In the shoes of a Portuguese Accounting student: perceptions into the skills for a successful career

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Abstract

Students are meaningful stakeholder groups in higher education universities (HIE). This work aims to examine Portuguese students' perceptions of the most important skills for a successful career for the accounting profession, and to identify how these perceptions vary among students with different academic profiles. Focusing only in undergraduate and master's student sensitivities, the analysis of the data collected through a survey indicate that perceptions differ according to students' educational accounting profiles (level of education, professional experience, and school excellence). The results also suggest that Portuguese students consider import the same skills that past literature attributes as important for recruiters, although with different levels of importance. Framed by stakeholder theory in a higher education context, the results may have practical implications for the academy (enhancing the perceived skills to meet objectives), recruiters (contributing to shaping skills in the aspirants), and students (matching their own opinion with that of their peers).

Keywords: Stakeholder theory; Accounting profession' Skills; Masters students' perceptions; Bachelors students' perceptions; Higher education universities (HEI)

1. Introduction

In recent decades, the accounting profession has been changing, and competencies[1] regarding the preparation, reporting, disclosure, and analysis of financial information for many stakeholders are in high demand. Accountants play an important role in the growth and sustainability of organizations (e.g., Bruna et al., 2017; Lim et al., 2016), and they are currently required to have other soft skills beyond those directly concerned with traditional accounting. The job market poses ever-increasing challenges, and, for a long time, hard skills alone are not sufficient (e.g, Andrews & Higson, 2008; Robles, 2012; Moore & Morton, 2017). Besides, development in technology over the last decade has brought new software and databases, and companies have started requiring that accountants keep abreast of the new information systems (e.g., Dzuranin et al., 2018; Spraakman et al., 2015). However, a recent study by Dolce et al. (2020) argue that accounting education still needs to progress to enhance the skills required by employers, and their findings suggest that graduates, compared to the companies, underestimate the importance of some soft skills and overestimate other technical skills, and only partially are in accordance with employers' views. Additionally, Chaffer and Webb (2017) and Coady et al. (2018) suggest that accounting graduates generally do not have the generic skills expected by employers, and that the accounting literature to date has signalled a number of gaps between the skills developed in accounting programs and the skills sought by the marketplace for those students pursuing careers in the accounting profession (e.g., Coady et al., 2018; Lichy and Khvatova, 2019; Jackling & De Lange, 2009; Kavanagh and Drennan, 2008).

[1] Uwizeyemungu, Bertrand and Poba-Nzaou (2020) set out clearly, based on past literature, that competences can be related to performance outcomes, characteristics or knowledge possessed (knowledge, skills, personal traits, and professional attributes). In this study, competencies are used in a wide sense, as synonymous with knowledge and skills.

However, accounting education institutions escort what is required by professional organizations (e.g., knowledge required for being a public accountant according to the guidelines of each country), and by assessment and accreditation agencies with the objective of improving the quality of business education either at the country level (e.g., certifying the quality assurance of the higher education system) or at an international level (e.g., to improve the quality of business education around the world). However, in the accounting education literature, the categorization of skills and the clarification of component elements seem to be confusing (Smith et al., 2018) and if a list of isolated skills could be analysed (Albrecht and Sack, 2000), they may present a knottily combined skill set (Jones and Sin, 2003). Smith et al. (2018) provide examples of these considerations, stating that “What is not clear is how students understand or conceptualize these different skill sets” (p.539). While Dolce et al. (2020) answer *how much these skills are developed at universities* by reviewing the expectation-performance gap in accounting education among practitioners/employers, university educators, and chartered institutes, and provide evidence about graduates’ expectations, very little research contemplates students’ perceptions. As such, alongside the studies that focus on the viewpoints of both graduates and employees[2] on soft skills in accounting education somewhat overlapping (e.g., Dolce et al., 2020; Lichy and Khvatova, 2019), the skills/competencies perceived as the most important by students[3], who are still largely engaged with their own and current process of acquiring competencies for the future, should also be considered. A small number of studies acknowledge the views that students

[2] One limitation of this study, as appointed by an anonymous reviewer, is the lack of data collected about the perception of employees and identification of gaps between different groups. The authors acknowledge this limitation and highlights the existence of other recent papers about that gap (e.g., Coady et al., 2018; Lichy and Khvatova, 2019). This paper highlights the gaps among students with different profiles.

[3] In this paper, “students” include learners enrolled in accounting programs offered by HEI (universities and polytechnics), either undergraduates or master’s degrees.

about entering employment might have, even though they are key stakeholders in the whole process (Kavanagh and Drennan, 2008).

Using the stakeholder theory framework, this study aims to examine Portuguese students' perceptions of the importance assigned to a large set of general/soft and technological[4] skills for long considered critical for the accounting profession (e.g., Albrecht and Sack, 2000; Kavanagh and Drennan, 2008). Furthermore, it identifies how the level of importance can vary among students with different academic profiles and highlights the differences. To this end, a survey was conducted with undergraduate and master's Portuguese accounting programs in high education institutions. Portugal has a suitable educational environment to conduct a study with the characteristics of this one. Many Portuguese business schools offer a degree in accounting (undergraduate and/or masters). Accountancy is a regulated profession and accountants must be certified and possess at least an undergraduate degree. All degree programs must be accredited by the National Agency for Assessment and Accreditation of Higher Education (A3ES); however, only some schools are internationally certified. Portugal has four business schools with international AACSB accreditation, whose mission is to foster engagement, accelerate innovation, and amplify the impact of business education (https://www.aacsb.edu/about).

Taken one-by-one, the findings suggest that undergoing students perceive as the most important, almost the same general abilities and knowledge that prior literature finds recruiters expect young graduates to possess. However, they do not attribute the same

[4] General/soft skills include personal skills and general knowledge that someone in the accounting profession should have; technological skills include more in-depth knowledge that someone in the accounting profession should have. Because Smith et al. (2018) question the confounding categorization and component elements of skills, distinction between the categories is clarified in the survey (see appendix)

level of importance to communication and teamwork skills as recruiters do in earlier studies.

They also attach greater importance to their technological skills. However, when students are divided according to their academic profile (masters *versus* bachelor's; professional experience in masters *versus* bachelor's; professional experience obtained in the academy *versus* outside of the academy; AACSB accredited *versus* non-AACSB accredited), the perceived skills with higher ranking differ, and the relative position changes. Only six general/soft patterns of underlined competences and four patterns of underlined technological competences survive. Students with a master's degree attribute a higher level of perception than their undergraduate colleagues on a bachelor's degree only to those competencies related to "Communication, Relationship and Innovation" and "Ethics and Professionalism" Ethics and Professionalism' and are thus more aligned with the requirements of employers claimed in earlier studies. Nonetheless, when both master's and bachelor's students have professional experience, all patterns (except IT management) are perceived as more important for master's students. The findings also suggest that when work experience is considered, there are differences in some skills between those who have experience outside the academy (e.g., autonomous work) and those within the academy (e.g., curricular internship). Patterns of skills linked to "Communication, Relationship and Innovation" and to "Office related applications" are perceived as the most important by students enrolled in AACSB Accredited schools when compared to non-AACSB Accredited, which seems to go together with the skills required by the job market regarding general/soft skills in earlier studies.

The theoretical contribution is that Portuguese students, as the most important stakeholder group for HIE, consider the skills that recruiters, as suggested by prior literature, consider the most important to have a promising career. It also contributes to the call for more research by Kavanagh and Drennan (2008) to include the perceptions of graduates already employed in industry, but in this case, it is used the perception of a student with professional experience in the industry, and of a student enrolled in an internationally recognized accounting program. Furthermore, it contributes by addressing the research problem in a geographic context not explored in the literature, that is, Portugal, a European country where prior studies identified students as the most important stakeholder group for HIE (Mainardes et al., 2013), with four business schools accredited by AASCB. This accreditation qualifies Portugal as a country with high-quality educational programs in business (accounting included), able to train skilled people to achieve the profession of chartered account or other related. This paper adds to those that emphasize graduates' estimation of the importance of skills and self-evaluation (e.g., Dolce et al., 2020), and the requirements of recruiters (e.g., Kavanagh & Drennan, 2008), but it is focused on the perception of young learners (e.g., Smith et al., 2018), still enrolled in accounting programs (undergraduates and masters). Indeed, it opens the way to match this group of stakeholders according to their individual level of education, the amount and level of professional experience acquired during their course, and the quality of the business education program through its accreditation by AACSB International. In addition, it enables exploration of potential differences in the perceived importance of several skills.

The practical implications of this study are threefold: first, it may provide academic institutions with valuable strategies when considering their curricula and competences and, therefore, the opportunity to consider whether something needs to be changed in order to enhance or adjust the profile of their own students; second, it may also answer recruiters' concerns evidenced in earlier literature about academic institutions being aligned to their needs regarding the most important type of skills students must be aware of; and third, the study is important for students of accounting, who can use the current findings, together with the existing literature on the skills required by the job market, to consider their own position and the position of their peers. Overall, the practical implications are also aligned with stakeholder theory in the higher education context.

The following section condenses pertinent literature. Then, the research questions, sample, method, and procedures to collect and analyse the data are presented. Subsequently, the results and discussion of the findings are outlined, followed by concluding remarks.

