PEDAGOGICAL AND DIDACTIC SKILLS OF ACCOUNTING FACULTY MEMBERS AND THE INTENTION AND USE OF EDUCATIONAL TECHNOLOGIES IN THE TEACHING-LEARNING PROCESS

EDVALDA ARAÚJO LEAL¹
Universidade Federal de Uberlândia

https://orcid.org/0000-0002-7497-5949
edvalda@facic.ufu.br

ROBERTA FERREIRA LOURENÇO
Universidade Federal de Uberlândia

https://orcid.org/0000-0002-8773-0545
robertaf1511@gmail.com

TAMIRES SOUSA ARAÚJO
Universidade Federal do Mato Grosso do Sul

https://orcid.org/0000-0002-0926-151X
tamiresousa124@hotmail.com

ABSTRACT

The present study aimed to identify the didactic-pedagogical competencies of Accounting faculty members and their intention to use educational technologies in the teaching-learning process. To achieve this, a descriptive study with a quantitative methodology was conducted, involving the administration of a questionnaire to a sample of 258 Accounting faculty members across Brazil. The study aimed to define respondent characteristics, quantify teaching competencies following Zabalza's (2003) framework, and measure the adoption of technologies in the teaching-learning process using the Unified Theory of Acceptance and Use of Technology (UTAUT) model. The data demonstrated that faculty members understand the functioning and importance of virtual learning environments, and they express interest in integrating technologies into the teaching process to improve outcomes. However, reports indicate that some educational institutions do not provide adequate support for the use of technological tools. These findings provide a foundation for academic administrators to assess the technical support and technological qualifications necessary to enhance faculty development and, consequently, education as a whole.

Keywords: Competencies. Educational Technology. Faculty Members.

1 INTRODUCTION

Due to the pandemic caused by SARS-CoV-2 in early 2020. the entire world was affected, especially educational institutions (Grossi et al., 2020). From this pandemic period onward, education professionals were required to adjust classrooms to the virtual format, alongside teaching techniques. Technology, previously optional in classrooms, became the solution to address social distancing issues. The mandatory integration of technology in this scenario has placed greater demands on educators in lesson preparation and the adoption of new teaching methodologies (Cruz et al., 2021).

Amid the pandemic, opportunities have arisen to rethink higher education. As noted by Fogarty et al. (2020), online accounting education has proven to be feasible and of high quality, highlighting students' willingness to engage in courses without face-to-face interaction. This necessitates a reassessment of university models and adaptation to the technology-driven future 4.0 era. Casa Nova et al. (2022) point out that educators were compelled to adopt technological resources during the pandemic, leading to the need for a renewal of teaching methodologies such as learning to record lectures, create videos, organize materials in the virtual learning environment (VLE), and enhance the quality of slides, among other adjustments. In essence, technology has become the reality of the educational environment.

Thus, the integration of technology into the educational environment requires teachers to be prepared. Silva et al. (2021) emphasize that the use of new technologies is undoubtedly an important topic for education stakeholders, but it is crucial to discuss how these practices are executed and the availability of resources in their presentation. Therefore, in the technological process, it is essential to establish a good educational relationship in the use of these resources to ensure proper learning. According to the authors, "these are issues that need to be articulated in an associated manner, focused on achieving the goals of the society in which educators are involved" (Silva et al., 2021. p. 69).

In light of this reality, it is essential for all stakeholders in the educational system to keep pace with changes and advancements so they can integrate Information and Communication Technologies (ICTs) into teaching practices (Almeida, 2003). In this scenario, educators find themselves challenged as they need to develop new competencies for teaching, especially in higher education (Cuervo et al., 2012).

According to Cruz et al. (2021. p. 994), the teaching profession is challenging and requires constant updates to "build new knowledge, skills, and competencies to adapt to social, technological, scientific, cultural, among other changes." Regarding teaching knowledge and competencies, Tardif and Raymond (2000) argue that teaching knowledge is heterogeneous, encompassing classroom work, knowledge, and know-how, which are derived from various sources. Their approach to teaching knowledge extends beyond mere content knowledge, emphasizing the importance of possessing competencies, skills, and attitudes (Tardif & Raymond, 2000).

In this context, Pereira (2007) discusses that university professors possess competencies that involve knowledge, skills, and attitudes that interact to perform the teaching profession effectively. For accounting professors, the need for updates to enhance their knowledge and skills to deal with changes and technology in the classroom is no different. According to Zabalza (2003), competence is a comprehensive concept that encompasses the set of knowledge and skills necessary for individuals to carry out various activities.

The knowledge, understanding, and competencies required for the teaching profession occupy a prominent position, as they are based on the premise that there is a foundational set of knowledge for pedagogical expertise (Cruz et al., 2021). Therefore, validating these forms of knowledge is essential to enhance teacher training.

After the return to face-to-face classes post-pandemic, technology continues to play a crucial role in the classroom as an important support in the teaching-learning process (Carvalho et

al., 2021). Thus, the question guiding this study is: what are the didactic-pedagogical competencies of Accounting professors and their intention and use of educational technologies? In this regard, the research aims to identify the didactic-pedagogical competencies of Accounting professors and their intention and use of educational technologies in the teaching-learning process.

The present study is justified by analyzing the profile of professors teaching in Accounting programs and identifying the didactic-pedagogical competencies necessary for teaching. Zabalza (2003) argues that competencies should encompass lesson planning, content selection and preparation, communication and interaction with students, application of new teaching methodologies, research on teaching, and management of new technologies. Regarding the use of educational technologies, it is relevant to understand their adoption and use by professors in lesson planning and organization. The study aims to contribute to the literature on this topic, addressing an existing theoretical gap.

