). This is consistent with the theory of cognitive load and the cognitive theory of multimedia learning (Mayer 2009; Sweller 1994) in that both emphasise humans’ limited cognitive capabilities to process large amounts of sensory information.

Moreover, the most appropriate pedagogical methods and e-tools are not yet sufficiently established (Al Ghamdi et al. 2016; Elshami et al. 2022; Rienties and Toetenel 2016). For example, while Elshami et al.’s (2022) findings revealed virtual students’ preference for pre-recorded educational material for offering the possibility to self-paced studying, O’Callaghan et al.’s (2017) research brought forward some disadvantages of asynchronous sessions, such as poor attendance and lower engagement, which have been recently confirmed (e.g., Conrad et al. 2022). Furthermore, the most successful teaching modalities are likely to differ by course content (Herrador-Alcaide et al. 2019; Krasodomska et al. 2022).

A further current topic of interest is that distance education satisfaction levels may be affected by virtual students’ individual abilities to use technology and affinity to computerised environments in that these may significantly impact their performance in a VLE (Aristovnik et al. 2020; Conrad et al. 2022; Flores et al. 2022; Herrador-Alcaide et al. 2019; Krasodomska et al. 2022). For example, Flores et al. (2022) found a positive association between students’ favourable perceptions of their competencies to follow online teaching and their adaption to distance education. In a similar vein, Krasodomska et al. (2022) found perceived the ease of online learning tools to relate positively with engagement in online learning. Other factors found to impact students’ relationships with online learning include individual self-regulatory and socio-emotional competencies as well as the availability of adequate resources (Flores et al. 2022). Additionally, extant research has uncovered gender-related differences in relation to certain aspects of distance education

(e.g., Al Ghamdi et al. 2016; Alves et al. 2021; Aristovnik et al. 2020; Bisht et al. 2022; Flores et al. 2022; Shahzad et al. 2021). For example, Aristovnik et al. (2020) found male students perceived their computer skills more favourably than the female counterparts. Flores et al. (2022) found female students exhibited higher levels of satisfaction about online teaching, assessment and academic success. Based on a large sample of 413 undergraduates, Al Ghamdi et al. (2016) found students reported online participation and communication satisfaction to differ significantly by gender. They found that male students were more willing to participate on the one hand, but female students were more satisfied in terms of communication on the other hand. However, prior empirical research also provides instances of no significant gender differences (e.g., Krasodomska et al. 2022).

3. Methodology

Students' perceptions of satisfaction with their virtual learning experience with the financial accounting module belonging to Portugal's pioneering fully online edition of a bachelor's degree (in 'Management and Business', offered by ABS) were captured through a mostly structured electronic questionnaire developed ad hoc as in previous research (e.g., Herrador-Alcaide et al. 2019). This survey circulated to all targeted students at the end of the financial accounting module, in July 2022. Thirty-two participants provided valid responses through a web link to the questionnaire. This sample size represents 78% of the population of undergraduate students enrolled in the online financial accounting course ($n = 41$).

To ensure questionnaire validity, its preliminary version was revised by lecturers and researchers in accounting and education from different Portuguese HEIs. The slightly modified questionnaire in accordance with the feedback gathered was pilot tested on 6 students from a HEI different from the targeted institution in order to ensure face and content validity.

The online questionnaire comprised 47 questions organised along four major dimensions (besides students' biographical data): (i) overall satisfaction with distance education of financial accounting; (ii) satisfaction with learning outcomes; (iii) satisfaction with the e-learning process; and (iv) satisfaction with pedagogical practices.

The assessment of satisfaction levels was determined through Likert-type items with responses ranging from a minimum score of 1 to the highest score of 5. In order to ensure the reliability of the questionnaire, the Cronbach's alpha test was performed. This validation requires a minimum value of 0.70. The number of items comprised by each of the four research dimensions and the respective (standardised) alpha coefficients are reported in Table 1.

Table 1. Reliability by Cronbach's alpha for the major dimensions.

Dimensions	Number of Items	Cronbach's Alpha	Standardised Cronbach's Alpha
Overall Satisfaction	8	0.8477	0.8508
Learning Outcomes	14	0.9848	0.9851
E-Learning Process	4	0.6986	0.7435
Pedagogical Practices	21	0.9573	0.9658

Note: Table 1 presents the Cronbach's alpha reliability test results for the internal consistency of the Likert-scale items of the dimensions overall satisfaction, learning outcomes, e-learning process, and pedagogical practices.

Data gathered were subject to quantitative analysis. Descriptive statistics, Pearson correlations, and statistical tests were presented for each of the individual dimensions presented in Table 1. Additionally, we modelled overall satisfaction through principal component analysis and linear regression. Regression models were estimated to understand how overall satisfaction could be explained by the other three dimensions, in turn, and altogether (as detailed in Section 4.3).

4. Results and Discussion

4.1. Sample Descriptives

The sociodemographic characteristics and descriptive statistics for our sample are summarised in Table 2. Virtual students were all working students who joined the university at an older age—they were all aged over 26, and, mostly, over 36 years old (71.88%).

Table 2. Sociodemographic characteristics and descriptive statistics.

	Freq.	Percent	Cum.
Gender			
Women	17	53.13	53.13
Men	15	46.88	100.00
Total	32	100.00	
Age (years)			
26–30	4	12.50	12.50
31–35	5	15.63	28.13
36 or above	23	71.88	100.00
Total	32	100.00	
Status			
Working student	32	100.00	100.00
Total	32	100.00	
Geographic location			
North	13	40.63	40.63
Centre	2	6.25	46.88
Lisbon metropolitan area	12	37.50	84.38
Algarve	1	3.13	87.50
Azores	1	3.13	90.63
Other	3	9.38	100.00
Total	32	100.00	
Hours a day dedicated to Distance Learning of Financial Accounting (DLFA)			
Up to 1 h	9	28.13	28.13
Up to 2 h	5	15.63	43.75
Up to 3 h	15	46.88	90.63
Up to 4 h	3	9.38	100.00
Total	32	100.00	
Premises of access to DLFA			
At work	5	15.63	15.63
At home	27	84.38	100.00
Total	32	100.00	
Quality level of the network connection to access DLFA			
Below average	1	3.13	3.13
Average	5	15.63	18.75
Good	17	53.13	71.88
Excellent	9	28.13	100.00
Total	32	100.00	

Note: Table 2 presents the sociodemographic characteristics and descriptive statistics for our sample.

