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Profile of Digital Competence Acquired by Students of the Accounting Sciences Course

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Abstract

This study analyzed the profile of digital competence acquired by students of the Accounting Sciences course. Descriptive research of quantitative approach was carried out. Data were collected through an online questionnaire applied to 93 respondents and analyzed through descriptive statistics and factor analysis. The impact of assertions on the following factors was highlighted: "I quickly identify the different virtual environments and logic of use of digital media" that affected the factor "Digital Knowledge" (DK) with a load of 0.865; "I access information from the internet in real time and from anywhere" affected the factor "Information Management" (IM) with a load of 0.865; "As a leader, I encourage my team to use digital resources" affected the factor "Online Leadership" (OL) with a load of 0.816; "I collaborate with others more efficiently when I use digital media" affected the factor "Online Collaborative Learning" (OCL) with a load of 0.878. It is concluded by positive perceptions of the interviewees regarding the knowledge, attitudes and skills towards digital media. The acquisition of basic knowledge in digital technologies demonstrates the university's alignment with technological advances in the course and the opportunity for employability of future professionals.

Keywords

Profile of Competences, Final-Year Students, Accounting Sciences Course, Digital Literacy, Cognitive, Socio-Emotional and Technical-Professional Aspects

1. Introduction

The 21st century is characterized by the advancement of technologies (Chuquimarca & Bedón, 2020), which makes digital literacy essential for individuals to access information and knowledge. In agreement, Arango-Morales, Delgado-Cruz, and Tamayo-Salcedo (2020) the reformulation of the productive sector and organizational operations in view of technological advances require a professional profile that encompasses knowledge, skills and attitudes, in view of the availability for change, flexibility, collaboration and the ability to solve problems.

Industry 4.0, through the digitisation of the economy, "directly affects the nature of business, employability and society, especially of students in full vocational training who, if not, will soon enter the field of work." Arango-Morales, Delgado-Cruz, and Tamayo-Salcedo (2020: p. 1). In this line of thought, studies (Almerich, Díaz-García, Cebrián-Cifuentes, & Suárez-Rodríguez, 2018; Castellanos, Sánchez, & Calderero, 2017; Instefjord & Munthe, 2017; Techataweewan & Prasertsin, 2018) highlight that professional training for acquiring and optimizing digital knowledge, and behaviors is an emerging need.

Other authors (Almerich, Díaz-García, Cebrián-Cifuentes, & Suárez-Rodríguez, 2018; Castellanos, Sánchez, & Calderero, 2017; Instefjord & Munthe, 2017; Techataweewan & Prasertsin, 2018) also agree that training for digital literacy for future professionals includes the development of critical thinking, communication and expression, the ability to solve problems and make decisions through the management and handling of technologies, and that this becomes a major challenge for higher education institutions. In this sense, Arango-Morales, Delgado-Cruz, and Tamayo-Salcedo (2020) argue that although students are digital natives "there are problems linked to digital competences, as their attention, communication and learning capacity to deal with problem solving is limited, compared to those generations who grew up in contexts with low mediation of digital technologies" (Arango-Morales, Delgado-Cruz, & Tamayo-Salcedo, 2020: p. 1).

This assertion points to the importance of digital literacy of college students, given that the world of work needs professionals with knowledge, values and skills that allow them to act competently. In agreement, Chu, Reynolds, Tavares, Notari, and Lee (2021) state that technologies have replaced the workforce in tasks that involve routine, consequently, employability requires people for jobs that require critical and analytical thinking, digital competences, communication and expression, flexibility and collective work, etc.

In this logic, Arango-Morales et al. (2020) affirm that social and managerial skills such as emotional intelligence, attitude, ability to solve problems, create new products and services are crucial for the social and professional inclusion of graduates. Thus, the basic prerequisites for employability include, in addition to the mastery of technical-scientific skills (hard skills), also behavioral and managerial (soft skills). From this point of view, Arango-Morales et al. (2020: p. 2) define digital competence as "the way a person thinks, solves problems and learns,

this has consequences in their study and development in the technological context in which they operate". Thus, digital competence "integrates the domain of knowledge and technological skills, together with complex cognitive abilities that favor continuous learning".

In the new work context, individuals and their competences become the differential of any organization (Instefjord & Munthe, 2017). It can be said then that knowledge has become the strategic condition for organizational performance. According to Kilimnik, Sant'anna, and Luz (2004: p. 2), increase the "pressures on workers, including those for continuous professional updating, legitimized by discourses such as competitiveness, employability and competence". Therefore, needs alignment between what the world of work demands and what the university determines for student professionalization.

The concept of competence as opposed to the perspective of technical-scientific training has been discussed in research in the accounting area (Cunha, Martins, Carvalho, & Carmo, 2022; Daff, 2021; Carrozzo, Slomski, Slomski, & Peleias, 2020; Coman, Ionescu, Duică, Coman, Uzlau, Stanescu, & State, 2022), highlighting that the training of future accountants should consider the set of skills necessary for the practice of the profession. Such investigations reinforce the need to develop and optimize the socio-digital skills of academics, in order to meet the new demands of the accounting profession through the transformation of the nature of the business with digitization. The perception that digital literacy is an imminent need in professional training and the need for discussion on this topic motivated this research and the elaboration of the following question: What is the profile of digital competence acquired by students of the Accounting Sciences course offered by a Higher Education Institution (IED) in the city of São Paulo?

