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SUCCESS OR FAILURE? PERFORMANCE OF CHATGPT IN THE CONCEPTUAL, PROCEDURAL, AND ATTITUDINAL SKILLS OF THE CFC SUFFICIENCY EXAM

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ABSTRACT

This study aimed to identify the performance of ChatGPT in the sufficiency exam of the Federal Accounting Council (CFC), considering conceptual, procedural, and attitudinal skills. Conceptual skills refer to the theories and concepts of Accounting; procedural skills involve the rules and techniques necessary for professional objectives; and attitudinal skills represent acquired dispositions to assess and act in various situations. All exams administered by the CFC between 2018 and 2022 were analyzed using the Artificial Intelligence (AI) tool. The results showed that ChatGPT passed the majority of the editions analyzed (8 out of 10), performing well on "conceptual" and "text interpretation" items but yielding unsatisfactory results on "procedural" and "attitudinal" questions. These findings indicate that AI faces challenges in areas related to professional practice and the application of accounting knowledge. While it performed well in some editions, its approval was partly facilitated by the number of nullified items, highlighting its difficulty in solving more complex accounting problems. The increasing presence of technologies such as ChatGPT raises questions about the future of accounting professionals and the need to adapt to an ever-evolving environment, where automation may allow accountants to focus on strategic activities, such as financial analysis and consulting. Thus, this study offers contributions to accountants, educators, and regulatory bodies regarding the impact of technology on Accounting Science, reflecting on the challenges, opportunities, and risks imposed by technological evolution.

Keywords: ChatGPT. Sufficiency Exam. Skills. Artificial Intelligence.

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1 INTRODUCTION

Technological transformations have increasingly challenged the accounting profession, and the debate about the future of accounting and its potential extinction has never been more frequent. Recently, the launch of OpenAI's chatbot attracted attention due to its rapid responses and highly human-like language (Deng & Lin, 2023; Patel & Lam, 2023) and sparked discussions about the actual capabilities of this tool in addressing current societal problems. The innovation, known as ChatGPT, has already demonstrated its ability to produce scientific texts (Rossoni, 2022; Patel & Lam, 2023), investigate fraud (Martínez, 2023), perform forensic examinations (Street & Wilck, 2023), identify errors, and even solve complex accounting issues (Oliveira & Khatib, 2023; Freitas et al., 2023).

However, despite the tool's impressive results, questions remain regarding the scope of Artificial Intelligence (AI) capabilities (Deng & Lin, 2023; Dias et al., 2023), especially in fields requiring constant updates, such as Accounting Science. It is worth noting that, in recent years, the market has increased its demands on accounting professionals, requiring skills beyond the technical and theoretical knowledge of the area (Dolce et al., 2020; Miranda et al., 2021; Lira et al., 2021).

Furthermore, institutions such as the International Federation of Accountants (IFAC) and the Federal Accounting Council (CFC) have paid considerable attention to the skills developed during accountants' training and the assessment of the knowledge of recent graduates (IAESB, 2014). Since 2000, for example, students in the final year of undergraduate accounting programs in Brazil have undergone a sufficiency exam that assesses specific content in the area, allowing them to practice the profession if approved. The exam aims to evaluate critical thinking, the ability to apply knowledge, and the skill of interdisciplinary integration when addressing students' problem-solving situations (CFC, 2015; Silva, 2014; Silva et al., 2015).

According to Silva (2014), this content can be classified into: (i) conceptual skills, related to accounting theories and scientific concepts; (ii) procedural skills, involving rules, techniques, methods, and strategies to achieve specific professional objectives; and (iii) attitudinal skills, representing the individual's acquired dispositions to assess and act accordingly in relation to objects, people, events, and/or situations. Zabala (1998) and Coll et al. (2000) explain that such content can indeed be taught, but only human interaction and educational practice allow the full development of all skills, mainly because procedures and attitudes require cross-cutting characteristics from the individual.

In this context, reflecting on the performance of technological tools becomes relevant to understanding the future of the accounting profession and the impact of technological innovations on the field (Andrade & Mehlecke, 2020; Kroon et al., 2021; Martínez, 2023). Therefore, this study aimed to identify ChatGPT's performance in the CFC sufficiency exam, considering conceptual, procedural, and attitudinal skills. It is believed that, even if the tool achieves approval in the exam, as demonstrated in the studies by Oliveira and Khatib (2023) and Freitas et al. (2023), failure may be imminent when evaluating the full set of skills required for accountants.

In this context, the sufficiency exams conducted before the Covid-19 pandemic (2018-2019), during the pandemic (2020-2021), and after the pandemic (2022) were analyzed, as the pandemic period was marked by significant technological development driven by the need for enhancements in remote education. Additionally, the decision to analyze exams up until the end of 2022 was made because, at the time of the study, ChatGPT had received its most recent update in March 2023 (OpenAI, 2023).

As justification and originality of the study, the discussions surrounding the impact of technology on Accounting Science and the skills required by the CFC for new accounting professionals are highlighted. Discussing technological advances in accounting is crucial to understanding emerging opportunities, challenges, and risks in the field. As an opportunity, it is

noted that routine activities, such as compliance evaluation, financial statement preparation, and problem-solving for decision-making, may even be automated, but strategic functions demand human actions. In this scenario, new challenges become part of the contemporary accountant's role and require educational institutions, professional bodies, and regulators to collaborate in promoting the development of both technical and behavioral competencies among professionals.

As a contribution, this research provides insights into the debate about the future of accounting, offering important information for accounting professionals, educators, and regulatory bodies regarding the effectiveness of AI in relation to the conceptual, procedural, and attitudinal skills required. With the study's findings, accountants can critically analyze the use of tools in their practices, educational institutions can organize their curricula to develop competencies that go beyond accounting theory, and regulatory bodies can reformulate their exams to encompass the new profile of accountants. Furthermore, analyzing sufficiency exams over different periods allows for an assessment of educational practices to ensure that future accountants acquire the necessary skills to face contemporary challenges. Finally, the research offers a deeper understanding of the impact of technology on Accounting Science, contributing to the academic literature and providing a critical perspective on the intersection between technological innovation and professional training.

