RBAAD Revista Brasileira de Aprendizagem Aberta e a Distância

ABED

ORIGINAL ARTICLE

Remote Learning and Academic Performance of Accounting Students

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ABSTRACT

The research sought to identify the self-perception of academic performance of Accounting Science students during emergency remote teaching (ERT). Data were collected through a survey from 245 respondents, which, after filtering by sample inclusion criteria and disregarding incomplete questionnaires, resulted in 226 valid responses from accounting students in the southern region of Brazil who took courses during ERT. Data were analyzed using exploratory factor analysis, Spearman's correlation, and Kruskal-Wallis test for differences between groups. The findings indicate that, in the students' perception, there was an increase in academic performance based on grade performance. In turn, there was a decrease in the development of technical and social skills. Some characteristics such as age, income, number of people living at home, period, and number of courses taken differentiate the perception of the student groups. The implications of the study indicate the need for more efficient adaptation to forms of teaching designed remotely and in emergency situations, the agents involved in this context include: students, teachers, educational institutions and the government.

Keywords: Self-perception; Academic performance; Emergency remote teaching.

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Ensino Remoto e Desempenho Acadêmico de Estudantes de Contabilidade

RESUMO

A pesquisa buscou identificar a autopercepção de desempenho acadêmico dos estudantes de Ciências Contábeis durante o ensino remoto emergencial (ERE). Os dados foram coletados por meio de uma survey, sendo obtidos dados de 245 respondentes, que após filtragem pelos critérios de inclusão da amostra e desconsideração de questionários respondidos de maneira incompleta, resultou em 226 respostas válidas junto a estudantes de cursos de contabilidade da região Sul do Brasil que cursaram disciplinas durante o ERE. Os dados foram analisados a partir da análise fatorial exploratória, correlação de Spearman e teste de diferenças entre grupos de Kruskal-Wallis. Os achados indicam que, na percepção dos estudantes, houve um aumento do desempenho acadêmico a partir do rendimento nas notas. Por sua vez, houve queda no desenvolvimento de habilidades técnicas e sociais. Algumas características, como idade, renda, quantidade de pessoas que moram em casa, período e número de disciplinas cursadas, diferenciam a percepção dos grupos de estudantes. As implicações do estudo indicam a necessidade de adaptação mais eficiente a formas de ensino delineadas remotamente e em situações emergenciais. os agentes envolvidos nesse contexto englobam: estudantes, professores, instituições de ensino e o governo.

Palavras-chave: Autopercepção; Desempenho Acadêmico; Ensino Remoto Emergencial.

Enseñanza Remota y Rendimiento Académico de Estudiantes de Contabilidad

RESUMEN

La investigación buscó identificar la autopercepción del desempeño académico de los estudiantes de Contabilidad durante la enseñanza remota de emergencia (ERE). Los datos fueron recolectados a través de un cuestionario, obteniendo datos de 245 participantes, que después de filtrar por los criterios de inclusión de la muestra y descartar los cuestionarios respondidos de manera incompleta, resultaron en 226 respuestas válidas de estudiantes de contabilidad de la región sur de Brasil que tomaron materias durante el período ERE. Los datos se analizaron mediante análisis factorial exploratorio, correlación de Spearman y prueba de diferencias entre grupos de Kruskal-Wallis. Los resultados indican que en la percepción de los estudiantes hubo un aumento en el rendimiento académico en función del desempeño en las calificaciones. A su vez, hubo una caída en el desarrollo de habilidades técnicas y sociales. Algunas características como la edad, los ingresos, el número de personas que viven en el hogar, el período y el número de materias estudiadas diferencian la percepción de los grupos de estudiantes. Las implicaciones del estudio indican la necesidad de una adaptación más eficiente a formas de enseñanza diseñadas a distancia y en situaciones de emergencia, los agentes involucrados en este contexto incluyen: estudiantes, docentes, instituciones educativas y el gobierno.

Palabras clave: Autopercepción; Desempeño academico; Enseñanza remota de emergencia.

1. Introduction

The COVID-19 pandemic accelerated the use of technology in the educational environment, serving as an alternative for the continuation of teaching activities during the period of social isolation (Soares & Colares, 2020; Santos & Zaboroski, 2020). This use was operationalized through Emergency Remote Teaching (ERT), in which technological resources were employed to make classes and materials available on online platforms (Kesley, 2020; Santos & Zaboroski, 2020).

Although Emergency Remote Teaching (ERT) was inspired by Distance Education (DE) (Hodges et al., 2020), it differs from it in that DE is designed to deliver content and pedagogical activities through online platforms with a structured course schedule, allowing for greater planning and organization throughout the program, with instructors experienced in digital communication (Rondini et al., 2020). Thus, ERT represented a new experience for students, distinct from online courses (Hodges et al., 2020).