In view of the above problem, the objective was to analyze the profile of digital competence acquired by students of the Accounting Sciences course offered by a HEI in the city of São Paulo, seeking to identify limitations and capacities that can influence the performance of professionals facing the challenges and demands of the profession. This study seeks to highlight the importance of professional training to be aligned with the needs of the world of work, more and more pedagogical proposals should reflect the attendance of the actual training of students in accordance with the requirements and challenges of the profession. The crisis generated by the Covid-19 pandemic accelerated the need for and importance of investigating what knowledge, behaviors, skills academics need to develop in the face of the challenges and requirements of their areas of activity.

The identification of gaps and skills of graduates in terms of digital skills can contribute to the review of the curricula of undergraduate courses and thus to the improvement of the quality of higher education offered. The employability of recent graduates depends on the new composition of their profile of digital skills. It is expected that this study will contribute to support curricular reforms and updates of the Accounting Sciences course and the implementation of proposals that consider increasingly high levels of technological skills of future accoun-

tants.

2. Theoretical Foundation

2.1. The Notion of Professional Competence

The concept of competences began to be discussed in the context of employability, in view of technological transformations and the digitization of the economy with new requirements in the composition of the worker's profile. Such changes cause the training processes to be rethought within universities, companies and other educational spheres (Dolce, Emanuel, Cisi, & Ghislieri, 2020). In this sense, Assunção and Goulart (2016) identified managerial competences such as self-initiative, collaboration and the ability to identify and solve problems as competences of greater expression. In agreement, Travassos (2019) and Dolce, Emanuel, Cisi, & Ghislieri (2020) emphasize that the world of work requires, in addition to technical skills (hard skills), knowledge, values and attitudes (soft skills).

In order to actually assess future professionals in different areas, in addition to cognitive skills, there are also other relevant factors. Some cognitive skills may be quite traditional involving reading, writing and calculation skills. In addition to such skills, which are more linked to the cognitive aspect of the individual, greater importance was placed on behavioral issues, according to Fleury and Fleury (2001: p. 189): "The notion of skill thus appears associated with verbs such as: act, mobilize resources, integrate multiple and complex knowledge, know how to learn, know how to engage, assume responsibilities, have a strategic vision".

This assertion demonstrates that the context plays a key role in the constitution of professional competences, in this sense Deluiz (2004) adds that professional skills go beyond technical abilities, they also encompass "cognitive, organizational, communicative, cooperation, teamwork skills, dialogue, social and behavioral skills" (Deluiz, 2004: p. 2).

In this context, the word skill has a broad meaning. According to Dias (2010: p. 74), the term skill means "aptitude, suitability, faculty that the person has to appreciate or resolve a matter", whereas in the "18th century its meaning is expanded to the individual level, designating the skill due to knowledge and experience" (Dias, 2010: p. 74). Fleury and Fleury (2001: p. 185) define skill as a "set of knowledge, abilities and attitudes (i.e., a set of human capabilities) that justify high performance. In other words, skill is perceived as a stock of resources, which the individual has."

The active role of individuals is the basis for obtaining the qualifications required by the world of work and technological innovation. Although professional qualification does not directly influence performance, "there is an indirect effect through technological innovation." (Frare, Horz, Martins, Fernandes, & Quintana, 2020: p. 10). The replacement of the term qualifications with competences refers to the new world of work that requires knowledge to deal with complexity and change, in addition to knowing how to do, also involves socio-affective, cognitive and technical-scientific aspects (Frare, Horz, Martins,

Fernandes, & Quintana, 2020).

In this sense, professionalization must be seen as a continuum, something changeable. According to this idea, "the real qualification of the worker, the set of their individual and collective competences, does not mean a stock of knowledge and skills, fixed in time, as they are mobilized and demobilized in a sequential process of adjustment in the internal and external market of job." (Deluiz, 2004: p. 4).

The digitizing of the economy from the integration of "disruptive technologies (artificial intelligence, process automation by robotics, blockchain, intelligent data analysis and cybersecurity) contributes to changing business models and the functioning of companies" (Coman et al., 2022: p. 2). Such changes demands new forms work organization and the need for a new profile professional that includes digital competence (López-Meneses, Sirignano, Vázquez-Cano, & Ramírez-Hurtado, 2020: p. 2).

2.2. Digital Competences

The development and optimisation of digital skill needs to be part of lifelong education (Cabero, Llorente, & Marín, 2011). This conception became more extended from the study by Cabero, Llorente, and Marín (2011), who define digital literacy as "a conceptual framework for accessing, analyzing, evaluating and creating messages in different ways (audiovisual, such as videos, internet use and multimedia)" (p. 73), that is, it is not about just knowing how to deal with technological tools, but think digitally. In agreement, López-Meneses, Sirignano, Vázquez-Cano, & Ramírez-Hurtado (2020: p. 2) define competence as a process that enables people to resolve problems creatively, perform activities, formulate questions, search for relevant information, and analyse, understand, and reflect as they apply their knowledge in response to the demands of a real world.