Zoom was the most used platform to support students' distance learning of financial accounting. The use of online platforms provides a broad set of e-learning tools necessary to create an effective e-learning environment for financial accounting students: (a) synchronous classes, (randomised) student group meetings in smaller breakout rooms for discussions or group work, web seminars, video conferencing, discussion forums, chats, links of support study material, and collaborative documents, among others. Given the wide-ranging tools embedded in online platforms, together with the possibility to synchronise with Moodle, it was possible to provide a comprehensive and effective e-learning environment for financial accounting students.

Furthermore, there was an overwhelming high level of satisfaction concerning the quality of the network connection (53.13% considered it good, and 28.13% excellent). Considering distance learning was normally carried out from home (84.38%), this evidence suggests the availability of adequate resources—a critical determinant of students' relationships with online learning (Flores et al. 2022).

As referred to by several authors (e.g., Bumblauskas and Vyas 2021; Herrador-Alcaide et al. 2019; Nasseh 1997), the creation of distance learning programs responds to the growing need to educate students at a distance. Table 2 shows the online edition of the bachelor's degree in 'Management and Business' offered by ABS attracted students not only from Portugal's mainland, but also from the Portuguese islands and from abroad (two students in Angola and one in Switzerland). In sum, the surveyed students, despite being mainly located in Portugal (90.62%), were geographically dispersed.

Nearly half of the students (46.88%) reported an average access time to the financial accounting distance learning module of up to 3 h, though the lowest time category (up to 1 h) also stood out (28.13%). A crosstabulation of age by average hours per day spent accessing the financial accounting distance learning module (Table 3) showed that respondents dedicating less time were those belonging to the age group 26–30: 75% of these committed up to 1 h on average, and the remaining 25% allocated up to 3 h. Respondents aged above 30 (regardless of belonging in the intermediate or upper age group) exhibited comparatively higher proportions of time dedicated to distance learning of financial accounting. Considering the most representative group in our sample (36 or above), percentages were 21.74%, 17.39%, 52.17%, and 8.70% for up to 1 h, up to 2 h, up to 3 h, and up to 4 h, respectively. Again, this evidence is in tune with prior literature suggesting a particularly good fit of distance education with the population of mature students.

Table 3. Analysis of age by average hours per day dedicated to distance learning of financial accounting (DLFA).

Age (Years)	On Average, How Many Hours per Day Have You Dedicated to DLFA?				
	Up to 1 h	Up to 2 h	Up to 3 h	Up to 4 h	Total
26–30	3	0	1	0	4
	75.00	0.00	25.00	0.00	100.00
	33.33	0.00	6.67	0.00	12.50
31–35	1	1	2	1	5
	20.00	20.00	40.00	20.00	100.00
	11.11	20.00	13.33	33.33	15.63
36 or above	5	4	12	2	23
	21.74	17.39	52.17	8.70	100.00
	55.56	80.00	80.00	66.67	71.88
Total	9	5	15	3	32
	28.13	15.63	46.88	9.38	100.00
	100.00	100.00	100.00	100.00	100.00

Note: the first row shows frequencies; the second row contains row percentages; and the third row exhibits column percentages.

A crosstabulation analysis of gender by age group (Table 4) showed that, overall, most respondents were aged 36 or above (71.88%), and this trait was shared by both genders (respective percentages being 70.59% for women and 73.33% for men).

Table 4. Analysis of gender by age.

Gender	Age (Years)			Total
	26–30	31–35	36 or Above	
Women	2	3	12	17
	11.76	17.65	70.59	100.00
	50.00	60.00	52.17	53.13
Men	2	2	11	15
	13.33	13.33	73.33	100.00
	50.00	40.00	47.83	46.88
Total	4	5	23	32
	12.50	15.63	71.88	100.00
	100.00	100.00	100.00	100.00

Note: the first row shows frequencies; the second row contains row percentages; and the third row exhibits column percentages.

The research sample was well positioned to elicit evidence on possible gender-related differences in relation to aspects of distance education since it was quite balanced in terms of gender distribution (Table 2: 47% were men and 53% were women), and there was a similar age profile by gender (Table 4). As earlier addressed, literature provides contradictory evidence concerning the existence of gender-related differences in relation to certain aspects of distance education (e.g., Flores et al. 2022; Krasodomska et al. 2022). Though results on this are provided later; preliminary exploratory evidence was gathered through crosstabulation of gender against average hours per day spent accessing the financial accounting distance learning module (Table 5).

Table 5. Analysis of gender by average hours per day dedicated to distance learning of financial accounting (DLFA).

Gender	On Average, How Many Hours per Day Have You Dedicated to DLFA?				Total
	Up to 1 h	Up to 2 h	Up to 3 h	Up to 4 h	
Female	6	3	8	0	17
	35.29	17.65	47.06	0.00	100.00
	66.67	60.00	53.33	0.00	53.13
Male	3	2	7	3	15
	20.00	13.33	46.67	20.00	100.00
	33.33	40.00	46.67	100.00	46.88
Total	9	5	15	3	32
	28.13	15.63	46.88	9.38	100.00
	100.00	100.00	100.00	100.00	100.00

Note: the first row shows frequencies; the second row contains row percentages; and the third row exhibits column percentages.

The results from Table 5 show that 100% of the respondents that on average dedicate up to 4 h per day to distance learning of financial accounting are men. Women do not dedicate more than 3 h: 35.29% dedicate up to 1 h, 17.65% dedicate up to 2 h, and 47.06% dedicate up to 3 h.

4.2. Individual Research Dimensions

The questionnaire consisted of 47 questions related to four major dimensions of distance education of financial accounting: (i) overall satisfaction (OS); (ii) satisfaction

with learning outcomes (LO); (iii) satisfaction with the e-learning process (ELP); and (iv) satisfaction with pedagogical practices (PP). These are presented in Table 6.

Table 6. List of items integrated in each of the four research dimensions.