2. Theoretical background and literature review

The stakeholder theory (Freeman, 1984; Freeman & John McVea, 2005) is one of the most broadly applied theories in the business world, considering the different expectations and demands of society and stakeholders. This theory considers the different expectations and demands of society and stakeholders (Arco-Castro et al., 2020) and the role of concern for others, consistent with the approach taken in teaching (e.g., Rodríguez-Gómez et al., 2020). The stakeholder theory proved highly useful to some specific organizations with dispersed powers, particularly the public and complexes, such as in the case of HEI, in which the "students" are suggested as the most important stakeholders (Mainardes et al., 2013). Bearing this in mind, students' expectations, needs, aspirations, or otherwise, should be taken into consideration to bring to them more efficient university management and achieve the main objectives set for an HEI (Lichy & Khvatova, 2019; Mainardes et al., 2013). They endorse the institution to other potential students, can return later (Alves & Raposo, 2006), and may engage with their *alma maters* from positions of power within the job market (Hennig-Thurau et al., 2001). Students want to succeed in their future profession, and that success may depend on a set of skills obtained for long considered critical to the accounting profession. Their perceptions can be compared with education-job mismatches based on the opinion of higher education teachers and graduate recruiters (Lichy & Khvatova, 2019), two other important stakeholders in universities and other equivalent institutions.

A seminal work by Albrecht and Sack (2000) entitled 'Accounting Education: Charting the Course through a Perilous Future' lists the skills that should be inherent to the accounting profession. The skills proposed at the time were supported by the argument that many traditional accounting tasks could be reliably automated and that an accountant's worth was gradually reflected in higher-order skills, such as critical thinking, problem solving, and analytical skills. This work could be appointed as one of the most popular theories about the skills that students, graduates, or executives/experts should possess. Further studies showed their validation for professionals currently in the job market and required for those who are young graduates. The most important skills required by recruiters for professionals in the accounting field are working in a team, organizing work to meet deadlines, and knowing how to use, albeit in a basic way, several types of software and computer applications (e.g., Hassall et al., 2005; Pan & Seow, 2016), communication, ability to solve problems, and personal skills, such as independent thinking, analytical skills, creativity, and flexibility (e.g., Jackling & De Lange, 2009; Lim et al., 2016; Yanto et al., 2018). On the other hand, young graduates of accounting must also have knowledge other than that of an accounting nature (Bui & Porter, 2010; De Lange et al., 2006), and communication (oral and written) is seen as the most decisive general skill, especially among the market's so-called Big 4, with new hires having to demonstrate confidence and effectiveness to their managers and directors from early on in their careers (Bui & Porter, 2010). Teamwork is also often mentioned, and recruiters believe that it should be developed during classes and/or part-time work (Bui & Porter, 2010; De Lange et al., 2006). Other authors have also indicated that leadership, interpersonal skills, time and change management, ambition/motivation, and continuous learning are important skills to be acquired by recent graduates (Bruna et al., 2017; Bui & Porter, 2010; Dzuranin et al., 2018; Jones, 2010; Kavanagh & Drennan, 2008; Low et al., 2016; Towers-Clark, 2015). The ability to communicate, ask the right questions, and know how to manage and analyze different databases is highly valued (Bruna et al., 2017; Dzuranin et al., 2018; Towers-Clark, 2015).

On the other hand, although several studies point out that recruiters show a greater preference for non-technical accounting skills than technical ones, in an increasingly technological market, young graduates must also have technological knowledge (e.g., big data analysis) to be successful in the profession (Dzuranin et al., 2018; Janvrin & Watson, 2017; PwC, 2015) and students (future accountants) must acquire knowledge that allows them to keep abreast of technological development and the future needs of companies. Thus, knowing how to use vlookup pivot tables, as well as other tools and more sophisticated systems, such as enterprise resource planning (ERP) or blockchain databases, is appreciated (e.g., Dzuranin et al., 2018; Spraakman et al., 2015). In fact, the most important role of an accountant in the past was to prepare and provide information to help the external and internal decision-making process (e.g., Janvrin & Watson, 2017), but the paradigm has been shifting for a long time, and one of the causes is the technological revolution (e.g., Kavanagh & Drennan, 2008), computerization, and implementation of services and systems for managing the value chain introduced on the Internet (Pan & Seow, 2016), even though some organizations are still poorly prepared to leverage IT in their finance and accounting functions (Uwizeyemungu et al., 2020). There are references that near future 40% of accounting records would be automated or deleted (e.g., Axson, 2015) and artificial intelligence is up to date, allowing companies to create robots that perform functions of calculating and analysing data which, together with the "greater importance of behavioural skills, such as professional judgment and emotional intelligence, will create new challenges for the entire accountancy profession" (Birt et al., 2018, p. 2).

The demand for professionals with profiles linked to accounting (included in the finance area) has increased steadily in recent years (Michael Page, 2018). Although some companies look for people with experience to occupy specific functions, the main players recruit university students or young graduates with little or no professional experience. This is due to the excellent reputation that accounting education has in the market and makes it possible to recruit as many young graduates as possible (e.g., Albrecht & Sack, 2000). Companies take advantage of job fairs endorsed by HEIs to promote job offers and/or internships to guarantee that they hire young people with the greatest potential to meet their future needs (e.g., Suleman & Laranjeiro, 2018). Therefore, HEIs play an important role in the development of future accountants. In addition to accounting knowledge, by the time young people have finished their degrees, they must have developed certain general skills, such as communication and learning ability, to ensure long-term work (e.g., Bunney et al., 2015), and technological skills (e.g., Kavanagh & Drennan, 2008; Lim et al., 2016; Spraakman et al., 2015). It is up to HEI to investigate the skills that companies and other institutions at national and international levels want new accountants to have and to take measures to avoid discrepancies between the qualifications acquired by students and those required by the market (e.g., Suleman & Laranjeiro, 2018; Yanto et al., 2018). To build up this approach, international accreditation agencies play the role of stakeholders in universities (e.g., Mainardes et al, 2013). One of the most recognized accreditation institutions in this area, AASCB

International, requires that to receive its accreditation (AACSB International, 2018), which must be appropriate to the expectations and requirements of employers for each course in accounting. Their guidelines cover not only technical knowledge but also the development of skills that encourage critical thinking and analysis and the gathering and analysis of information[5].

Notwithstanding the identification of skills in the literature or by accreditation agencies, the match between those required by recruiters and those that young graduates have is not perfect (e.g., Kavanagh and Drennan, 2008; Bui and Porter, 2010; Bunney et al., 2015; Dolce et al., 2020), with different levels of perception regarding their importance, and a relevant question is *how much these skills are developed at university*. While Dolce et al. (2020) answer that question by reviewing the expectation-performance gap in accounting education among practitioners/employers, university educators, and chartered institutes and provide evidence about graduates' expectations, very little research contemplates students' perceptions, and several other authors claim that students' expectations of skill development in their undergraduate degree programs are not being met (e.g., De Lange et al., 2006; Kavanagh and Drennan, 2008). Informed by the literature and following similar studies of students in higher programs, such as De Lange et al. (2006), Kavanagh and Drennan (2008), and Jackling and De Lange (2009), the main purpose of the present study was to analyse the perception of the importance that undergraduate and master's students, still enrolled in accounting programs, assign to

[5] It should also be noted that the AACSB International indicates that Accounting courses should "(…) include learning experiences that develop skills and knowledge related to the integration of information technology in accounting and business. (…)" (AACSB International, 2018, p. 27). So, HEI must use processes to determine and review the learning objectives of their courses. Besides, the International Accounting Education Standards Board (IAESB), in its most recent Handbook of International Education Pronouncements (Ed. 2019) calls to the need of professional competence, going behind knowledge of principles, standards, concepts, facts, and procedures, to integrate and apply learning outcomes for (a) technical competence, (b) professional skills, and (c) professional values, ethics, and attitudes.

a large set of competences/skills for long considered critical (e.g., Albrecht and Sack, 2000; Kavanagh and Drennan, 2008).

3. Research Questions and Methodology

The main purpose of this paper is achieved in three ways: i) identify which skills are highly perceived as the most important, ii) analyse differences in that level of perception comparing groups of students with diverse educational accounting profiles, and iii) uncover patterns of skills, to show how these patterns may overlap and which skills are seen in multiple patterns. Each path was linked to a specific research question. Figure 1 summarizes the research proposal approach with the identification of the research questions and the subsequent research analysis development, and its explanation is detailed in the following sub-sections.

[Insert Figure 1 here]

3.1 Research questions

The first research question (Figure 1), RQ1, is broader and seeks to understand *what skills (general/soft and technological) undergraduate and master's students enrolled in accounting programs (HEIs) perceive as the most important to equip them for the accounting profession.* (Figure 1). The purpose is not to measure whether they possess those skills, but whether they consider a particular skill important based on the knowledge obtained in the accounting program.