In this context, the profile of professional competences required represents a challenge to be overcome by the university, which should not be reduced to a space that is identified only with the training of professionals for the labor market, but also with its social function that is to train professional-citizens. Deluiz (2004: p. 3) affirms that in the process of building professional skills, it is necessary to "provide training that allows workers to act as citizens who produce goods and services and as actors in civil society, meeting criteria of social equity and democratization".

The research by Cabero, Cejudo, Leal, and Andrés (2009: p. 43) who emphasize the emerging need for digital literacy in a "knowledge and information society characterized by the use of Information and Communication Technologies (ICTs) in all activity sectors"; in this context, syllabus reforms are emerging to address this essential requirement for the insertion of professionals. Infante-Moro, Infante-Moro, and Gallardo-Pérez (2019: p. 202) point out that, although university students belong to a generation of digital natives and "interact daily with mobile devices, platforms and social networks, digital skills such as communica-

tion, problem solving and decision making through the management and exploitation of technology".

In this way, we agree with the concept of expanded digital skill presented by Almenara, Cejudo, and Díaz (2011: p. 73) when referring to digital literacy as "a conceptual framework to access, analyze, evaluate and create messages in different ways, through audiovisuals such as videos and other multimedia". This vision of technologies indicates more than knowing how to deal with technological tools, but thinking digitally. In agreement, Ng (2012: pp. 1066-1067) considers digital literacy as an "array of literacies related to the use of digital technologies", for the author technologies "are the subset of technologies including hardware and software used by people for educational, social or leisure purposes at school or at home", thus, the concept of literacy results from the "Interrelation of dimensions that intersect: technical dimension, cognitive dimension and socio-emotional dimension of digital literacy". **Figure 1** represents the relationships between the three dimensions of digital literacy.

Data in **Figure 1** demonstrate that the **technical dimension** refers to practical knowledge. In the case of digital literacy, Ng (2012: p. 1068) states that the world of work requires "technical and operational competences to use ICT in learning and daily activities". The **cognitive dimension**, in turn, is associated with the "capacity for critical thinking in the search, treatment and evaluation of digital information…being able to evaluate and select suitable software to perform a task" (Ng, 2012: p. 1068). For the author, mastering this dimension of digital literacy requires ethical, social and moral behaviors related to the use of digital content, mentioning copyright in order not to misappropriate the content, which would constitute plagiarism. In agreement, Eshet (2010: p. 7) says that it is an intersection between the technical and the cognitive dimensions, that is, the acquisition of knowledge required for handling hyperlinks, for reproduction and creation of content, etc.; this literacy allows navigating "in hypermedia environments to construct new knowledge, as well as synthesizing information using the tools that best meet their needs" (Eshet, 2010: p. 7).

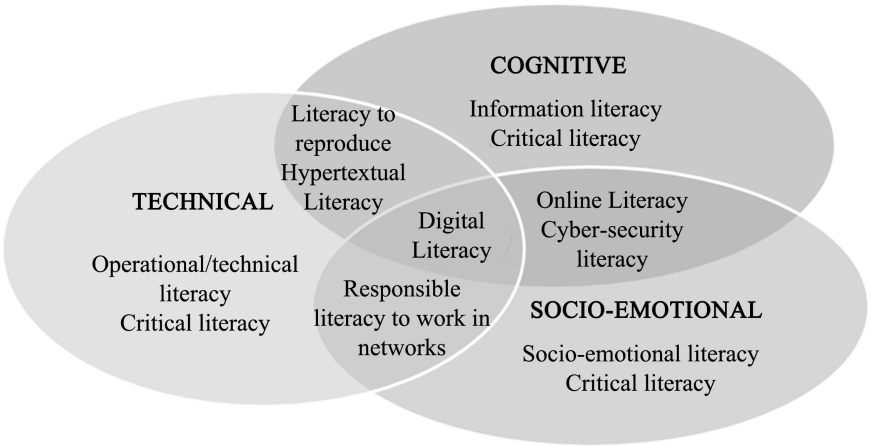

Figure 1. Digital literacy model. Source: Ng (2012: p. 1067).

In this logic, the **socio-emotional dimension** of digital literacy means the intersection with the cognitive dimension and presupposes "being able to use the Internet responsibly to communicate, socialize and learn" (Ng, 2012: p. 1068). At the center of the intersection of the three dimensions is the framework of digital literacy, understood as "the development of a set of technical, cognitive, social and emotional competences" (Ng, 2012: p. 1069) in which the subject demonstrates being able to perform basic tasks with tools and technological resources of daily use, carry out research, identify and evaluate information in an adequate way for research purposes and learning from the content, be able to use technological tools to develop tasks, solve problems, etc.

In this context, studies like Instefjord and Munthe (2017) and Pettersson (2018) highlight that education institutions have not yet recognized the full potential that technologies and digital environments offer; higher education has been called upon to implement digital platforms and tools to support teaching and learning systems in view of the technological training of future professionals. Infante-Moro, Infante-Moro, and Gallardo-Pérez (2019) reinforce that the knowledge and information society represents a challenge for educational systems that need to meet the digital demands of society with the implementation of spaces governed by creativity, discovery and digital navigation. In this logic, Pettersson (2018) reinforces that teaching by competences must consider digital literacy in which the integration of knowledge, information management and individual and collective digital communication lead to collaborative learning and network leadership.