Dimensions	Items	
Overall Satisfaction (OS)	OS_01	How does distance learning of financial accounting (DLFA) compare to face-to-face delivery?
	OS_02	How effective has DLFA been?
	OS_03	Has DLFA enabled you to improve your knowledge?
	OS_04	Regarding my experience with DLFA, I learned a lot
	OS_05	Regarding my experience with DLFA, I do not regret the time invested
	OS_06	Regarding my experience with DLFA, I would encourage other students to choose this educational model
	OS_07	Should you have the opportunity to continue your studies in financial accounting, would you choose the distance learning model again?
	OS_08	Would you recommend DLFA to other people?
Learning Outcomes (LO)	LO_01	I had the feeling of achieving learning milestones as I progressed in my course of financial accounting
	LO_02	I have improved my learning to learn skill
	LO_03	I have improved my processing and managing information skills
	LO_04	I have improved my deduction and analysis skills
	LO_05	I have improved my decision-making skills
	LO_06	I have improved my verbal communication skills
	LO_07	I have improved my teamwork skills
	LO_08	I have improved my creative thinking skills
	LO_09	I have improved my management, leadership and strategic thinking skills
	LO_10	I have improved my self-management and self-development skills
	LO_11	I have improved my problem-solving skills
	LO_12	I have improved my analytical skills
	LO_13	I have improved my written communication skills
	LO_14	I have improved my capacity to plan my own work
E-Learning Process (ELP)	ELP_01	Distance learning encourages more active learning than face-to-face delivery
	ELP_02	I do not feel intimidated in distance learning environments
	ELP_03	I feel more comfortable in a virtual classroom than in a face-to-face classroom
	ELP_04	Distance learning allows you to learn at your own pace
Pedagogical Practices (PP)	PP_01	Documentation for self-study
	PP_02	Use of the LEAP method ©—Listen, Empathise, Agree, Partner
	PP_03	Bibliographical research for self-study and for solving the case method
	PP_04	Synchronous classes
	PP_05	Asynchronous classes
	PP_06	Learning by question method
	PP_07	Video visualisation
	PP_08	Discussion forums
	PP_09	Chats
	PP_10	Online group work
	PP_11	Online materials
	PP_12	Online presentations
	PP_13	Flipped classroom
	PP_14	Learning by experimentation/challenges
	PP_15	Learning based on the student case method as a way to apply knowledge and understand the business reality
	PP_16	Teamwork/exchange of experiences
	PP_17	Workshops
	PP_18	Expositive method
	PP_19	Practical work applied to a real data set using software
	PP_20	Reports summarising case conclusions
	PP_21	Business simulation tool (TOConline)

4.2.1. Overall Satisfaction

Tables 7 and 8 present the descriptive statistics and Pearson correlations, respectively, of the eight items that integrate the overall satisfaction dimension (OS). These items present means from 3.813 (OS_01) to 4.656 (OS_08), on a scale from 1 to 5, indicating a high level of satisfaction among respondents. Outstandingly, the item OS_08—Would you recommend Distance Learning of Financial Accounting (DLFA) to other people?—presented a minimum value of response of four and a maximum of five. Furthermore, the correlation between the overall satisfaction items was invariably positive (Table 8), with the highest correlations found being between the following items: (i) OS_04 and OS_03 (0.751); (ii) OS_04 and OS_06 (0.751); and (iii) OS_06 and OS_05 (0.757).

Table 7. Descriptive statistics by overall satisfaction's items.

Variable	Sample Size	Mean	Std. Dev.	Min	Max
OS_01	32	3.813	0.693	3	5
OS_02	32	4.094	0.734	3	5
OS_03	32	4.375	0.66	3	5
OS_04	32	4.219	0.87	2	5
OS_05	32	4.531	0.621	3	5
OS_06	32	4.375	0.66	3	5
OS_07	32	4.594	0.665	3	5
OS_08	32	4.656	0.483	4	5

Note: OS_01 How does DLFA compare to face-to-face delivery?; OS_02 How effective has DLFA been?; OS_03 Has DLFA enabled you to improve your knowledge?; OS_04 Regarding my experience with DLFA, I learned a lot; OS_05 Regarding my experience with DLFA, I do not regret the time invested; OS_06 Regarding my experience with DLFA, I would encourage other students to choose this educational model; OS_07 Should you have the opportunity to continue your studies in financial accounting, would you choose the distance learning model again?; and OS_08 Would you recommend DLFA to other people?

Table 8. Pearson correlations between overall satisfaction's items.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) OS_01	1.000							
(2) OS_02	0.606 *	1.000						
(3) OS_03	0.300	0.724 *	1.000					
(4) OS_04	0.124	0.522 *	0.751 *	1.000				
(5) OS_05	0.089	0.382 *	0.679 *	0.733 *	1.000			
(6) OS_06	0.159	0.391 *	0.556 *	0.751 *	0.757 *	1.000		
(7) OS_07	0.319	0.345	0.138	0.047	0.149	0.432 *	1.000	
(8) OS_08	0.283	0.458 *	0.418 *	0.262	0.306	0.317	0.656 *	1.000

Note: Table 8 presents the Pearson correlations by item—overall satisfaction. * shows significance at $p < 0.05$.

Students' self-reported high levels of overall satisfaction with their virtual learning of financial accounting adds to empirical work which found high levels of satisfaction amongst virtual students in higher education (e.g., Cassidy 2016; Herrador-Alcaide et al. 2019; Munoz-Escalona et al. 2020). This, in turn, supports acknowledged advantages of distance education (Feasley 1983; Frick 1991; Nasseh 1997; Sharples 2000; Zigerell 1984).

With regard to the overall satisfaction dimension, we sought to uncover any possible differences in the analysis of the inbuilt 8 items according to students' age or gender. For this purpose, we performed the T test, a statistical measure used to determine if there is a statistically significant difference between the means of groups. The results are presented in Tables 9 and 10.

The t statistics (−1.9650 and −2.1787) presented in Table 9 led us to reject the null hypothesis of no mean difference between the two age groups ($p = 0.0587$ and $p = 0.0373$) regarding OS_01 (How does DLFA compare to face-to-face delivery?) and OS_02 (How effective has DLFA been?). Results obtained by authors such as Krasodomska et al. (2022) have led to the belief that younger students are more engaged than their older classmates

in online-only education and that older students might face more difficulties engaging in online learning. However, our results, though exploratory in nature due to the small sample size, point in a different direction: students aged 36 or above showed a higher degree of satisfaction when asked to compare DLFA against face-to-face delivery, and they also evaluated the effectiveness of DLFA more favourably than their younger classmates. Arguably, our results are consistent with those of several authors who find that distance education satisfies students with special educational needs such as busy working mature students (Feasley 1983; Herrador-Alcaide et al. 2019; Sharples 2000; Zigerell 1984). Older students are more likely to be positioned at a more demanding stage of their professional careers; they are also more likely to have children, and in what follows they may find it harder to reconcile business and family affairs with the time, cost, and location constraints imposed by face-to-face delivery. Distance learning allows overcoming barriers such as location and time (Bumblauskas and Vyas 2021; Conrad et al. 2022; Herrador-Alcaide et al. 2019; Nasseh 1997) and such a flexible and time- and cost-effective approach seems to be particularly appealing to the older students (van Rhijn et al. 2016).

Table 9. Overall satisfaction by age.