Further, the second research question (Figure 1), RQ2, explores *whether students with different academic profiles may have different perceptions of the importance of skills*, since prior literature does not reflect this issue. Three sub-questions were developed, namely, whether there were differences in the perceived importance of skills between undergraduate and master's accounting students (RQ2a), whether there are differences in the perceived importance of skills by students with some professional experience compared to students with no professional experience (RQ2b), and whether there are differences in the perceived importance of skills by students enrolled in a school accredited by AACSB as compared with other (non-accredited) HEIs (RQ2c). These questions address diversity of academic profiles, explicitly: i) the academic qualifications (ongoing undergraduate degrees *versus* ongoing master's degrees); ii) the professional experience that they may have as trainees (included in the undergraduate *versus* in the master's degree programs, obtained in the academy *versus* outside of the academy); and iii) the excellence of the HEI students enrolled in. About this last aspect, which could be an important avenue to explore, this study highlights the AACSB Accreditation since one of the requirements is that the curriculum must be appropriate to the expectations and needs of employers (other important group of stakeholders). As such, each course in accounting (AACSB International, 2018) must cover technical knowledge, critical thinking and analysis, and the collection and analysis of information.

Finally, the third research question (figure 1), RQ3, aims to *uncover the patterns from a large set of skills that can better describe the students' perceptions, which are important for their future success as an accountant.* This research question is justified because the first two are supported in a list of individually considered skills. It is important to take them together to uncover a pattern that can group skills with similar characteristics and thus provide a more comprehensive measure of students' perceptions, especially because skills are not easily directly measurable and some can be closely related. The third research question was answered by using two different ranges. First, a general answer (equivalent to RQ 1), and an answer is obtained according to the different educational accounting profiles (equivalent to RQ2a, RQ2b, and RQ2c).

3.2 Data collection

This research uses an instrument adapted from two well-established surveys created by Albrecht and Sack (2000) and Kavanagh and Drennan (2008) to collect quantitative data. Slight refinements were made after a pilot survey was completed by 25 accounting students in a Portuguese HEI. The final version includes an introduction, which is a message addressed specifically to the respondents requesting information about the objectives of the study, the affiliation of the authors who are carrying out the research, and guarantees regarding confidentiality and anonymity of the respondents and their responses[6]. The final survey has four sections and most questions are close ended: i) Section I, General skills, as identified in the instrument created by Albrecht and Sack (2000) and applied by Kavanagh and Drennan (2008), using a 5-point Likert scale (1: not important to 5: extremely important, with a brief description of each skill is included to mitigate bias in students' interpretation); ii) Section II, Technological skills, as identified in the instrument used by Albrecht and Sack (2000), extended to include the knowledge in terminology such as ERP, bitcoin, and blockchains (5-point Likert scale); iii) Section III, Biographical data (gender, age, degree, name of the HEI, and professional experience); and, iv) Section IV, Professional experience, answered only by those respondents who answered in the affirmative to the question about "Professional experience" included in Section III (data about the type of experience, duration and moment in time is collected).

[6] The survey complies with Regulation (EU) 2016/679 of the European Parliament and of the Council of the European Union of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data.

3.3 Sample and processes

The survey was available using the Google Forms app and was answered online using a computer, smartphone, or tablet. Due to Regulation (EU) 2016/679, access to a list of the e-mail addresses of all students was not available. To address this constraint, a list of all HEIs offering bachelors and master's degrees in accounting was obtained from the publicly available website of the Higher Education Authority in Portugal, which includes the name of the Director of each program and the institutional e-mail address to whom an e-mail was sent requesting their help in the aleatory diffusion of the survey among the accounting students enrolled in the program he/she was responsible for. A total of 192 responses to the surveys were obtained, but only 188 responses were validated (e.g., due blank answers). It was not possible to control the number of Portuguese students to whom the survey was sent, but respondents were from universities/polytechnics, representing around 30% of all HEI offering programs in accounting.

Table 1 shows respondents' characteristics. Panel A shows that most of the respondents were female (72.9%, consistent with the prominence of this gender in Portuguese HEI); the majority were between 18 and 23 years old (53.7%), still enrolled in a bachelor's degree (57.4%), and studying at a public university/polytechnic (91%). Panel B presents information on professional experience. Most of the respondents revealed that they had one professional experience (147 students, 78.2%), with 104 students (70.4%) qualifying it as an experience in the field of accounting (53.7%), but extra-curricular, not mandatory, while they are still studying (outside the higher education environment).

[Insert Table 1]

3.4 Research Analysis

All variables were previously codified and exported to the statistical software. There were 47 different variables to capture the students' answers regarding the importance of general/soft skills and 22 different variables for technological skills (sections I and II of the survey, respectively). To provide an answer to RQ1, descriptive statistics were presented for each skill, which allowed us to rank the list of skills with the highest levels of perceived importance. Then, to respond to RQ2a, RQ2b and RQ2c, t-tests for independent samples were conducted to find differences in the skills perceived by different groups of students according to their academic profile. Finally, to explore and answer RQ3, this study uses exploratory factor analysis (EFA) to uncover patterns of skills, show how these patterns may overlap, and show which skills are seen in multiple patterns. The assumptions of the EFA and the subsequent analysis of output follow Field (2013) and Hair et al. (2013). As in Kavanagh and Drennan (2008) and Smith et al. (2018), the objective is to reduce the complexity of the findings, enrich the discussion, and extract components that group together the different sets of skills previously individually considered. Subsequently, the extracted components are considered new variables, and using the means of the skills included in each factor, an index is constructed. The RQ 2a-2c are then revisited using these results to compare groups of students according to their academic profile.

4. Results and Discussion

4.1 Answer to Research Question 1

Section I of the survey: student perceptions relative to general/soft skills

Table 2 presents the results of Section I of the survey. A brief definition of each skill is presented in a column (also included in the survey), along with descriptive statistics. The last column ranks the importance respondents attributed to each general/soft skill based on the mean (1^{st}–47^{th}).

[Insert Table 2]

On average, students distinguish the general and soft “technical/bookkeeping knowledge” (mean: 4.75), followed by “work ethically” (4.63) and by “professional attitude” (4.59) as the most important skills needed to succeed as an accountant in the future, ranking them in the top three. They then position “continuous learning” (4.56) and “accounting software skills” accounting software skills’(4.51) in the fourth and fifth places, respectively. Those with the lowest level of importance include “creativity” (3.41), “risk propensity” (3.46), “self-promotion” (3.6), “entrepreneurship” (3.63) and “leadership” (3.71). However, all skills have an average level of importance higher than 3 on a scale of 1 to 5; therefore, all these skills are perceived by students as *important*, *very important*, or *extremely important.*

Section II of the survey: student perceptions relative to technological skills

Table 3 presents the results of Section II of the survey. Descriptive statistics are presented, and the last column ranks the importance attributed to each skill by respondents based on the mean. On average, students perceived the ability to use “Spreadsheet software” the most important competence for an accountant's success (mean= 4.56), followed by those related to the use of “communication software” (4.11), “word processing software” (4.10) and “File and directory management” (4.05) and “Internet” Competencies related to programming, such as “Computer hardware,” “HTML and other web programming” and “Programming languages,” are those perceived as less important on a scale of 1 to 5 (mean 3.29, 3.12 and 2.81, respectively).

[Insert Table 3]

4.2 Answer to Research Question 2

Research question 2 covered the influence of the academic degree, professional experience, and excellence of the school on students' perceptions. To answer *RQ2a,* a parametric t-test for the independent samples is reported in Table 4. The p-value is always higher than 0.05; therefore, it is not possible to reject the null of the equality of the means except for "Resource management" skill (general/soft skill) and "presentation software" (technological skill). Only if the statistics show that the level of confidence drops from 95% to 90% do some characteristics present slight differences in perceptions between bachelor's and master's students. However, students in bachelor's undergraduate courses attribute greater importance to skills than master's students.

[Insert Table 4]

Similarly, to respond to *RQ2b* Table 5 reports the t-test for independent samples. The survey is addressed in such a way that it is possible to capture whether the students have had some professional experience while they are studying, as well as to ascertain whether that experience is obtained in their academic institution (because some courses have internships included) or outside of the institution (not related to the program they are enrolled in). Compared to the previous analysis, the number of respondents decreased to 147 as professional experience was required to continue the survey. The responses to this research question were divided into two groups. The first column presents the results for the group of students whose professional experience was obtained during their degree, whether bachelors or masters. The other columns show the outcomes for the group of students whose professional experience was obtained within or outside their institution. In the first case, comparing undergraduate students with masters students, no significant differences were found in relation to the majority of general/soft skills except for “risk analysis,” “customer service,” “read with understanding” and “tenacity” (general/soft skills). In the second case, however, there were many more skills for which significant differences were found between students obtaining professional experience within or outside of the HEI. Specifically, “self-motivation,” “computer technological competences,” “interpersonal skills,” “work ethic,” “change management,” “decision modelling,” “critical thinking,” “measurement,” “foreign language,” “leadership,” “strategic management” and “technological management and budgeting.”

[Insert Table 5 here]

To reply to RQ2c, the same method was performed and the results are reported in Table 6. It is possible to take this approach because one answer to an open question in the survey requires the respondent to identify the HEI, which was confirmed in the public list of AACSB-accredited institutions (https://www.aacsb.edu/accreditation/accredited-schools) and codified accordingly. Compared with the previous analysis, the number of skills for which more statistically significant differences exist is when the academic profile considered is from an AACSB-accredited institution. As shown in Table 6, skills like “Cross-cultural appreciation,” cross-cultural communication”, “oral communication, ““creativity, ““leadership, “ present significant differences between both groups, but the perceived importance of these skills is always higher for students in non-AACSB Accredited institutions.