Following this reasoning, Aulia (2020: p. 6) reinforces the idea that new competences must be acquired by future professionals, such as "problem solving, data analysis, critical thinking, communication, management skill, ethical value and attitudes". Given the importance of including digital competences in the academic environment, Chuquimarca and Bedón (2020) highlight that, although the use of digital competences is something quite required, the competences of undergraduate students have not been enhanced to "provide technological resources that contribute to the acquisition and strengthening of digital competences." (Chuquimarca & Bedón, 2020: p. 1).

Considering the relevance of the topic and the need for research, Arango-Morales, Delgado-Cruz, and Tamayo-Salcedo (2020: p. 17) developed a model of digital competences to investigate the profile of competences of university students in Mexico in the field of tourism. The digital competences model is composed of questions involving the use of technology to perform tasks, solve problems, communicate and manage information, in addition to this: ethical behavior, collaboration, creation and sharing of digital content and participation in social networks (Arango-Morales, Delgado-Cruz, & Tamayo-Salcedo, 2020: p. 5).

The model's constructs involve: **Digital Knowledge (DK)**—a set of compe-

tences used in professional and personal development; **Information Management (IM)**—ability to search, obtain, evaluate, organize and share the most appropriate information through information and communication technologies to answer a given question; **Personal Digital Communication (PDC)**—interpersonal ability to communicate efficiently and reliably using digital tools; **Collective Digital Communication (CDC)**—interpersonal ability to collaborate with others in communication processes with efficiency and reliability using digital tools; **Online Collaborative Learning (OCL)**—ability to learn in work teams to acquire knowledge and experiences that strengthen the use of digital media; **Online Leadership (OL)**—ability to influence, coordinate and lead work teams distributed on the network in digital environments (Arango-Morales, Delgado-Cruz, & Tamayo-Salcedo, 2020: p. 323).

This competences model is used by the present study in agreement with research on the subject, in order to understand the evolution and scope of research on this topic. Aulia (2020) investigated opportunities and challenges facing skill-based training in the digital age through a literature review. The results showed that the digital competences needed in the 21st century are: 1) ICT operation (ability to use, operate and solve technological problems, problems such as spreadsheets); 2) work with information such as searching, accessing, evaluating and organizing information, including producing and communicating information; and 3) critical view of digital media, in the form of critical thinking, opportunities and challenges of digital technology and media to solve real-world problems.

Chuquimarca and Bedón (2020) investigated the digital competences of university students. The research was quantitative, data were collected by a questionnaire applied to 107 students and sought to identify categories, such as technology consumption, ICT knowledge and use, research and information processing. The results show that the web is widely used in various activities, but it is necessary to enhance competences that result in an effective use in academic actions regarding the search and treatment of information. The authors concluded that it is necessary for pedagogical proposals to encompass strategies based on the use of technologies and the responsibility to prepare students not only as consumers of information, but also as critics and capable of using the media to create and innovate in the profession.

The study by Fleaca and Stanciu (2019) aimed to investigate the self-perception of university students about digital competences, such as information systems and data processing, digital communication, digital content creation, identification and problem solving about information and communication technologies. The results demonstrated the need to adopt digital teaching in order to improve learning outcomes from syllabus reforms capable of resulting in a better insertion of professionals in the digital world.

Likewise, the research by Arango-Morales, Delgado-Cruz, and Tamayo-Salcedo (2020) analyzed the digital competences of tourism students at a Mexican public

university. The results pointed to expressive levels of development of the students' digital competences in the practical and theoretical dimensions. The authors conclude on the importance of syllabus reforms to increase the level of skills, in which the role of professors in the development and improvement of digital skills is vital. The authors conclude that technological immersion is one of the challenges for educational institutions.

Gašová, Mišík, and Štofková (2018) investigated the skills employers expected from university students in a digital economy in "Employers demands on e-skills of university students in conditions of digital economy". The results found indicate that 80% respondents consider the university as the privileged space to acquire digital skills. Gaps between students' needs and the education program are pointed out. Among other things, research shows that more than 50% students rated their own digital skills as advanced. This degree of digital skills development classifies students into different levels of digital literacy and professional insertion.

Infante-Moro, Infante-Moro, and Gallardo-Pérez (2019) aimed to analyze the importance that university students give to the acquisition of ICT skills for their professional performance achieved during the course. The study concludes that expressiveness in the field of ICTs is linked to the importance and motivation of students. Contrary to this result, Carrozzo, Slomski, Slomski, & Peleias (2020) aimed to highlight the degree of reflexivity of the Sufficiency Exam/Federal Accounting Council (CFC), in the period from 2013 to 2017, in view of the set by the global syllabus structure and the axes of skills required from professionals in the accounting area. Therefore, they carried out a descriptive study with a qualitative approach. They found that the Sufficiency Exam/CFC, in the period from 2013 to 2017, had a degree of reflexivity of 95.2% in the structure of the World Curriculum, thus, the authors concluded that the exam requires most of the basic knowledge included in the training of the Accountant, but managerial contents such as Information Technology (IT) and other contents necessary for training global accountant were not identified.

Duarte and Rodríguez (2021) aimed to develop and validate a digital competence questionnaire for Mexican university students in the context of online migration due to Covid-19 confinement. Five dimensions of the European Union Digital Competence Framework were used: 1) Information and Data Literacy; 2) Communication and Collaboration; 3) Creation of digital content; 4) Identity and security management for the use of digital media; 5) Troubleshooting. The dimension of Identity and security management for the use of digital tools revealed the highest level of perceived skill reported by the students.