The work has been divided into five sections. Initially, this introduction describes the topic. Next, there is the theoretical framework, which presents the main definitions of the subject matter and its foundations. Subsequently, the methodology used for conducting the research is presented, followed by the findings obtained. Finally, the research concludes with the final considerations.

2 THEORETICAL FRAMEWORK

2.1 Teacher Competencies and Knowledge

According to Cruz et al. (2021), teaching requires ongoing professional development aimed at building new knowledge and skills that help educators address the changes and challenges of their profession. Tardif and Raymond (2000. p. 213) define teacher professional knowledge as "plural, composite, heterogeneous, as they bring forth, in the very exercise of their work, knowledge and manifestations of know-how and know-being that are quite diversified, stemming from various sources." In this context, Fleury and Fleury (2001) argue that being a teacher requires a set of professional competencies, knowledge, skills, and attitudes. Tardif and Raymond (2000) further emphasize that competence refers to 'know-how.

The Table 1 presents the competencies required for teaching as advocated by Masetto (1998), Perrenoud (2000) e Zabalza (2003).

Table 1
Competencies required for teaching

Authors	Competencies
Perrenoud (2000)	1) Organize and direct learning situations; 2) Manage the progression of learning; 3) Design and evolve differentiation strategies. 4) Engage students in their learning and tasks; 5) Collaborate within a team; 6) Participate in school administration; 7) Inform and involve parents; 8) Use new technologies; 9) Address professional duties and ethical dilemmas; 10) Manage their own continuous professional development.
Zabalza (2003)	1) Plan the teaching-learning process; 2) Select and prepare disciplinary content; 3) provide clear and well-organized information and explanations (communication skills); 4) Manage new technologies; 5) Design methodology and organize activities; 6) Communicate and interact with students 7) Tutoriing; 8) Evalaute; 9) Reflect and research teaching methods; 10) Identify with the institution and work collaboratively.
Masetto (1998)	1) Expertise in a knowledge area; 2) Mastery in pedagogical skills; 3) Competence in the political dimension.

Source: Based on Puentes et al. (2009) and Masetto (1998).

Perrenoud (2000), Zabalza (2003), and Masetto (1998) developed the classification and typology of professional competencies for university professors, addressing and discussing the professional competencies of teachers in higher education. Perrenoud (2000) argues that

assessment is one of the necessary competencies for teacher training, as its administration aims to investigate the progression of learning and involves observing and evaluating students in a formative approach. The competencies presented by Zabalza (2003) are adopted for analysis in the present study.

Regarding the knowledge necessary for teaching in the accounting field attributed to reference teachers, Miranda et al. (2012) point out that, according to students' perceptions, they include the didactics or teaching methodology adopted, the attitudes, and the personal qualities of the teacher, such as commitment, responsibility, dedication, mastery of the content they teach, and experience as a accounting professional (Miranda et al., 2012).

In this context, Nogueira et al. (2012) investigated what students perceive as qualities pertinent to a good teacher. The results highlighted knowledge and teaching methodology. The authors confirmed in the study that students value the relationship with their teachers, appreciating when professors aim for a less hierarchical approach, acting more as partners in the learning process. Additionally, students take into consideration how effectively professors incorporate technology into teaching (Nogueira et al., 2012).

Rezende and Leal (2013) assessed the degree of importance attributed to teacher competencies from the perspective of Accounting students and identified the competencies required for teaching. Their findings highlighted that the most relevant competencies include mastery of knowledge, teaching methodology, and market experience for teaching in the Accounting course.

Bolzan and Vendruscolo (2021) analyzed the degree of effort and frequency of mobilization of teaching competencies by undergraduate Accounting professors in Rio Grande do Sul (RS). With a sample of 243 professors and undergraduate program coordinators who teach courses in the accounting field, it was noted that these educators face challenges in operationalizing teaching competencies, as well as in applying knowledge of information technology.

The authors Zabolotny et al. (2022) aimed to understand the process of knowledge construction mobilized by professors in stricto sensu Graduate Programs in Accounting. Findings indicate a gap in pedagogical training among the surveyed professors, with most of their knowledge construction occurring throughout their careers and experiences with their mentors.

Tempesta et al. (2022) investigated the educational training provided to professors in graduate programs in Accounting in Brazil. They identified that the four dimensions of educational training proposed in the literature (didactic-pedagogical; technical-scientific; human; and practical) appear heterogeneously across Accounting graduate programs, often being optional for future master's and doctoral candidates. This highlights a significant path to be traversed for adequate educational training for professors in the Brazilian accounting field (Tempesta et al., 2022).

Considering the studies presented, it is recognized that, beyond knowledge, teachers possess competencies that extend beyond mastery of the content to be taught. Competencies are required that can contribute to the improvement and quality of teaching in the classroom. Thus, these competencies endow educators with the commitment to choose the most suitable methodology for teaching, aiming to contribute to the teaching-learning process and the professional development of students.

2.2 Teaching and Technology

Santos et al. (2020) point out that with new technologies integrated into the educational environment, a paradigm has been altered: teaching methods. Thus, new means of teaching and learning become necessary so that students are supported in becoming professionals who meet the new demands of the market. Continuing teacher education, which builds new knowledge and professional competencies, is responsible for updating in each paradigm shift in the educational environment (Cruz et al., 2021).

The integration of new technologies into education relies on the professional competencies of teachers, requiring adaptation to educational innovations. Educational innovation can be defined as a set of more or less systematized ideas, processes, and strategies through which attempts are made to introduce and provoke changes in current educational practices (Brighenti et al., 2015). Its goal is to provide tools to remain competitive in knowledge in a constantly changing global society, modifying concepts and attitudes, enhancing methods and interventions, and transforming the processes of teaching and learning according to reality (Brighenti et al., 2015).