Higher Education Institutions (HEIs) were required to adapt and implement ERT unexpectedly, relying on adjustments to digital resources (Saldanha, 2020). In the face of the remote teaching emergency, both instructors and students had to cope with a lack of training in using new platforms and a scarcity of resources, such as computers, internet access, and adequate physical space to attend classes. These challenges contributed to an increase in student dropout rates (Santos & Zaboroski, 2020). Furthermore, a study by Al Shlowiy et al. (2021), conducted in the context of foreign language learning, indicated that instructors believed students required additional training with the digital tools employed and perceived that students were more prone to academic dishonesty during assessments and less likely to engage fully with the course.

Paula et al. (2021) focused their research on student engagement during ERT. The findings indicated that students were engaged with the course, particularly at the cognitive-behavioral and emotional levels. The conflicting perceptions in the teacher–student relationship, along with evidence of student engagement in this mode of instruction, suggest a need for further in-depth exploration of the topic. The quality of education during ERT was influenced by the availability of basic access infrastructure. In 2019, internet access among the population in socioeconomic classes D and E reached 50%, with 85% of usage exclusively via mobile phones, 14% exclusively via computers, and only 1% through other devices (e.g., television, video game consoles, etc.) (TIC Domicílios, 2020), posing a significant challenge for the implementation of high-quality digital education.

Accounting course instructors reported that during ERT, analytical skills, interaction and motivation, communication, and planning and organization were “problematic” aspects (Ferreira et al., 2022). Thus, instructors’ perceptions of ERT indicate a challenging teaching environment, considering student performance, as students faced difficulties and limitations in their learning. Fagundes et al. (2014) argue that academic performance can be influenced by various internal and external factors within the educational environment, and during the ERT period, additional challenges were introduced for students that may have impacted their performance (Bulhões et al., 2022).

In light of the context presented, this study aimed to analyze the self-reported academic performance of Accounting students in the southern region of Brazil during the period of ERT. To this end, participation invitations were sent via email to 281 administrative offices, coordinations, and departments of undergraduate Accounting programs at public and private HEIs across Brazil, providing a link to an online questionnaire for students interested in participating in the study. This research seeks to address a gap in the literature by examining students’ perceptions of their own performance during a turbulent period of instruction. These data can be used to inform strategies aimed at minimizing potential deficits in student training, as Braga (2022) indicates a decline in educational quality both in objective terms, such as dropout rates and failures, and in subjective terms, such as the didactic and pedagogical organization of courses.

2. Theoretical Framkework

This section is subdivided into two subsections, presenting a literature review with the main concepts, findings, and discussions related to the topics addressed in the present study.

2.1 Academic Performance

Academic performance can be influenced by variables such as student motivation, academic goals, choice of program, and the instruction received during pre-graduate education (Fagundes et al., 2014). In this regard, instructors and institutions can positively affect student adaptation through active interactions, employing teaching methodologies aligned with the expected competencies of accounting professionals, encouraging students to engage in extracurricular activities, promoting the development of university-focused projects, and supporting participation in research, projects, and events, which may facilitate students' integration into the university environment (Lopes et al., 2019).

Entrance exam scores can serve as an indicator of student success during undergraduate studies, particularly in the first two years of the program, since those who achieve higher scores tend to have received a higher-quality basic education, established study routines, and possess family support and resources that maximize their learning, thereby more easily maintaining academic performance during the initial period of higher education (Fagundes et al., 2014). In undergraduate programs, performance can be reflected through grades, as well as student interest, class participation, and the level of interaction and engagement, among other factors that may characterize academic achievement (Meriac, 2012; Ferreira et al., 2022).

Other behavioral aspects include responsibility in meeting deadlines and completing tasks individually without relying on materials or assistance from other students when required by the instructor. Unethical behaviors, such as using tools that provide undue advantages—like employing artificial intelligence in completing assignments—may become more prevalent in digital environments, as students have greater freedom to perform activities without supervision. This scenario suggests that counterproductive behaviors closely linked to a lack of ethics are amplified in ERT (Meriac, 2012; Ferreira et al., 2022). Given that academic performance can be assessed through various factors, it is pertinent to further examine the details of ERT.

2.2 Emergency Remote Teaching

The social isolation measures imposed during the COVID-19 pandemic to mitigate the spread of the virus required the rapid implementation of digital platforms to maintain activities that were previously conducted in person within the academic environment (Saldanha, 2020; Soares & Colares, 2020). This marked the beginning of the ERT period, which, as an unprecedented solution to a temporary problem, lacked the same organization and structure as Distance Education (Rondini et al., 2020). Consequently, instructors and students faced challenges adapting to the new instructional formats (Santos & Zaboroski, 2020; Soares et al., 2021), which may have affected students' comprehension of the curricular content (Ferreira et al., 2022).

In the literature, there is a growing number of studies on the topic of "academic performance during ERT." Depending on the program and social conditions, students' self-perceptions may vary, and studies consistently show that this period was characterized by significant challenges for undergraduate students who were not accustomed to ERT (Sangster et al., 2020; Lago et al., 2021; Vasconcellos, 2022; Ferreira et al., 2022).