2 CONCEPTUAL, PROCEDURAL, AND ATTITUDINAL SKILLS IN THE AGE OF CHATGPT

Skill development is crucial for the success of future accountants (Dolce et al., 2020; Breda et al., 2021; Miranda et al., 2021; Kroon et al., 2021). Previous studies indicate that the market increasingly demands that universities teach content that goes beyond technical knowledge and prepare students with cross-disciplinary capabilities (Pacheco & Camilo, 2020; Lira et al., 2021). The International Education Standards No. 3 (IES 3) formulated by the IFAC, for example, emphasizes the development of professional skills that extend beyond scientific knowledge (Bassani, 2021), highlighting content that addresses intellectual, interpersonal, communication, personal, and organizational characteristics.

In this regard, Coll et al. (2000) proposed a classification of the content taught in classrooms into three dimensions: (i) conceptual, (ii) procedural, and (iii) attitudinal. The first dimension refers to knowledge about a specific subject, encompassing facts and principles expressed through meaningful words that stimulate cognitive activity and expand the understanding of facts. This dimension is related to declarative knowledge, including facts, concepts, and scientific principles, and can only be developed through the teaching of a solid theoretical foundation (Frasson et al., 2019; Silva, 2014). Generally, these contents are easier to learn, as they primarily require the memorization of provided information (Bastistti et al., 2017; Pasquarelli & Oliveira, 2017).

The second dimension consists of "a set of ordered actions, aimed at achieving a goal" (Coll et al., 2000, p. 77) and derives from learning related to know-how, involving study techniques, research methods, and strategies that enable the execution of tasks related to learning. According to Zabala (1998), procedural skills encompass rules, techniques, methods, skills, and strategies that represent actions directed towards achieving a specific objective, primarily developed through the practice of "know-how." These contents can be classified into: (i) motor/cognitive – addressing actions involving motor or cognitive components, such as jumping and running (motor components) or inferring and hypothesizing (cognitive components); (ii) the number of actions required to perform procedures; and (iii) the degree of determination, referring to the consistency and flexibility in the order of actions.

The third dimension focuses on students' attitudes, which are more complex to identify and assess (Coll et al., 2000; Perrenoud, 2002; Frasson et al., 2019). Attitudinal skills represent

acquired and relatively enduring tendencies or dispositions to evaluate and act according to this evaluation in relation to objects, people, events, or situations (Silva, 2014). According to Zabala (1998), attitudinal knowledge relates to standards of conduct, postures, and values when facing specific situations, encompassing three components: knowledge, feelings, and actions of conduct. Thus, individuals can only develop attitudinal skills if scientific knowledge transforms their attitudes and behaviors. Furthermore, unlike conceptual and procedural skills, attitudinal skills are not taught directly, as their learning depends largely on the behavior of the teacher, who serves as a role model for their students (Frasson et al., 2019).

Silva's (2014) research discusses these skills in the CFC sufficiency exam. The researcher analyzed the 2012 and 2013 editions and classified the questions into conceptual, procedural, and attitudinal skills based on constitutive definitions, as depicted in Figure 1. Notably, for these classifications, the researcher relied on the seminal studies of Zabala (1998), Coll et al. (2000), Perrenoud (2002), and Lúzia (2008).

Figure 1

Classification of Skills and Their Constitutive Definitions

Constructs	Constitutive Definition
Conceptual Skills Focus on theoretical foundations.	The exam items that assess Conceptual Skills primarily focus on theoretical foundations. Thus, the skills evaluated relate to the ability to: • Understand concepts and terminology in Accounting; • Identify Accounting theories; • Recall the meanings of concepts applicable to Accounting; • Express declarative knowledge of accounting; • Develop reasoning for constructing arguments in the field of Accounting; • Connect theory with practice; • Interpret accounting phenomena in light of theoretical principles.
Procedural Skills Focus on actions directed towards achieving specific objectives.	The exam items aimed at assessing Procedural Skills focus on actions directed towards achieving specific objectives. Thus, the skills evaluated relate to the ability to: • Achieve goals associated with Accounting; • Apply Accounting rules; • Utilize techniques in the accounting process; • Prepare accounting information in compliance with standards required by regulatory bodies; • Prepare qualitative accounting information; • Use procedures to carry out accounting tasks; • Draft opinions and reports in the field of Accountin.
Attitudinal Skills Focus on standards of conduct, postures, positions regarding specific situations, and values.	The exam items aimed at assessing Attitudinal Skills focus on standards of conduct, postures/positions regarding specific situations, and values. Thus, the skills evaluated relate to how one should be in terms of: • Demonstrating a systemic view of accounting activities; • Demonstrating interdisciplinarity in accounting activities; • Adapting behavior to legislation inherent to accounting functions; • Critically positioning oneself regarding what was learned in Accounting Sciences; • Disseminating accounting information with precision; • Generating information for decision-making, organizing attitudes, and building values oriented towards citizenship; • Exercising with ethics and proficiency the responsibilities and prerogatives prescribed by specific legislation, revealing appropriate mastery of different organizational models.

Source: Adapted from Silva (2014, p. 55).

As a key finding, Silva (2014) observed that the accounting council primarily required content related to "what must be known" (conceptual skills), indicating that the assessments of the Sufficiency Exam were somewhat aligned with the National Curricular Guidelines (DCNs). It is worth noting that the DCNs for the Accounting course are undergoing changes, as Resolution CNE/CES No. 10, of December 16, 2004, was recently updated by Resolution CNE/CES No. 1, dated March 27, 2024. The new DCNs expand the competencies and skills to be developed in students, focusing on content in a broad and interdisciplinary manner. However, since the implementation of these DCNs has a deadline of two years, that is, until 2026, many courses are still operating under the premises of the previous guidelines.

On the other hand, AI has evolved drastically. In 2022, OpenAI released ChatGPT, a tool capable of answering questions in seconds with language that closely resembles human communication (Patel & Lam, 2023). It is based on the Generative Pre-Trained Transformer architecture, which stands out for its ability to process information in parallel and learn complex representations of sequential data (OpenAI, 2023). This characteristic allows the tool to understand conversational context, analyze linguistic patterns, and produce contextually appropriate responses.