Variable	Under 36	36 or More	T Test	
	Mean	Mean	t	p-Value
OS_01	3.444	3.957	−1.9650	0.0587
OS_02	3.666	4.260	−2.1787	0.0373
OS_03	4.222	4.434	−0.8148	0.4216
OS_04	4.111	4.261	−0.4320	0.6688
OS_05	4.777	4.434	0.4272	0.1638
OS_06	4.444	4.347	0.3671	0.7161
OS_07	4.666	4.505	0.3825	0.7048
OS_08	4.666	4.652	0.0752	0.9406

Note: Table 9 presents the T test results for comparing means of two age groups—under 36 vs. 36 or above—regarding the eight items associated with the overall satisfaction dimension.

Table 10. Overall satisfaction by gender.

Variable	Women	Men	T Test	
	Mean	Mean	t	p-Value
OS_01	3.823	3.800	0.0943	0.9255
OS_02	4.058	4.133	−0.2821	0.7798
OS_03	4.352	4.400	−0.1982	0.8443
OS_04	4.235	4.200	0.1127	0.9110
OS_05	4.470	4.600	−0.5816	0.5652
OS_06	4.352	4.400	−0.1982	0.8443
OS_07	4.705	4.467	1.0156	0.3179
OS_08	4.764	4.533	1.3720	0.0180

Note: Table 10 presents the T test results for comparing means of two gender groups—women and men—regarding the eight items associated with the overall satisfaction dimension.

On the other hand, we found there were no statistical differences in the answers provided concerning overall satisfaction with DLFA according to gender (Table 10). The t statistic led us to accept the null hypothesis of no mean difference between the two genders for all items of the overall satisfaction dimension. This is contrary to the findings of some previous research such as Flores et al. (2022), who found that women students exhibited higher levels of satisfaction about online teaching. Further research based on a larger sample would help to validate our exploratory evidence suggesting gender irrelevance.

4.2.2. Learning Outcomes

In Tables 11 and 12 we present the descriptive statistics and Pearson correlations of the 14 items that integrate the learning outcomes (LO) dimension. Accordingly, all

items exhibited sound averages. Particularly, means ranged from 4.063 (LO_13) to 4.313 (LO_02 and LO_07), on a scale from 1 to 5, indicating a high level of satisfaction among respondents regarding learning outcomes. Improvements of some of the concerned skills, such as LO_01, LO_03, LO_10 and LO_14, had already been pointed out as benefits of distance education (e.g., Feasley 1983; Frick 1991; Gonzalez et al. 2020; Krasodomska et al. 2022; Nasseh 1997). Notably, there were as few as four items that presented a range of responses from the minimum value of 1 (Very unsatisfied) to the maximum value of 5 (Extremely satisfied): LO_05—I have improved my decision-making skills; LO_11—I have improved my problem-solving skills; LO_12—I have improved my analytical skills; and LO_13—I have improved my written communication skills.

Table 11. Descriptive statistics by learning outcomes' items.

Variable	Sample Size	Mean	Std. Dev.	Min	Max
LO_01	32	4.250	0.718	3	5
LO_02	32	4.313	0.859	2	5
LO_03	32	4.219	0.832	2	5
LO_04	32	4.156	0.847	2	5
LO_05	32	4.250	0.88	1	5
LO_06	32	4.125	0.942	2	5
LO_07	32	4.313	0.821	2	5
LO_08	32	4.281	0.813	2	5
LO_09	32	4.188	0.821	2	5
LO_10	32	4.188	0.859	2	5
LO_11	32	4.156	0.92	1	5
LO_12	32	4.156	0.92	1	5
LO_13	32	4.063	1.014	1	5
LO_14	32	4.094	0.928	2	5

Note: LO_01: I had the feeling of achieving learning milestones as I progressed in my course of financial accounting; LO_02: I have improved my learning to learn skill; LO_03: I have improved my processing and managing information skills; LO_04: I have improved my deduction and analysis skills; LO_05: I have improved my decision-making skills; LO_06: I have improved my verbal communication skills; LO_07: I have improved my teamwork skills; LO_08: I have improved my creative thinking skills; LO_09: I have improved my management, leadership, and strategic thinking skills; LO_10: I have improved my self-management and self-development skills; LO_11: I have improved my problem-solving skills; LO_12: I have improved my analytical skills; LO_13: I have improved my written communication skills; and LO_14: I have improved my capacity to plan my own work.

Table 12. Pearson correlations by learning outcomes' items.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) LO_01	1.000													
(2) LO_02	0.810 *	1.000												
(3) LO_03	0.769 *	0.849 *	1.000											
(4) LO_04	0.782 *	0.818 *	0.957 *	1.000										
(5) LO_05	0.663 *	0.790 *	0.936 *	0.899 *	1.000									
(6) LO_06	0.763 *	0.708 *	0.787 *	0.905 *	0.778 *	1.000								
(7) LO_07	0.739 *	0.726 *	0.841 *	0.856 *	0.827 *	0.824 *	1.000							
(8) LO_08	0.705 *	0.656 *	0.717 *	0.825 *	0.756 *	0.880 *	0.831 *	1.000						
(9) LO_09	0.793 *	0.784 *	0.836 *	0.885 *	0.827 *	0.845 *	0.772 *	0.886 *	1.000					
(10) LO_10	0.810 *	0.836 *	0.888 *	0.890 *	0.832 *	0.807 *	0.829 *	0.846 *	0.910 *	1.000				
(11) LO_11	0.769 *	0.712 *	0.839 *	0.879 *	0.867 *	0.833 *	0.831 *	0.889 *	0.900 *	0.901 *	1.000			
(12) LO_12	0.769 *	0.794 *	0.797 *	0.796 *	0.827 *	0.722 *	0.788 *	0.803 *	0.815 *	0.860 *	0.886 *	1.000		
(13) LO_13	0.731 *	0.718 *	0.862 *	0.928 *	0.886 *	0.904 *	0.790 *	0.839 *	0.916 *	0.801 *	0.889 *	0.785 *	1.000	
(14) LO_14	0.786 *	0.771 *	0.891 *	0.925 *	0.879 *	0.908 *	0.892 *	0.819 *	0.865 *	0.867 *	0.851 *	0.776 *	0.884 *	1.000

Note: * shows significance at $p < 0.05$.

Analysis of Table 12 shows the correlations between the learning outcomes items were consistently positive, which indicates that they follow the same orientation. All items showed high correlation values, with the highest correlations being found between the following items: (i) LO_04 and LO_03 (0.957); (ii) LO_05 and LO_03 (0.936); (iii) LO_13 and LO_04 (0.928); and (iv) LO_14 and LO_04 (0.925).

4.2.3. E-Learning Process

Tables 13 and 14 present the descriptive statistics and Pearson Correlations, respectively, of the four items that integrate the e-learning process (ELP) dimension. These items presented means spanning from 3.781 (ELP_03) to 4.469 (ELP_01) on a scale from 1 to 5.