[Insert Table 6]

Finally, Table 7 shows the top ten general/soft skills and the top five technological skills ranked according to the mean for the groups of students classified in prior tables. Irrespective of the statistical significance of the difference in the level of importance of the skills between the groups, Panels A to D show that some skills are commonly perceived as important by different groups of students (but ranked in different positions), and other skills are included only in one of the groups. Major differences are driven by students with any kind of professional experience, especially when the experience is obtained outside the environment of the institution, as well as by students enrolled in AACSB accredited institutions.

[Insert Table 7]

4.3 Answer to Research Question 3

An EFA solution was used in RQ3. The fundamental assumption is that there are several underlying factors that are smaller than the number of variables used to capture the level of importance of skills responsible for the co-variation among those skills. Determining the number and meaning of these factors is a statistical and heuristic process that determines which skills belong together.

The process applied (not tabulated) resulted in the extraction of six components for general/soft skills and four components for technological skills, which then underwent orthogonal rotation (e.g., Kavanagh and Drennan, 2008). Good internal consistency was verified by Cronbach's alpha (> 0.7). The 47 and 22 initial variables to capture general/soft skills and technological skills were explained in 63.4% and 65.72% by six and four factors, respectively (Table 8). Based on a brief description of each skill included in the survey, these extracted components are labelled as follows: i) General/soft skills: “Management and Decision”; “Communication, Relationship and Innovation”; “IT Literacy”; “Ethics and Professionalism”; “Attention and Writing,” and “Ambition and Justice”; ii) Technological skills: “Programming and Operating systems,” “IT Management,” “Navigation, Communication and Calculation Software,” and “Office-related applications” (technological skills).

[Insert Table 8]

These components can be used to explore the relationships and associations between other variables. Table 9 summarizes the analysis. Panel A shows the descriptive statistics for the index that captures the mean of the value given to the skill pattern. The average is always higher than 3, with “ethics and professionalism” and “navigation, communication and calculation software” being perceived as the most important pattern of general/soft and technological skills, respectively. Panel B compares the groups based on the academic profiles used in this study. For easy interpretation, statistics were omitted, and only conclusions were included. Based on the degree course attended (column degree), and taking together all the respondents, the pattern of skills linked to “Communication, Relationship and Innovation” and “Ethics and Professionalism” Ethics and Professionalism’ are perceived as the most important by more students enrolled in Accounting Master’s degrees than by students enrolled in undergraduate studies. However, when only students with some kind of professional experience are considered (column experience), the master's students (or the students with professional experiences obtained outside of the institution) tend to attribute higher levels of importance to almost all (or all) of the patterns of skills than their peers. The last column, AACSB Accredited, shows that patterns with higher indices come from students enrolled in non-AACSB accredited institutions.

[Insert Table 9]

4.4. Discussion

This study examines the perceived importance of students, the major stakeholder group for HEIs, to a set of general/soft and technological skills (Albrecht & Sack, 2000; Kavanagh & Drennan, 2008) required to ensure a successful professional career as an accountant. The main findings on a set of 47 general/soft skills considered individually show that Portuguese students attach extreme importance to competences related to professional and moral ethics, as revealed by the means for "technical knowledge," "work ethic," "professional attitude," "continuous learning" and "accounting software skills," which are the top 5 of the most perceived as determinants for success in an accountant's daily life. The literature indicates that communication, whether oral or written, is crucial for good performance in the accounting profession (Bruna et al., 2017; Bui & Porter, 2010; Dzuranin et al., 2018; Hassall et al., 2005; Jackling & De Lange, 2009; Kavanagh & Drennan, 2008; Lim et al., 2016; Towers-Clark, 2015; Yanto et al., 2018). However, the results show that, on average, all Portuguese undergraduate students attribute a level of importance that ranks oral communication and written communication in twenty-eighth and twenty-fourth place when compared with the average of the other skills. The literature also highlights teamwork and critical thinking as important skills (Bruna et al., 2017; Hassall et al., 2005; Jackling & De Lange, 2009; Lim et al., 2016). According to

The Financial Times 2018 Skills Gap, these skills are among the five most important (Nilsson, 2018). The results of the survey are consistent because respondents, on average, attribute a level of importance higher than 4.2 (out of 5), but they are not among the top in perceived importance. This may be due to the different number of skills included in different studies. Earlier studies also highlight the importance of current accountants and graduates who are willing to learn continuously (Bruna et al., 2017; Dzuranin et al., 2018; Lim et al., 2016). Portuguese respondents also considered this to be one of the most important skills, since they attributed an average of 4.56 out of 5, ranking it fourth.

The results for the set of 22 technological skills revealed that Portuguese students perceived spreadsheet software, communication software, and word processing software as the three most important. Overall, these results seem to converge with the existing literature regarding the interest that companies have in recruiting recent graduates with a good capacity for data analysis and the ability to handle these types of systems (Dzuranin et al., 2018; Janvrin & Watson, 2017; PwC, 2015; Spraakman et al., 2015). From the Portuguese students' point of view, programming skills are the least relevant to an accountant's success. The literature also indicates that accountants only need to obtain knowledge about the structuring of the systems that generate accounting (Pan & Seow, 2016), so programming skills are not skills that current accountants need to be more successful.

Thus, in response to the first research question, Portuguese students who are still in the institution perceive as being most important have almost the same general abilities and knowledge as those that the literature says recruiters expect young graduates to have to ensure success in the accounting profession (technical components, ethical principles, and ability to learn). However, they attribute the same level of importance to communication and teamwork skills as recruiters do (e.g. Jackling and De Lange, 2009;

Lim et al., 2016). Portuguese students also attach greater importance to the technological skills linked to the use of software for data analysis. These skills are also considered to be of great importance to current employers in the accounting job market and should be included in curricula (e.g., Dzuranin et al., 2018; Uwizeyemungu et al., 2020).

The purpose of the second research question was to explore the influence of academic degree, professional experience, and school excellence on students' perceptions. First, the study compares Portuguese students enrolled in master's degrees with those enrolled at the undergraduate level. Overall, the perceived importance of each skill did not significantly differ between the two groups, except for "Resource management" (general/soft skill) and "presentation software" presentation software'(technological skill) within high levels of confidence. However, Portuguese students attending a bachelor's degree course attribute greater importance to skills than do students attending masters. One plausible reason could be the intense dissemination between the Portuguese academy and the Portuguese Chartered Accountants Association, sharing experiences, education, seminars, webinars, and other information useful to undergraduate students, which could contribute to junior students' belief that all competencies and knowledge are very important. Second, the study explores whether there are differences in the skills perceived by students with professional experience. This analysis was divided into two parts. Students with any kind of professional experience were compared on the basis of their level of education. Only "risk analysis," "customer service," "read with understanding" and "tenacity" (general/soft skills) present significant differences in the level of importance attributed when comparing bachelor and master's students. However, when students with some kind of professional experience were compared based on the environment in which that experience was obtained, there were many more skills for which significant differences were found between students obtaining professional experience within the institution or outside it. These include, “self-motivation,” “computer technological competences,” “interpersonal skills,” “work ethic,” “change management. This is an important result that reinforces the notion that professional experience during the academic period allows the consolidation of skills learned during classes (International Federation of Accountants, IFAC, 2015), but the environment in which it is experienced may influence their level of importance. The excellence of the school is then used to compare students, regardless of their level of education or professional experience. Again, the level of importance is perceived statistically differently between AACSB and non-AACSB accredited students for some competencies, but not for all. Comparing this with previous results, it is difficult to find characteristics that are always perceived as the most important for the different groups considered. As such, the answer to Research Question 2 highlights the most important skills perceived by the same students classified into different groups. Moreover, it may be open to misinterpretation given that the skills with a higher score for perceived importance are not always the same between different groups.

As such, the answer to the third question may be of greater importance and make a larger contribution than in the previous analysis. Instead of considering all the skills individually, this study highlights the patterns of skills grouped together using statistics based on EFA. Finally, a total of 10 trends of skills (six general/soft and four technological) summarizes the information of the 69 previously considered. The results show that master’s students’ perceptions of the competencies related to “Communication, Relationship and Innovation” and “Ethics and Professionalism” Ethics and Professionalism are higher than those of their undergraduate bachelor’s degree colleagues. This result is important because employers also place more emphasis on non-technical skills such as interpersonal skills, the ability to work with the organizational culture of the firm, and oral communication skills (Dolce et al., 2020; Low et al., 2016). The results suggest that Portuguese bachelor's degree students may think that the technical skills are the most important, but when they move on to the masters, they move closer to the lens of employers, who, as Kavanagh and Drennan (2008) point out, are much more concerned with 'business awareness' "oral communication skills," "ethical awareness/professional skills," "written communication," for instance, which are captured by those two patterns identified.