Given this technological advancement, researchers from various fields have begun exploring and investigating the broad capabilities of AI (Biswas, 2023; Surameery & Shokor, 2023; Johnson et al., 2023). In the business field, Rossoni (2022) used the tool to co-author an editorial and noted that AI significantly facilitated the writing process, generating content efficiently. Similarly, Dowling and Lucey (2023) argue that using ChatGPT in research, particularly in finance, contributes to idea generation and data identification, making it a valuable tool for researchers. Additionally, Martínez (2023, p. 37) applied ChatGPT in the identification and assessment of risks in the auditing field, obtaining satisfactory results in case interpretation and the detection of potential irregularities. According to the researcher, the tool "has the ability to understand the scope of information necessary for risk identification and description, using all stored information".

However, Street and Wilck (2023) "had a chat" with AI about Forensic Accounting and found that ChatGPT correctly performs accounting entries and prepares financial statements. Nonetheless, in more complex situations, such as inventory recording, it provides incorrect information and even invents expense values and cost of goods sold. From the researchers' perspective, this tool "possesses general knowledge but does not readily differentiate between institutional contexts unless specifically prompted to do so. Even when prompted, its knowledge may not be as applicable as that of a trained professional" (p. 18). Furthermore, Zaremba and Demir (2023) warn about the ethical and regulatory issues of using ChatGPT in the business field. Particularly in finance, the researchers believe that studies should raise reflections on the dangers of tool dependency to ensure the responsible use of technology.

Regarding the CFC sufficiency exam, studies by Oliveira and Khatib (2023) and Freitas et al. (2023) analyzed ChatGPT's ability to pass the exam, both confirming sufficiency (more than 50% accuracy in the tests). However, Oliveira and Khatib (2023, p. 22) believe that "a skeptical approach is needed when evaluating the accuracy of responses generated by these technologies," as some answers were unsatisfactory, containing errors and invented content. Furthermore, AI's main challenges in the exam were topics related to Accounting Principles, Brazilian Accounting Standards, Controllership, and Accounting Theory (Freitas et al., 2023), subjects that often intersect with conceptual skills. Therefore, it is important to test this tool's capabilities, considering all the skills required for an accountant to operate in the field.

3 METHODOLOGICAL PROCEDURES

The research is classified as descriptive, documentary, and with a qualitative-quantitative approach (Marconi & Lakatos, 2019). It is descriptive because it sought to identify the performance of ChatGPT in the CFC sufficiency exam, considering conceptual, procedural, and attitudinal skills. For this purpose, all exams administered by the Council from 2018 to 2022 were analyzed. This time frame was chosen to examine three distinct scenarios: pre-pandemic, represented by the exams applied in 2018 and 2019 (in-person format); the pandemic period, covering the 2020 and 2021 exams (conducted remotely); and the post-pandemic period, represented by the 2022 exams (returning to the in-person format).

The research is also documentary, as it used ten exams (since two editions occur each year) and their respective answer keys. Given that each exam consisted of 50 questions, a total of 500 exam items (questions) were collected and analyzed. Data collection took place in July 2023, directly from the CFC website. Subsequently, all exam items were submitted to ChatGPT, version 4 (free DALL-E, updated in March 2023), and the results were recorded in Microsoft Office Excel® spreadsheets.

For inputting questions into the AI, a specific chat was created for each exam edition. In each chat, the tool was asked to answer the question using the prompt "What is the correct answer to this question?" without mentioning that the questions were from the sufficiency exam. The questions were input one by one, following the exam order. It is noted that questions containing visual elements were described for the AI due to its limitations in interpreting images in this version. To ensure the accuracy of these descriptions, the guidelines established by the Accessibility Technology Center, which provides image description guidelines for assistive technologies (Instituto Federal do Rio Grande do Sul, 2024), were followed. Additionally, to assess the level of success (passing the exam) or failure (failing the exam) of ChatGPT, the same passing score used for student approval in the sufficiency exam was adopted, requiring a 50% correct response rate (equivalent to 25 questions). In cases where questions were annulled, they were considered correct responses.

Finally, a qualitative approach was employed, using Content Analysis to understand all exam items and classify them into Conceptual, Procedural, and Attitudinal Skills. Content Analysis offers a systematic understanding of communication intent, as it seeks to extract the essence of a text through detailed analysis of the available information, data, and evidence (Martins & Theóphilo, 2007). In this context, the constitutive definitions (Figure 1) and categorization procedures (Figure 2) proposed by Silva (2014) and Silva et al. were utilized (2015).

Figure 2
Categorization Procedures

	VERIFICATION ITEMS
CONCEPTUAL: Primarily focus on theoretical foundations.	1. Relates knowledge about a specific aspect of Accounting.
	2. Describes concepts and terminology in Accounting Sciences.
	3. Identifies Accounting theories.
	4. Promotes cognitive activity by fostering understanding and applying accounting concepts.
	5. Expresses declarative knowledge in the accounting field.
	6. Develops memory and reasoning, leading to the construction of knowledge in Accounting.
	7. Builds thought processes to enable argumentation in the field of Accounting.
	1. Relates to what needs to be done in the accounting field.

PROCEDURAL: Focus on actions directed towards achieving specific objectives.	2. Describes actions in an orderly, non-random manner to achieve a goal associated with Accounting.
	3. Applies rules related to the use of Accounting.
	4. Connects techniques to be used in Accounting practice.
	5. Presents methods used in the construction of accounting data.
	6. Includes rules, techniques, methods, skills, strategies, and procedures.
	7. Utilizes procedures to carry out Accounting tasks, prepare opinions, and produce reports in the accounting field.
ATTITUDINAL: Focus on standards of conduct, postures, positions regarding specific situations, and values.	1. Relates to how one should behave in the field of Accounting.
	2. Demonstrates a systemic view and interdisciplinarity in accounting activities.
	3. Adapts behavior to the legislation inherent to accounting functions.
	4. Requires positioning on Accounting matters.
	5. Disseminates accounting information with a high level of precision.
	6. Generates information for decision-making, organizing attitudes, and building values oriented towards citizenship.
	7. Exercises ethics and proficiency in the responsibilities and prerogatives of the accounting field, demonstrating appropriate mastery of different organizational models.