The studies analyzed pointed to the importance of skill-based training and the importance of digital literacy in the context of professional training, so that digital skills are part of the set of skills required from contemporary professionals, especially in the accounting area.

3. Research Methodology

Considering that the objective of this study was to analyze the profile of digital competence acquired by students of the Accounting Sciences course of a university center in the city of São Paulo, descriptive research was carried out.

A descriptive study seen the description of the characteristics of a given population or phenomenon for the establishment of relationships between variables. Its characteristic is the use of standardized techniques for data collection. An instrumental basis of this research was the questionnaire. According to this standardized data collection technique, the methodological approach adopted was the quantitative approach that has as characteristic the use of quantification, both in the modalities of information collection, in the treatment of them, through statistical techniques.

This study was limited to the Accounting Sciences course offered by an HEI located in the city of São Paulo. The institution was selected for its tradition in offering the course in accounting sciences, a program that scored maximum (5) in the National Student Performance Exam (ENADE). In addition, the institution is part of the Education Quality Accreditation Agency (EQUAA), a non-profit civil association whose mission is to increase the quality of education, preparing students for a professional career. To that end, they developed the Invicta by EQUAA application, the first international platform for measuring and certifying soft skills for students.

The population of this study consisted of 636 Accounting Science undergraduate students regularly enrolled in the year 2021. From these students, a sample of 314 students was selected, allocated in 4 classes distributed by periods: in the 6th, 112; in the 7th, 60 and, in the 8th, 142.

Data were collected by an online questionnaire applied using the Google Docs platform. The instrument was composed of two parts, containing 35 structured questions, namely: 1) the first part aimed to collect demographic data such as: sex; age; time experience; in which management they operate; time of experience in the position/function; and whether they exercised a managerial role; 2) the second part was adapted from the study by Arango-Morales, Delgado-Cruz, and Tamayo-Salcedo (2020: p. 17). The objective was to determine the profile of digital skills of those investigated from a skills matrix composed of 29 digital skills divided into six subcategories: Digital Knowledge (DK), Information Management (IM), Personal Digital Communication (PDC), Collective Digital Communication (CDC), Online Collaborative Learning (OCL) and Online Leadership (OL). In this matrix, a 7-point Likert scale was used, in which participants responded according to the degree of agreement in the statement, in which 1: totally disagree and 7: totally agree. The skills matrix used in the second part is seen in **Table 1**.

For data collection, contact was made with the professor and the leader of each of the 6th to 8th period classes. The questionnaire link was made available for the leader to forward to the students. In the online questionnaire, information

Table 1. Matrix of digital competences.

Subcategory	Code	Assertion
Digital Knowledge (DK)	DK_1	I have enough knowledge to manage digital media.
	DK_2	I quickly identify the different virtual environments and logic of use of digital media.
	DK_3	I develop reflective thinking through digital media.
	DK_4	I use my knowledge of technological resources to develop and enhance my performance at work, with family, my contacts, friends, etc.
	DK_5	I constantly improve my knowledge of using digital tools
	DK_6	I can use different types of operating systems installed on a computer (Microsoft Windows, Linux) and on mobile devices (Android, smartphone, etc.).
	DK_7	I identify and solve common problems in communication and information systems and in applications (e-mail, antivirus, hard disk, software, etc.).
	DK_8	I have mastery of different technological tools, such as spreadsheets; big data; SQL database; cloud applications, such as Google Analytics etc.
Information Management (IM)	IM_1	I access information using Internet tools (search engines, web pages, databases, etc.).
	IM_2	I access information from the internet in real time and from anywhere.
	IM_3	I always assess the reliability of information and data available on the web.
	IM_4	I use the information obtained from the web responsibly.
	IM_5	I use graphic organizers and software to create mind maps, diagrams, graphs to set relationships between ideas and concepts.
Personal Digital Communication (PDC)	PDC_1	I have active participation in professional networks (LinkedIn).
	PDC_2	I develop cultural understanding and global awareness by connecting with colleagues and/or people from other cultures.
Collective Digital Communication (CDC)	CDC_1	I actively participate in online conversations or discussions, making valuable contributions to problem solving.
	CDC_2	Using digital tools, I am more productive in my tasks and activities.
	CDC_3	Communication through digital media has increased my network of social, academic and professional contacts.

Continued

Online Collaborative Learning (OCL)	OCL_1	I actively participate in collaborative work using digital media.
	OCL_2	I collaborate with others more efficiently when I use digital media.
	OCL_3	I collaborate with others to create new things (ideas, knowledge, products, resources, content, etc.) through digital media.
	OCL_4	I share ideas, experiences, information and knowledge using digital media.
	OCL_5	I contribute to the learning of my colleagues by sharing my knowledge through digital media.
Online Leadership (OL)	OL_1	As a leader, I'm always on the lookout for digital changes that can affect my team's work.
	OL_2	As a leader, I encourage my team to use digital resources.
	OL_3	As a leader, I recognize my team's commitment to working remotely using digital media.
	OL_4	As a leader, I use digital means to solve problems that arise within the team.
	OL_5	As a leader, I encourage my team to be increasingly competitive in the use of digital tools.
	OL_6	I am able to coordinate group activities using Network tools and media.