Another important suggestion is that when the study compares students with some professional experience, master's students with professional experience attribute higher levels of importance to all (except IT management) patterns of skills than bachelor's students who also have professional experience. These results seem to be in line with Andrews and Higson (2008), who point to the need for prior work experience as a core competency for graduate employability, and Low et al. (2016), who indicate that graduates develop technical skills for their role through job training. Thus, the skill patterns tend to score higher for the more educated (number of years) and more experienced students who probably have a more accurate idea about the skills they should acquire to succeed as an accountant in the future. However, the differences between groups were not statistically significant. On the contrary, when students with some professional experiences are again mixed and divided into the type of experience obtained (within the academy or outside the academy, regardless of the level of education), the results suggest that patterns of skills always score higher in the group of students with experiences outside the academy. Furthermore, the patterns "Communication, Relationship and Innovation," "Attention and Writing," and "Ambition and Justice" Ambition and Justice' present statistically significant differences between both groups. This seems to suggest that regarding important skills, the perception gap between students and employers (e.g., Andrews & Higson, 2008; Dolce et al., 2020; Kavanagh & Drennan, 2008; Low et al., 2016) appears to be narrow when students have a broader perception of the real world.

Results for differences obtained when comparing groups of Portuguese students according to the excellence of school attended highlight that the patterns students in AACSB accredited schools scored more highly are: “Communication, Relationship and Innovation” and “Office related applications” Office related applications’, as compared to non-AACSB accredited. The seal of approval that AACSB accreditation confers gives students confidence in their preparedness to succeed in their career. This study shows that the patterns of skills perceived as the most important to be successful in the accounting profession by students in Portuguese schools with this seal seem to be aligned with those required by the job market regarding general/soft skills (e.g., Andrews and Higson, 2008; Dolce et al., 2020; Kavanagh & Drennan, 2008; Low et al., 2016) and proficiency in some Microsoft tools (e.g., Spraakman, et al., 2015; Uwizeyemungu et al., 2020).

5. Concluding remarks, implications, and limitations

The purpose of this study covers three perspectives: i) an overall analysis of the perception of a battery of general/soft skills and technological skills, ii) an analysis of the influence of the *academic degree, professional experience, and excellence of the school on students’ perceptions*, and iii) the discovery of patterns of skills, with tendencies according to the education level, experience, and accreditation.

Portuguese students who are still in the HEI perceive as the most important, almost the same general abilities and knowledge as those in the literature say that recruiters expect young graduates to have. However, when students are divided according to their academic profile (masters *versus* bachelor’s; professional experience in masters *versus* bachelor's; professional experience obtained in the academy *versus* outside of the academy; AACSB accredited *versus* non-AACSB accredited), the perceived skills with higher ranking differ, and the relative position changes. Therefore, the students' profile of the type of competence they perceive as the most important is not immaterial, which points to an important contribution to future research.

Taking into account patterns, Portuguese students with a master's degree attribute a higher level of perception than their undergraduate colleagues on a bachelor's degree only to those competencies related to "Communication, Relationship and Innovation" and "Ethics and Professionalism" Ethics and Professionalism', and are thus more aligned with the requirements of employers (e.g., Dolce et al., 2020; Kavanagh & Drennan, 2008; Low et al., 2016) than bachelor students. Nonetheless, when both master's and bachelor's students have professional experience, all the patterns (except IT management) are perceived as more important for master's students, which may be in line with Andrews and Higson (2008) and Low et al. (2016) regarding the role of competencies in job training, related to more senior people who act as a benchmark. In addition, when work experience is considered, some patterns of skills present statistically significant differences between those who have experience outside the academy (e.g., autonomous work) and those within the academy (e.g., curricular internship), scoring higher. This is suggestive of a narrower gap between students and employers (e.g., Andrews & Higson, 2008; Dolce et al., 2020; Kavanagh & Drennan, 2008; Low et al., 2016) when students have a greater perception of the real world. Finally, there are also differences in skills perceived as the most important by students enrolled in AACSB accredited schools when compared to non-AACSB accredited schools, which seem to go hand-in-hand with the skills required by the job market regarding general/soft skills (e.g., Andrews & Higson, 2008; Dolce et al., 2020; Kavanagh & Drennan, 2008; Low et al., 2016) and an aptitude for Microsoft tools (e.g., Spraakman, et al., 2015; Uwizeyemungu et al., 2020).

With the lens of stakeholder theory, this study draws the institution's attention (boards, faculty, and students) to the different understandings that students have about the general/soft skills and technological skills they perceive to be most important for becoming a successful accountant in the future. It is up to the institution, having listened to all the stakeholders (inside and outside of the academy) to analyze the results and the characteristics of their own students to understand whether the importance of the underlined skills should be equally or differently perceived by different groups. To increase students' degree of perception regarding the importance of those skills fundamental to the job market in accounting, intervention could take the form of changes to the curriculum or in the type of subjects that students take. The results could also be important for professional accounting bodies, as their mission is often to regulate the practice of the certified accountant profession, and prerequisites are linked more with technical than with soft skills. The results may have practical implications for recruiters and employers in the job market because it is important to continuously align with the institution and curricula. A suggestion for future research is to conduct a survey among undergraduate students, before and after doing job training in an organization completely aligned with the accounting educational policy of an HEI, while at the same time controlling for other students also doing job training but autonomously.

One limitation of this study is shared with the relevant literature aforementioned: the study is country-located. However, Portuguese students benefit from programs accredited by the national authority, with some being AACSB International accredited, and as a European Union member, Portugal follows national, European, and international standards. Thus, although the conclusions drawn from this study cannot be generalized to a broad audience, they can contribute to existing knowledge and can be replicated in other environments.

Finally, the scope for future research should be broadened to include other IT matters. This study includes patterns for technological skills, the importance of which is also distinguished by recent studies, such as those of Spraakman et al. (2015) and Uwizeyemungu et al. (2020). However, the world is changing, and currently, the debate surrounding robotic process automation, artificial intelligence, and blockchain (e.g., Zhang et al., 2018), as well as online workers *versus* traditional accounting workers (e.g., Buchheit et al., 2019) is brought up to date, and should be spelled out to include students' perceptions, especially from early 2021, when the covid-19 outbreak is in the limelight.

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Table 1. Sample

Panel A: Description by gender, age, academic degree, and status of the higher school

Variable	Characterization	Frequency	%
Gender	Woman	137	72.9
	Man	51	27.1
	Total	*188*	*100*
Age	18-20 years	38	20.2
	21-23	63	33.5
	24-26	25	13.3
	> 26	62	33.0
	Total	*188*	*100*
Academic degree ongoing	Undergraduate	108	57.4
	Master	80	42.6
	Total	*188*	*100*
Status of the university/polytechnic	Public	171	91
	Private	17	9
	Total	*188*	*100*
Excellence of the school	*AACSB Accreditation*	*48*	*25.5*
	No-AACSB Accreditation	*140*	*74.5*
	Total	*188*	*100*

Panel B: Description by professional experience

Variable	Characterization	Frequency	%
Professional experience	No	41	21.8
	Yes	147	78.2
	Total	*188*	*100*
Professional experience in accounting	No	43	29.3
	Yes	104	70.7
	Total	*147*	*100*
Type of experience	Included in the academic program	68	46.3
	Outside of the academy	79	53.7
	Total	*147*	*100*

Table 2. Perception of the students about general skills

General skills	Brief description	Min	Max	Mean	St.Dev.	Ranking
Technical/bookkeeping	Have accounting knowledge	2	5	4.75	0.513	1
Work ethic	Ability to maintain proper moral values within the workplace	2	5	4.63	0.603	2
Professional attitude	Acting professionally	2	5	4.59	0.644	3
Continuous learning	Always be willing to learn	2	5	4.56	0.596	4
Accounting software skills	Know how to use accounting software	2	5	4.51	0.65	5
Analytical	Ability to analyse things very carefully	2	5	4.47	0.697	6
Values	Know what's right and what's wrong to choose or decide the direction to be taken to achieve a goal	2	5	4.47	0.649	7
Read with understanding	Know how to read and understand what you read	2	5	4.44	0.656	8
Ethical awareness	Ability to evaluate situations ethically	1	5	4.44	0.725	9
Interdisciplinarity	Being aware of various topics related to Accounting	2	5	4.43	0.686	10
Risk analysis	Know how to analyse the risks associated with a situation	2	5	4.41	0.661	11
Problem solving	Know how to find solutions to problems	1	5	4.36	0.706	12
Computer literacy	Ability to use a computer	2	5	4.34	0.709	13
Computer technology competence	Know how to work with computer applications	2	5	4.33	0.684	14
Flexibility	Ability to adapt to circumstances/Time management	2	5	4.31	0.732	15
Teamwork	Know how to work well with other people	1	5	4.29	0.763	16
Self-motivated	Ability to do what needs to be done, without influence or directions from other people or situations.	1	5	4.29	0.762	17
Listening	Know how to listen/pay attention to what others say	2	5	4.26	0.725	18
Critical thinking	Ability to think carefully about a situation/idea	2	5	4.24	0.739	19
Decision-making	Ability to select between two or more alternatives to reach outcomes and take decisions	2	5	4.23	0.773	20
Decision modelling	Ability to collect, perceive, organize and manage information for decision-making/Organization	2	5	4.23	0.708	21
Independent thought	Know how to reason without influence from others	2	5	4.23	0.757	22
Customer service	Recognize needs and ensure customer satisfaction	1	5	4.22	0.879	23
Written communication	Know how to write correctly	2	5	4.2	0.761	24
Measurement	Know how to measure situations and/or tasks	2	5	4.18	0.731	25
Resource management	Ability to manage the assets available	2	5	4.18	0.773	26
Change management	Know how to plan and introduce new processes	2	5	4.18	0.691	27
Oral communication	Know how to speak properly	1	5	4.17	0.816	28
Citizenship	Participation in the dynamics of the company	2	5	4.14	0.775	29
Logical argument	Know how to argue based on common sense	1	5	4.14	0.754	30
Tenacity	Ability to firmly maintain an opinion or perform a task in a determined way	1	5	4.13	0.73	31
Research	Ability to study a topic in detail	1	5	4.1	0.884	32
Interpersonal skills	Ability to communicate or interact well with other people	2	5	4.02	0.811	33
Project management	Know how to organize and control a project	1	5	3.99	0.824	34
Strategic management	Know how to decide the objectives to be achieved, the actions to be carried out and the use of resources	1	5	3.98	0.853	35
Cross-cultural communication	Ability to understand the ways in which culturally distinct individuals communicate with each other	2	5	3.95	0.823	36
Social justice	Act in a way that ensures the needs of all	1	5	3.95	0.894	37
Cross-cultural appreciation	Know how to accept people with other ideals	1	5	3.91	0.861	38

