

Review

Fifteen Years of Accounting Professional's Competencies Supply and Demand: Evidencing Actors, Competency Assessment Strategies, and 'Top Three' Competencies

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Abstract: This paper reviews accounting education literature with a focus on the supply of and demand for an accounting professional's competencies. Its main objective is to determine which actors are involved in the relationship, ascertain both sides' perspectives, and evidence of competency supply and demand over the last 15 years. After a solid selection, the analysis includes 122 empirical articles from 2006 to 2021. The actors and competencies addressed in the relevant literature were identified and strategies used in their assessment were discovered. The identified competencies were then categorized and framed in the five constructs presented by Kroon and Alves. This approach evidenced that mismatches remain between competency expectations and competency supply in the accounting profession. Investigators may consider the results to improve the consistency of research in this field of study, contributing to a theory that is still lacking. Using the identified concepts and the constructs' components, empirical studies can bring substantial practical implications to reduce or eliminate existing competency gaps. This study provides an integrated understanding of the literature on the fit between higher education institutions and the labor market of the accounting professional's competencies. The framing of actors, strategies, and competencies will assist other researchers in augmenting knowledge in this area.



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1. Introduction

Competence can be seen as a connection between the labor market and education, linking graduates with the expectations of the organizations that hire them (Klemp 1980). If the competencies developed in education do not meet the needs of the labor market, society will be affected (Ridwan 2017; Yorke 1992).

Companies must perform as efficiently and effectively as possible in an increasingly competitive world. All resources need to be the most appropriate, including human resources. This means that, for each position, the most relevant human resource must be sought. On the other hand, higher education institutions (HEIs) aim to educate their students to be prepared to enter the job market. Their customers are the students getting their education, however, ultimately, the final consumer of their product (graduates) are the labor market (Hassall et al. 2005; Yorke 1992). For higher education institutions to consider they are satisfying demand, their graduates must be deemed competent by the companies that may hire them. So, what is at stake is the fit between the demand and supply of professionals with the appropriate competencies to perform their functions well.

Monitoring this fit is even more critical in constantly evolving professions, such as accounting. Technological changes in recent years, more globalized communications,

and constant legislative and regulatory changes (Bui and de Villiers 2017; Burns and Scapens 2000; Olivier 2000; Warren et al. 2015) require adjustments in the competencies of accounting professionals. Researchers have been following this evolution increasingly closely, with numerous studies over the last 15 years. Many studies have looked into the competencies of accounting professionals (e.g., Bui and Porter 2010; Dolce et al. 2020; Gray 2010; Howcroft 2017; Jackling and de Lange 2009; Kavanagh and Drennan 2008) in many different ways. Kroon and Alves (2022) analyzed much of this literature to systematize it, considering both sides, namely supply, and demand. They achieved their objective by constructing a conceptual framework that reflects the fit between the supply and demand of an accounting professional's competencies in conceptual terms. However, they did not identify which competencies have been studied in the literature nor investigated the actual fit between the demand and supply of these same competencies.

Recently, several specific competencies were focused on in literature reviews, such as communication skills (Siriwardane and Durden 2014), graduates' attributes (Osmani et al. 2015), and critical thinking (Abdul Latif et al. 2019). Palmer et al. (2004) reviewed several international competency studies and concluded about the needed competencies for entry-level accountants. However, these studies draw a picture of the desired competencies for accounting graduates, though they do not identify or assess the convergence with the expected competencies. As this correspondence is fundamental for the accounting profession, we propose to study how and which competencies have been studied in this field. The objective is to identify and report on the fit in the literature between the demand and supply of the accounting professional's competencies.

On the supply side, we will limit the study to higher education (also referred to as 'university'), which provides most professional accountants' competencies. On the demand side, we will consider the (labor) market, adopting a perspective that envisions society to be the consumer of the services provided by higher education (Richardson 2005; Ridwan 2017; Waldmann and Ratnatunga 2011) instead of the student.