Table 13. Descriptive statistics by e-learning process items.

Variable	Sample Size	Mean	Std. Dev.	Min	Max
ELP_01	32	4.469	0.621	3	5
ELP_02	32	4.344	0.902	2	5
ELP_03	32	3.781	1.07	2	5
ELP_04	32	4.188	0.998	2	5

Note: ELP_01: Distance learning encourages more active learning than face-to-face delivery; ELP_02: I do not feel intimidated in distance learning environments; ELP_03: I feel more comfortable in a virtual classroom than in a face-to-face classroom; and ELP_04: Distance learning allows you to learn at your own pace.

Table 14. Pearson correlations by e-learning process items.

Variables	(1)	(2)	(3)	(4)
(1) ELP_01	1.000			
(2) ELP_02	0.682 *	1.000		
(3) ELP_03	0.548 *	0.248	1.000	
(4) ELP_04	0.478 *	0.284	0.281	1.000

Note: * shows significance at $p < 0.05$.

Studies by authors such as [Aristovnik et al. \(2020\)](#), [Conrad et al. \(2022\)](#), [Flores et al. \(2022\)](#), [Herrador-Alcaide et al. \(2019\)](#), and [Krasodomska et al. \(2022\)](#) highlight that satisfaction in distance learning may be affected by virtual students' individual abilities to use technology and their affinity with computing environments. The items ELP_02 (I do not feel intimidated in distance learning environments), ELP_03 (I feel more comfortable in a virtual classroom than in a face-to-face classroom), and ELP_04 (Distance learning allows you to learn at your own pace) presented responses ranging from 2 (Unsatisfied) to 5 (Extremely satisfied), indicating some discontentment on the part of some respondents.

By analysing Table 14, we conclude the correlations between the e-learning process items were invariably positive, indicating that the items follow the same orientation. The highest correlation was found between the items ELP_02 and ELP_01 (0.682).

4.2.4. Pedagogical Practices

Tables 15 and 16 present the descriptive statistics and Pearson correlations, respectively, of the 21 items that integrate the pedagogical practices (PP) dimension. These items presented means from 3.219 (PP_21) to 4.5 (PP_11) on a scale from 1 to 5. In general, all items showed high correlation values, with the highest correlations being found between the following items: (i) PP_12 and PP_02 (0.878); PP_14 and PP_12 (0.873); and PP_19 and PP_20 (0.891).

According to the carried out literature review, several authors (e.g., [Elshami et al. 2022](#); [Henderson et al. 2017](#); [Potter and Johnson 2006](#)) highlight the importance of tools such as video visualisation and chats. In our sample, these tools, as well as reports summarising case conclusions (PP_20) and the business simulation tool—TOCOnline (PP_21), were those with the lowest averages in relation to the set of presented pedagogical practices. The best-ranked pedagogical practices were learning by question method (PP_06), online group work (PP_10), synchronous classes (PP_04), and online materials (PP_11). This reflects a considerable wide range of preferred pedagogical practices. On the one hand, the importance attached to the quality of online materials comes as no surprise because of the strong self-study component that characterises the distance education model. However, it should be emphasised that students appreciated synchronous classes, a result that is consistent with the importance of the effectiveness of synchronous communication between

the teacher and the student in a VLE (Al Ghamdi et al. 2016; Conrad et al. 2022; Elshami et al. 2022; Moore 1990). Furthermore, our results highlighted that collaborative learning (inquiry-based learning and online group work) was highly appreciated by students, consistent with the results of Elshami et al. (2022) and Munoz-Escalona et al. (2020), for example.

Table 15. Descriptive statistics by pedagogical practices' items.

Variable	Sample Size	Mean	Std. Dev.	Min	Max
PP_01	32	4.344	0.787	2	5
PP_02	32	4.250	1.078	3	5
PP_03	32	4.125	0.793	2	5
PP_04	32	4.406	0.875	2	5
PP_05	32	4.281	0.772	2	5
PP_06	32	4.375	0.833	2	5
PP_07	32	3.875	1.1	3	5
PP_08	32	4.125	1.129	3	5
PP_09	32	3.656	1.31	3	5
PP_10	32	4.375	0.833	2	5
PP_11	32	4.500	0.718	2	5
PP_12	32	4.344	1.066	3	5
PP_13	32	4.094	0.995	2	5
PP_14	32	4.063	1.19	3	5
PP_15	32	4.313	0.859	2	5
PP_16	32	4.344	0.787	2	5
PP_17	32	3.938	1.19	3	5
PP_18	32	4.156	0.847	2	5
PP_19	32	4.000	1.344	3	5
PP_20	32	3.719	1.508	3	5
PP_21	32	3.219	1.879	3	5

Note: PP_01 Documentation for self-study; PP_02: Use of the LEAP method ©—Listen, Empathise, Agree, Partner; PP_03: Bibliographical research for self-study and for solving the case method; PP_04: Synchronous classes; PP_05: Asynchronous classes; PP_06: Learning by question method; PP_07: Video visualisation; PP_08: Discussion forums; PP_09: Chats; PP_10: Online group work; PP_11: Online materials; PP_12: Online presentations; PP_13: Flipped classroom; PP_14: Learning by experimentation/challenges; PP_15: Learning based on the student case method as a way to apply knowledge and understand the business reality; PP_16: Teamwork/exchange of experiences; PP_17: Workshops; PP_18: Expositive method; PP_19: Practical work applied to a real data set using software; PP_20: Reports summarising case conclusions; and PP_21: Business simulation tool (TOCOnline).