Source: Adapted from Arango-Morales, Delgado-Cruz, and Tamayo-Salcedo (2020: p. 323).

about the purpose of the research was made clear, as well as their acceptance to participate spontaneously in the research. The questionnaire link was sent to 340 final-year students of the course distributed in the 4 classes from 6th to 8th periods. Of these, 100 responses were obtained, and 93 questionnaires were considered valid. It is noteworthy that the context of the Covid-19 pandemic was a limitation to collection of data in scientific research.

A pre-test of the instrument was carried out with a group of undergraduates from the Administration course, who were not part of the sample. After application, respondents were invited to point out difficulties in completing the questionnaire and possible suggestions for improvement. No participant reported difficulty in answering the questions and there were no suggestions for changes to the questionnaire.

For data analysis, initially, descriptive statistics were performed regarding demographic data of the respondents and the assertions in their respective latent variables. Subsequently, the Mann-Whitney Mean Test and the Kruskal-Wallis Test were applied. Finally, to validate the construct in the Brazilian scenario, Exploratory Factor Analysis was applied, using the statistical software Statistical

Package for Social Sciences (SPSS).

4. Results and Discussions

The results from the questionnaire involved procedures such as: coding responses, data tabulation, statistical calculations and presentation of the results categorized into Profile of Acquired Digital competences.

According to demographic data, females with 55% respondents predoused, followed by 45% males. These data converge from Arango-Morales, Delgado-Cruz, and Tamayo-Salcedo (2020: p. 4), in which the majority were women (73.5%). The age group that stood out the most (59%) was students between 21 and 25 years old. Regarding the time of experience, around 84% have been working for more than one year, with 1 to 3 years of experience predominating with 35%. Finally, only 10% respondents had a managerial role in a company.

4.1. Profile of Acquired Digital Competences

Data in **Table 2** demonstrate a more managerial profile of respondents, in the Information Management (IM) construct, the four highest levels of digital literacy with 5.720; 6.387; 5.882; 6.247 respectively, demonstrating that they are able to manage different types of information a technological resource.

Data in **Table 2** demonstrate that, however, the only assertion with a low mean in this category, 3.989 was the question IM5 **"I use graphic organizers and software to create mind maps, diagrams, graphs to set relationships between ideas and concepts"**, which indicates limitations of students in this topic, as pointed out by Chuquimarca and Bedón (2020), who found the respondents' difficulty in formulating diagrams and maps to design and set relationships between data, concepts and ideas.

In the Collective Digital Communication (CDC) construct, the findings demonstrate a predominance of the question (CDC2) **"Using digital tools, I am more productive in my tasks and activities"**, with a mean of 5.634. On the other hand, the question (CDC1) **"I actively participate in online conversations or discussions, making valuable contributions to problem solving"** was the least expressive in this construct, with a mean of 4.140. Thus, one can observe a point to be developed by final-year students of accounting sciences course, so that it is possible to increase the sharing network for solving problems identified in the exercise of the profession in the digital age.

These results converge with the study by Arango-Morales, Delgado-Cruz, and Tamayo-Salcedo (2020), since "shared experience facilitates the direction and influence that leaders have on their work teams, in addition to accelerating communicative processes in academic and professional tasks." (Arango-Morales, Delgado-Cruz, & Tamayo-Salcedo, 2020: p. 9).

As for the Online Collaborative Learning (OCL) construct, data in **Table 2** indicate the highest performance of respondents in the question (OCL2) **"I collaborate with others more efficiently when I use digital media"** with a mean

Table 2. Acquired digital competencies.

Latent Variable	Indicators	Minimum	Maximum	Mean	Standard deviation	Coefficient of Variation	Asymmetry	Kurtosis
Digital Knowledge (DK)	DK1	1	7	4.301	1.473	0.342	−0.121	−0.505
	DK2	1	7	4.613	1.649	0.357	−0.457	−0.588
	DK3	1	7	4.613	1.482	0.321	−0.348	−0.199
	DK4	**1**	**7**	**5.237**	**1.556**	**0.297**	**−0.476**	**−0.739**
	DK5	1	7	4.978	1.474	0.296	−0.503	−0.283
	DK6	**1**	**7**	**5.280**	**1.513**	**0.287**	**−0.739**	**0.094**
	DK7	1	7	4.581	1.814	0.396	−0.300	−0.937
	DK8	**1**	**7**	**3.688**	**1.726**	**0.468**	**0.069**	**−0.863**
Information Management (IM)	IM1	1	7	5.720	1.409	0.246	−1.177	1.417
	IM2	**1**	**7**	**6.387**	**1.225**	**0.192**	**−2.597**	**7.508**
	IM3	1	7	5.882	1.538	0.262	−1.720	2.706
	IM4	**1**	**7**	**6.247**	**1.129**	**0.181**	**−2.032**	**5.064**
	IM5	**1**	**7**	**3.989**	**1.902**	**0.477**	**−0.062**	**−1.107**
Personal Digital Communication (PDC)	PDC1	1	7	4.430	1.969	0.445	−0.238	−1.199
	PDC2	**1**	**7**	**5.237**	**1.455**	**0.278**	**−0.597**	**−0.360**
Collective Digital Communication (CDC)	CDC1	1	7	4.140	1.736	0.419	−0.067	−0.800
	CDC2	**1**	**7**	**5.634**	**1.435**	**0.255**	**−0.997**	**0.430**
	CDC3	1	7	5.344	1.625	0.304	−0.778	−0.383
Online Collaborative Learning (OCL)	OCL1	1	7	4.538	1.773	0.391	−0.488	−0.608
	OCL2	**1**	**7**	**5.000**	**1.745**	**0.349**	**−0.791**	**−0.059**
	OCL3	1	7	4.688	1.713	0.365	−0.667	−0.017
	OCL4	1	7	4.989	1.723	0.345	−0.700	−0.308
	OCL5	1	7	4.935	1.654	0.335	−0.455	−0.523
Online Leadership (OL)	OL1	1	7	5.237	1.492	0.285	−0.918	0.620
	OL2	1	7	5.000	1.775	0.355	−0.667	−0.492
	OL3	**1**	**7**	**5.581**	**1.527**	**0.274**	**−1.110**	**1.027**
	OL4	1	7	5.097	1.662	0.326	−0.810	0.036
	OL5	**1**	**7**	**4.505**	**1.965**	**0.436**	**−0.324**	**−1.046**
	OL6	1	7	5.043	1.719	0.341	−0.724	−0.339