In the educational process, technology integrated into the classroom is responsible for changes in teaching. "Technological progress is remarkable [...] the boundaries and limits to knowledge production are increasingly reduced due to sophisticated forms of communication, which are determined by digital technologies" (Gonçalves & Kanaane, 2021. p. 257).

In this scenario, the teaching-learning process across all levels of education has been altered, including undergraduate Accounting programs. The use of ICTs in accounting education has enhanced teaching-learning processes, necessitating greater technological proficiency among educators. Thus, there is a need to move beyond the traditional approach of knowledge transmission and advance towards developing capabilities, skills, and attitudes that enable access to diverse resources, facilitating meaningful learning (Nganga & Leal, 2017).

The ICTs, in terms of distributing content and communication systems, have profoundly transformed social relations. This has allowed interaction spaces to be redefined, now occurring anytime and anywhere (Santos et al., 2020). However, currently, not all students have personal access to digital tools; a survey conducted by the Brazilian Institute of Geography and Statistics (IBGE), reported by Valor Econômico in September 2022. revealed that in 2021. nearly 95% of public school students did not have internet access (Rosa & Carneiro, 2022).

Korelo et al. (2010) present, in their research, that the most common technologies addressed in the educational setting are: multimedia, computer labs, portals of higher education institutions (HEIs), electronic whiteboards, and distance learning classrooms. They also emphasize that these technologies are well-received by students despite their limitations in terms of updates. These limitations are highlighted in the research provided by the National Telecommunications Agency (Anatel, 2023), which reported that by the end of 2022. approximately 9.500 schools lacked internet access, and another 46.100 schools did not have computer labs. Thus, new challenges are identified in the educational system across all its levels.

Nevertheless, it is believed to be essential that knowledge integration strategies be adapted and that the alternative and complementary use of modern and current technological tools be incorporated into the educational context and the teaching-learning process.

With technology, the learning process has been altered. Nagib (2018) asserts that the vision for education in the 21st century highlights the student as the protagonist in the teaching-learning process, emphasizing the significant importance of managing learning strategies that enable them to successfully meet the demands of their studies and workplace requirements, thus becoming active and proactive pillars in society.

Moraes (2013) points out that the acceptance and adoption of new technology generate uncertainties among individuals and decision-makers, as there is a process of accepting new technologies. Venkatesh et al. (2003) developed the Unified Theory of Acceptance and Use of Technology (UTAUT) model, aiming to present the characteristics that can influence individuals to adopt or not adopt new technology in their activities.

Moraes (2013) emphasizes that the acceptance and adoption of new technology create uncertainties among individuals and decision-makers, given the process involved in adopting these innovations. Venkatesh et al. (2003) developed the Unified Theory of Acceptance and Use of Technology (UTAUT) model to highlight the characteristics influencing individuals' decisions to adopt new technology in their activities (Cruz et al., 2021).

Nogueira et al. (2017) present that the UTAUT model consists of four dimensions: performance expectancy, effort expectancy, social influence, and facilitating conditions. The research further discusses that factors such as gender, age, experience, and voluntariness of use can influence as moderators within the UTAUT model.

Venkatesh et al. (2003. p. 447) define the performance expectancy dimension as "the degree to which an individual believes that using the system will help enhance their job performance." The author argues that performance expectancy is considered a predictor of usage intention (Venkatesh et al., 2003). The effort expectancy dimension is related to the level of ease, clarity, and understanding when using the system (Davis, 1989). The author discusses that when multiple systems are available, the one that is easiest to use will be the most utilized.

The dimension of Social Influence can be perceived as "the degree to which an individual perceives that others believe they should use the system" (Nganga, 2015. p. 71). Essentially, it refers to the level of influence others have on an individual's adoption of a new system (Nganga, 2015). Finally, the dimension of Facilitating Conditions is related to the individual's understanding of the infrastructure and technical support available for using the system, indicating whether the individual has the necessary resources to use the system (Nganga, 2015).

It is relevant to state that the UTAUT model was used in the present study to measure teachers' intention to adopt educational technologies.

3 METHODOLOGY

The research is classified as descriptive with a quantitative approach. The procedure adopted for data collection was a survey using a questionnaire. The instrument was organized into three parts: the first part contained information to characterize the respondents; the second part included statements about teaching competencies based on Zabalza (2003) complemented with competencies indicated by Perrenoud (2000); and the third part consisted of questions about technology adoption, following the UTAUT model proposed by Venkatesh et al. (2003). Table 2 presents the statements related to the investigated competencies and the factors affecting technology adoption used in the questionnaire.

Table 2
Pedagogical Competencies and Factors Influencing Technology Adoption

Code Question	Statements - Competencies
C1	Before starting a course, I develop the course planning, defining the pedagogical objective according to the syllabus contents.
C2	I plan the activities that are expected to be carried out during the course I am going to teach.
C3	Before the course begins, I seek to understand the characteristics of enrolled students (quantity, age, their previous qualifications, among other aspects).
C4	During the course, I aim to include supplementary content to the syllabus that is applicable in the professional practice of future accountants.
C5	I am familiar with different assessment methods and apply them throughout the classes, involving differentiated assessments according to the content covered.
C6	I analyze the syllabus of the courses considering time constraints and the resources available and accessible to students.
C7	I adopt a didactic and accessible communication style for student comprehension.
C8	I am knowledgeable about active teaching methodologies, such as: case studies, storytelling, role-play, integrated panels, observation and verbalization groups.
C9	I have been integrating educational technologies into the courses I teach, such as: use of virtual learning environments, application of technological tools, technological tools for assessments.
C10	I am familiar with the contents and format of institutional assessments (e.g., Enade, CFC Exam) and the aspects that compose such assessments.
C11	I apply different teaching methodologies in the classroom (examples: case studies, debates, seminars, dynamics, interactive lectures).