In this regard, Sangster et al. (2020) reflected on the impact of COVID-19 on accounting education across 45 countries. A subset of their findings indicates that the main challenges faced by Brazilian students were: lack of internet access, insufficient preparation prior to the transition from in-person to remote learning, inadequate access to essential infrastructure for ERT, insufficient training in the use of digital platforms, and increased bureaucratic requirements.

Soares et al. (2021) conducted a study to examine the perceptions of students enrolled in the in-person Accounting program regarding ERT, with 390 students participating. The study found that respondents experienced increased stress during ERT. Most of these respondents lived with their parents and reported higher income levels compared to other students. Students faced difficulties adapting to the remote learning model, and, in their view, instructors also struggled with adaptation. Moreover, students with prior experience in Distance Education encountered fewer difficulties. The students indicated that greater engagement was required to follow the classes, and the main challenges they faced included internet connectivity issues, lack of training in using platforms (e.g., Moodle), and an excessive number of activities with short deadlines.

Bulhões et al. (2022) assessed the challenges faced by chemistry students during ERT, with 40 students participating in a survey consisting of closed-ended questions. The study revealed that the greatest difficulty encountered by students was lack of connectivity, as most of the sample belonged to lower- or middle-income groups. Insufficient preparation also negatively affected teaching, and the absence of practical classes compromised students' learning. Additionally, participants reported a lack of information in the college's communication notices, which hindered students' organization.

Lago et al. (2021) analyzed learning factors in higher education. Two large groups of students from various programs were examined, categorized as Hard-Science (STEM programs) and Soft-Science (humanities programs). The study found that the teaching approach, the dynamics used for completing assignments, and the student's program affected their perception of instructional quality. Hard-Science programs adapted better to the remote model and students felt comfortable continuing their studies online. It was concluded that, depending on the program, students experienced fewer difficulties, and no generalization could be made regarding the continuation of courses in an online format.

Ferreira Neto et al. (2021) investigated students' perceptions regarding the teaching–learning process during ERT. The study included 42 participants from the Biological Sciences program, who were evaluated through survey questions. The findings indicated that the main challenges reported were maintaining concentration while studying, unstable internet connectivity, reading on mobile screens, and evaluating the model as only moderate, with 50% of responses rating it as "reasonable," 40.5% as "good," and the remainder as "poor."

Ferreira et al. (2022) examined instructors' perceptions of the academic performance of Accounting students during ERT. An online survey was distributed to 1,220 HEI email addresses, yielding 68 valid responses. The results highlighted a decline in student performance during ERT. The variables that showed deterioration during this period included analytical skills, interaction, motivation, and communication. However, students' grades improved significantly, which may be associated with the challenges of conducting in-person, closed-book assessments, resulting in lower demands due to the accelerated remote teaching format.

Vasconcelos et al. (2022) analyzed the performance of undergraduate Accounting students at a university in Rio Grande do Sul. The study included 281 students who responded to a questionnaire, which indicated that there were no significant changes in student performance following the implementation of ERT, except for cohorts that began in 2017, which showed higher average grades compared to other years.

According to the study, this may have occurred because these students were in the final stages of their program and recognized the importance of achieving strong performance at the end of their undergraduate studies.

Such studies are important for examining the consistency of findings across different regions of Brazil. The topic lacks extensive literature, making this research relevant for discussing elements that contribute to a deeper understanding of this subject.

3. Methodological Procedures

The study's methodological design is detailed below in four subsections, including the research approach, target population, data collection and analysis techniques, as well as ethical and methodological considerations.

3.1 Methodological Classification of the Research

The study has a descriptive nature, as, according to the definition proposed by Nunes et al. (2021) , descriptive research observes groups or phenomena, recording and analyzing their characteristics, variations, and patterns. The research problem was approached quantitatively, as Silva et al. (2015) suggest that, when dealing with numerical data, this model is appropriate when the study object is well-defined and a certain level of knowledge has already been established, depending on the topic and research objectives, which aligns with the context of the present study.

3.2 Population, Sample, and Data Collection

Data were collected through a survey conducted between September and November 2023 with undergraduate Accounting students in the southern region of Brazil who experienced ERT during the COVID-19 pandemic. Participation invitations were sent via email to 281 program coordinations, administrative offices, and communication departments of Accounting programs at public and private HEIs, with contact information obtained from the institutions' websites. At the end of data collection, a total of 245 responses were received. After excluding responses from students who had not studied during the remote period and those not from the southern region, 226 valid responses remained. The final sample was therefore classified as non-probabilistic and drawn from an infinite population, as it was not possible to determine the exact size of the study population.

3.3 Research Instrument and Ethical and Methodological Considerations

At the beginning of the questionnaire, respondents were presented with the Informed Consent Form (ICF), which ensured anonymity and voluntary participation in the data collection process. The questionnaire was then structured into three blocks of statements regarding the ERT period: Block I addressed positive aspects of ERT, Block II focused on negative aspects, and Block III evaluated students' self-perception of academic performance. In the final section of the research instrument, questions were included to capture respondents' sociodemographic characteristics.