Source: Adapted from Silva (2014, p. 58).

For the categorization procedures in Content Analysis, three steps were performed. In the first step, a detailed reading of the questions was conducted, assigning a score of 1 (one) to the verification items (Figure 2) that made explicit or implicit reference to Conceptual, Procedural, or Attitudinal Skills, and a score of 0 (zero) if otherwise. In the second step, the scores assigned were summed, referring to the seven verification items for each skill.

Finally, in the third step, the skills were classified using the following criteria: a) if the sum of the verification item scores was "0," it indicated no conceptual, procedural, or attitudinal aspects; b) if the sum of the scores was within the range of "1 to 3," it denoted the presence of conceptual, procedural, or attitudinal aspects; c) if the sum of the scores was in the range of "4 to 6," it indicated the predominance of a conceptual, procedural, or attitudinal aspect; d) if the sum of the scores was "7," it indicated that the question was fully characterized as a conceptual, procedural, or attitudinal skill. At the conclusion of the third step, it was decided that the criteria outlined in points "c" and "d" would be used for classifying the exam items in this research, as demonstrated in Table 1.

It is also noted that some questions were not classified within the analyzed skills, as they pertained to items related to applied Portuguese Language, which only require candidates' text interpretation – as referenced by the Law of Directives and Bases of Education and Decree-Law No. 6,583 of 2008, which addresses the Portuguese Language Orthographic Agreement. As these questions do not directly measure Accounting knowledge and are associated with the ability to comprehend beyond the explicit meaning of words, they were categorized as "Text Interpretation." Following these steps, the questions were categorized by the level of success and failure of ChatGPT in the exams, and the data were analyzed quantitatively through frequency analysis.

4 RESULTS

From the categorization of Content Analysis of the exam items from 2018 to 2022, the results presented in Table 1 were obtained.

Table 1
Classification of Exam Items

Skills	Exam Editions										Total
	2018		2019		2020		2021		2022		
	1ª	2ª	1ª	2ª	1ª	2ª	1ª	2ª	1ª	2ª	
Conceptual	20	27	30	19	13	9	10	11	23	21	183
Procedural	22	19	17	20	33	35	33	35	24	26	264
Attitudinal	6	2	1	9	2	4	5	2	1	1	33
Text Interpretation	2	2	2	2	2	2	2	2	2	2	20
Total	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**500**

Source: Research Data.

The distribution of the analyzed questions shows that most are categorized as procedural skills (264 questions, representing 52.8% of the sample), followed by conceptual skills (183 questions, corresponding to 36.6%), attitudinal skills (33 questions, representing 6.6%), and lastly, text interpretation (20 questions, accounting for 4%). This result differs from Silva's (2014) findings, which identified a high frequency of conceptual skills, followed by procedural and then attitudinal skills in the 2012 and 2013 editions of the sufficiency exam. This suggests that over the years, the CFC has shifted to prioritize exam items that evaluate practical knowledge application, possibly reflecting the importance of professional experience from the perspective of the exam organizers (Pasquarelli & Oliveira, 2017).

Regarding the number of questions per edition, it is notable that: (i) the first edition of 2019 had the highest number of exam items categorized as conceptual skills (30); (ii) the second editions of 2020 and 2021 had the most items with procedural characteristics (35); and (iii) the second edition of 2019 had the highest number of attitudinal questions (9). This result is interesting when analyzing the periods: (i) "pre-pandemic" (2018-2019), "during the pandemic" (2020-2021), and "post-pandemic" (2022), as it indicates that in 2018 and 2019, questions were more focused on conceptual skills. In the years 2020 to 2022, however, this changed, with more procedural skill questions being applied, potentially suggesting that the CFC adopted certain strategies to minimize possible cases of cheating during the online application of the exam.

After categorization, all questions were submitted to ChatGPT to determine its success or failure level in resolution. The results are presented in Table 2.

Table 2
ChatGPT Performance by Edition

	Pre-Pandemic				During the Pandemic				Post-Pandemic	
Exam	**2018**		**2019**		**2020**		**2021**		**2022**	
Edition	**1ª**	**2ª**	**1ª**	**2ª**	**1ª**	**2ª**	**1ª**	**2ª**	**1ª**	**2ª**
Success	28	31	24	25	23	24	23	23	29	21
Failure	22	19	23	24	23	24	24	27	21	29
Annulled	-	-	3	1	4	2	3	-	-	-
Final Score	28	31	27	26	27	26	26	23	29	21
Result	**AP**	**AP**	**AP***	**AP**	**AP***	**AP***	**AP***	**RP**	**AP**	**RP**

Note: AP = Approved in the exam, AP = Approved considering annulment, RP = Failed in the exam.*
Source: Research Data.

As shown in Table 1, overall, ChatGPT successfully completed the exams, passing 8 out of the 10 analyzed tests. The best performances were in the two editions of 2018 (with 28 and 31 correct answers) and the first edition of 2022 (with 29 correct answers). The lowest performances occurred in the second editions of 2021 and 2022, with 27 and 29 incorrect answers, respectively.

These results align with the findings of Oliveira and Khatib (2023) and Freitas et al. (2023), who reported similar outcomes when testing ChatGPT.

For comparison, according to statistical results published by the CFC, students who took the sufficiency exam scored an average of 22 and 23 correct answers in the two editions of 2018; in 2019, the average was 23 and 22; in 2020, it was 23 and 21; in 2021, it was 21 and 22; and in 2022, it was 21 in both editions. This indicates that ChatGPT consistently outperformed the average of students who took the sufficiency exam in the analyzed editions. While ChatGPT achieved between 28 and 31 correct answers in its best performances, students' averages ranged between 21 and 23 correct answers.

However, it is noteworthy that in the first edition of 2019, both editions of 2020, and the first edition of 2021, the AI's approval was only achieved due to the number of annulled questions. Additionally, during the pandemic period, ChatGPT showed the lowest success rates, passing the two editions of 2020 and the first of 2021 solely due to annulments and failing the second edition of 2021. This information may be relevant in skill analysis since these editions also had the highest number of exam items categorized as procedural (Table 1). It is important to note that procedural skills represent a set of ordered actions aimed at achieving an objective, which is closely tied to practical accounting a domain where ChatGPT demonstrated limitations, as noted in the study by Street and Wilck (2023).

