



Accountant abilities and knowledge from the perspective of high school students

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Accountant abilities and knowledge from the perspective of high school students

Abstract

Objective: The abilities and knowledge of accounting professionals are crucial aspects for career consolidation, since the profession has gradually changed due to the adoption of international accounting standards and market dynamics. Thus, this study aimed at identifying the abilities and knowledge that high school students consider necessary for accountants' performance in the labour market. **Method:** The study is characterized as descriptive, with a quantitative approach to the problem. For data collection, high school students from the municipality of Três Lagoas, state of Mato Grosso do Sul, Brazil, were surveyed by the application of a structured questionnaire, to measure accountants' abilities and knowledge necessary for the exercise of the profession. Data were organized in Excel spreadsheets, using the Statistical Packages for the Social Sciences (SPSS) software for descriptive and factor analysis. **Results:** The set of variables presented in the research explained 60.91% of the abilities and knowledge that respondents judged necessary for the performance of accountants. **Contributions:** The gathering, identification and classification of the factors from the perspective of high school students allowed us to understand their perception of the accounting profession.

Keywords: Accounting professional. Abilities. Knowledge. Factor analysis.

Habilidades e conhecimentos do contador na ótica de discentes do Ensino Médio

Resumo

Objetivo(s): As habilidades e o conhecimento do profissional contábil são aspectos determinantes à consolidação de sua carreira, visto que a profissão tem mudado gradativamente com a adoção de padrões internacionais de contabilidade e por meio da dinâmica do mercado. Com isso, objetiva-se identificar as habilidades e os conhecimentos que os alunos de Ensino Médio julgam necessários para a atuação do contador no mercado de trabalho. **Método(s):** O estudo se caracteriza como descritivo, com abordagem quantitativa do problema. Para a coleta dos dados, foi solicitado aos discentes do Ensino Médio do município de Três Lagoas, estado de Mato Grosso do Sul, por meio de aplicação de questionário estruturado, a mensuração das habilidades e conhecimentos do contador, necessárias para o exercício da profissão. Os dados foram organizados em planilhas do Excel, se valendo do *software Statistical Packages for the Social Sciences* (SPSS) para a análise descritiva e fatorial. **Resultados:** Como resultado temos que o conjunto de variáveis apresentadas na pesquisa explicam 60,91% das habilidades e conhecimentos que os respondentes julgam necessários à atuação do contador. **Contribuições:** Como contribuições, ao reunir o conjunto de fatores, identificá-los e classificá-los sob a ótica dos estudantes, identifica-se como estes alunos têm compreendido a profissão contábil.

Palavras-chave: Profissional Contábil. Habilidades. Conhecimentos. Análise Fatorial.

Habilidades y conocimientos del contador desde la perspectiva de estudiantes de secundaria



Resumen

Objetivo(s): Las habilidades y el conocimiento del profesional contable son aspectos determinantes a la consolidación de su carrera, ya que la profesión ha cambiado gradualmente con la adopción de estándares internacionales de contabilidad y por medio de la dinámica del mercado. Con eso, el objetivo es identificar las habilidades y conocimientos que los estudiantes de secundaria consideran necesarios para la labor del contador en el mercado laboral. **Método(s):** El estudio se caracteriza como descriptivo, con abordaje cuantitativo del problema. Para la recolección de datos, se solicitó a estudiantes de secundaria del municipio de Três Lagoas, estado de Mato Grosso do Sul, mediante la aplicación de un cuestionario estructurado, medir las habilidades y conocimientos del contador, necesarios para el ejercicio de la profesión. Los datos fueron organizados en hojas de cálculo de Excel, utilizando el *programa Statistical Packages for the Social Sciences (SPSS)* para el análisis descriptivo y factorial. **Resultados:** Como resultado tenemos que el conjunto de variables presentadas en la investigación explica el 60,91% de las habilidades y conocimientos que los encuestados consideran necesarios para la actuación del contador. **Contribuciones:** Como contribuciones, al reunir el conjunto de factores, identificarlos y clasificarlos bajo la óptica de los estudiantes, se identifica cómo estos alumnos han comprendido la profesión contable.

Palabras clave: Profesional Contable. Habilidades. Conocimientos. Análisis Factorial.

Introduction

The abilities and knowledge of a professional are determining aspects to the consolidation of a career. Lemes et al. (2014, p. 293) stated that "accounting education should promote the development of knowledge and abilities that allow the accounting professional to enter the world of work with conditions to meet the needs of the various users of accounting information. The market requires accountants to be well trained and provide users with quality services of accounting, since the profession has gradually become more dynamic and modified to meet international accounting standards through the integration of systems and the interface with the business and governmental environments. Thus, "professionals are expected to be prepared to face challenges of the profession and act in such a way that their services maintain quality" (Nunes et al., 2014, p. 146). The recognition of the accounting professional by society can be measured by the abilities and knowledge presented in the area.