Table 16. Pearson correlations by pedagogical practices' items.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(1) PP_01	1.000																				
(2) PP_02	0.618 *	1.000																			
(3) PP_03	0.807 *	0.755 *	1.000																		
(4) PP_04	0.821 *	0.642 *	0.808 *	1.000																	
(5) PP_05	0.791 *	0.494 *	0.626 *	0.733 *	1.000																
(6) PP_06	0.830 *	0.575 *	0.659 *	0.803 *	0.784 *	1.000															
(7) PP_07	0.349	0.299	0.277	0.390 *	0.309	0.475 *	1.000														
(8) PP_08	0.603 *	0.822 *	0.703 *	0.600 *	0.477 *	0.566 *	0.403 *	1.000													
(9) PP_09	0.431 *	0.680 *	0.601 *	0.464 *	0.418 *	0.447 *	0.327	0.750 *	1.000												
(10) PP_10	0.584 *	0.431 *	0.415 *	0.625 *	0.533 *	0.581 *	0.264	0.429 *	0.240	1.000											
(11) PP_11	0.827 *	0.625 *	0.679 *	0.847 *	0.727 *	0.809 *	0.408 *	0.557 *	0.394 *	0.863 *	1.000										
(12) PP_12	0.585 *	0.878 *	0.596 *	0.607 *	0.584 *	0.613 *	0.368 *	0.794 *	0.596 *	0.613 *	0.737 *	1.000									
(13) PP_13	0.534 *	0.519 *	0.557 *	0.622 *	0.384 *	0.618 *	0.276	0.334	0.446 *	0.501 *	0.609 *	0.394 *	1.000								
(14) PP_14	0.596 *	0.818 *	0.675 *	0.657 *	0.648 *	0.659 *	0.376 *	0.763 *	0.718 *	0.497 *	0.642 *	0.873 *	0.458 *	1.000							
(15) PP_15	0.695 *	0.505 *	0.604 *	0.770 *	0.788 *	0.868 *	0.418 *	0.457 *	0.356 *	0.643 *	0.784 *	0.619 *	0.606 *	0.738 *	1.000						
(16) PP_16	0.740 *	0.542 *	0.652 *	0.681 *	0.579 *	0.732 *	0.349	0.531 *	0.431 *	0.781 *	0.827 *	0.585 *	0.657 *	0.665 *	0.790 *	1.000					
(17) PP_17	0.506 *	0.340	0.419 *	0.490 *	0.547 *	0.578 *	0.265	0.294	0.296	0.545 *	0.642 *	0.450 *	0.441 *	0.527 *	0.683 *	0.712 *	1.000				
(18) PP_18	0.594 *	0.592 *	0.595 *	0.696 *	0.720 *	0.738 *	0.333	0.553 *	0.457 *	0.738 *	0.769 *	0.725 *	0.556 *	0.823 *	0.862 *	0.788 *	0.683 *	1.000			
(19) PP_19	0.457 *	0.690 *	0.545 *	0.549 *	0.529 *	0.548 *	0.327	0.680 *	0.531 *	0.461 *	0.601 *	0.788 *	0.362 *	0.787 *	0.615 *	0.549 *	0.746 *	0.709 *	1.000		
(20) PP_20	0.464 *	0.561 *	0.516 *	0.505 *	0.486 *	0.472 *	0.250	0.685 *	0.537 *	0.472 *	0.551 *	0.684 *	0.319	0.712 *	0.518 *	0.573 *	0.655 *	0.667 *	0.891 *	1.000	
(21) PP_21	0.384 *	0.434 *	0.414 *	0.356 *	0.290	0.296	0.263	0.458 *	0.359 *	0.358 *	0.442 *	0.509 *	0.420 *	0.556 *	0.396 *	0.514 *	0.612 *	0.525 *	0.677 *	0.740 *	1.000

Note: * shows significance at $p < 0.05$.

4.3. Overall Satisfaction Modelling

At the outset, this research also sought to respond to recent calls to further investigate virtual students' engagement (e.g., Elshami et al. 2022; Flores et al. 2022; Krasodomska et al. 2022). Students' engagement is a key determinant of distance education success (Elshami et al. 2022; Krasodomska et al. 2022; Martins and Kellermanns 2004), and it is undisputed that a good measure of success is students' satisfaction (Conrad et al. 2022). Therefore, through principal component analysis (PCA) and linear regression models employing the linear least squares method (OLS), we sought to gain a deeper understanding of the research dimension overall satisfaction.

Prior to extracting the principal components, we applied the Kaiser–Meyer–Olkin (KMO) method to test the sampling adequacy for the principal component analysis, alongside with the Bartlett's test of sphericity. The results are presented in Table 17.

Table 17. KMO test and Bartlett's test.

	Overall Satisfaction	Learning Outcomes	E-Learning Process	Pedagogical Practices	
Kaiser–Meyer–Olkin Measure of Sampling Adequacy	0.657	0.806	0.592	0.735	
Bartlett's Test of Sphericity	Chi-square	160.855	776.287	37.139	810.437
	Degrees of freedom	28	91	6	210
	<i>p</i> -value	0.000	0.000	0.000	0.000

Note: The items that integrate the four dimensions—overall satisfaction, learning outcomes, e-learning process, and pedagogical practices—are those previously presented in Table 6.

The KMO test delivered values greater than 0.5 in all four researched dimensions, indicating that the items were suitable for the PCA. Likewise, Bartlett's test of sphericity showed a significant value of 0.000 ($p < 0.05$) in every dimension; therefore, the correlation between the items was adequate to perform the PCA.

Tables 18–21 display the results from PCA for the four dimensions, respectively: overall satisfaction, learning outcomes, e-learning process, and pedagogical Practices. We used principal component analysis and the rotation method of Varimax with Kaiser Normalisation and selected the first two components of each extraction.

Table 18. Rotated component matrix—overall satisfaction.

Variable	Comp1 Sat01	Comp2 Sat02	Unexplained
OS_01		0.603	0.155
OS_02		0.507	0.122
OS_03			0.102
OS_04	0.670		0.059
OS_05	0.429		0.098
OS_06	0.407		0.132
OS_07		0.503	0.215
OS_08			0.127

Note: Table 18 presents the results of the PCA for the overall satisfaction dimension. The variables are as follows: OS_01: How does DLFA compare to face-to-face delivery?; OS_02: How effective has DLFA been?; OS_03: Has DLFA enabled you to improve your knowledge?; OS_04: Regarding my experience with DLFA, I learned a lot; OS_05: Regarding my experience with DLFA, I do not regret the time invested; OS_06: Regarding my experience with DLFA, I would encourage other students to choose this educational model; OS_07: Should you have the opportunity to continue your studies in financial accounting, would you choose the distance learning model again?; and OS_08: Would you recommend DLFA to other people?. Extraction method: principal component analysis; rotation method: Varimax with Kaiser Normalisation. Blanks are $\text{abs}(\text{loading}) < 0.4$.

Table 19. Rotated component matrix—learning outcomes.

Variable	Comp1 Ler01	Comp2 Ler02	Unexplained
LO_01			0.132
LO_02		0.600	0.070
LO_03			0.067
LO_04			0.048
LO_05			0.111
LO_06	0.487		0.072
LO_07			0.128
LO_08			0.088
LO_09			0.077
LO_10			0.072
LO_11			0.091
LO_12		0.408	0.139
LO_13	0.454		0.078
LO_14			0.083

Note: Table 19 presents the results of the PCA for the learning outcomes dimension. The variables are as follows: LO_01: I had the feeling of achieving learning milestones as I progressed in my course of financial accounting; LO_02: I have improved my learning to learn skill; LO_03: I have improved my processing and managing information skills; LO_04: I have improved my deduction and analysis skills; LO_05: I have improved my decision-making skills; LO_06: I have improved my verbal communication skills; LO_07: I have improved my teamwork skills; LO_08: I have improved my creative thinking skills; LO_09: I have improved my management, leadership, and strategic thinking skills; LO_10: I have improved my self-management and self-development skills; LO_11: I have improved my problem-solving skills; LO_12: I have improved my analytical skills; LO_13: I have improved my written communication skills; and LO_14: I have improved my capacity to plan my own work. Extraction method: principal component analysis; rotation method: Varimax with Kaiser Normalisation. Blanks are $\text{abs}(\text{loading}) < 0.4$.