In this context, by relating the skill classifications procedural (accounting practice actions), conceptual (theoretical knowledge), and attitudinal (conduct norms and professional values) with ChatGPT's performance, the results presented in Table 3 were obtained.

Table 3
Skills X ChatGPT Performance

ChatGPT Performance	Habilidades							
	Conceptual	**(%)**	**Procedural**	**(%)**	**Attitudinal**	**(%)**	**Interpretation**	**(%)**
Sucesso	115	63	111	42	11	33	14	70
Fracasso	65	35	146	55	19	58	6	30
Anulada	3	2	7	3	3	9	0	0
Total	**183**	**100**	**264**	**100**	**33**	**100**	**20**	**100**

Source: Research Data.

The data presented in Table 3 reveal that the AI was most successful in text interpretation questions, correctly answering 14 out of 20 (70%) and in those categorized as “conceptual skills,” with 115 correct responses out of 183 questions (63%). However, ChatGPT demonstrated greater failure in attitudinal skills, missing 19 out of 33 items (58%) and procedural skills, with 146 incorrect answers out of 264 (55%). These results indicate that although ChatGPT has shown aptitude in understanding texts and concepts, as highlighted in previous studies (Rossoni, 2022; Patel & Lam, 2023; Zaremba & Demir, 2023), its performance is insufficient when faced with questions requiring stances, values, and actions within Accounting. Thus, the increase in successful responses to conceptual questions may indicate that the tool can grasp theoretical concepts and information presented in the question statements. However, this conceptual understanding may not suffice to tackle the practical complexities inherent in Accounting Science (Dolce et al., 2020; Breda et al., 2021; Miranda et al., 2021).

To illustrate this complexity and ChatGPT's challenges, a test item categorized under the “procedural” skill was selected (Figure 3). This question was part of the second edition of the 2022 exam.

Figure 3
Example of ChatGPT Failure

Question	ChatGPT's Response
A certain business entity in the commercial sector reported the following transactions for the month of January: 01/05 - Purchase of 20 units of merchandise, on credit, at R$ 110.00 each; 01/06 - Return of one of the units of merchandise purchased the day before; 01/07 - Discount of R$ 5.00 per unit on the 19 remaining units of merchandise (purchased on 01/05); 01/08 - Sale on credit of 20 units of merchandise for a total of R$ 4,000.00; 01/09 - Receipt of two units returned from the previous sale; 01/10 - Discount granted on the remaining merchandise sold for a total of R$ 230.00; and, Initial inventory consisting of 5 units purchased at R$ 100.00 each. Considering exclusively the information provided and knowing that the company uses the "First In, First Out (FIFO)" inventory valuation method, indicate the value of the Cost of Goods Sold on January 8. A) R$ 1,865.00 *B) R$ 2,075.00 C) R$ 2,590.00 D) R$ 2,700.00	To calculate the Cost of Goods Sold (COGS) on January 8, we first need to understand the inventory movements and costs: 1) Purchase of 20 units at R$ 110.00 each: Totaling R$ 2,200.00 in cost. 2) Return of one unit: Reduces the total cost by R$ 110.00. 3) Discount of R$ 5.00 per unit on the remaining 19 units: This reduces the total cost by R$ 5.00 * 19 = R$ 95.00. 4) Initial inventory of 5 units at R$ 100.00 each: Totaling R$ 500.00 in cost. The total cost available for sale on January 8 is: Total cost available = (20 - 1 - 19) × 110 + 5 × 100 = 110 × 1 + 5 × 100 = 110 + 500 = R$ 610.00. Therefore, the Cost of Goods Sold on January 8 is R$ 610.00. Thus, the correct answer is that the Cost of Goods Sold on January 8 is A) R$ 1,865.00.

*Note: *Correct alternative according to the answer key provided by the CFC.*
Source: Research Data.

In the selected question (Figure 3), routines related to inventory are presented, including purchases, returns, discounts, and sales. For the student to respond correctly, it was necessary to describe the actions in an orderly manner, following a logical sequence that involved calculating the initial inventory, purchases, returns, discounts, and finally, sales. Additionally, it was crucial to have a grasp of the concepts, rules, and procedures related to this specific scenario. However, ChatGPT did not succeed in this calculation, as it failed to recognize that the routine of discounts on purchases, for example, does not affect the exit of units from inventory, but rather the value of the merchandise. The same difficulty was evidenced in the study by Street and Wilck (2023), which showed that the tool provided incorrect information in the inventory entry, fabricating important data, such as the cost of goods sold and associated expenses. Thus, it can be stated that questions requiring the practical application of knowledge in Accounting Science and a deep understanding of the nuances and specificities of Accounting are challenging for AI.

Additionally, in an effort to analyze performance by skill over time, Tables 4, 5, and 6.

Table 4
Skills X ChatGPT Performance (During the Pandemic)

Edition	Quantity	Conceptual	Procedural	Attitudinal	Text Interpretation
1st of 2018	Categorized Questions	20	22	6	2
	ChatGPT's Correct Answers	14	9	3	2
	ChatGPT's Errors	6	13	3	0
	Annulled	-	-	-	-
	(%) Correct Answers	**70%**	**41%**	**50%**	**100%**
	(%) Errors	**30%**	**59%**	**50%**	**0%**
2nd of 2018	Categorized Questions	27	19	2	2
	ChatGPT's Correct Answers	18	11	0	2
	ChatGPT's Errors	9	8	2	0
	Annulled	-	-	-	-
	(%) Correct Answers	**67%**	**58%**	**0%**	**100%**
	(%) Errors	**33%**	**42%**	**100%**	**0%**
1st of 2019	Categorized Questions	30	17	1	2
	ChatGPT's Correct Answers	18	6	0	0
	ChatGPT's Errors	11	10	0	2
	Annulled	1	1	1	-
	(%) Correct Answers	**60%**	**35%**	**0%**	**0%**
	(%) Errors	**37%**	**59%**	**0%**	**100%**
2nd of 2019	Categorized Questions	19	20	9	2
	ChatGPT's Correct Answers	14	6	3	2
	ChatGPT's Errors	5	13	6	0
	Annulled	-	1	-	-
	(%) Correct Answers	**74%**	**30%**	**33%**	**100%**
	(%) Errors	**26%**	**65%**	**67%**	**0%**

Source: Research Data.