Hence, investigating the determining variables related to the theme has attracted the attention of researchers. Lemes et al. (2014) investigated the professional abilities of accountants recommended by the International Federation of Accountants (IFAC), together with the evaluation of professionals in the Triângulo Mineiro region in state of Minas Gerais, Brazil. Nunes et al. (2014) studied the perception of high school students on the responsibilities of an accountant. Martins et al. (2019) evaluated the attributes and abilities of the accounting professional and the importance of their services for business decision making.

Leal et al. (2014) analyzed stereotypes of the accounting profession with students and external public in the *Triângulo Mineiro*. The contribution of this type of study refers to the analysis on stereotypes of accountants in Brazil, promoting reflection on the image attributed and the impacts on their professional performance. According to Pires et al. (2009), research can be useful to organizations, companies and users of accounting services as it promotes a diagnosis of the vision/expectation of students who may attend this undergraduate course.



In this vein, this research meets theoretical and methodological recommendations of Leal et al. (2014), Lemes and Miranda (2014), Nunes et al. (2014) and Martins et al. (2019), related to the need for expansion of variables and the investigation in other contexts and regions of Brazil. Its general objective is to identify the abilities and knowledge that high school students deem necessary for the accountant's performance in the labor market. Specifically, it seeks to highlight the variables that can contribute as pertinent instruments to the construction of political-pedagogical projects of the Accountancy course, directing quality fostering research to the formation of accountancy students. The guiding question of this research is: What is the expectation on abilities and competencies of accountants from the perspective of possible users of accounting?

This research aimed at contributing to the development of pedagogical projects and improvement of the quality of the education of accounting academics. Ott et al. (2011) stated that studies related to this theme can be useful to regulatory bodies of the accounting profession by offering relevant variables to training accountants. They exemplify this point with the identification of expectation gaps among users of the accounting knowledge.

Theoretical framework

Abilities, competencies and stereotypes of the accounting profession

Choosing a profession is a difficult moment in the lives of students, given the range of existing possibilities. In the process of deciding which professional path to follow, many of them try to get to know the attributes of professions of their interest and seek to align one of them to their profile. However, existing prejudices and stereotypes on certain professions weigh on the choice process. The accounting profession has faced complex changes “due to changes occurring in the broader context and in accounting itself” (Nunes et al., 2014, p. 146). Nevertheless, according to Ribeiro et al. (2021, p. 70), “every year there are many graduates entering the labor market in the area”. This means that accounting professionals must acquire and develop abilities and be prepared to act in a dynamic environment.

According to Azevedo (2010, p. 5), “in the last two decades, the decline in the number of accounting students has been a source of concern for academics and professionals worldwide. In addition, there is a decrease in the number of PhDs in the area in the North American scenario, as presented by Plumlee et al. (2005). Thus, understanding what students think about the abilities of accountants will allow us to deconstruct myths and prejudices concerning the profession, making it possible to show students that accounting can be aligned with their profiles and be a good choice.

In addition to deconstructing preconceived ideas concerning the accounting profession, this study also seeks to reflect on the adherence between what is taught in academia and the knowledge required to be successful in the profession, as professionals can work in several areas: finance, costs, tax planning, controllership, forensics, and corporate accounting, among others. Thus, it is important to reflect on the competencies and abilities in order to: demonstrate what students think about accounting; through research, arouse their interest and bring them closer to the profession; show the contribution of possible adjustments in the literature about the competencies and abilities required of accountants.

Etymologically, ability is a term of Latin origin, *habilitate*, whose meaning is “to know how to do”; the word competence also has the same etymological origin, *competentia* and means “ability to analyze and solve problems with suitability, aptitude or skill” (Pagnoncelli, 2016, p. 18-19) “Competence is acting effectively, it is the practical intelligence for action with



the use of knowledge acquired throughout life” (2016, p. 19). So, competence consists in uniting abilities, knowledge, and attitudes and coordinating them.

The concern with abilities and competencies that accountants are expected to acquire and develop throughout their professional practice has been the reason for extensive international studies to adapt the accounting education to market requirements. The IFAC has created the International Accounting Education Standards Board (IAESB), which has developed standards for the accounting education. Brazil, besides adopting the IAESB standards, has added other abilities and competencies to the education of accounting students by means of a resolution from the National Education Council (CNE).

The IFAC has discussed, through the IAESB, the abilities required of accountants around the world and seeks to improve the development of the accounting profession, with the mission of training competent professionals, while the IAESB has prepared resolutions called "accounting education standards". These standards aim to describe the competencies and abilities they deem necessary for the accounting profession. These standards are revised from time to time via academic research or commissioned studies.

In its third edition, the IAESB developed the International Education Standard (IES3), whose objectives describe the competencies and abilities that accountants should master in the accounting profession, among others. In Table 1, IES3 divides competencies and abilities into five groups: organizational, intellectual, personal, interpersonal, and communication.