Source: research data.

of 5000, followed by the question (OCL4) **"I share ideas, experiences, information and knowledge using digital media"** with a mean of 4989. These results are in agreement with the research by Frare, Horz, Martins, Fernandes, and

Quintana (2020: p. 9) when they say that the sharing of information and knowledge for those interested in the object of accounting is optimized through technology: "qualification of accounting professionals is linked to technological innovation, because it will be from this that there will be the possibility of sharing information with customers, shareholders, partners".

As for the Online Leadership (OL) construct, most respondents are diligent about the emergence of new technologies to improve the activities carried out by their subordinates (OL1—mean 5.237) **"As a leader, I'm always on the lookout for digital changes that can affect my team's work."** Another point was the assessment by most participants regarding the use of remote work (OL3—mean 5.581) **"As a leader, I recognize my team's commitment to working remotely using digital media"**. Faced with the Covid-19 pandemic, many companies have made remote work (home office) possible for their employees for health reasons and this mean value confirms the commitment of managers and their teams in relation to the continuity of work.

Although the overall mean was high (4.99), the answers varied greatly for each assertion. According to Fávero and Belfiore (2017), the data set can be considered heterogeneous when the value of the coefficient of variation is above 0.3 (30%) and, according to **Table 2**, the answers were heterogeneous for the assertions, since most of the answers (18) had a coefficient of variation greater than 30%, which indicates that the final-year students of the Accounting Sciences course have different characteristics in relation to the development of skills.

4.2. Confirmatory Factor Analysis: In Search of the Most Expressive Digital Competence

Confirmatory Factor Analysis was applied to validate the research instrument proposed by Arango-Morales, Delgado-Cruz, and Tamayo-Salcedo (2020) in the Brazilian context, with students of the Accounting Sciences course. There are asymmetry and kurtosis values that extrapolate the desirable range of −1 and +1 (Fávero & Belfiore, 2017). However, this item is not an assumption for confirmatory factor analysis, as it does not require normal distribution (Fávero & Belfiore, 2017), so no indicator was excluded at this point in the analysis. **Table 3** lists the fit indices and factor loadings of the analyzed model.

Of the constructs used in the study, two had to be removed, as they did not present an adequate factor structure. In total, the Acquired Digital competence instrument was composed of 24 items and 4 factors. As can be seen, all factors had favorable indicators, which demonstrate the suitability of the proposed models. Values of the comparative or incremental fit indices are also observed: the values of CFI (0.979), TLI (0.976) and IFI (0.979) were higher than the reference indicator 0.90 (Brown, 2015). Finally, the SRMR index (0.095) had a reference value (<0.10, Brown, 2015) and indices lower than 0.10 indicate a good fit (Hair, Black, Babin, & Anderson, 2010). However, the RMSEA index [0.099 (0.085 - 0.112)] expressed values above the acceptable in the literature [0.080 (0.06 - 0.10)] (Brown, 2015). This is justified by the lack of robustness of the

Table 3. Fit indices and factor loadings. (a) Fit indices; (b) Factor loadings.

(a)

Construct			Number of items	Factor Loading (Range)	Composite reliability
Acquired Digital Skills			24	0.688 - 0.868	0.882
χ^2 (df)	**CFI**	**TLI**	**SRMR**	**IFI**	**RMSEA (90% CI)**
469.379 (248)	0.979	0.976	0.095	0.979	0.099 (0.085 - 0.112)

(b)

Factor	Indicator	Loading	Factor	Indicator	Loading
Digital Knowledge	DK1	0.816	**Online Leadership**	OL1	0.776
	DK2	**0.865**		OL2	**0.816**
	DK3	0.622		OL3	0.634
	DK4	0.703		OL4	0.810
	DK5	0.831		OL5	0.651
	DK6	0.614			
	DK7	0.672		OL6	0.685
	DK8	0.660			
Information Management	IM1	0.805	**Online Collaborative Learning**	OCL1	0.737
	IM2	**0.865**		OCL2	**0.878**
	IM3	0.593		OCL3	0.800
	IM4	0.793		OCL4	0.860
	IM5	0.472		OCL5	0.867

Chi square (χ^2); Degrees of freedom (df); Comparative Fit Index (CFI); Tucker-Lewis Index (TLI); Standardized Root Mean-Squared Residual (SRMR); Bollen's Incremental Fit Index (IFI); Root mean square error of approximation (RMSEA). Source: research data.

study sample and this index is more suitable for population data and large samples (Latif, 2000).