Code	
C12	I teach classes on topics related to my field of expertise.
C13	I have faced challenges related to teaching (full classrooms, small groups, diverse student profiles, available infrastructure, etc.).
C14	I adopt teaching methodologies that promote the development of students' critical and reflective thinking on the subject matter and practical application.
Code Question	**Statements - Adoption of Technologies**
AT1	How much do you use this category in your face-to-face classes?
AT2	How much do you intend to use this category in your face-to-face classes?
AT3	How much do you agree that using this category of technology in the classroom is useful in building accounting knowledge?
AT4	How much do you agree that using this category of technologies in accounting education contributes to classroom dynamics?
AT5	How much do you agree that you are skilled in using this category of technologies for teaching accounting?
AT6	How much do you agree that students prefer the use of this category of technologies in accounting education?
AT7	How much do you agree that the environment in which you are located influences your behavior in using this category of technologies in accounting education?
AT8	How much do you agree that you have the necessary resources to implement this category of technologies in accounting education?
AT9	How much do you agree that the educational institution where you work provides the necessary resources to implement this category of technologies in accounting education?
AT10	How much do you agree that you have the necessary support from the educational institution and/or students to address doubts regarding the use of this category of technologies for accounting education?

Source: Adapted from Zabalza (2003); Perrenoud (2000) and Venkatesh et al. (2003).

Respondents were asked to assign a score from 0 to 10 to each statement, indicating their level of disagreement or agreement with the proposition. The closer the score was to 0. the lower the degree of agreement with the statement. Conversely, the closer the score was to 10. the higher the degree of agreement with the statement presented.

Before the questionnaire was administered, a pilot test was conducted with five accounting faculty members to assess comprehensibility. Several adjustments were suggested and implemented to enhance the participants' understanding of the instrument.

For data collection, a database was created following these steps: 1) a survey was conducted on the e-MEC website to gather information on all active public Accounting courses in Brazil; 2) the websites of educational institutions offering Accounting courses were accessed to collect email addresses of the faculty members; and 3) a database was created containing the names of the faculty members, their institutions, and their emails. The instrument (questionnaire) was then sent via email along with an invitation to participate in the survey and a link to access the questionnaire.

We were able to contact 1.276 faculty members, which represents the study population. Data collection took place from January 5th to March 10th, 2023. with the questionnaire being made available on the Google Docs platform. The research sample consisted of 258 respondents, representing all five regions of the country.

For the analysis of the collected data, descriptive analysis and exploratory factor analysis were employed. According to Fávero et al. (2009), exploratory factor analysis is a multivariate technique of interdependence aimed at condensing observed relationships among a set of related variables to identify common factors. In this study, this test was used to analyze the teaching competencies of faculty members considering Zabalza (2003) and the intention and use of technologies using the UTAUT model proposed by Venkatesh et al. (2003).

4 ANALYSIS AND DISCUSSION OF RESULTS

Table 3 presents data regarding the characterization of participating faculty members in the study. It is noticeable that the majority of respondents are male, accounting for 55.4% of the total. Regarding age, most fall within the 40 to 50 years old range.

Table 3

Characterization of Respondents

Variable	Possibility of a response	Quantity (%)
Gender	Female	44.6
	Male	55.4
Age	Up to 30 years old	5.43
	31 to 35 years old	12.79
	35 to 40 years old	14.73
	40 to 45 years old	17.44
	45 to 50 years old	20.16
	51 to 55 years old	14.34
	Above 55 years old	15.12
Region	North	6.20
	Northeast	18.22
	Midwest	15.50
	Southeast	31.40
	South	28.68
Marital status	Married	59.30
	Single	22.48
	Divorced	8.53
	Common-law Union	9.69
Academic background	Accounting	89.92
	Business Administration	4.26
	Business Administration and Accounting	1.16
	Others (Economics, Law, Engineering)	4.65
Employment status	20 Hours	6.59
	40 Hours	10.85
	Exclusive Dedication (Full-time commitment)	75.19
	Substitute Professor	5.81
Years of teaching experience	Up to 1 year	14.34
	1 to 5 years	9.69
	5 to 10 years	13.57
	10 to 15 years	16.67
	15 to 20 years	20.54
	20 to 25 years	12.79
	Over 25 years	12.40
Years of teaching experience in Accounting	Up to 1 year	13.57
	1 to 5 years	13.18
	5 to 10 years	14.34
	10 to 15 years	19.38
	15 to 20 years	18.60
	20 to 25 years	10.47
	Over 25 years	10.47

Source: Research data.

It is also possible to observe that the majority of participants are from the Southeast and South regions, which stand out with 31.40% and 28.68%, respectively. Regarding academic background, 89.92% have a degree in Accounting, and 75.19% are full-time dedicated professors. As for years of teaching experience, 37.21% stated they have been teaching for 10 to 20 years, including years of teaching experience in Accounting, totaling 37.98%.

4.1 Pedagogical and teaching competencies of professors and adoption of technologies

As mentioned in the methodology section, in the research instrument, after characterizing the professors, pedagogical and teaching competencies required for teaching and factors affecting the adoption of technologies were analyzed. Table 4 presents a descriptive analysis of the statements presented to the professors aimed at understanding the competencies required for teaching.

Table 4
Pedagogical and teaching competencies of teachers

Code Question	Overall average
C1	9.52
C2	9.31
C3	6.28
C4	8.64
C5	8.12
C6	9.06
C7	9.17
C8	7.42
C9	7.65
C10	8.89
C11	8.89
C12	8.51
C13	9.49
C14	9.33

Source: Research data

High averages are observed for most of the competencies investigated, highlighting the importance of adopting pedagogical competencies by the surveyed teachers. A lower average was found concerning teachers seeking to understand the characteristics of enrolled students, such as age, previous qualifications, among other aspects, including prior knowledge of the content of the discipline to be taught (C3). This diagnosis is relevant to assist in the selection of methods to be applied in classes and in the development of the evaluation process.