Table 1

Competencies and abilities to be acquired, consolidated and developed by accountants, according to IES3.

Intellectual abilities	Ability to locate, obtain, and organize information from human, print, and electronic sources; Ability to investigate and research, reasoning, logical thinking, and critical analysis; Ability to identify and solve unexpected problems and situations.
Technical and functional abilities	Proficiency in mathematics, statistics, and mastery of information technology; Knowledge of decision models and risk analysis; Knowledge measures to monitor results; Development and preparation of reports; Work in compliance with legislation and regulatory agency requirements..
Personal abilities	Self-management; Initiative, influence and self-learning; Ability to select and set priorities to achieve goals with available resources; Ability to anticipate and adapt to change; Consider the implications of values, ethics, and attitudes in decision-making; Professional skepticism.
Interpersonal and communication abilities	Work with other areas of the company as a process consultant and resolve conflicts; Work in teams; Interacting with people from other cultures and intellectual level; Negotiate acceptable solutions and agreements in various situations; Be able to work in a multicultural environment; Present, discuss, report and defend views in formal and informal situations, write and speak correctly in public; Proficiency in other languages.;
Organizational and business management abilities	Strategic planning, project management, people and resource management, and decision making; Ability to organize and delegate tasks, motivate and develop people; Leadership ability; Professional judgment and insight;

Source: Adapted from Lemes et al. (2014) and Nunes et al. (2014).



These abilities and competencies are the IAESB proposal and must be acquired throughout the accountant's professional experience. For Nunes et al. (2014), interpersonal abilities are related to teamwork; organizational abilities refer to discipline with goals and deadlines; personal abilities are linked to the application of the knowledge acquired in graduation; and intellectual abilities are linked to problem detection/solution.

In Brazil, the CNE, through the Chamber of Higher Education, published the CNE/CES Resolution number 10/2004, establishing the national curricular guidelines for the Accountancy course. Among these guidelines are described the proficiencies, abilities, and competencies that the course's graduates must master. Article 4 of Resolution CNE/CES no. 10/2004 lists eight competencies and abilities that the Accounting graduate must acquire during the course, as follows:

- I - Properly use the terminology and language of Accounting and Actuarial Science;
- II - Demonstrate a systemic and interdisciplinary vision of the accounting activity;
- III - Elaborate opinions and reports that contribute to the efficient and effective performance of their, whatever the organizational models;
- IV - Properly apply the legislation inherent to accounting functions;
- V - Develop leadership among multidisciplinary teams to capture the necessary inputs for technical controls, generation and dissemination of accounting information, with recognized level of accuracy;
- VI - Performing responsibilities with expressive mastery of accounting functions, including notions of actuarial activities and quantification of financial, equity and governmental information, which enable economic agents and administrators of any productive or institutional segment to fully comply with their duties regarding management, controls and rendering of accounts of their management before society, also generating information for decision making, organization of attitudes and construction of values oriented to citizenship;
- VII - Develop, analyze and implement accounting information systems and management control, revealing critical analytical capacity to assess the organizational implications with information technology;
- VIII - Exercise with ethics and proficiency the duties and prerogatives prescribed through specific legislation, revealing domains appropriate to the different organizational models (National Chamber of Higher Education, 2010, p. 2).

In light of this, it can be seen that accountants must master several skills and competencies in order to be worthy of their training. Thus, several studies, such as Marin et al. (2000), Dimnik et al. (2006), Cardoso et al. (2009, 2010), Castro (2012), Leal et al. (2014), Lemes et al. (2014), Nunes et al. (2014) and Martins et al. (2019) investigated which of these abilities high school students, laymen in society, accounting science graduates and other professionals considers as the most important for the accounting profession.

Leal et al. (2014), in their research "Stereotypes in the accounting profession: the opinion of students and the external public in the *Triângulo Mineiro*", concluded that accounting professionals are well regarded in items such as creativity, dedication to studies, teamwork, communication, leadership, risk propensity, and ethics. Nunes et al. (2014), in their research "The perception of high school students about the accounting profession", asserted that students see the accounting profession linked to proficiency in mathematics, statistics and information technology, people and process management, decision making, strategic planning, logical, investigative and critical reasoning. Martins et al. (2019) conducted a survey on the attributes and abilities of the accounting professional and the importance of their services to business decision making. They point out that clients of accounting firms value the care and quality of services provided to customers and the anticipation of issues and problem solving.

At this situation of research, through a study on accountant competencies, Cardoso et al. (2010) investigated the competencies required for managerial accountants. The competencies cited in international studies and aligned with studies conducted in Brazil were



divided into three factors: technical competencies - accounting and finance, legal, control tools, planning and analytical abilities; behavioral competencies - self-control, listening effectively, leadership/teamwork, information management and external relations; and posture competencies - attitude, entrepreneurship, overview/strategic vision. The same study presented results found in Brazil for competencies required of the managerial accountant: overview/strategic vision, accounting/finance, information management, attitude/initiatives, and leadership and teamwork.