Company promotion	Ambition to occupy positions at a higher grade than the one previously held in the hierarchy of a company	1	5	3.85	0.885	39
Cultural sensitivity	Know how to accept other cultures	1	5	3.79	0.912	40
Negotiation	Know how to negotiate	1	5	3.77	0.893	41
Foreign language	Knowledge of other languages	1	5	3.72	0.93	42
Leadership	Ability to be a leader	1	5	3.71	0.868	43
Entrepreneurship	Ability to create new business	1	5	3.63	0.907	44
Self-promotion	Practice of purposefully trying to present oneself as highly competent to other people	1	5	3.6	0.951	45
Risk propensity	Tendency to act with risk	1	5	3.46	1.13	46
Creativity	Ability to have original ideas	1	5	3.41	0.924	47

Table 3. Perception of the students relative to technological skills

Technological skills	Min	Max	Mean	St.Dev.	Ranking
Spreadsheet software	2	5	4.56	0.664	1
Communications software (e.g., Outlook)	1	5	4.11	0.901	2
Word-processing software	2	5	4.10	0.831	3
File and directory management	2	5	4.05	0.758	4
World Wide Web	2	5	4.04	0.800	5
Technology management and budgeting	1	5	4.04	0.776	6
Windows	1	5	4.01	0.925	7
Database software	1	5	4.01	0.928	8
Technology security and controls	1	5	3.85	0.907	9
Computer operations management	2	5	3.85	0.801	10
Project management	1	5	3.82	0.869	11
Systems analysis	2	5	3.81	0.842	12
Presentation software	1	5	3.72	0.959	13
Information systems planning and strategy	1	5	3.64	0.974	14
Graphics software (e.g., Adobe)	1	5	3.62	1.061	15
Technology terminology	1	5	3.52	0.984	16
Intra/Extranets	1	5	3.44	0.914	17
Electronic commerce	1	5	3.39	0.927	18
Computer hardware	1	5	3.29	0.978	19
Other operating systems	1	5	3.22	0.944	20
HTML and others web programming	1	5	3.12	0.965	21
Programming languages	1	5	2.81	1.063	22

Table 4. T-test for perceptions of undergraduates and masters students for general/soft skills and technological skills and Ranks

General/soft skills	**Master student (n=108) Mean**	**Undergraduate student (n=80) Mean**	**t-test**	**sig.(2tailed)**
General/soft skills:				
Risk analysis	4.41	4.42	-0.043	0.966
Analytical	4.46	4.48	-0.185	0.854
Cross-cultural appreciation	3.80	4.00	-1.593	0.113
Continuous learning	4.61	4.52	1.096	0.275
Logical argument	4.11	4.16	-0.403	0.688
Customer service	4.28	4.19	0.699	0.485
Professional attitude	4.63	4.56	0.649	0.517
Self-motivated	4.24	4.32	-0.760	0.448
Self-promotion	3.45	3.70	-1.856	0.065*
Citizenship	4.19	4.10	0.764	0.446
Computer technology competence	4.29	4.36	-0.728	0.467
Interpersonal skills	4.00	4.03	-0.237	0.813
Read with understanding	4.36	4.50	-1.444	0.150
Listening	4.26	4.26	0.030	0.976
Written communication	4.18	4.22	-0.423	0.673
Cross-cultural communication	3.95	3.95	-0.031	0.975
Oral communication	4.16	4.18	-0.110	0.912
Ethical awareness	4.51	4.38	1.245	0.215
Technical/bookkeeping	4.74	4.76	-0.289	0.773
Creativity	3.48	3.37	0.775	0.439
Entrepreneurship	3.64	3.62	0.129	0.897
Work ethic	4.64	4.62	0.192	0.848
Flexibility	4.29	4.32	-0.338	0.736
Change management	4.18	4.18	-0.009	0.993
Values	4.53	4.43	1.049	0.296
Teamwork	4.21	4.35	-1.208	0.229
Decision-making	4.19	4.27	-0.712	0.477
Tenacity	4.06	4.19	-1.138	0.257
Accounting software skills	4.53	4.50	0.264	0.792
Cultural sensitivity	3.64	3.90	-1.969	0.051*
Problem solving	4.31	4.39	-0.734	0.464
Risk propensity	3.34	3.55	-1.256	0.211

Company promotion	3.71	3.94	-1.775	0.078*
Decision modelling	4.21	4.25	-0.366	0.715
Independent thought	4.21	4.24	-0.254	0.800
Critical thinking	4.21	4.26	-0.436	0.664
Negotiation	3.63	3.88	-1.944	0.053*
Measurement	4.15	4.20	-0.504	0.615
Computer literacy	4.41	4.28	1.327	0.186
Foreign language	3.63	3.80	-1.235	0.218
Leadership	3.61	3.78	-1.288	0.199
Social justice	3.86	4.01	-1.095	0.275
Research	4.00	4.17	-1.237	0.218
Interdisciplinarity	4.44	4.43	0.116	0.908
Strategic management	3.89	4.05	-1.251	0.213
Resource management	4.05	4.28	-1.994	0.048**
Project management	3.94	4.04	-0.820	0.413
Technological skills:				
Systems analysis	3.68	3.92	-1.941	0.054*
Electronic commerce	3.29	3.46	-1.289	0.199
Computer operations management	3.79	3.90	-0.945	0.346
File and directory management	3.96	4.12	-1.385	0.168
Project management	3.76	3.87	-0.851	0.396
Technology management and budgeting	3.95	4.10	-1.313	0.191
Computer hardware	3.18	3.38	-1.441	0.151
HTML and other web programming	3.06	3.17	-0.735	0.463
World Wide Web	4.09	4.01	0.666	0.506
Intra/Extranets	3.46	3.42	0.335	0.738
Programming languages	2.74	2.86	-0.795	0.428
Other operating systems	3.25	3.20	0.337	0.737
Information systems planning and strategy	3.63	3.65	-0.160	0.873
Technology security and controls	3.76	3.92	-1.136	0.258
Presentation software	3.54	3.85	-2.226	0.027**
Database software	3.99	4.02	-0.224	0.823
Spreadsheet software	4.50	4.60	-1.021	0.309
Word-processing software	4.01	4.17	-1.258	0.210

Graphics software (e.g., Adobe)	3.58	3.65	-0.475	0.636
Communications software (e.g., Outlook)	4.14	4.08	0.404	0.687
Technology terminology	3.54	3.50	0.257	0.797
Windows	3.95	4.06	-0.764	0.446

*p<0.1; **p<0.5

Table 5. T-test for perceptions of students according to professional experience obtained for general/soft skills and technological skills and Ranks

	When?				*Where?*			
	Master (n=77)	Undergraduate (n=70)	t-test	sig. (2tailed)	Academy (n=78	Outside (n=79)	t-test	sig. (2tailed)
General/soft skills:								
Risk analysis	4.51	4.30	-1.835	0.069*	4.34	4.47	1.137	0.258
Analytical	4.52	4.40	-1.036	0.302	4.44	4.48	0.344	0.732
Cross-cultural appreciation	3.99	3.81	-1.170	0.244	3.78	4.01	1.580	0.116
Continuous learning	4.62	4.56	-0.670	0.504	4.60	4.58	-0.207	0.836
Logical argument	4.18	4.21	0.270	0.787	4.16	4.23	0.540	0.590
Customer service	4.36	4.09	-1.889	0.061*	4.13	4.32	1.236	0.219
Professional attitude	4.64	4.54	-0.882	0.379	4.54	4.63	0.832	0.407
Self-motivated	4.32	4.29	-0.311	0.756	4.13	4.46	2.578	0.011**
Self-promotion	3.66	3.60	-0.387	0.699	3.53	3.72	1.201	0.232
Citizenship	4.19	4.07	-0.919	0.360	4.01	4.24	1.701	0.091
Computer technology competence	4.34	4.30	-0.325	0.746	4.19	4.43	2.072	0.040**
Interpersonal skills	4.10	3.97	-1.026	0.307	3.88	4.18	2.319	0.022**
Read with understanding	4.56	4.30	-2.468	0.015**	4.26	4.58	3.077	0.003***
Listening	4.34	4.23	-0.875	0.383	4.19	4.37	1.410	0.161
Written communication	4.26	4.16	-0.822	0.413	4.16	4.25	0.730	0.467
Cross-cultural communication	4.06	3.93	-0.988	0.325	3.94	4.05	0.794	0.428
Oral communication	4.18	4.19	0.028	0.977	4.07	4.28	1.474	0.143
Ethical awareness	4.58	4.40	-1.637	0.108	4.44	4.54	0.898	0.371
Technical/bookkeeping	4.73	4.77	0.496	0.621	4.76	4.73	-0.343	0.732
Creativity	3.53	3.39	-0.927	0.355	3.35	3.56	1.296	0.197
Entrepreneurship	3.61	3.76	0.954	0.341	3.57	3.77	1.288	0.200