Regarding familiarity with active teaching methodologies and adoption of educational technologies, their averages were also lower compared to the other investigated competencies (7.42% and 7.65%, respectively). Active methodologies are 'pedagogical strategies to create teaching opportunities where students become more actively engaged, involving them to foster greater engagement' (Valente et al., 2017, p. 464). These methodologies present an alternative to the traditional teaching model, focusing on 'ways to develop the learning process using real or simulated experiences, aiming to successfully address challenges arising from essential activities of social practice in different contexts '(Berbel, 2011. p. 29).

It was also analyzed the level of adoption of technologies in the educational process and the factors that affect such adoption. Table 5 presents the descriptive results on the adoption of educational technologies. It is important to highlight that the technology analyzed was the virtual learning environment, considering that it is used by teachers and students for exchanging materials and maintaining interaction with technology support.

Table 5
Adoption of technologies in the educational process

Code Question	Overall average
AT1	8.64
AT2	7.42
AT3	8.23
AT4	8.48
AT5	8.55
AT6	7.39
AT7	8.24
AT8	7.37
AT9	6.98
AT10	6.76

Source: Research data.

Regarding the use of technologies in the educational process, the lowest averages are related to how much the educational institution promotes the necessary resources to implement this category (virtual learning environment) and how much teachers assess receiving necessary support from the educational institution for using this technology. The averages were 6.98% and 6.76%, respectively.

According to Moran (2018, p. 11), technologies facilitate collaborative learning because "communication among peers, students exchanging information, participating in activities together, solving challenges, conducting projects, and mutually evaluating each other is increasingly important." This reinforces the importance of adopting technologies in the teaching-learning process, which can contribute to students' academic performance.

4.2 Exploratory Factor Analysis

To characterize the pedagogical competencies of teachers and the adoption of technologies in the educational process, exploratory factor analysis (EFA) was applied. Initially, the test was conducted on the 14 statements related to pedagogical competencies of teachers as presented in the questionnaire used in the research. In the first round, statements 3, 4, and 13 were removed due to low factor loadings.

The choice for exploratory factor analysis aims to synthesize the surveyed statements based on their similarities (Fávero et al., 2009). The Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were conducted to assess the adequacy of using factor analysis. The KMO value obtained was 0.827, indicating that it was suitable for the test application. Varimax rotation was used to group the variables and identify the factors, leading to the identification of four factors presented in Table 6. These four factors accounted for 68.73% of the total data variation. It is important to note that all items listed in Table 6 obtained factor loadings greater than 0.5, indicating that they are statistically significant (Hair et al., 2009).

Table 6
Factor Analysis – Pedagogical competencies of teachers

Items/Indicators/Competencies	Factors/Dimensions			
	1	2	3	4
C05	0.82			
C08	0.66			
C09.	078			
C12	0.73			
C10		0.98		
C11		0.98		
C01			0.81	

C02		0.77	
C06		0.61	
C07			0.59
C14			0.83
Eigenvalues	31.25	15.85	12.30	9.31
% Explained Variance	22.02	18.05	16.59	12.05
% Cumulative Variance	22.02	40.07	56.67	68.72
Cronbach's Alpha	0.923	0.845	0.915	0.862

Source: Research data.

To analyze the reliability of the instrument (questionnaire), the internal consistency test called Cronbach's Alpha was applied to examine the correlation among survey responses considering the analysis of collected information from research participants. It was observed that all four factors obtained coefficients above 0.7, indicating a high degree of reliability of the investigated variables (Hair et al., 2009).

The factor 1 was named 'Competencies in Assessment Processes, Organization and Development of Teaching Methodologies, and Application of New Technologies.' The variables grouped in this factor explained 22.02% of the total data variation, indicating that high factor loadings reflect greater agreement among teachers regarding the pedagogical competencies assessed. Assessment processes are crucial for successful teaching and learning, as emphasized by Perrenoud (2000), who positions assessment as a necessary competency in teacher education. This competency involves investigating learning progression, observing and evaluating students in learning situations formatively, and periodically assessing the competencies of future teachers to make informed decisions about educational progression.

Factor 2 is named 'Competencies in the Application of Teaching Methodologies and Knowledge of External Institutional Assessments.' The variables grouped in this factor showed high factor loadings and explained 18.05% of the data variation. This indicates that teachers possess competencies that aid in the application of diverse teaching methodologies in the classroom. The teaching methodologies employed by teachers aim to impart content to students and are notably characterized by lectures and demonstrations conducted by the teachers themselves. According to Behrens (2013, p. 43), "the emphasis on teaching does not necessarily embrace learning. Referenced by a Cartesian view, the methodology is based on four pillars: listen, read, memorize, and repeat."

Factor 3 was named 'Competencies in Planning and Preparation of Content.' The variables grouped in this factor showed high factor loadings and explained 16.59% of the data variation. This indicates that teachers are capable of developing competencies that assist them in their work as educators, which involves not only the specific knowledge to be shared with students but also the pedagogical aspects related to planning. According to Almeida (2003), the planning of the teaching-learning process needs to consider the teacher's pedagogical conception, support from the multidisciplinary team, services offered to students, student profiles, teaching resources, curriculum, lesson plans, and the principles and guidelines of this process.

Factor 4 was named 'Competencies in Communication, Adoption of New Methodologies, and Reflection.' This factor explained 12.05% of the data variation, and the variables indicated that teachers possess competencies related to effective communication and the adoption of new teaching methodologies. Vasconcelos (2009) emphasizes that the development of communication competencies is crucial in the daily life of a teacher, as the teaching process heavily relies on effective communication. Failures in communication can lead to difficulties for students in assimilating the content presented by the teacher.