There is still no consensus on the concept of competence. Almost half a century after the publication of McClelland's seminal work 'Testing for competence rather than for intelligence' (McClelland 1973), the concept of competence remains a subject of contention. Several authors have defined and redefined the concept (e.g., Barrett and Depinet 1991; Boyatzis 1982; Ellström 1998; Klemp 1980, 2001; Spencer and Spencer 1993), addressing behavioral, general, or cognitive perspectives. Webster's dictionary currently defines 'competence' as "the quality of being adequately or well qualified physically and intellectually, especially possession of the skill and knowledge required (for a task)".

However, 'competence' and 'competency' are not the same. Competence refers to the range of adequately performed skills, while competencies refer to the behaviors adopted in competent performance (Rowe 1995). Furthermore, van der Klink and Boon (2003) point out that "the definitions [of competencies] differ with regard to the elements that are highlighted" (p. 127). For example, the concept of competencies for educational purposes assumes that competencies can be considered a set of trainable skills, knowledge, and attitudes. Competency definitions for the purposes of selection procedures generally define competencies as an individual's capabilities for future work (adding characteristics and traits to the concept which are unchangeable or very difficult to alter).

With the above in mind, and considering that we are studying the competencies developed in higher education and required or expected by the labor market, in this study, the concept of competencies encompasses knowledge, skills, attitudes, characteristics (attributes, personal qualities), and traits (motives).

To understand how the literature has recently approached the fit between the expectations of the professional accounting labor market and the supply of higher education institutions of accounting professional's competencies, we will assess the accounting and educational literature of the last fifteen years. The main objective is to synthesize the state-of-the-art in this field, focusing on the competencies studied and how this is done.

Therefore, four research questions guide the literature analysis:

1. Which actors of the competencies' supply–demand relationship have been identified in literature?
2. Which strategies are used in the literature to assess the competencies' supply and demand?
3. What competencies have been studied over the last 15 years?
4. What is the recent competencies' supply–demand convergence?

This work will answer these research questions by systematically reviewing the recent literature, following the five-step approach of a systematic literature review, as described by [Denyer and Tranfield \(2009\)](#): (one) formulate the research questions; (two) locate studies; (three) select and assess these studies; (four) analyze and synthesize; and (five) report and use the results.

The rest of this paper is organized as follows. Section 2 sets out the methodology and fundamental principles of the systematic literature review. Section 3 presents and discusses the results obtained in the content analysis related to the four research questions. Section 4 concludes this paper, points out its limitations and gives several future research suggestions.

2. Methodology

According to [Snyder \(2019\)](#), a systematic review aims “to identify all empirical evidence that fits the pre-specified inclusion criteria to answer a particular research question or hypothesis” (p. 334). Using explicit and systematic methods when reviewing articles minimizes any possible bias and provides reliable findings from which conclusions can be taken and decisions can be made ([Moher et al. 2010](#)). As is valid for all research, systematic reviews should be reported comprehensively and transparently to allow readers to assess the investigation's strengths and weaknesses ([Liberati et al. 2009](#)).

To achieve this transparent systematization, this paper is structured by following the method outlined in the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) Statement ([Moher et al. 2010](#)), updated in 2021 by [Page et al. \(2021\)](#). The PRISMA flow chart that illustrates the different phases of this systematic literature review (SLR) is shown in Figure 1.