Table 20. Rotated component matrix—e-learning process.

Variable	Comp1 EI01	Comp2 EI02	Unexplained
ELP_01			0.112
ELP_02	0.551		0.381
ELP_03		0.973	0.015
ELP_04	0.764		0.259

Note: Table 20 presents the results of the PCA for the e-learning process dimension. The variables are as follows: ELP_01: Distance learning encourages more active learning than face-to-face delivery; ELP_02: I do not feel intimidated in distance learning environments; ELP_03: I feel more comfortable in a virtual classroom than in a face-to-face classroom; and ELP_04: Distance learning allows you to learn at your own pace. Extraction method: principal component analysis; rotation method: Varimax with Kaiser Normalisation. Blanks are $\text{abs}(\text{loading}) < 0.4$.

The hypothesis analysis was carried out by extending the following model:

$$\text{Sat}_j = \beta_0 + \beta_{i,j} \text{PC}_{i,j} + \epsilon_{i,j} \quad (1)$$

where the dependent variable is Sat_j , the overall satisfaction, and the independent variables are the principal components extracts for the three dimensions ($\text{PC}_{i,j}$ where i represents the dimension—learning outcomes (Ler), e-learning process (EI), and pedagogical practices (Ped); j represents the components extract for the dimension, with $j = 01$ and 02 —the first and second components extracts). Next, we applied a linear least-squares method (OLS) for estimating the unknown parameters in our linear regression models:

Model 1:

$$\text{Sat}_{01} = \beta_0 + \beta_1 \text{Ler}_{01} + \beta_2 \text{Ler}_{02} + \epsilon_{i,j} \quad (2)$$

Model 2:

$$\text{Sat}_{01} = \beta_0 + \beta_1 \text{EI}_{01} + \beta_2 \text{EI}_{02} + \epsilon_{i,j} \quad (3)$$

Model 3:

$$\text{Sat}_{01} = \beta_0 + \beta_1 \text{Ped}_{01} + \beta_2 \text{Ped}_{02} + \epsilon_{i,j} \quad (4)$$

Model 4:

$$\text{Sat01} = \beta_0 + \beta_1 \text{Ler01} + \beta_2 \text{El01} + \beta_3 \text{Ped01} + \varepsilon_{ij} \quad (5)$$

Table 21. Rotated component matrix—pedagogical practices.

Variable	Comp1 Ped01	Comp2 Ped02	Unexplained
PP_01			0.168
PP_02			0.201
PP_03			0.207
PP_04			0.159
PP_05			0.197
PP_06			0.102
PP_07			0.921
PP_08		0.444	0.165
PP_09		0.542	0.403
PP_10			0.264
PP_11			0.068
PP_12			0.222
PP_13			0.508
PP_14			0.196
PP_15			0.101
PP_16			0.130
PP_17			0.301
PP_18			0.145
PP_19			0.291
PP_20	0.445		0.327
PP_21	0.759		0.341

Note: Table 21 presents the results of the PCA for the pedagogical practices dimension. The variables are as follows: PP_01: Documentation for self-study; PP_02: Use of the LEAP method ©—Listen, Empathise, Agree, Partner; PP_03: Bibliographical research for self-study and for solving the case method; PP_04: Synchronous classes; PP_05: Asynchronous classes; PP_06: Learning by question method; PP_07: Video visualisation; PP_08: Discussion forums; PP_09: Chats; PP_10: Online group work; PP_11: Online materials; PP_12: Online presentations; PP_13: Flipped classroom; PP_14: Learning by experimentation/challenges; PP_15: Learning based on the student case method as a way to apply knowledge and understand the business reality; PP_16: Teamwork/exchange of experiences; PP_17: Workshops; PP_18: Expositive method; PP_19: Practical work applied to a real data set using software; PP_20: Reports summarising case conclusions; and PP_21: Business simulation tool (TOOnline). Extraction method: principal component analysis; rotation method: Varimax with Kaiser Normalisation. Blanks are $\text{abs}(\text{loading}) < 0.4$.

The results for the estimations with OLS of the relationship between overall satisfaction and the three dimensions are presented in Table 22.

From the analysis of Model 1 in Table 22, we can see that there was a significant relationship between the overall satisfaction and the learning outcomes dimension ($p < 0.01$). The relationship with the first component of the learning outcomes dimension did not prove significant. Based on the R-squared (R^2), we can state that the regression presents a relatively high degree of explanation and the R^2 is equal to 0.782. In Model 2, both components from the e-learning process dimension proved to be significant (with $p < 0.01$ and $p < 0.05$, respectively). This model presented a R^2 of 0.622, representing a high degree of explanation. Based on the analysis of Model 3, we can also see a significant relationship between the overall satisfaction and the pedagogical practices dimension ($p < 0.01$). This model presented a lower R^2 compared with previous models, this being equal to 0.465.

Model 4 incorporates the first components of the three dimensions: learning outcomes, e-learning process, and pedagogical practices. We can see that there was a significant relationship between the first principal component of the overall satisfaction and (i) the first component of the learning outcomes dimension ($p < 0.01$) as well as (ii) the first component of the e-learning process dimension ($p < 0.1$). The relationship with the first component of the pedagogical practices dimension did not prove significant—a result that should

be interpreted with caution because of the small size of the underlying sample. The R^2 presented by this model was 0.734, representing a high degree of explanation.

Table 22. Test results for the relationship between overall satisfaction and the learning outcomes (Ler), e-learning process (El), and pedagogical practices (Ped) dimensions.