The findings indicate that the teachers participating in the research recognize the importance of didactic-pedagogical competencies and their relevance to the teaching-learning process.

In the second stage, exploratory factor analysis was conducted to group variables related to intention and use of technologies in the educational process based on their similarities. As mentioned earlier, this study utilized the UTAUT model proposed by Venkatesh et al. (2003). The model's variables encompass four dimensions/constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions.

To apply exploratory factor analysis, the Kaiser-Meyer-Olkin (KMO) measure was analyzed, yielding a value of 0.817, indicating suitability for the test. Table 7 displays the Varimax rotation, identifying two factors that explained 67.62% of the total variation in the data.

Table 7
Factor Analysis - Adoption of Technologies in the Educational Process

Items/Indicators/Technology Adoption	Factors/Dimensions	
	1	2
AT2	0.63	
AT3	0.79	
AT4	0.83	
AT5	0.89	
AT6	0.68	
AT7	0.63	
AT8		0.78
AT9		0.91
AT10		0.91
Eigenvalue	50.47	17.15
% Explained Variance	39.36	28.26
% Cumulative Variance	39.36	67.62
% Explained Variance	0.873	0.810

Source: Research data.

It was found that the Cronbach's alpha test for the factors yielded coefficients above 0.7, indicating the required level of reliability for the proposed analysis.

Analyzing Table 6, Factor 1 was named 'Intention and Use of Technologies involving Performance Expectancy, Effort Expectancy, and Social Influence'. This factor explained 39.36% of the data variation, indicating that educators have the intention and use of technologies, in this study referred to as virtual learning environments. The factors proposed by the UTAUT model highlighted were performance expectancy, effort expectancy, and social influence. According to Venkatesh et al. (2003, p. 447), performance expectancy "is defined as the degree to which an individual believes that using the technology will help to improve job performance." Effort expectancy, as defined in the UTAUT model, "is the degree of ease associated with the use of the system" (Venkatesh et al., 2003. p. 450).

Factor 2 was named 'Intention and Use of Technologies involving Facilitating Conditions'; it explained 28.26% of the data variation. In this factor, variables were grouped concerning how educators assess the technological resources and support offered by the institution for the use of technologies in the educational environment. According to Venkatesh et al. (2003, p. 453), facilitating conditions have a direct impact on technology use behavior and can be defined as "the degree to which an individual believes there is technical and organizational infrastructure to support system use." Thus, facilitating conditions represent technical support mechanisms available to educators to assist them with any issues or doubts related to technology use.

It is evident that the surveyed educators have the intention and use of educational technologies with the expectation of performance, expecting that the use of the virtual learning environment will help improve their job performance (Venkatesh et al., 2003). The expectation of effort indicates that educators perceive ease and understand the use of the virtual learning environment.

Regarding social influence, it reflects how educators perceive how others in their environment use and believe in technology. Lastly, facilitative conditions are related to the degree to which educators believe that infrastructure and technical support are provided for the use of technology.

5 FINAL REMARKS

The aim of the investigation was to identify the didactic-pedagogical competencies of Accounting professors and the intention and use of educational technologies in the teaching-learning process. Findings indicate, regarding didactic-pedagogical competencies, that professors recognize their importance but exhibit some weaknesses, such as knowing the main characteristics of enrolled students in their courses. Students value their relationship with professors more when the latter seek to foster a less hierarchical approach in their interactions (Nogueira et al., 2012).

As for competencies related to knowing active teaching methodologies and adopting educational technologies, the average ratings given by professors were lower compared to other competencies analyzed. These results may indicate that professors are less familiar with the application of these methodologies, opting instead for traditional methods.

The research revealed that instructors indicate that educational institutions, for the most part, provide limited support for using technologies aimed at accounting education. It is understood that employing diverse strategies can construct digital experiences as opportunities to foster the agency of future professionals in the learning process, thereby contributing to achieving digital competencies (Bacich, 2017).

In the results of the exploratory factor analysis aimed at grouping common variance in pedagogical competencies, four factors were identified: Competencies in the Assessment Process, Organization and Development of Teaching Methodologies, and Application of New Technologies; Competencies in the Application of Teaching Methodologies and Knowledge of External Institutional Assessments; Planning and Content Preparation Competencies; and Communication Competencies, Adoption of New Methodologies, and Reflection. These groupings highlighted that educators acknowledge the importance of pedagogical competencies and their relevance to the teaching-learning process.

Regarding the variables related to the intention to use technologies in the educational process by teachers, adopting the UTAUT model, the exploratory factor analysis grouped the variables into two factors based on similarity: Intention and Use of Technologies involving performance expectancy and effort expectancy, social influence, and Intention and Use of Technologies involving facilitating conditions. It is evident that in the intention to use educational technologies, teachers show similarity in the determinants proposed by the UTAUT model across the four constructs.

The implications and contributions of this study propose reflections on teacher training in the accounting field, covering both didactic-pedagogical competencies and the intention to use educational technologies. The results provide insights for academic managers to assess the technical support and technological qualifications necessary for enhancing education. For teachers, the study encourages an analysis of the pedagogical and digital competencies required, prompting them to pursue continuous professional development.

For future research, it is suggested to investigate how educational institutions provide technological support to teachers and students and its relationship with academic performance. Furthermore, exploring the digital competencies of accounting faculty and their motivation for technological qualification would also be beneficial.