In addition to this research, Castro (2012) investigated what accounting students at the Federal University of Santa Catarina thought on the competencies and activities of the accounting profession. Sixteen variables were analyzed to identify what degree of importance students give to each one in relation to the profession, and to what degree students consider they mastered each variable. The variables analyzed and the degree of importance (considering the very important and extremely important answers) were the following: analytical, 96%; communication, 41%; strategic vision, 100%; entrepreneurship, 84%; integrity and trust, 80%; self-control, 72%; control tools, 60%; accounting and finance, 96%; management techniques, 88%; information technology, 86%; listening effectively, 84%; customer service, 80%; teamwork, 88%.

Adding to the previous discussions, Cardoso et al. (2009) verified the existence of an implicit interdependence structure among the competencies required of accountants. After analyzing 18 variables, these authors organized 13 of them into four factors that allowed to understand which variables make up the structure of competencies required of accountants: articulation competencies - effective listening, customer service and teamwork; management technique competencies - negotiation, management tools, and information management; conduct and administration competencies - communication, entrepreneurship, strategy, integrity, and trust; and specific competencies - accounting and finance, legal apparatuses, and control tools.

Accordingly, Lemes et al. (2014) observed the validity of the IES3 with 126 recently graduated accounting professionals in the Triângulo Mineiro region. By means of factor analysis, the authors classified the abilities and competencies into four factors and the results were similar to those described in the IES3, indicating that the cited standard fits the researched reality. Along with them, Dimnik et al. (2006) gathered a list of stereotypes about the accounting profession depicted in 121 films up to the year 2000, and by using factor analysis they reduced 41 characteristics found in the films into five factors, namely: dreamy, impassive or cold, eccentric, hero and/or villain. However, based on previous studies, the authors claim that it is impossible to categorize the image of accountants as positive or negative.

Negative images of the profession were found in the study by Miranda et al. (2016). The authors investigated how accounting professionals were portrayed by the Folha de São Paulo newspaper over a one-year period, between November 2013 and November 2014, in which 60% of the mentions made to the profession referred to accounting scandals and fraud. Such a result brought the authors to reflect on concerns on the ethics of the profession. Marin et al. (2000) identified the competencies of accounting graduates as to satisfactorily meeting the competencies demanded by managers of large organizations. Results were satisfactory in relation to theoretical knowledge and proactive attitude, however, difficulties were noted in professionals with regard to English language abilities, practical knowledge, and leadership.

Some of the stereotypes related to the accounting profession are often confused with the competencies and abilities required of professionals. In the cited studies, accountants are seen as cold and calculating people, such image coming from the exact science abilities that this professional must possess. The lack of creativity, and need for control and order are linked to the fact that the profession is carried out by means of rules. The evasive posture and shyness



are linked to the ethics that the professional must always maintain. In a way, studies on perceptions bring as a result stereotypes respondents carry with them, such as representations influenced by the environment, media, movies (Dimnik et al., 2006) and journalistic news (Miranda et al., 2016).

However, working accounting professionals, in their vast majority work in accounting offices or in sectors of organizations linked to human resources and finance. These professionals use the basic operations of the areas of exact sciences, moreover, accounting is an applied social science. Thus, the knowledge needed in the area of exact sciences for the development of the accounting profession can be considered basic. In fact, accountants need to know in greater depth about the variations and the assets of companies. Therefore, they demand knowledge about the composition of assets, rights, obligations, costs and expenses. However, accounting sciences belong to the area of applied social sciences, and not to the exact sciences.

According to Ribeiro et al. (2021), although the course was not the students' first choice, they stated that they had a vocation for the professional practice of accounting. A competent professional shows a good image to society. However, these stereotypes are in circulation and override the good image that accountants build with their professional conduct and practice. Therein lays the importance of ascertaining what the image of this profession is in front of those who intend to enter a university.

According to Alves et al. (2016, p. 14), there is "an alignment with the national guidelines proposed for the accounting course that determine that the course curriculum has an hourly load destined to knowledge of areas that are not specific to accounting. Thus, research on abilities and knowledge of accountants can contribute to the development of pedagogical projects in undergraduate accounting courses.

In the studies examined that many of the competencies and abilities expected of the accountant are repeated in such a way that the structure proposed by IES3, shown in Table 1 was taken into account by the following authors cited in this work: Cardoso et al. (2009, 2010), Castro (2012), Leal et al. (2014), Nunes et al. (2014) and Martins et al. (2019).

This study is also based on the structure proposed by IES3, according to Table 1, "competencies and abilities to be acquired, consolidated and developed by accountants according to IES3", in which each of these abilities and competencies were presented, besides assigning a degree of importance to each research participant within the Likert scale.