Table 4 shows ChatGPT's performance by skills in the years prior to the pandemic. It is noted that in all editions, the exam items considered "conceptual" and "text interpretation" were highlighted as areas of success for the tool. In the second edition of 2019, for example, the tool achieved 74% accuracy on the questions categorized as conceptual. On the other hand, this same edition presented the greatest challenges (failures) in the items categorized as "procedural," as the AI made errors on about 65% of the questions. Additionally, for the items categorized as "attitudinal," ChatGPT failed in most editions, getting all questions wrong in the second edition of 2018 and 67% wrong in the second edition of 2019.

In Table 5, the performance of the AI during the pandemic years is highlighted. During this period, it can be observed once again that procedural questions - which saw a significant increase during this time - and attitudinal questions presented the greatest challenges for ChatGPT. In all editions, the number of incorrect answers exceeded the correct ones, particularly noted in the first and second editions of 2020 for procedural items (61% and 57% errors, respectively) and in the first edition of 2021 for attitudinal items. Regarding the "conceptual" and "text interpretation" exam items, ChatGPT performed well in most editions, notably in the second edition of 2020, which had the highest accuracy percentage: 78% for conceptual items and 100% for interpretation items.

Table 5
Skills X ChatGPT Performance (During the Pandemic)

Edition	Quantity	Conceptual	Procedural	Attitudinal	Text Interpretation
1st of 2020	Categorized Questions	13	33	2	2
	ChatGPT's Correct Answers	9	11	1	2
	ChatGPT's Errors	3	20	0	0
	Annulled	1	2	1	-
	(%) Correct	**69%**	**33%**	**50%**	**100%**
	(%) Errors	**23%**	**61%**	**0%**	**0%**
2nd of 2020	Categorized Questions	9	35	4	2
	ChatGPT's Correct Answers	7	14	1	2
	ChatGPT's Errors	2	20	2	0
	Annulled	-	1	1	-
	(%) Correct	**78%**	**40%**	**25%**	**100%**
	(%) Errors	**22%**	**57%**	**50%**	**0%**
1st of 2021	Categorized Questions	10	33	5	2
	ChatGPT's Correct Answers	5	15	2	1
	ChatGPT's Errors	4	16	3	1
	Annulled	1	2	-	-
	(%) Correct	**50%**	**45%**	**40%**	**50%**
	(%) Errors	**40%**	**48%**	**60%**	**50%**
2nd of 2021	Categorized Questions	11	35	2	2
	ChatGPT's Correct Answers	5	16	1	1
	ChatGPT's Errors	6	19	1	1
	Annulled	-	-	-	-
	(%) Correct	**45%**	**46%**	**50%**	**50%**
	(%) Errors	**55%**	**54%**	**50%**	**50%**

Source: Research Data.

Finally, in Table 6, the performance in the post-pandemic editions is highlighted. During this period, something different from the previous ones can be identified. The second edition of 2022 proved challenging for ChatGPT across all skills, as the tool made errors on 57% of the questions categorized as "Conceptual," 62% of the "Procedural," and 100% of the "Attitudinal." However, in the items classified as "Text Interpretation," the tool again achieved success.

Table 6
Skills X ChatGPT Performance (Post-Pandemic))

Edition	Quantity	Conceptual	Procedural	Attitudinal	Text Interpretation
1ª of 2022	Categorized Questions	23	24	1	2
	ChatGPT's Correct Answers	16	13	0	0
	ChatGPT's Errors	7	11	1	2
	Annulled	-	-	-	-
	(%) Correct	**70%**	**54%**	**0%**	**0%**
	(%) Errors	**30%**	**46%**	**100%**	**100%**
2ª of 2022	Categorized Questions	21	26	1	2
	ChatGPT's Correct Answers	9	10	0	2
	ChatGPT's Errors	12	16	1	0
	Annulled	-	-	-	-
	(%) Correct	**43%**	**38%**	**0%**	**100%**
	(%) Errors	**57%**	**62%**	**100%**	**0%**

Source: Research Data.

The analysis of the data across specific periods before, during, and after the pandemic reveals some interesting trends, particularly concerning changes in the exam format and the

required skills. Before the pandemic, the tool demonstrated consistent success in Conceptual exam items, especially highlighted in the first edition of 2018 and the second edition of 2019. However, it faced difficulties with Procedural and Attitudinal exam items, particularly in the second edition of 2019, again indicating the AI's limitations in handling tasks that require practical actions and decision-making based on values and ethical posture. It is important to recall that, as Zabala (1998) emphasizes, Procedural Skills represent a set of ordered actions with a purpose, directed towards achieving a specific objective. These contents involve actions such as reading, drawing, observing, calculating, classifying, relating, synthesizing, inferring, among others. On the other hand, studies on Attitudinal knowledge are related to standards of conduct and postures in specific situations, as well as fundamental values.

During the pandemic, ChatGPT was able to correctly answer some Conceptual exam items but faced challenges with those requiring the practical application of accounting knowledge (Procedural and Attitudinal skills). This period also coincided with the transition of the exam from in-person to virtual, indicating that changes in the application format and the skills assessed may have directly impacted the tool's performance. After the pandemic, especially in the last edition analyzed, the results were different. The AI failed to answer most of the questions categorized as "Conceptual," suggesting that even in some theoretical content, challenges may arise for the tool.

5 CONCLUSIONS

With the objective of identifying ChatGPT's performance in the CFC sufficiency exam, considering Conceptual, Procedural, and Attitudinal skills, all exams administered by the CFC from 2018 to 2022 were analyzed and submitted to the AI. Overall, the tool, recognized for its rapid processing capability and response to complex questions, was approved in the majority of the analyzed exams (8 out of 10 editions). However, when comparing ChatGPT's performance with the skills, the results reveal good performance in items categorized as "Conceptual" and "Text Interpretation," but low performance in "Procedural" and "Attitudinal" questions.