REFERENCES

Agência Nacional de Telecomunicações. (2023, 31 de maio). Em 2022, Brasil registrou 9,5 mil escolas sem acesso à internet. *Agência Nacional de Telecomunicações Notícias*. https://www.gov.br/anatel/pt-br/assuntos/noticias/em-2022-brasil-registrou-9-5-mil-escolas-sem-acesso-a-internet

Albertin, A. L., Brauer, M. (2012). Resistência à educação a distância na educação corporativa. *Revista de Administração Pública*, *46*(5), 1367-1389. https://doi.org/10.1590/S0034-76122012000500009

Almeida, M. E. B. (2003). Educação a distância na internet: abordagens e contribuições dos ambientes digitais de aprendizagem. *Educação e Pesquisa*, *29*(2), 327-340. https://doi.org/10.1590/S1517-97022003000200010

Bacich, L. (2017). Desafios e possibilidades de integração das tecnologias digitais. *Revista Pátio*, (81), 37-39.

Behrens, M. A. (2013). *O paradigma emergente e a prática pedagógica* (6a ed.). Vozes.

Berbel, N. A. N. (2011). As metodologias ativas e a promoção da autonomia de estudantes. *Semina, Ciências Sociais e Humanas*, *32*(1), 25-40. https://doi.org/10.5433/1679-0383.2011v32n1p25

Bolzan, G., & Vendruscolo, M. I. (2021). Competências docentes: um estudo com professores de graduação em ciências contábeis no Rio Grande do Sul. *Contabilidade Vista & Revista*, *32*(3), 123-164, 2021. https://doi.org/10.22561/cvr.v32i3.6811

Brighenti, J., Biavatti, V. T., & Souza, T. R. (2015). Metodologias de ensino-abordagem sob a percepção dos alunos. *Revista GUAL*, *8*(3), 281-304. https://doi.org/10.5007/1983-4535.2015v8n3p281

Carvalho, C. de S., Cruz, L. M., & Coelho, L. A. (2021). A educação como direito fundamental do/a estudante na pandemia da COVID 19: o ensino remoto e a realidade de escolas públicas de um município do interior baiano. *Revista Educação e Políticas em Debate*, *10*(3), 1124-1142. https://doi.org/10.14393/REPOD-v10n3a2021-61535

Casa Nova, S. P. de C., Nogueira, D. R., & Blaya, M. (2022). Surfando no tsunami do ensino remoto emergencial: a busca de formação docente nas ondas-caixotes, caldos e capotes durante a pandemia de Covid-19. *Prosppectus – Perspectivas Qualitativas Em Contabilidade e Organizações*, *2*(1), 45-58.

Cruz, L. M., Coelho, L. A., & Ferreira, L. G. (2021). Docência em tempos de pandemia: saberes e ensino remoto. *Debates em Educação*, *13*(31), 993-1016. https://doi.org/10.28998/2175-6600.2021v13n31p992-1016

Cuervo, A. A. V., Noriega, J. Á. V., & Martínez, E. A. C. (2012). Medición de competencias científicas en profesores de educación superior tecnológica. *Revista de Avaliação da Educação Superior*, *17*(1), 237-254. https://doi.org/10.1590/S1414-40772012000100012

Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340. https://psycnet.apa.org/doi/10.2307/249008

Fávero, L. P., Belfiore, P., Silva, F. L., & Chan, B. L. (2009). *Análise de dados: modelagem multivariada para tomada de decisões*. Elsevier.

Fleury, A., & Fleury, M. T. L. (2001). Construindo o conceito de competência. *Revista de Administração Contemporânea*, *5*(edição especial), 183-196. https://doi.org/10.1590/S1415-65552001000500010

Fogarty, T. J. (2020). Accounting education in the post-COVID world: looking into the Mirror of Erised. *Accounting Education*, *29*(6), 563-571. https://doi.org/10.1080/09639284.2020.1852945

Gonçalves, A. de M., & Kanaane, R. (2021). A prática docente e as tecnologias digitais. *Rev. Eletrônica Pesquiseduca*, *13*(29), 256-265. https://doi.org/10.58422/repesq.2021.e1030

Grossi, M. G. R., Minoda, D. D. S. M., & Fonseca, R. G. P. (2020). Impacto da pandemia do COVID-19 na educação: reflexos na vida das famílias. *Teoria e Prática da Educação*, *23*(3), 150-170. https://doi.org/10.4025/tpe.v23i3.53672

Hair, J. F., Jr., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2009). *Análise multivariada de dados* (6a ed.). Bookman.

Jesus, É. F., Moura, L. R. C., Roman, D. J., & Macedo, R. de C. (2021). Aceitação e uso de tecnologia de sistema acadêmico por alunos de uma instituição federal de ensino. *International Journal of Knowledge Engineering and Management*, *10*(27), 36-72. https://doi.org/10.29327/265007.10.27-2

Korelo, J. C., Prado, P. H. M., & Silva, D. M. (2010). Escolha e adoção de tecnologias de informação e comunicação na educação. *INMR - Innovation & Management Review*, *7*(2), 80-103.

Masetto, M. T. (1998). *Professor universitário: um profissional da educação na atividade docente*. Papirus.

Meirelles, F. de S., & Longo, L. (2014). Adoção de plataforma estratégica de tecnologia de informação e comunicação: análise baseada no modelo UTAUT. *Revista da FAE*, *17*(1), 110-125.

Miranda, G. J., Casa Nova, S. P. de C., & Cornachione, E. B., Jr. (2012). Os saberes dos professores-referência no ensino de contabilidade. *Revista Contabilidade & Finanças*, *23*(59), 142-153. https://doi.org/10.1590/S1519-70772012000200006

Moraes, G. H. S. M. (2013). *Adoção de governo eletrônico no Brasil: a perspectiva do usuário do programa Nota Fiscal Paulista*. [Tese de doutorado, Fundação Getúlio Vargas], Repositório FGV São Paulo. https://repositorio.fgv.br/items/4e9db0d8-5980-4103-81e1-a57937e1a6ae

Moran, J. (2018). Metodologias ativas para uma aprendizagem mais profunda. In L. Bacich & J. Moran (Orgs.), *Metodologias ativas para uma abordagem teórico-prática*. Penso.