Method

Procedures, data collection and sample characterization

Data collection occurred through the application of a structured questionnaire, in which respondents marked, in a leveled manner, the available alternative best suited to their perception. The questionnaire was composed of three blocks, adapted from the research of Lemes et al. (2014) and Nunes et al. (2014). As a contribution, a variable was included that addressed the relevance of the accountant's preparation for technological innovations. The investigation was based on the objective of identifying the abilities and knowledge that high school students believe are necessary for accountants.

The first block contemplated the consent to participate in the study. Then, the characteristics of respondents were collected, and the last block of the questionnaire sought to identify the abilities and knowledge that high school students consider necessary for accountants' works. A five-point Likert scale was used, so that respondents could evaluate the importance of their needed abilities and knowledge.



To obtain the data, the first contact was made with the management of four schools in the municipality of Três Lagoas, in Mato Grosso do Sul: Escola Estadual Afonso Pena, Escola Estadual Professor João Magiano Pinto, Escola do Serviço Social da Indústria (Sesi), and Escola Estadual João Ponce de Arruda. The approval for the application of the questionnaire allowed to carry out a survey with 655 students. The respondents were prioritized according to their availability to participate, in the period from August to December 2019. The profile of the interviewees is systematized in Table 2.

Table 2

Sample profile.

Features	Details	Frequências	%s
Gender	Male	78	48.75%
	Female	82	51.25%
Age	15 years old	11	6.88%
	16 years old	51	31.00%
	17 years old	76	47.50%
	18 years old	19	11.88%
	over 19 years	14	8.76%
Residence	Três Lagoas, Mato Grosso do Sul	143	89.38%
	Other municipality in Mato Grosso do Sul	0	0.00%
	Municipality of São Paulo	13	8.13%
Currently in high school	First	32	20.00%
	Second	60	37.50%
	Third	67	41.88%
High School	Public school	124	77.50%
	Private Schools	36	22.50%
	Public and private school	0	0.00%
Higher education will be in:	Public university	26	16.25%
	Private University	122	76.25%
	I do not intend to attend university	8	5.00%
Desired Area	Biomedical	16	10.00%
	Humanities	47	29.38%
	Technology	21	13.13%
	Exact Sciences	21	13.13%
	Biology	13	8.13%
	Applied Social Sciences	5	3.13%
	Other	15	9.38%

Source: Survey data (2022).

The research sample was composed of 78 male students and 82 female students, totaling 160 respondents. It is noteworthy that only five (3.13%) respondents intend to take a course in the area of applied social sciences, without specifying whether it is Administration, Public Administration, Accounting or Tourism. To mitigate this finding, it can be stated that a large part of the respondents will potentially be users of accounting, and it is important to realize the abilities and competencies expected of an accountant. In this result, despite the fact that students are aware of the main abilities and competencies of an accountant, it is hypothesized that they do not have knowledge about the area of applied social sciences.

**Table 3***Components of the survey.*

Items	Description
Theoretical and empirical review	Focus on the approach to the theme: abilities and knowledge of the accounting science graduate.
Population	Corresponds to 655 students enrolled in high school in public and private schools in the municipality of Três Lagoas, Mato Grosso do Sul.
Sample	By accessibility, 160 students answered the research questionnaire.
Research instrument	Adapted from studies by Lemes et al. (2014) and Nunes et al. (2014).
Validation	Applied to ten first-year students, duly enrolled in public schools in the research locus.
Data collection	It took place in the second semester of 2019.
Data organization	After collecting the questionnaires, data were tabulated in Excel spreadsheets. The information was obtained by SPSS software, version 22.
Data analysis	To validate and provide credibility to the study the analysis performed was: - Descriptive statistics: mean and standard deviation; and - Factor analysis: on the reliability of the total data set; verification of the significance index; understanding communalities; applying Cronbach's alpha, the KMO test and the percentage of explained variance.

Source: Adapted from Creswell (2010).

This study is characterized as a survey (Creswell, 2010) – i.e., the approach to the problem is quantitative and used the technique called “factor analysis” to treat and understand the data collected. Due to the possibility of bringing together the abilities and knowledge required for the accounting professional to act, this technique provides the organization of these factors into components/nuances that can contribute to the theme. It is a method capable of providing the researcher with “a clear understanding of which variables can act together and how many of them can actually impact the analysis” (Hair et al., 2009, p. 107).

In the descriptive analysis, the mean and standard deviation were adopted. To meet the validation procedures and credibility in factor analysis, it was used the analysis of the reliability of the total data set; verification of the significance index; understanding the communalities; application of Cronbach's alpha, KMO test and explained variance. In the next section follows the analysis of the data collected.

Results

Descriptive analysis

Table 4 shows the descriptive statistics resulting from the application of the questionnaire.