The academic studies by Ferreira et al. (2022), which assessed instructors' perceptions of ERT, and by Soares et al. (2021), which evaluated students' perceptions of the same period, were used as references for constructing the data collection instrument. The survey underwent a pre-test round with students who shared characteristics with the target population, and the data from this pre-test were discarded prior to the start of the main data collection.

Regarding ethical considerations, the data collected for the study were analyzed exclusively in aggregate form to ensure participant anonymity. Furthermore, it is noteworthy that the research project was approved by the Research Ethics Committee of the HEI to which the researchers are affiliated and is registered in Plataforma Brasil under initial number 70912423.

3.4 Data Analysis Technique

Data were collected and extracted using the digital platform Google Forms® and organized in Microsoft Excel®. Subsequently, statistical tests were conducted using IBM SPSS software. An exploratory factor analysis (EFA) was performed to assess the properties of each construct. The EFA for Blocks I and II was conducted together due to the nature of the statements, resulting in the identification of four factors related to ERT Daily Routine, ERT Independence, Performance and Adaptation, as well as Study Environment and Focus. For Block III, two factors emerged, associated with Hard/Soft Skills and Engagement, and Planning and Organization. Principal Component Analysis was used as the extraction method, and Varimax was employed for rotation, with Kaiser normalization applied for better interpretation of the results.

After identifying the factors, factor loadings were saved, and the Kolmogorov-Smirnov normality test was conducted, which revealed that the data did not approximate a normal probability distribution. Subsequently, Spearman's correlation was applied to examine the associations between the factors. Finally, the non-parametric Kruskal-Wallis test was used to identify potential differences between factors (p-value < 0.05) according to respondents' characteristics, in cases of independent samples (Field, 2009). Values that reached significance (p-value < 0.05) in the Kruskal-Wallis test were subjected to the Mann-Whitney post hoc test to reject the null hypothesis in group comparisons with respect to the factors.

4. Results and Discussion

This section presents the study's findings following data collection, processing, and analysis, organized into four subsections. The content includes the statistical tests conducted and the profile of the research sample. The results are presented in tables, and their interpretations are discussed in greater detail below.

4.1 Respondent Profile

Detailed information regarding the respondents' profile is presented in Table 1.

Table 1 - Respondents' Profile

Age	Absolute Frequency	Relative Frequency	Semester/Year	Absolute Frequency	Relative Frequency
G1: up to 23 years	80	34,48%	3rd or 4th semester / 2nd Year	3	1,31%
G2: 24 years	45	19,40%	5th or 6th semester / 3rd Year	45	19,65%
G3: 25–27 years	50	21,55%	7th or 8th semester / 4th Year	151	65,94%
G4: 28–54 years	57	24,57%	9th or 10th semester / 5th Year	21	9,17%
Gender	Absolute Frequency	Relative Frequency	Completed or not currently enrolled	12	5,24%
Male	102	43,97%	Remote Courses	Absolute Frequency	Relative Frequency
Female	128	55,17%	1-5	33	14,41%
Other	1	0,43%	6-10	116	50,66%
Prefer not to answer	1	0,43%	11 or more	80	34,93%
Marital Status	Absolute Frequency	Relative Frequency	Professional Activity	Absolute Frequency	Relative Frequency
Married	51	21,98%	Did not engage in professional activity during the ERE	33	14,22%
Single	178	76,72%	Only during part of the ERE period	19	8,19%
Other	3	1,29%	Yes, during the entire ERE period	180	77,59%
Household Members	Absolute Frequency	Relative Frequency	Income	Absolute Frequency	Relative Frequency
1	19	8,19%	Up to 1 minimum wage	2	0,86%
2	53	22,84%	1–3 minimum wages	27	11,64%
3 or more	160	68,97%	3–5 minimum wages	84	36,21%
			Above 5 minimum wages	119	51,29%

Among the 226 respondents, 55.17% identified as female, representing the largest proportion of students. The students' ages ranged from 20 to 54 years, with the majority between 20 and 23 years old (34.48%). Most students were in the final stage of the program, as 65.95% reported being in their fourth year. Another observed characteristic was enrollment in 6 to 10 courses during ERT, representing 50.66% of respondents. Regarding employment, 180 students reported working throughout the ERT period (77.59%).

Regarding family composition, most respondents were single (76.72%) and lived with three or more people (68.97%). Concerning household income, 119 students reported a family income above five minimum wages (51.29%), 84 students reported between three and five minimum wages (36.21%), 27 students reported between one and three minimum wages (11.64%), and, finally, the smallest group included two students earning up to one minimum wage (0.86%).