Nagib, M. (2018). Quem somos. *Escola sem partido*. https://www.programaescolasempartido.org/

Nganga, C. S. N. (2015). *Aceitação do uso de recursos tecnológicos pelos docentes de pós-graduação em Contabilidade*. [Dissertação de mestrado, Universidade Federal de Uberlândia], Repositório UFU. https://repositorio.ufu.br/handle/123456789/12624

Nganga, C. S. N., & Leal, E. A. (2017) Proposta de uma escala multiitens para avaliar os fatores determinantes da aceitação do uso de recursos tecnológicos pelos docentes de pós-graduação em contabilidade. *Revista de Contabilidade e Controladoria*, *9*(3), 143-160. http://dx.doi.org/10.5380/rcc.v9i3.52459

Nogueira, D. R., Bornal, E. M., Barbante, E. A., Jr., & Matsuoka, I. N. (2017). Mobile learning na educação contábil: uma análise do processo de adoção de tecnologia sob a percepção discente. *Revista Mineira de Contabilidade*, *18*(2), 5-16.

Nogueira, D. R., Casa Nova, S. P. de C., & Carvalho, R. C. O. (2012). O bom professor na perspectiva da geração Y: uma análise sob a percepção dos discentes de Ciências Contábeis. *Revista Enfoque: Reflexão Contábil*, *31*(3), 37-52.

Pereira, M. A. C. (2007). *Competências para o ensino e a pesquisa: um survey com docentes de Engenharia Química*. [Tese de doutorado, Universidade de São Paulo], Repositório USP. https://doi.org/10.11606/T.3.2007.tde-08082007-170909

Perrenoud, P. (2000). *10 novas competências para ensinar*. ArtMed.

Rezende, M. G. de, & Leal, E. A. (2013). Competências requeridas dos docentes do curso de Ciências Contábeis na percepção dos estudantes. *Sociedade, Contabilidade e Gestão*, *8*(2), 145-160. https://doi.org/10.21446/scg_ufrj.v8i2.13295

Rosa, R., & Carneiro, L. (2022, setembro 16). Dos 3,6 milhões de estudantes sem acesso à internet em 2021, 94,7% eram de escolas públicas, diz IBGE. *Valor Econômico.* https://valor.globo.com/brasil/noticia/2022/09/16/dos-36-milhes-de-estudantes-sem-acesso-internet-em-2021-947-pontos-percentuais-eram-de-escolas-pblicas-diz-ibge.ghtml

Salles, A., Silva, N., Fonseca, P., & Santos, E. (2020) Adoção de tecnologia em organizações públicas brasileiras à luz do modelo UTAUT: uma revisão sistemática da literatura. *Revista dos Mestrados Profissionais*, *9*(2), 185-201. https://doi.org/10.51359/2317-0115.2020.249447

Santos, A. L. D., Quintana, A. C., & Cruz, A. P. C. (2020). Utilização do Moodle em curso de graduação em ciências contábeis: reflexos desse uso. *Revista Capital Científico*, *18*(3), 29-44.

Silva, E., Oliveira, A. J., & Coutinho, D. J. G. (2021). A importância das tecnologias numa perspectiva de inclusão digital para a prática docente. *Revista Insignare Scientia*, *4*(1), 63-77. https://doi.org/10.36661/2595-4520.2021v4i1.11491

Tardif, M., & Raymond, D. (2000). Saberes, tempo e aprendizagem do trabalho no magistério. *Educação & Sociedade*, *21*(73), 209-244. https://doi.org/10.1590/S0101-73302000000400013

Tempesta, V. R., Rocha Neto, I.V., Leal, E. A., & Miranda, G.J. (2022) Quais saberes compõem a formação docente nos cursos de pós-graduação stricto sensu em contabilidade no Brasil? *Revista Enfoque Reflexão Contábil., 41*(3), 18-36. https://periodicos.uem.br/ojs/index.php/Enfoque/article/view/56335/751375154871

Valente, J., Almeida, M., & Geraldini, A. (2017). Metodologias ativas: das concepções às práticas em distintos níveis de ensino. *Revista Diálogo Educ.*, *17*(52), 455-478. https://doi.org/10.7213/1981-416X.17.052.DS07

Vasconcelos, A. F. (2009). *Professores em Ciências Contábeis: um estudo sobre as competências para o exercício da docência nos cursos presenciais no Nordeste brasileiro.* [Universidade de Brasília, Universidade Federal da Paraíba e Universidade Federal do Rio Grande do Norte], Repositório UnB. http://repositorio.unb.br/handle/10482/3911

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: toward a unified view. *MIS Quarterly*, *27*(3), 425-478.

Zabalza, M. A. (2003). *Competencias docentes del profesorado universitário: calidad y desarrollo profesional*. Narcea.

Zabolotny, S. R., Quintana, A. C., & Cruz, A. P. C. (2022). Epistemologia dos saberes docentes: um estudo em programas de pós-graduação. *Revista Pensamento Contemporâneo em Administração, 16*(2), 96-115. https://doi.org/10.12712/rpca.v16i2.54263

CONFLICT OF INTEREST

The authors assert that there is no conflict of interest related to this submitted work.

AUTHOR CONTRIBUTIONS

Roles	1st author	2nd author	3nd author
Conceptualization	♦	♦	♦
Data curation	♦	♦	♦
Formal analysis	♦	♦	♦
Funding acquisition	♦		
Investigation	♦	♦	♦
Methodology	♦	♦	♦
Project administration	♦		
Resources	♦		
Software	♦		
Supervision	♦		♦
Validation	♦	♦	♦
Visualization	♦	♦	♦
Writing – original draft	♦	♦	♦
Writing – review & editing	♦		♦

ACKNOWLEDGMENTS