Table 4*Results of consistency tests for the 30 variables.*

Factors	Min	Max	Mean	Standard deviation
Ability to obtain and organize information	1	5	4.00	1.145



Ability to research and critically analyse	1	5	4.03	1.140
Ability to resolve unexpected situations	1	5	3.90	1.086
Must participate in continuing education	1	5	3.91	1.061
Proficiency in mathematics and statistics	2	5	4.27	1.012
Domain of information technology	1	5	4.07	1.104
Knowledge of decision models and risk analysis	1	5	4.14	1.039
Knowledge of outcome measures	1	5	4.24	1.004
Knowledge to develop and write reports	1	5	4.13	1.056
Compliant with laws and regulatory agencies	1	5	3.82	1.151
Proficiency in application development	1	5	3.31	1.280
Participate in a series of bodies, councils and class entities	1	5	3.86	1.131
Capable of self-management	1	5	4.26	0.998
Initiative, influence and self-learning	1	5	3.67	1.065
Ability to select and set priorities	1	5	4.21	0.995
Ability to anticipate and adapt to changes	1	5	3.80	1.088
Ability of values, ethics and attitudes in decisions	1	5	4.05	1.099
Professional skepticism is part of the career	1	5	3.52	1.205
Prepared to work in other areas of the company	1	5	3.56	1.310
Prepared to work in teams	1	5	4.04	1.134
Prepared to interact with other cultures	1	5	3.96	1.201
Prepared to negotiate in different situations	1	5	4.20	1.024
Prepared to work in a multicultural environment	1	5	3.81	1.125
Prepared to speak and debate in public	1	5	3.85	1.173
Proficient in other languages	1	5	3.10	1.239
Prepared to make strategic planning and decisions	1	5	4.03	1.140
Prepared to organize tasks and develop people	1	5	3.58	1.193
The accountant has leadership abilities	1	5	3.91	1.082
Prepared to make professional judgment and discernment	1	5	3.58	1.248
Prepared for technological innovations	1	5	3.87	1.195

Source: Survey data (2022).

In Table 4, five items are highlighted, according to the mean and standard deviation obtained in the assessment of high school students about the abilities and knowledge required by accountants to perform their professional activity. Thus, the most relevant item refers to "proficiency in mathematics and statistics", which according to Nunes et al. (2014, p. 156), "the accounting professional is stereotyped as one who should know a lot about mathematics and numbers". Given this, results continue to point out that accountants need to have full mastery of mathematics and statistics, a fact that allows us to infer there are stereotypes of accounting professionals related to expertise in mathematical calculations.

Two other variables relevant to results of this research are "ability to select and set priorities" and "preparation to negotiate in various situations". The result of these two variables adds to the research of Leal et al. (2008) and Nunes et al. (2014), as it can be observed that among the abilities required of accountants are those related to decision-making and to identifying and solving problems, which points in the direction of the profession's stereotype of proactivity and dynamism.

It was also possible to highlight the variable "ability for self-management", in which students consider accountants to have sufficient training to organize, control, and manage their personal accounts, and even to have "knowledge of outcome measures". Here the ability of the



measurer in situations stands out, the one who balances costs and benefits in both professional and personal situations.

What can be seen from the five main variables is that students were able to correctly identify them in relation to the accounting profession, a situation that allows this research to dialogue with that of Nunes et al. (2014, p. 157), as "students indicated several characteristics and/or attitudes that the accounting professional should present for their professional performance". Thus, it can be stated that high school students know the main abilities and knowledge that accountants should have in the exercise of the accounting profession.

In order to provide greater statistical consistency to the results of this research, we used factor analysis to reduce the factors indicated as abilities and knowledge required by accounting professionals. The results are presented in the next item.

Factor analysis

This analysis counted on the principal components extraction method, the varimax rotation technique, and the missing values were replaced by the mean. According to Hair et al. (2009), the component analysis model is more appropriate when there is the possibility of factor reduction. Factor analysis provides a clear understanding of which variables can act together and which of them can be considered significant to the study.

It was also verified that there were no outliers, and 15 questionnaires were excluded due to filling problems. The variables retained in the analysis were those that, in addition to meeting the recommendations of Hair et al. (2009) in relation to the communality index above 0.50, also met the guidelines of the kurtosis and asymmetry values, which should be between ± 3 . Thus, some variables were excluded due to not meeting the standards of kurtosis, asymmetry, communality or distribution of loads. They are: "the accountant has a number of organs, councils and class entities available to the accounting professional"; "the accountant has leadership abilities and is prepared to make professional judgments and discern". Thus, results of this research indicated that, in the assessment of respondents, these three variables are not part of the list of determining abilities and knowledge for the accounting professional.