Regarding the impact of indicators on their respective factors, item **(DK2) "I quickly identify the different virtual environments and logic of use of digital media"** most affected Digital Knowledge (DK) with a loading of 0.865, followed by Information Management (IM) with the question **(IM2) "I access information from the internet in real time and from anywhere"**, with a loading of 0.865. With respect to Online Leadership (OL), the statement (OL2) **"As a leader, I encourage my team to use digital resources"** shows greater expressiveness of the construct with a load of 0.816. These results converge with the research by Gašová, Mišík, and Štofková (2018), who found that the efficient use of technol-

ogy for problem solving combined with teamwork is the most desired skill by employers.

Finally, in the Online Collaborative Learning (OCL) construct, the assertion (OCL2) **"I collaborate with others more efficiently when I use digital media"** was more prominent with a loading of 0.878. This result is in agreement with Fleaca and Stanciu (2019), who found the greatest emphasis on the issue of using collaborative platforms to increase efficiency, with an average score of 3.2 on a Likert scale of up to 4 points.

It is noteworthy that, in the Information Management (IM) factor, the variable (IM5) **"I use graphic organizers and software to create mind maps, diagrams, graphs to set relationships between ideas and concepts"** presented a lower factor loading (0.472), that is, the answers show great divergence, indicating a point of attention for students and professors of the accounting sciences course, in accordance with Chuquimarca and Bedón (2020), who also obtained similar results regarding the use of mind maps to organize ideas and concepts, with 40% of a total of 107 respondents who used this information management tool.

These results indicate the importance of teaching practices that optimize the less developed competencies identified in this study, which will bring benefits for the training of future accountants.

5. Conclusion

This study aimed to analyze the profile of digital skills acquired by final-year students of the Accounting Sciences course. The sample consisted mostly of women (55%), young people aged between 21 and 25 years who have not yet exercised a managerial role (90%). As for the Digital Skills profile, it was found that the Information Management (IM) construct concentrates the four highest levels of digital literacy of respondents (5.720; 6.387; 5.882; and 6.247) demonstrating high levels of proficiency in this construct.

In the Collective Digital Communication (CDC) construct, the predominance of the question (CDC2) was identified **"Using digital tools, I am more productive in my tasks and activities",** with a mean of 5.634. As for the Online Collaborative Learning (OCL) construct, it was found that the question (OCL2) **"I collaborate with others more efficiently when I use digital media"** had the highest mean, 5000. As for the Online Leadership (OL) construct, most respondents are diligent about the emergence of new technologies to improve the activities performed by their subordinates, obtaining a mean value of 5.237 for the question (OL1) **"As a leader, I'm always on the lookout for digital changes that can affect my team's work"**.

Regarding the impact of indicators on their respective factors, item **(DK2) "I quickly identify the different virtual environments and logic of use of digital media"** is the one that most affects Digital Knowledge (DK) with a loading of 0.865, followed by Information Management (IM) with the question **(IM2) "I**

access information from the internet in real time and from anywhere", with a loading of 0.865. Regarding Online Leadership (OL), the statement (OL2) **"As a leader, I encourage my team to use digital resources"** shows greater expressiveness of the construct, with a loading of 0.816.

As the predominant profile of the group of students analyzed with high levels of digital literacy, there is the dimension of Digital Knowledge linked to the construct **"Digital Knowledge"** (DK), with the assertion "I quickly identify the different virtual environments and logic of use of digital media" and a factor loading of 0.865, followed by **"Information Management"** (IM) with the assertion "I access information from the internet in real time and anywhere" with a load of 0.865. The dimension of Digital Behavior linked to **"Online Collaborative Learning"** (OCL) with the assertion "I collaborate with others more efficiently when I use digital media" with 0.878 factor loading, followed by "Online Leadership" (OL), with the statement (OL2) "As a leader, I encourage my team to use digital resources", which shows greater expressiveness of the construct, with 0.816 factor loading.

The study contributes to the literature with the proposition that final-year students of Accounting Sciences, know and manage digital media in different virtual environments, can also access information at any time and from anywhere. When it comes to leadership, respondents encourage their teams to use digital resources and consider collaboration more effective when using social media.

The research also has implications for professors and students of the Accounting Sciences program to reflect on the results of the two constructs of the Acquired Digital Skills instrument, which were not validated by Exploratory Factor Analysis (PDC and CDC). Thus, it is necessary to have projects to raise awareness among university students about the use of personal and collective digital communication, as they can contribute to networking within the job market. In conclusion, respondents have a more managerial (knowledge) and attitudinal (relational and social) profile than a technical-professional mastery (know-how) of digital media.

Finally, it is important to point out that the present study has limitations regarding sample robustness due to the fact that it is only one Higher Education Institution to test the methodological model in Brazil, so it would be interesting in future research to use a population and sample including different Institutions that offer the Accounting Sciences course with different syllabus and pedagogical proposal.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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