4.1 Exploratory Factor Analysis

The Kaiser-Meyer-Olkin (KMO) test was conducted on the statements classified in Blocks I and II to assess the adequacy of correlations for factor analysis. The KMO indicated a sampling adequacy of 0.771, which is considered satisfactory according to Kaiser and Rice (1974). Furthermore, as suggested by Figueiredo Filho et al. (2014), Bartlett's sphericity test is used to evaluate the existence of correlations among variables. A significance level of 5% is adopted; when the p-value is less than 0.05, there is greater confidence in rejecting the null hypothesis, which assumes an identity matrix, i.e., absence of correlation. In this case, the test resulted in a value close to 0 (1.20759442208286E-211), indicating that Bartlett's sphericity test confirms the adequacy for conducting exploratory factor analysis, as it demonstrates the presence of relationships among the analyzed parameters.

The factors were formed based on the rotated component matrix, using the similarity of factor loadings, as shown in Table 2.

Table 2 - Rotated Component Matrix

Rotated Component Matrix				
Statements	Factors			
	Daily Life in the ERE	Independence in the ERE	Performance and Adaptation	Study Environment and Focus
P10 - The faster availability of content on online platforms contributed to the quality of the ERE.	0,758			
P2 - I believe that during the ERE there was better use of technological tools for learning.	0,753			
P9 - Not having to travel to campus contributed to the quality of the ERE.	0,752			
N7 - During the ERE, there was an excessive number of activities and tight deadlines for submissions.	0,667			
P4 - The ERE context allowed assessments to be completed with consultation, even if not authorized by the professor.	0,656			
P7 - Cooperation among classmates contributed to the quality of the ERE.	0,641			

P8 - The use of multiple research sources contributed to the quality of the ERE.		0,790		
P6 - Autonomy in the learning process contributed to the quality of the ERE.		0,783		
P5 - Completing asynchronous activities (classes and assignments) contributed to the quality of the ERE.		0,693		
P11 - Various means of contact with the professor contributed to the quality of the ERE.		0,685		
N3 - My academic performance was affected during the ERE.			0,756	
N1 - The ERE context caused difficulty in adapting to the new teaching modality.			0,719	
N4 - My institution took too long to adapt to the ERE.			0,661	
N8 - Classes were monotonous during the ERE.			0,621	
N5 - My stress levels were higher during the ERE.			0,490	
N2 - My home study setup was adequate (desk, chair, computer, high-speed internet, proper lighting, quiet environment without interruptions).				0,695
N6 - During the ERE, I was able to maintain a study routine and focus.				0,602
P3 - I believe that during the ERE there was greater encouragement for research.				0,482

The factors generated through the EFA resulted in four theoretical constructs: Daily Routine in ERT for Factor 1; ERT Independence for Factor 2; Performance and Adaptation for Factor 3; and Study Environment and Focus for Factor 4. As indicated by Figueiredo Filho and Silva Júnior (2010), determining the number of factors to be extracted represents the correlation patterns among the analyzed variables. Following the recommendation of Hair et al. (2009), a 60% threshold was used as a reference, meaning that factor extraction continued until this level was achieved (Table 3).

Table 3 - Total Variance Explained (Block I and II)

Components	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotated Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,161	23,114	23,114	4,161	23,114	23,114	3,500	19,443	19,443
2	2,987	16,592	39,706	2,987	16,592	39,706	2,668	14,820	34,263
3	2,088	11,600	51,307	2,088	11,600	51,307	2,485	13,806	48,068
4	1,230	6,836	58,143	1,230	6,836	58,143	1,813	10,074	58,143

It was found that four factors were returned, explaining 58.14% of the cumulative variance.

Next, the KMO test was conducted for the statements in Block III to assess the adequacy of correlations and determine whether they were appropriate for factor analysis. The KMO indicated a sampling adequacy of 0.823, demonstrating a satisfactory level (Kaiser & Rice, 1974). This round of testing also resulted in a value close to 0, indicating suitability for factor analysis according to Bartlett's sphericity test.

Table 4 shows the formation of the performance factors based on the rotated component matrix, using the similarity of factor loadings.

Table 4 - Rotated Component Matrix

Rotated Component Matrix		
Statements	Factors	
	Hard/Soft Skills and Engagement	Planning and Organization
D9 - The ERE contributed to the development of my communication skills (oral and written).	0,822	
D3 - The ERE context stimulated my interest in studying and learning.	0,781	
D10 - The ERE context contributed to the development of my ability to apply technical accounting language.	0,758	
D2 - The ERE context increased my enthusiasm for studying.	0,742	
D8 - The ERE contributed to the development of my critical thinking skills in the learning process.	0,616	
D7 - The ERE improved my academic performance in terms of learning.	0,565	

D4 - The ERE improved my time management.		0,851
D5 - The ERE improved my ability to plan activities related to classes.		0,792
D1 - The ERE context improved my teamwork skills.		0,504
D6 - The ERE improved my academic performance in terms of grades.		0,462

The factors generated from the EFA resulted in two theoretical constructs: Hard/Soft Skills and Engagement for Factor 1, and Planning and Organization for Factor 2. The classification of the statements aimed to increase the likelihood of success in the tests; thus, the statements were categorized as performance according to their description. Table 4 presents the performance statements (Block III). When contrasted with the study conducted by Ferreira et al. (2022), which examined perceptions of performance during ERT from the instructors' perspective, the following factor components showed similarity with Block III factors: Analytical Skills with Factor 1, and Planning and Organization with Factor 2.