However, in relation to the variable "the accountant has leadership abilities and is prepared to make professional judgments and to discern" it is understood that in the statistical perspective this variable should be excluded, however it is exactly what is intended in the evolution of the accountant: having leadership abilities, being prepared to make professional judgments, and having discernment. This result may be a bias in the research for having collected data from students (future executors/thinkers/users of accounting) instead of professionals in the labor market who use, generate, and analyze accounting information. Thus, this point is considered extremely relevant and should be included in the curricula. Another option is to develop this theme through an extension project with high school students.

Furthermore, only the significant variables were kept in the study. We used the factor reduction through the principal components extraction method, made possible by the varimax rotation technique to obtain the indexes. Thus, Table 5 shows all 27 significant variables in the study, which presented the following indexes.

The data were considered reliable through the application of Cronbach's Alpha test, from which the index of 0.918 was obtained. In exploratory research, Hair et al. (2009) state that this index, when higher than 0.60, is acceptable. To analyze the adequacy of the sample, the KMO test was used, which showed a result of 0.897. For Marôco (2010), the KMO above 0.50 represents a high capacity of factorability. It was also performed the Bartlett's Test of Sphericity, with a significance result of 0.00, which for Hair et al. (2009) rejects the probability that the population matrix is identical.

**Table 5**

Results of the consistency tests of the 30 variables.

Cronbach's alpha	Bartlett's sphericity		KMO	% of explained variance
	Sig.			
0.918	0.00		0.897	60.906

Source: Survey data (2022).

The confidence interval level of the sample is 99%. The data analysis allowed verifying that the set of variables explains, by the result of the variance, 60.906% of the abilities and knowledge, which the high school students judge necessary for the accountant's performance. It is worth noting that Hair et al. (2009, p. 115) suggest that the number of factors should be "sufficient to meet a specified percentage of explained variance, usually 60% or more". Consistently, the percentage of variance that presents the set of variables involved in the study explains approximately 61% of the abilities and knowledge that high school students deem necessary for the accountant's performance in the labor market.

From this, the variables were grouped into six components or categories, with an eigenvalue greater than 1 and a percentage of variance explained of 60.906. As mentioned, these indices meet the standards set by Hair et al. (2009). This can be evaluated by analyzing Table 6:

Table 6

Explanatory factors of the used model.

Components	Initial own values			Rotated sums % cumulative
	Total	Variance	Cumulative	
1	9.380	34.742	34.742	15.106
2	2.083	7.714	42.456	30.164
3	1.493	5.531	47.987	38.889
4	1.391	5.152	53.140	47.067
5	1.087	4.027	57.167	54.605
6	1.010	3.739	60.906	60.906

Source: Survey data (2022).

Next, we present the rotated matrix with nuances of each of the components of this research. The answer to the objective of this research, to identify the abilities and knowledge that high school students from the municipality of Três Lagoas believe are necessary for the accountant's work, is measured in Table 7. As mentioned, from the data expressed therein, respondents believe that the set of 27 factors grouped into six components are responsible for 60.906% of the aspects that constitute the abilities and knowledge needed by accountants.

Table 7

Abilities and knowledge of accountants

Factors	Components					
	1	2	3	4	5	6
Ability to obtain and organize information	.622					



Ability to research and critically analyse	.578	
Ability to resolve unexpected situations		.601
Must participate in continuing education		.587
Proficiency in mathematics and statistics	.449	
Domain of information technology	.649	
Knowledge of decision models and risk analysis	.606	
Knowledge of outcome measures	.750	
Knowledge to develop and prepare reports	.649	
Compliant with laws and regulatory agencies	.622	
Proficiency in application development		.763
Capable of self-management	.616	
Have initiative, influence and self-learning		.563
Ability to select and set priorities	.482	
Ability to anticipate and adapt to changes		.548
Ability with values, ethics and attitudes in decisions		.769
Professional skepticism is part of the career		.554
Prepared to work in other areas of the company		.574
Prepared to work in teams	.554	
Prepared to interact with other cultures	.654	
Prepared to negotiate in different situations	.748	
Prepared to work in a multicultural environment	.554	
Prepared to speak and debate in public	.555	
Proficient in other languages		.694
Prepared to make strategic planning and decisions	.737	
Prepared to organize tasks and develop people		.546
Prepared for technological innovations		.474

Source: Survey data (2022).

For didactic purposes, the ability and knowledge set, as mentioned, has been divided into six components, referred to as:

Component 1: responsible for 34.742% of the set, is formed by: ability to obtain and organize information; capacity for research and critical analysis; proficiency in mathematics and statistics; mastery of information technology; knowledge of decision models and risk analysis; knowledge of outcome measures; knowledge to develop and prepare reports; and act in compliance with laws and regulatory agencies. Thus, we assume these eight variables correlate and can be considered organizational abilities.

Component 2: explains 7.714% of the set and gathers the following variables. Ability to: self-manage; and select and set priorities; preparedness to: work in teams; interact with other cultures; negotiate in diverse situations; work in a multicultural environment; speak and debate in public; and make strategic planning and decisions. These variables are called interpersonal abilities needed by accountants in their professional practice.