Work ethic	4.68	4.63	-0.476	0.635	4.56	4.73	1.802	0.074*
Flexibility	4.26	4.36	0.780	0.437	4.24	4.37	1.040	0.300
Change management	4.29	4.11	-1.479	0.141	4.06	4.33	2.346	0.020**
Values	4.55	4.43	-1.056	0.293	4.50	4.48	-0.170	0.865
Teamwork	4.34	4.20	-1.031	0.304	4.15	4.38	1.729	0.086*
Decision-making	4.31	4.14	-1.296	0.197	4.12	4.33	1.630	0.105
Tenacity	4.21	3.96	-2.027	0.045**	3.96	4.20	2.012	0.046**
Accounting software skills	4.49	4.57	0.708	0.480	4.49	4.57	0.765	0.445
Cultural sensitivity	3.83	3.66	-1.117	0.266	3.62	3.86	1.561	0.121
Problem solving	4.40	4.36	-0.392	0.696	4.32	4.43	0.919	0.360
Risk propensity	3.53	3.36	-0.932	0.353	3.43	3.47	0.222	0.825
Company promotion	3.81	3.76	-0.315	0.753	3.81	3.76	-0.324	0.747
Decision modelling	4.30	4.20	-0.828	0.409	4.07	4.41	2.806	0.006***
Independent thought	4.26	4.13	-1.022	0.308	4.12	4.27	1.146	0.254
Critical thinking	4.27	4.20	-0.576	0.565	4.10	4.35	2.002	0.047**
Negotiation	3.74	3.76	0.109	0.913	3.53	3.94	2.711	0.008
Measurement	4.17	4.14	-0.207	0.836	4.01	4.28	2.137	0.034**
Computer literacy	4.38	4.29	-0.773	0.441	4.25	4.41	1.317	0.190
Foreign language	3.68	3.64	-0.205	0.838	3.49	3.81	2.059	0.041**
Leadership	3.73	3.61	-0.768	0.444	3.53	3.80	1.828	0.070*
Social justice	3.95	3.84	-0.683	0.496	3.85	3.94	0.546	0.586
Research	4.10	4.06	-0.304	0.761	3.99	4.16	1.164	0.246
Interdisciplinarity	4.42	4.44	0.234	0.815	4.41	4.44	0.268	0.789
Strategic management	4.04	3.86	-1.264	0.208	3.81	4.08	1.859	0.065*
Resource management	4.13	4.17	0.305	0.761	4.10	4.19	0.637	0.525
Project management	4.13	3.90	-1.655	0.100	3.87	4.15	2.052	0.042**

Technological skills:

Systems analysis	3.73	3.84	0.819	0.414	3.79	3.77	-0.154	0.878
Electronic commerce	3.36	3.44	0.528	0.599	3.35	3.44	0.598	0.551
Computer operations management	3.78	3.84	0.469	0.640	3.71	3.90	1.438	0.153
File and directory management	3.97	4.10	0.990	0.324	3.94	4.11	1.344	0.181
Project management	3.75	3.86	0.718	0.474	3.69	3.90	1.439	0.152
Technology management and budgeting	3.97	3.97	-0.020	0.984	3.85	4.08	1.702	0.091*
Computer hardware	3.18	3.31	0.839	0.403	3.25	3.24	-0.060	0.953
HTML and other web programming	3.18	3.06	-0.772	0.442	3.06	3.18	0.734	0.464
World Wide Web	4.06	4.04	-0.165	0.869	4.04	4.06	0.142	0.888
Intra/Extranets	3.51	3.37	-0.895	0.373	3.37	3.51	0.910	0.365
Programming languages	2.81	2.79	-0.111	0.912	2.76	2.82	0.329	0.742
Other operating systems	3.23	3.21	-0.128	0.899	3.28	3.18	-0.671	0.503
Information systems planning and strategy	3.65	3.59	-0.383	0.703	3.62	3.62	0.016	0.988
Technology security and controls	3.82	3.90	0.544	0.587	3.79	3.91	0.770	0.443
Presentation software	3.60	3.74	0.917	0.361	3.68	3.66	-0.113	0.910
Database software	4.06	3.93	-0.889	0.376	3.94	4.05	0.703	0.483
Spreadsheet software	4.65	4.49	-1.503	0.135	4.51	4.62	0.960	0.339
Word-processing software	4.10	4.01	-0.636	0.526	4.00	4.11	0.806	0.421
Graphics software (e.g., Adobe)	3.64	3.59	-0.282	0.778	3.63	3.59	-0.210	0.834
Communications software (e.g., Outlook)	4.14	4.10	-0.293	0.770	4.01	4.22	1.350	0.180
Technology terminology	3.57	3.41	-0.983	0.327	3.40	3.58	1.157	0.249
Windows	4.04	3.99	-0.355	0.723	4.00	4.03	0.167	0.867

*p<0.1; **p<0.05; ***p<=.01

Table 6. T-test for perceptions of students according to the Excellence of the school

	AACSB Mean	**Non-AACSB Mean**	**t-test**	**sig.(2tailed)**
General/soft skills:				
Risk analysis	4.33	4.44	-1.059	0.293
Analytical	4.52	4.46	0.589	0.558
Cross-cultural appreciation	3.65	4.01	-2.675	0.009***
Continuous learning	4.38	4.62	-2.367	0.021**
Logical argument	4.04	4.17	-1.096	0.276
Customer service	3.98	4.31	-2.080	0.041
Professional attitude	4.56	4.60	-0.372	0.711
Self-motivated	4.29	4.29	0.049	0.961
Self-promotion	3.33	3.69	-2.416	0.018**
Citizenship	4.00	4.19	-1.375	0.173
Computer technology competence	4.38	4.31	0.553	0.581
Interpersonal skills	3.75	4.11	-2.443	0.017**
Read with understanding	4.40	4.46	-0.585	0.560
Listening	4.17	4.29	-1.070	0.287
Written communication	4.02	4.26	-1.923	0.058*
Cross-cultural communication	3.67	4.05	-2.723	0.008***
Oral communication	3.88	4.27	-2.990	0.004***
Ethical awareness	4.42	4.44	-0.194	0.847
Technical/bookkeeping	4.71	4.76	-0.660	0.511
Creativity	3.06	3.54	-3.019	0.003***
Entrepreneurship	3.35	3.72	-2.467	0.016**
Work ethic	4.63	4.63	-0.038	0.970
Flexibility	4.23	4.34	-0.835	0.406
Change management	4.17	4.18	-0.109	0.913
Values	4.50	4.46	0.381	0.704
Teamwork	4.19	4.33	-1.134	0.260
Decision-making	4.08	4.29	-1.474	0.145
Tenacity	4.06	4.16	-0.799	0.427
Accounting software skills	4.56	4.49	0.688	0.493
Cultural sensitivity	3.65	3.84	-1.268	0.208
Problem solving	4.29	4.38	-0.752	0.454
Risk propensity	3.25	3.53	-1.452	0.150

Company promotion	3.73	3.89	-1.033	0.305
Decision modelling	4.06	4.29	-1.971	0.052*
Independent thought	4.29	4.21	0.712	0.478
Critical thinking	4.19	4.26	-0.538	0.592
Negotiation	3.56	3.84	-1.784	0.078*
Measurement	4.10	4.21	-0.849	0.398
Computer literacy	4.38	4.32	0.482	0.631
Foreign language	3.69	3.74	-0.311	0.757
Leadership	3.40	3.81	-2.703	0.009***
Social justice	3.73	4.02	-1.808	0.075*
Research	3.83	4.19	-2.486	0.015**
Interdisciplinarity	4.46	4.42	0.322	0.748
Strategic management	3.71	4.07	-2.427	0.018**
Resource management	4.06	4.22	-1.192	0.237
Project management	3.85	4.04	-1.268	0.209
Technological skills:				
Systems analysis	3.79	3.82	-0.206	0.837
Electronic commerce	3.17	3.46	-1.860	0.067
Computer operations management	3.67	3.91	-1.641	0.105
File and directory management	4.04	4.06	-0.118	0.906
Project management	3.73	3.86	-0.835	0.406
Technology management and budgeting	4.08	4.02	0.449	0.654
Computer hardware	3.10	3.36	-1.432	0.156
HTML and other web programming	2.81	3.23	-2.454	0.016**
World Wide Web	4.17	4.00	1.362	0.176
Intra/Extranets	3.48	3.42	0.363	0.717
Programming languages	2.69	2.85	-0.996	0.322
Other operating systems	3.21	3.23	-0.145	0.885
Information systems planning and strategy	3.54	3.67	-0.825	0.412
Technology security and controls	3.73	3.89	-1.072	0.287
Presentation software	3.77	3.70	0.437	0.663
Database software	4.02	4.00	0.131	0.896
Spreadsheet software	4.71	4.51	1.839	0.069*
Word-processing software	4.15	4.09	0.444	0.659