Following the recommendation of Hair et al. (2009), a 60% threshold was used as a reference, meaning that factor extraction continued until this level was achieved (Table 5).

Table 5 - Total Variance Explained (Block III)

Components	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotated Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,160	41,601	41,601	4,160	41,601	41,601	3,337	33,369	33,369
2	1,427	14,269	55,871	1,427	14,269	55,871	2,250	22,501	55,871

It was found that two factors were returned, explaining 55.87% of the cumulative variance, which Hair et al. (2009) suggest is an acceptable level for the test. Table 6 presents a summary of the identified factors.

Table 6 - Constructs – Blocks I, II, and III

Theoretical Constructs	Percepções no contexto do ERE
Blocks I and II Factor 1 – Daily Life in the ERE	- Faster availability of online teaching platforms; - Better use of technological resources; - Not having to travel contributed to quality; - Excessive activities and tight deadlines; - Allowed assessments with consultation not authorized by the professor; - Cooperation among classmates contributed to quality;

Blocks I and II Factor 2 – Independence in the ERE	- Use of multiple research sources contributed to quality; - Autonomy in learning contributed to quality; - Asynchronous activities contributed to quality; - Various means of contact with the professor contributed to quality;
Blocks I and II Factor 3 – Performance and Adaptation	- Academic performance was affected; - Difficulty adapting to the teaching modality; - Institution took too long to adapt; - Monotonous classes; - Higher stress levels;
Blocks I and II Factor 4 – Study Environment and Focus	- Home study setup (desk, chair, internet, etc.); - Ability to maintain a study routine and focus; - Encouragement of research;
Block III Factor 1 – Hard/Soft Skills and Engagement	- Development of communication skills; - Interest in studying and learning; - Development of technical and accounting language; - Increased enthusiasm for studying; - Development of critical thinking skills in the learning process; - Academic performance in terms of learning;
Block III Factor 2 – Planning and Organization	- Improved time management; - Improved ability to plan class-related activities; - Improved teamwork skills; - Improved academic performance in terms of grades;

Factors 1 and 2 from Blocks I and II represented statements reflecting positive perceptions during ERT, whereas Factors 3 and 4 included statements reflecting negative perceptions of students' experiences during ERT. In Block III, Factors 1 and 2 encompassed questions related to students' self-perceptions of academic performance.

4.3 Spearman Correlation

To examine the associations between variables, Spearman's correlation method was used, as indicated by the normality test, as shown in Table 7.

Table 7 - Spearman's Correlation

	Blocks I and II				Block III	
Constructos	Daily Life in the ERE	Independence in the ERE	Performance and Adaptation	Study Environment and Focus	Hard/Soft Skills and Engagement	Planning and Organization
Daily Life in the ERE	1,000					
Independence in the ERE	**-0,282****	1,000				

Performance and Adaptation	-0,074	0,091	1,000			
Study Environment and Focus	**0,129***	**-0,187****	-0,110	1,000		
Hard/Soft Skills and Engagement	**-0,193****	**0,362****	**-0,348****	0,005	1,000	
Planning and Organization	**0,164***	**0,310****	0,079	**0,246****	-0,096	1,000

*Note. *p-value < 0.05; p-value < 0.01*

Descriptively, weak positive and negative associations were observed (Field, 2009). Significant associations were also identified (p-value < 0.05, highlighted in bold), indicating potential direct and indirect effects among the compared factors. The strongest positive association was observed between the factors ERT Independence and Hard/Soft Skills and Engagement (r = 0.362; p-value < 0.001). This positive relationship suggests that autonomy in the learning process is linked to the development of students' technical and behavioral skills, as well as their enthusiasm for studying.

ERT Independence was also positively associated with Planning and Organization (r = 0.310; p-value < 0.001), indicating that the greater a student's autonomy in their studies, the better their ability to manage time and tasks. A positive association was also observed between the Study Environment and Focus factor and the Planning and Organization factor (r = 0.246; p-value < 0.001), suggesting that during ERT, students' home environment and their ability to manage time and plan activities were related, with better home structures linked to more effective planning and time management. Meanwhile, a negative correlation was found between Performance and Adaptation and Hard/Soft Skills and Engagement (r = -0.348; p-value < 0.001), possibly indicating that students had to choose between focusing on academic performance and adapting to the atypical ERT period or on developing their technical and behavioral skills.

4.4 Group Differences

To compare three or more groups of a quantitative variable, the Kruskal-Wallis (K-W) test was used. This is a non-parametric test that does not assume a normal distribution. Table 8 presents the group differences found in relation to students' academic context, family background, and professional engagement.