Component 3: presents a percentage of explanation of 5.531% and is formed by the variables: initiative, influence, and self-learning; ability to anticipate and adapt to changes; ability with values, ethics, and attitudes in decisions; and preparation to work in other areas of the company. This aspect allows us to see that accountants must have functional and intellectual abilities in the exercise of their profession.



Component 4: is able to explain 5.152% of the total and was formed by the variables: ability to solve unexpected situations; participation in continuing education; and professional skepticism as part of the career. This component is named personal abilities to minimize skepticism and provide ability and knowledge for unexpected situations.

Component 5: it has the possibility to explain 4.027% of the researched context and presented the factors: mastery of other languages and preparation to organize tasks and develop people. We consider the best denomination as management ability, because the ease of communication contributes to the organization of tasks and the development of people. This result corroborates the study of Marin et al. (2000), in which it was evidenced that the accountant must have practical, language and leadership abilities.

Component 6: it has the possibility to explain 3.739% of the theme and is formed by the variables: domain for the development of applications and preparation for technological innovations. In this component, it is expressed that the accountant must have knowledge for the development of technologies.

In summary, the six components were named, respectively: organizational abilities, interpersonal abilities, functional and intellectual abilities, personal abilities, management abilities, and technology development. These six items together explain 60.906% of the factors related to accountants' abilities and knowledge. Thus, it is considered that the contribution of this research to the subject is in the reduction of 30 existing variables to the six mentioned factors.

According to Lemes et al. (2014), the set of abilities and knowledge were divided into 25 variables, and results obtained were presented in four components that meet the IFAC standards. Corroborating this result are the researches of Lemes et al. (2014) and Nunes et al. (2014), who also verified that the abilities determined by the IFAC were significant in the evaluation of the research participants. Another relevant factor in this research is that knowledge of mathematics or statistics is significant for the accounting profession. It is worth noting that this finding is in line with the studies of Dimnik et al. (2006); Leal et al. (2014) and Miranda et al. (2016), differing, however, from Ribeiro et al. (2021). Thus, it can be stated that there is no consensus in research on the need for knowledge in mathematics or statistics for the accounting profession.

Given the above, the results obtained in this study are in dialogue with the precedents, since, in the respondents' evaluation, the abilities and knowledge determined by the IFAC were presented as significant from the perspective of high school students. As a contribution to the theme, we highlight the inclusion of another variable in this research, "mastery for the development of applications", and that Component 6 brought this and "preparation for technological innovations" together under the denomination development of technologies.

Considering that accountants must have sufficient knowledge for technological innovations and think about the development of applications that facilitate their work, on the part of high school students, managers of Accountancy courses can analyze the possibility of including, in the course curriculum, content that meets this demand. It is worth emphasizing this item, the development of technologies, is an innovation in the theme of abilities and knowledge required by the accounting professional.

Final considerations

This study aimed at identifying the abilities and knowledge that high school students in the municipality of Três Lagoas consider necessary for the accountants' works. To this end, the data collection instrument of Lemes et al. (2014) and Nunes et al. (2014) was adapted,



obtaining a sample of 160 respondents. As a contribution, the variable related to the relevance of the preparation accountants for technological innovations was included.

Results of the research pointed out that the main factor of the study was the one that gathered the "organizational abilities", namely: ability to obtain and organize information; research and critical analysis abilities; proficiency in mathematics and statistics; mastery of information technology; knowledge of decision models and risk analysis; knowledge of results measures; knowledge to develop and prepare reports; and acting in compliance with laws and regulatory agencies.

The significant variables in this research were grouped into six components, with a 60.906% explanation percentage of the context and denominated, respectively, as: organizational abilities, interpersonal abilities, functional and intellectual abilities, personal abilities, management abilities, and technology development. It is worth noting that the set of variables gathered in the respective components meets the IFAC standards.

Finally, the respondents considered that accountants must possess sufficient knowledge of technological innovations, and even master knowledge about the development of applications that contribute to their professional practice. This finding allows Accounting course managers to analyze the possibility of including in the course syllabus content that meets this demand, given that the public entering universities is increasingly linked to the use of information technology. It is worth emphasizing that this item, the development of technologies, is an innovation in the area of abilities and knowledge required by the accounting professional.

As contributions, it can be said that by bringing together the set of factors, identifying and classifying them from the students' point of view, it was possible to know how they understand the Accounting profession. Besides, it also opens the precedent to consider what possible gaps in knowledge should be filled up or even expanded to provide knowledge of the variables by which future professionals can feel motivated and contribute with improvements to their professional practice in this area of training. It is suggested in future studies to replicate this research in other municipalities in Brazil in private schools to expand the findings obtained in the public sphere of education.

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