These results indicate that competencies related to professional practice, ethical posture, knowledge application, and the mission of Accounting Science as a tool for decision-making still pose challenges for AI. Additionally, it is important to highlight that, despite success in some editions, ChatGPT achieved approval in some of them solely due to the number of annulled questions. This underscores the difficulty of AI in solving more complex accounting problems. Therefore, it can be stated that, while the tool demonstrates promising skills in certain aspects of Accounting, it is essential to consider its broader impact on the profession.

In this sense, the increasing presence of technologies like ChatGPT raises important questions about the role of accounting professionals in the future and how they can adapt to an ever-evolving environment. The automation provided by the inclusion of these tools in Accounting can simplify routine tasks, allowing accountants to focus on activities such as strategic financial analysis and business consulting. This enables accounting professionals to take on more proactive roles in the financial decisions of organizations. On the other hand, it is necessary for these professionals to be skeptical and critically evaluate their consultations, as incorrect and unexamined responses can lead to problems in executing accounting practices, directly impacting their clients and the quality of information.

Furthermore, it is essential to invest in the training of accounting professionals to ensure they can adequately understand and utilize these technological tools, guaranteeing that the integrity and accuracy of financial information are not compromised. Moreover, it is important to emphasize that the advancement of AI in Accounting does not mean the complete replacement of professionals, but rather support for the execution of their activities. In this sense, it is believed that current and future accounting professionals need to stay updated with the latest technologies

but, above all, must develop transversal skills, as highlighted in the study. For this, it is necessary for educational institutions, regulatory bodies, and all stakeholders in the training process to make efforts to ensure that Conceptual, Procedural, and Attitudinal skills are integral to the accountant's education.

As a limitation, it is important to highlight the assumption that the exam questions are well-written and clear, allowing the AI to understand the requested information. The study also had to use a description protocol for exam items that contain visual elements, as the AI faces difficulties in interpreting non-textual elements, such as graphs, tables, or diagrams, in the analyzed version. Additionally, considering that ChatGPT undergoes constant updates, the results obtained in this study whether successful or not may differ in future studies, which could hinder comparative analyses.

Finally, suggestions for future research include: (i) empirically investigating graduates in Accounting (both those already graduated and those currently studying) to understand their perceptions of the impact of integrating these technologies into the accounting job market and professional practices; (ii) exploring strategies to enhance AI capabilities so that it can meet the more complex and diverse demands of the accounting profession; and (iii) analyzing the skills required in the sufficiency exams for the field by investigating the provided guidelines and potential biases among the exam committees.

REFERENCES

Andrade, C. B. H., & Mehlecke, Q. T. C. (2020). As inovações tecnológicas e a contabilidade digital: um estudo de caso sobre a aceitação da contabilidade digital no processo de geração de informação contábil em um escritório contábil do Vale do Paranhana/RS. *Revista Eletrônica de Ciências Contábeis*, *9*(1), 93-122. https://seer.faccat.br/index.php/contabeis/article/view/1596

Bastosti, T. dos S.; Preto, V. M.; & Heinzle, M. R. S. (2017). Processos avaliativos na educação superior: os planos de ensino em análise. *Revista Ibero-Americana de Estudos em Educação, 12*(3), 1174-1791. https://doi.org/10.21732/riaee.v12.n.3.2017.8577

Biswas, S. S. (2023). Role of chat GPT in public health. *Annals of Biomedical Engineering*, *51*(5), 868-869. https://doi.org/10.1007/s10439-023-03172-7

Breda, M. G., Moraes, A. C., França Lopes, I., & Meurer, A. M. (2021). Desenvolvimento de habilidades e competências técnicas no curso de Ciências Contábeis: percepções de alunos a luz da IFAC. *Refas - Revista Fatec Zona Sul*, *7*(5), 1-23. https://www.revistarefas.com.br/RevFATECZS/article/view/433

Coll, C., Pozo, J. I., Sarabia, B., & Valls, E. (2000). *Os conteúdos na reforma: Ensino e aprendizagem de conceitos, procedimentos e atitudes*. ArtMed Editora.

Conselho Federal de Contabilidade (2015). *Resolução do Conselho Federal de Contabilidade nº 1486 de 2015,* Regulamenta o Exame de Suficiência como requisito para obtenção de Registro Profissional em Conselho Regional de Contabilidade (CRC). https://cfc.org.br/registro/legislacao/

Deng, J., & Lin, Y. (2023). The benefits and challenges of ChatGPT: An overview. *Frontiers in Computing and Intelligent Systems*, *2*(2), 81-83. https://doi.org/10.54097/fcis.v2i2.4465

Dias, R., Sousa, F., & Trigo, A. (2023). *Os contabilistas certificados e o ChatGPT*. XIX Congresso Internacional de Contabilidade e Auditoria. https://www.researchgate.net/profile/Antonio-Trigo/publication/375162742_Certified_Accountants_and_ChatGPT/links/65426c123cc79d48c5c68a9b/Certified-Accountants-and-ChatGPT.pdf

Dolce, V., Emanuel, F., Cisi, M., & Ghislieri, C. (2020). The soft skills of Accounting graduates: perceptions versus expectations. *Accounting Education*, *29*(1), 57-76. https://doi.org/10.1080/09639284.2019.1697937

Dowling, M., & Lucey, B. (2023). ChatGPT for (Finance) research: The Bananarama Conjecture. *Finance Research Letters*, *53*, 103662. https://doi.org/10.1016/j.frl.2023.103662

Frasson, F., Laburú, C. E., & Zompero, A. F. (2019). Aprendizagem significativa conceitual, procedimental e atitudinal: uma releitura da Teoria Ausubeliana. *Revista Contexto & Educação*. https://dx.doi.org/10.21527/2179-1309.2019.108.303-318

Freitas, M. M. de, Sallabery, J. D., Silva, T. B. J., & Rosa, F. S. (2023). *Resolução de problemas contábeis como o ChatGPT 4.* V International Conference in Management and Accounting (ICMA).