Table 8 - Group Differences (Student)

Group	Category	Blocks I and II				Block III	
		Daily Life in the ERE	Independence in the ERE	Performance and Adaptation	Study Environment and Focus	Hard/Soft Skills and Engagement	Planning and Organization
Age	G1: up to 23 years	113,99	122,69	111,15	107,80	115,74	105,32
	G2: 24 years	155,93	96,84	112,47	127,49	106,63	123,28
	G3: 25–27 years	113,34	120,74	138,92	113,68	110,73	132,53
	G4: 28–54 years	91,67	119,61	107,53	122,51	130,41	112,78
	p-value	***0,000***	*,181*	*,063*	*,376*	*,279*	*,124*
Professional Activity	No	100,55	121,06	96,64	106,94	131,09	102,42
	Only during part of the ERE period	104,16	139,05	135,00	106,95	112,55	105,24
	Yes	120,73	113,28	118,19	119,26	114,24	120,27
	p-value	*0,199*	*0,257*	*0,107*	*0,506*	*0,397*	*0,275*
Work Model	Did not work	100,04	114,14	96,68	112,57	121,50	95,68
	On-site	118,51	106,18	115,80	124,43	114,12	119,85
	Remote	116,82	143,75	132,59	107,27	118,47	128,90
	Hybrid	123,59	115,63	109,93	101,00	118,70	99,04
	p-value	*0,551*	***0,010****	*0,129*	*0,234*	*0,942*	*0,084*
Household Income	Up to 1 minimum wage	35,50	143,50	27,00	173,50	204,50	139,50
	1–3 minimum wages	86,85	125,00	94,78	76,15	140,02	79,94
	3–5 minimum wages	112,76	112,18	120,27	120,86	114,26	112,74
	Above 5 minimum wages	127,23	117,17	120,27	121,62	111,26	127,06
	p-value	***0,009****	*0,772*	*0,070*	***0,006****	*0,054*	***0,009****

Quantidade pessoas morando na casa	1 person	100,68	134,26	135,58	87,79	110,53	94,47
	2 people	101,00	135,91	109,40	117,25	129,12	117,37
	3 or more people	123,51	107,96	116,59	119,66	113,03	118,83
	p-value	*0,059*	***0,015****	*0,344*	*0,146*	*0,290*	*0,321*

*Note. *p-value < 0,05; **p-value < 0,01.*

The test conducted across respondents' age groups indicated significance ($p < 0.05$) for Factor 1 (Daily Routine in ERT), suggesting that students in the G2 age group (24 years) demonstrated better adaptability to the new ERT learning environment. Additionally, the Mann-Whitney post hoc test showed that older age groups, such as G4 (28 to 54 years), experienced greater difficulties during the ERT period. These findings differ from Araújo et al. (2013), who evaluated the academic performance of Accounting students in private HEIs and reported an increase in performance with advancing age.

Regarding groups of students who did or did not engage in professional activities during ERT, no significant differences were found. However, for the type of work, significance was observed among groups in relation to the ERT Independence factor (p-value = 0.010). Thus, it can be noted that students who worked in a remote work modality exhibited greater self-sufficiency in learning and in aspects related to the statements of this process.

Regarding declared family income, significance was observed in three factors. Students with a family income above five minimum wages adapted more easily to daily routines in ERT. In contrast, households with up to three minimum wages were associated with poorer evaluations for Study Environment and Focus, as well as Planning and Organization. Additionally, Factor 2, ERT Independence, showed significant results across respondents' household size, particularly among those living with one or two people. These individuals exhibited greater autonomy and self-management in their learning methods during ERT. Despite these significant findings, the post hoc test did not reject the null hypothesis, indicating insufficient significance to infer differences among specific income groups.

It was observed that students who did not engage in professional activities during ERT reported a better self-perception of their development in technical and emotional skills. Additionally, positive relationships were found when comparing higher family incomes with adaptation to the new ERT dynamics, indicating that lower income is associated with greater difficulties in adapting to ERT. Similar results were observed in the study by Soares et al. (2021), which indicated that households with higher income contributed to students' ability to cope with adversities. Moreover, comparable findings were noted regarding students' adaptation; however, the study highlighted that students living alone experienced greater difficulties. This was also reflected in the correlation between students living alone and the Study Environment factor.

Table 9 presents the group differences found for the student context.

Table 9 - Group Differences (College)

Group	Category	Blocks I and II				Block III	
		Daily Life in the ERE	Independence in the ERE	Performance and Adaptation	Study Environment and Focus	Hard/Soft Skills and Engagement	Planning and Organization
Period	3º ou 4º	32,67	92,00	92,67	174,00	158,83	111,17
	5º ou 6º	105,04	113,40	116,96	106,98	111,68	121,21
	7º ou 8º	123,83	114,05	117,72	123,62	117,92	120,53
	9º ou 10º	117,24	145,76	131,62	82,43	105,48	92,67
	p-value	**0,038***	*0,317*	*0,262*	**0,034***	*0,682*	*0,269*
Courses Taken	1–5	93,79	125,67	105,42	96,67	140,52	85,00
	6–10	116,59	120,93	116,41	110,49	115,52	119,39
	11 or more	121,44	102,00	116,91	129,10	103,72	121,01
	p-value	*0,121*	*0,087*	*0,667*	***0,035****	***0,026****	***0,018****