Graphics software (e.g.. Adobe)	3.65	3.61	0.208	0.836
Communications software (e.g.. Outlook)	4.27	4.05	1.739	0.085*
Technology terminology	3.54	3.51	0.209	0.835
Windows	4.23	3.94	2.075	0.041**

*p<0.1; **p<0.05; ***p<=.01

Table 7 - Rank of skills

Panel A: Master versus Undergraduate students

Ranking	Master students	Undergraduate students
General/soft skills:		
1st	Technical/bookkeeping	Technical/bookkeeping
2nd	Work ethic	Work ethic
3rd	Professional attitude	Professional attitude
4th	Continuous learning	Continuous learning
5th	Values	Read with understanding
6th	Accounting software skills	Accounting software skills
7th	Ethical awareness	Analytical
8th	Analytical	Values
9th	Interdisciplinarity	Interdisciplinarity
10th	Risk analysis	Risk analysis
Technological skills:		
1st	Spreadsheet software	Spreadsheet software
2nd	Communications software (e.g., Outlook)	Word-processing software
3rd	World Wide Web	File and directory management
4th	Word-processing software	Technology management and budgeting
5th	Database software	Communications software (e.g., Outlook)

Panel B: Students with professional experience obtained during the Master or during the undergraduate

Ranking	Master students	Undergraduate students
General/soft skills:		
1st	Technical/bookkeeping	Oral communication
2nd	Work ethic	Negotiation
3rd	Professional attitude	Foreign language
4th	Continuous learning	Measurement
5th	Ethical awareness	Interdisciplinarity
6th	Read with understanding	Logical argument
7th	Values	Research
8th	Analytical	Resource management
9th	Risk analysis	Self-motivated
10th	Accounting software skills	Company promotion
Technological skills:		
1st	Spreadsheet software	Spreadsheet software
2nd	Communications software (e.g., Outlook)	Communications software (e.g., Outlook)
3rd	Word-processing software	File and directory management
4th	World Wide Web	World Wide Web
5th	Database software	Word-processing software

Panel C: Students with professional experience obtained in the academy or outside of the academy

Ranking	In the academic program	Outside of the academy
General/soft skills:		
1st	Technical/bookkeeping	Work ethic
2nd	Continuous learning	Technical/bookkeeping
3rd	Work ethic	Professional attitude
4th	Professional attitude	Continuous learning
5th	Values	Read with understanding
6th	Accounting software skills	Accounting software skills
7th	Analytical	Ethical awareness
8th	Ethical awareness	Values
9th	Interdisciplinarity	Analytical
10th	Risk analysis	Risk analysis
Technological skills:		
1st	Spreadsheet software	Spreadsheet software
2nd	World Wide Web	Communications software (e.g., Outlook)
3rd	Communications software (e.g., Outlook)	Word-processing software
4th	Word-processing software	File and directory management
5th	Windows	Technology management and budgeting

Panel D: Students enrolled in an AACSB Accredited institution (n=480) or non-AACSB Accredited institution

Ranking	***AACSB Accredited***	***non-AACSB Accredited***
General/soft skills:		
1st	Technical/bookkeeping	Technical/bookkeeping
2nd	Work ethic	Work ethic
3rd	Professional attitude	Continuous learning
4th	Accounting software skills	Professional attitude
5th	Analytical	Accounting software skills
6th	Values	Analytical
7th	Interdisciplinarity	Read with understanding
8th	Ethical awareness	Values
9th	Read with understanding	Risk analysis
10th	Continuous learning	Ethical awareness
Technological skills:		
1st	Spreadsheet software	Spreadsheet software
2nd	Communications software (e.g., Outlook)	Word-processing software
3rd	Windows	File and directory management
4th	World Wide Web	Communications software (e.g., Outlook)
5th	Word-processing software	Technology management and budgeting

Table 8 - Principal Component Analysis Results: general skills

Panel A: General/soft skills (components and weights)

	Management and Decision	Communication. Relationship and Innovation	IT Literacy	Ethics and Professionalism	Attention and Writing	Ambition and Justice
Strategic management	0.756					
Project management	0.739					
Decision modelling	0.669					
Decision-making	0.657					
Research	0.624					
Leadership	0.571					
Critical thinking	0.551					
Problem solving	0.538					
Negotiation	0.519					
Resource management	0.503					
Entrepreneurship		0.693				
Cross-cultural communication		0.653				
Creativity		0.638				
Logical argument		0.608				
Interpersonal skills		0.584				
Oral communication		0.551				
Cross-cultural appreciation		0.548				
Listening		0.542				
Accounting software skills			0.781			
Computer literacy			0.717			
Computer technology competence			0.623			
Ethical awareness				0.763		
Work ethic				0.704		
Values				0.573		
Professional attitude				0.509		
Analytical					0.751	
Read with understanding					0.715	
Written communication					0.572	
Company promotion						0.724
Social justice						0.695

Cultural sensitivity						0.613
% variance	**15.53%**	**13.92%**	**9.62%**	**9.36%**	**7.60%**	**7.37%**
Eugenvalues	**14.482**	**2.7**	**2.015**	**1.391**	**1.176**	**1.058**
Cronbach' Alpha	**0.91**	**0.89**	**0.753**	**0.791**	**0.766**	**0.767**

Results after orthogonal rotation (varimax); KMO index= 0.924; Bartlett $_{(630)}$ = 4.158.095; p < 0.001.

Panel B: Technological skills (components and weights)

	Programming and Operating systems	IT Management	Navigation. Communication and Calculation Software	Office-related applications
Programming languages	0.835			
HTML and other web programming	0.805			
Other operating systems	0.758			
Computer hardware	0.748			
Intra/Extranets	0.522			
Information systems planning and strategy	0.514			
Technology terminology	0.507			
Project management		0.814		
Technology management and budgeting		0.778		
Computer operations management		0.706		
Systems analysis		0.687		
File and directory management		0.668		
Windows			0.78	
Spreadsheet software			0.726	
Communications software (e.g.. Outlook)			0.59	
World Wide Web			0.559	
Graphics software (e.g.. Adobe)				0.764
Word-processing software				0.672
Database software				0.6
Presentation software				0.577
% variance	**20.49%**	**18.16%**	**14.75%**	**12.32%**
Eugenvalues	**8.774**	**1.788**	**1.531**	**1.05**
Cronbach' Alpha	**0.888**	**0.866**	**0.766**	**0.803**

Results after orthogonal rotation; KMO Index= 0.893; Bartlet $_{(190)}$ = 2225.416; p < 0.001

Table 9. General Index for each component extracted and comparison between groups according to academic profile

Panel A: General Index (based on the mean)

Components of general/soft skills	**Index**	**Min.**	**Max.**	**St.Dev.**
Management and Decision	4.08	2	5	0.599
Communication, Relationship and Innovation	3.94	1.63	5	0.624
Computing	4.39	2	5	0.558
Ethics and Professionalism	4.53	2	5	0.515
Attention and Writing	4.37	1	5	0.583
Ambition and Justice	3.86	1.33	5	0.741
Components of technological skills	**Index**	**Min.**	**Max.**	**St.Dev.**
Programming and Operating systems	3.29	1.29	5	0.755
IT Management	3.92	2.20	5	0.654
Navigation. Communication and Calculation Software	4.18	2	5	0.635
Office-related applications	3.86	1.50	5	0.752

Panel B: Comparison between groups according to academic profile - Which one scores higher?

	Degree?	**Experience**		**AACSB Accredited?**
		When?	**Where?**	
Components of general/soft skills				
Management and Decision	Undergraduate	Master	Outside academy	Non-AACSB
Communication, Relationship and Innovation	Master	Master	Outside academy	AASCB
Computing	Undergraduate	Master	Outside academy	Non-AACSB
Ethics and Professionalism	Master	Master	Outside academy	Non-AACSB
Attention and Writing	Undergraduate	Master	Outside academy	Non-AACSB*
Ambition and Justice	Undergraduate	Master	Outside academy	Non-AACSB*
Components of technological skills				
Programming and Operating systems	Undergraduate	Master	Outside academy	Non-AACSB
IT Management	Undergraduate	Undergraduate	Outside academy	Non-AACSB
Navigation. Communication and Calculation Software	Undergraduate	Master	Outside academy	Non-AACSB
Office-related applications	Undergraduate	Master	Outside academy	AASCB

Figure 1. Research proposal approach