Instituto Federal do Rio Grande do Sul (2024). Centro Tecnológico de Acessibilidade – CTA. Disponível em: https://cta.ifrs.edu.br/

International Accounting Education Standard Board [IAESB]. (2014). *International Education Standard 3*, Initial Professional Development – Professional Skills (Revised). https://www.ifac.org/system/files/publications/files/IAESB-IES-3-Professional-skills.pdf

Johnson, D., Goodman, R., Patrinely, J., Stone, C., Zimmerman, E., Donald, R., Chang, S., Berkowitz, S., Finn, A., Jahangir, E., Scoville, E., Reese, T., Friedman, D., Bastarache, J., Heijden, Y. van der, Wright, J., Carter, N., Alexander, M., Choe, J., … Wheless, L. (2023). Assessing the accuracy and reliability of AI-generated medical responses: An evaluation of the chat-GPT model. In *Research Square*. https://doi.org/10.21203/rs.3.rs-2566942/v1

Kroon, N., Alves, M. do C., & Martins, I. (2021). The impacts of emerging technologies on accountants' role and skills: Connecting to open innovation—A systematic literature review. *Journal of Open Innovation Technology Market and Complexity*, *7*(3), 163. https://doi.org/10.3390/joitmc7030163

Lei nº 9394/96, de 20 de dezembro de 1996. Dispõe sobre a Lei de Diretrizes e Bases da Educação Nacional. Diário Oficial da União. Brasília: Ministério da Educação.

Lira, T. A., Gomes, F. P., & Musial, N. T. K. (2020). Habilidades e Competências profissionais exigidas dos contadores: quais os requisitos dos anúncios de emprego? *Revista Catarinense da Ciência Contábil*, *20*, 1-28. https://doi.org/10.1630/2237-7662202132271

Lúzia, A. M. S. (2008). Panorama da educação brasileira frente ao terceiro milênio. *Revista Eletrônica de Ciências.*

Marconi, M. A., & Lakatos, E. M. (2019). *Fundamentos de metodologia científica* (6a ed.). Atlas.

Martins, G. A., & Theóphilo, C. R. (2007). *Metodologia da investigação científica para Ciências Sociais Aplicadas*. Atlas.

Martínez, C. E. L. (2023). *La utilización de la inteligencia artificial CHAT - GPT para la identificación y evaluación de riesgos, realizada en el marco de una auditoría a los estados financieros de empresas que cotizan en el mercado público de valores de Colombia*. [Tese de Doutorado, Universidad Autónoma de Bucaramanga UNAB].

Miranda, C. S., Lima, J. P. R. de, & Souza, T. C. de. (2021). Habilidades dos recém-formados em contabilidade: análise da percepção dos profissionais de recrutamento. *Revista de Contabilidade da UFBA, 15*. https://periodicos.ufba.br/index.php/rcontabilidade/article/view/42987

Oliveira, J., & Khatib, A. (2023). Man or machine? An exploratory study of the performance of chat GPT 3.5 in the CFC sufficiency exam. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4560434

OpenAI. (2023). *ChatGPT. Get instant answers, find creative inspiration, learn something new*. https://openai.com/chatgpt

Pacheco, E., & Camilo, S. P. O. (2020). Competências essenciais requeridas na contratação de profissionais em início de carreira. *RAGC, 8*(32), 117-131.

Pasquarelli, B. V. L., Oliveira, T. B. (2017). Aprendizagem baseada em projetos e formação de professores: uma possibilidade de articulação entre as dimensões estratégica, humana e sócio-política da didática. *Góndola, Enseñ Aprend Cienc, 12*(2), 186-203. https://doi.org/10.14483/23464712.10903

Patel, S. B., & Lam, K. (2023). ChatGPT: the future of discharge summaries? *The Lancet. Digital Health*, *5*(3), e107-e108. https://doi.org/10.1016/S2589-7500(23)00021-3

Perrenoud, P. (2002). As competências para ensinar no século XXI. Porto Alegre: Armed.

Resolução CNE/CES nº 01 de março de 2024. Dispões sobre as novas diretrizes curriculares do curso de Ciências Contábeis. Diário Oficial da União. Ministério da Educação. http://portal.mec.gov.br/docman/marco-2024/257031-rces001-24/file

Rossoni, L. (2022). A inteligência artificial e eu: escrevendo o editorial juntamente com o ChatGPT. *Revista Eletrônica de Ciência Administrativa*, *21*(3), 399-405. https://doi.org/10.21529/recadm.2022ed3

Silva, O. L. (2014). *Avaliação das habilidades conceituais, procedimentais, atitudinais: estudo no exame de suficiência em Contabilidade 2013-2013*. [Dissertação de Mestrado, Universidade Federal do Paraná].

Silva, O. L., Colauto, R. D., Sibim, M. C., Tonim, J. M. F., & Machado, D. P. (2015). *Avaliação de habilidades e competências em custos no exame de suficiência*. XXII Congresso Brasileiro de Custos, Foz do Iguaçu, 11 a 13 nov.

Street, D., & Wilck, J. (2023). 'Let's Have a Chat': Principles for the Effective Application of ChatGPT and Large Language Models in the Practice of Forensic Accounting. *Availableat SSRN 4351817*.

Surameery, N. M. S., & Shakor, M. Y. (2023). Use Chat GPT to solve programming bugs. *International Journal of Information Technology & Computer Engineering (IJITC)*, *3*(31), 17-22. https://doi.org/10.55529/ijitc.31.17.22

Zabala, A. (1998). A prática educativa: como ensinar. (2a ed.). Artmed, 1998.

Zaremba, A., & Demir, E. (2023). ChatGPT: Unlocking the future of NLP in finance. *Modern Finance*, *1*(1), 93-98. https://doi.org/10.61351/mf.v1i1.43

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest regarding this submitted work.

AUTHOR CONTRIBUTIONS

Roles	1ª author	2º author	3º author	4ª author	5º author
Conceptualization	♦	♦			
Data Curation	♦	♦			
Formal Analysis	♦		♦	♦	♦
Funding Acquisition					
Investigation	♦	♦			
Methodology	♦	♦			
Project Administration					♦
Resources					
Software	♦	♦			
Supervision					♦
Validation	♦	♦	♦	♦	♦
Visualization	♦	♦	♦	♦	♦
Writing – Original Draft	♦	♦	♦	♦	♦
Writing – Review and Editing	♦	♦	♦	♦	♦