*Note. *p-value < 0,05; **p-value < 0,01.*

Tests across different academic periods yielded significant results ($p < 0.05$) for the factors Daily Routine in ERT and Study Environment and Focus, indicating that students in different semesters/years had distinct perceptions for certain factors. Students in the 3rd or 4th semesters experienced greater difficulties integrating the ERT model into their routines. Conversely, students from the 5th semester onward demonstrated better adaptation to the new daily routines. For the Study Environment and Focus factor, the opposite trend was observed: students in the 3rd or 4th semesters reported a more favorable study environment compared to later periods. Post hoc tests applied to factors with significant results (p-value < 0.05) did not reject the null hypothesis.

Regarding the number of remote courses taken during ERT, significant p-values were identified for three factors. For Study Environment and Focus and Planning and Organization, scores increased proportionally with the number of courses taken, suggesting better adaptability of the environment, greater focus, and improved planning as students enrolled in more courses. Conversely, the perception of Hard/Soft Skills and Engagement behaved inversely proportional to the number of courses taken, indicating that as students took more courses, they felt they were developing fewer technical and behavioral skills. This finding is similar to that reported by Vasconcelos et al. (2022), who observed better adaptation among students in more advanced stages of their program.

Younger students and those in their final year of college experienced fewer difficulties adapting to the new ERT dynamics, particularly regarding the effective use of technological resources and online platforms.

However, they faced greater challenges with tight deadlines for assignments. These findings are consistent with the study by Bittencourt and Albino (2017), which indicated that younger individuals tend to adapt more easily to technology use in learning environments.

5. Conclusions

The objective of the present study was to analyze the self-reported academic performance of Accounting students in the southern region of Brazil during the ERT period. The educational sector underwent a significant transformation to adapt to the teaching model implemented during the COVID-19 pandemic. Considering that ERT was implemented abruptly and affected multiple aspects of society, this study aimed to examine how Accounting students in southern Brazil perceived their academic performance during the ERT period.

The results highlight different correlations among factors of interest during ERT, emphasizing that technical and behavioral skills were positively correlated with independence during ERT and negatively correlated with performance and adaptation during the same period. Among the various self-perceived performance groups, younger students and those in their final year of the program adapted better to ERT, although they faced challenges with tight deadlines. Students who did not work during ERT reported improvements in their technical and emotional skills. Furthermore, higher family income was associated with more effective adaptation to ERT, whereas students from lower-income households faced greater challenges.

Finally, the findings highlight the benefits of ERT, such as the elimination of commuting, increased autonomy in learning processes, and stronger peer connections. However, negative aspects were also identified, including lack of communication with instructors, limited assessment dynamics, and an excessive number of activities implemented as a “compensation” for this issue, in addition to structural challenges and the development of communication skills. These results carry several implications. In the socio-academic context, there is a need to apply methodologies that foster student interaction and engagement in classes.

Distance Education (DE) requires a specific approach; therefore, it is essential that students are prepared and assessed regarding their ability to engage with this remote model. This is particularly relevant considering that some students have completed their entire academic trajectory in a fully in-person format. Instructors also require training regarding available technological teaching tools, as well as organization and structure, to effectively operate in a more flexible model that, in theory, should be more accessible due to asynchronous communication. Regarding assessment methods, an analysis of the results from this and other studies shows an increase in grades; however, this improvement did not correspond to the development of the analytical and critical skills necessary.

Given this, it is possible to reflect on whether to maintain traditional assessment methodologies (tests and exams) or to pursue alternative strategies, such as focusing on open-book activities, presentations, or even creating a student guide to emphasize the importance of organizing coursework, assignments, and responsibilities to achieve adequate development. Opportunities also exist within the organizational context. Both private and public HEIs can better prepare for the needs of distance learning in a more efficient and sustainable manner. The emergency period required rapid and improvised adaptation by HEIs that had not previously operated online. Advances in technological infrastructure and content availability remain relevant in the current post-pandemic context and can be further developed, allowing the benefits identified during the emergency period to be leveraged in in-person, hybrid, or remote learning models.

Some programs that require in-person classes, such as those in health-related fields, would need to adapt more extensively compared to programs requiring less face-to-face interaction. In addition to HEIs, the government has opportunities to invest in basic infrastructure to enable students' access to distance learning, such as internet connectivity and computers. From a regulatory perspective, the Ministry of Education (MEC) could assess opportunities to ensure the provision of quality education in the distance learning model, given that it is responsible for accrediting HEIs authorized to operate in this mode.

These issues represent opportunities for further research to make distance education more efficient, despite challenges in collecting samples due to the number of students who experienced ERT. This constitutes a limitation for future studies regarding emergency remote teaching. The topic of academic performance can still be explored in terms of assessment methods and in the perceptions of both students and instructors: what opportunities exist to achieve adequate evaluation in non-presential education?

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