Variables	Model 1	Model 2	Model 3	Model 4
	Sat01	Sat01	Sat01	Sat01
Ler01	0.120 (0.113)			0.334 *** (0.0899)
Ler02	0.455 *** (0.138)			
El01		0.719 *** (0.137)		0.303 * (0.165)
El02		0.310 ** (0.147)		
Ped01			0.0976 (0.0823)	0.0157 (0.0585)
Ped02			0.286 *** (0.0926)	
Constant	2.367 *** (0.618)	2.108 ** (0.941)	5.046 *** (0.730)	2.397 *** (0.782)
R-squared	0.782	0.622	0.465	0.734
F-Stat	51.94	23.87	12.61	25.70
Prob > F	2.60×10^{-10}	7.45×10^{-7}	0.000115	3.41×10^{-8}
Degree of Freedom	29	29	29	28

Note: Sat01 represents the first component extract for the overall satisfaction dimension. Ler01 and Ler02 represent the first and second component extracts for the learning outcomes dimension. El01 and El02 represent the first and second component extracts for the e-learning process dimension. Ped01 and Ped02 represent the first and second component extracts for the pedagogical practices dimension. Standard errors are shown in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Notably, the learning outcomes dimension, which integrates several items related to skills improvement, proved extremely important to our sample of respondents. The development of competencies at the personal level was extremely valued by the sampled students, thus providing a very significant contribution to overall satisfaction. Evidence associated with the importance of personal skills has already been found by Flores et al. (2022), namely with regard to individual self-regulatory and socio-emotional competencies. Our results also highlight the importance of the e-learning process components to the overall satisfaction, in line with the findings of Aristovnik et al. (2020), Conrad et al. (2022), Flores et al. (2022), Herrador-Alcaide et al. (2019), and Krasodomska et al. (2022). Particularly, our findings confirmed that distance education satisfaction levels may be affected by virtual students' technical capabilities and affinity to computerised environments in that these may impact significantly on their performance in a VLE. Students' readiness for digital learning and satisfaction should have been facilitated by availability of adequate resources (Flores et al. 2022) since, as earlier stated (Section 4.1), sampled students exhibited an overwhelming high level of satisfaction concerning the quality of the network connection and their carried out their distance learning mostly from home.

5. Conclusions

Table 23 provides a summary of our results, which support the conclusions that follow.

The results of this study are particularly supportive of the Portuguese government's recent (2019) decision to approve a legal regime to frame distance education in higher education institutions. Insofar as high levels of satisfaction with distance education were uncovered based on students' experience with a highly technical subject such as financial accounting in a first edition of a fully online degree program, these research outcomes should be highly encouraging to other Portuguese HEIs considering transitioning to formal

online offerings, thereby contributing to the Portuguese government’s ambitious goal to achieve more than 50,000 distance education adult graduates by 2030. Furthermore, this research is of international interest in that it contributes to overcome the dearth of research on the factors that may determine distance education satisfaction, thereby helping HEIs adapting their practices to improve virtual students’ satisfaction and, thereby, online learning outcomes. Hence, these research outcomes may contribute to augment mature students’ educative and social inclusion.

Table 23. Research findings summarised.

Hypothesis—Accepted?		Highlight
H1	Overall, mature students of the first online-only bachelor’s degree in Portugal are satisfied with distance learning of financial accounting (DLFA) Yes	–
H2	The sampled population satisfaction levels with DLFA differ by age group Yes	Unlike some previous research findings, it was not younger students, but rather the older, that exhibited higher levels of satisfaction with DLFA, which suggests that the good fit of distance education with the needs of busy working mature students outweighs their likely lower predisposition to using online resources.
H3	The sampled population satisfaction levels with DLFA differ by gender No	–
H4	The sampled population is satisfied with the outcomes from DLFA Yes	Besides the sense of fully grasping the core financial accounting competencies, the skills that were most consensually acknowledged to have been enhanced concern information management and individual self-regulatory competencies (self-management, self-development, and self-planning).
H5	The sampled population is satisfied with the E-learning Process of DLFA Yes	Despite the high levels of satisfaction with the e-learning process of DLFA, this was not unanimously felt especially concerning the felling of comfort in a virtual classroom as compared with a face-to-face classroom.
H6	The sampled population is satisfied with the pedagogical practices adopted in DLFA Yes	Despite overall high levels of satisfaction with the pedagogical practices adopted in DLFA, there was a considerably diverse range of preferred practices. Yet, the quality of online materials, synchronous classes, and collaborative learning (inquiry-based learning and online group work) stood out as highly appreciated.
H7	All three dimensions (learning outcomes, e-learning process, and pedagogical practices) contribute importantly to explain overall satisfaction of the sampled population with DLFA Partly	As individually considered, each of the three dimensions offered significant potential to explain sampled students’ overall satisfaction with DLFA. When considered together, it became evident that the learning outcomes dimension, which integrates several items related to skills improvement, proved particularly important to our sample of respondents, thus providing the most significant contribution to overall satisfaction. Our results also highlight the importance of the e-learning process components to the overall satisfaction. Unexpectedly, the relationship with the pedagogical practices dimension did not prove significant.

Our finding that pedagogical practices is the dimension that contributed the least (though, still importantly) to overall satisfaction as compared with learning outcomes and the e-learning process is challenging. For example, [Cassidy \(2016\)](#) found improved communication and greater variety of teaching methods employed to account importantly for student’s satisfaction with VLE. Our case study comprised 21 pedagogical practices and yet other aspects seemed comparatively more important to elicit students’ satisfaction with distance learning of financial accounting.

Our evidence on the tight connection between students' overall satisfaction and the e-learning process dimension may assist HEIs' planning of their long-distance course design. For example, HEIs may wish to invest in the provision of opportunities for students to develop their digital competencies and affinity in order to maximise the potential for their engagement and satisfaction and, thereby, the success of distance education programs. Furthermore, our findings are compatible with the importance of HEIs providing timely IT support to overcome students' technical challenges in a VLE.

This research has limitations. First, all data gathered were self-reported, meaning they were entirely from the students' perspectives. Second, one must be aware of the limited generalisation potential arising from the small sample size and the particular research setting. For example, the most successful pedagogical practices are likely to differ by course contents (Herrador-Alcaide et al. 2019; Krasodomska et al. 2022). Future research based on a larger sample and diverse research settings (country, HEI, course contents) could confirm this study's insights and elicit a more complete understanding of the topic.

Author Contributions: Conceptualisation, A.P.S., I.M. and M.M.; methodology, C.P., I.M. and M.M.; software, I.M. and C.P.; validation, A.P.S., L.T., M.M. and M.S.P.; formal analysis, C.P. and I.M.; investigation, A.P.S., I.M., L.T., M.M. and M.S.P.; resources, M.M.; writing—original draft preparation, A.P.S., I.M. and M.M.; writing—review and editing, A.P.S., C.P., I.M., L.T. and M.S.P. All authors have read and agreed to the published version of the manuscript.

Funding: This work was supported by the UIDB/05105/2020 Program Contract, funded by national funds through the FCT I.P.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest, as the authors are the funders of this research.

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