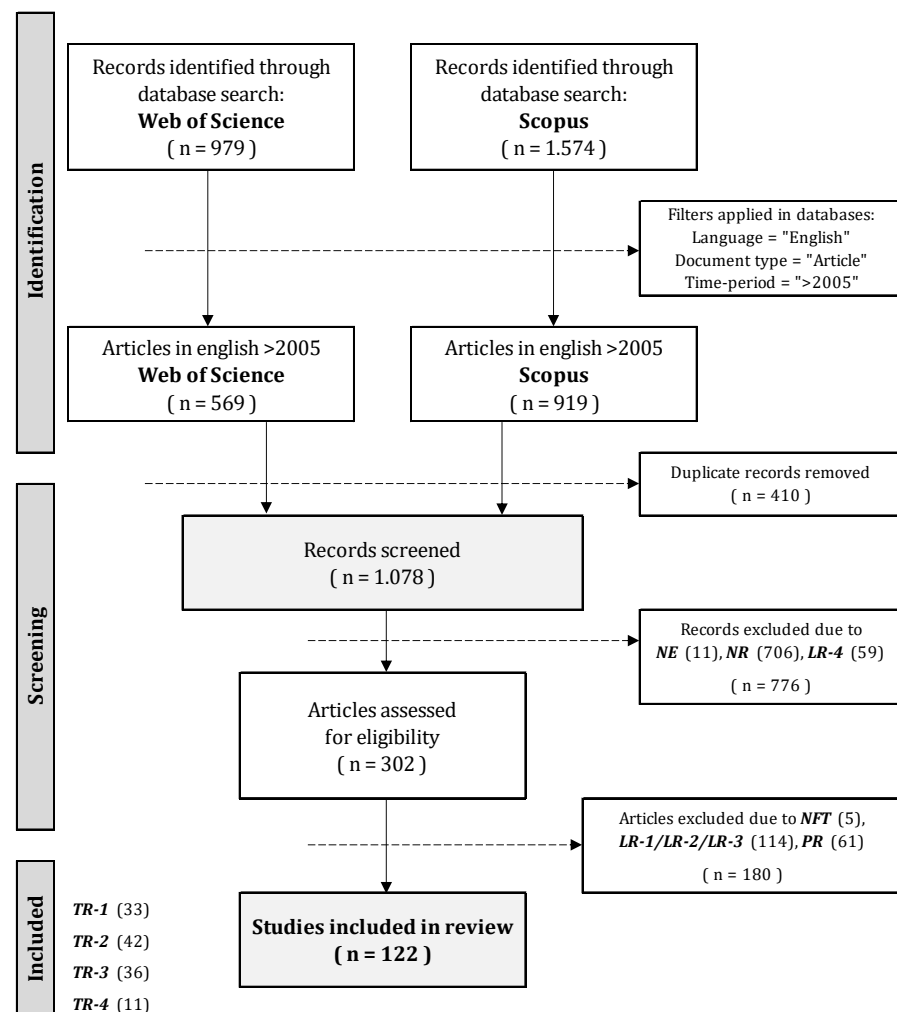


Figure 1. Search protocol (adapted from Page et al. 2021).

2.1. Article Collection

The first step to applying the systematic review method is identifying relevant articles' locations. The Web of Science (WoS) and SciVerse Scopus (Scopus) databases were preferred, given their scope, quality, and prestige, which ensures the quality of the articles collected (Gasparyan et al. 2013). Although the research was carried out in only two databases, they cover the majority of the high-quality publications in the social sciences (Gasparyan et al. 2013).

The keywords were defined to connect the accounting profession with the demand or supply of competencies. As seen before, 'competencies' is a comprehensive concept that may include knowledge, skills, attitudes, traits, motives, attributes, characteristics, personal qualities, etc. However, in the context under study, researchers use one of two concepts: competency or skill, so these two concepts (and their possible ramifications) were placed on one side. On the other side, there are still two components: demand and supply. These are represented, respectively, by the labor market and higher education. Table 1 presents the final search key used in both databases (WoS and Scopus).

Thus, on 11 February 2022, a basic search in 'title, abstract, author keywords, and keywords plus' was conducted at the WoS Core Collection (indexes: SCIE, SSCI, AHCI, ESCI, CPCI, BKCI, and CCRIC). This search returned 979 results. The document types, language, and publication year filters were then applied, restricting the results to 'articles' written in 'English' in the last fifteen years (2016–2021). These restrictions reduced the sample from 979 initial results to 569 articles that meet the defined conditions. On the same date, a combined search was conducted on the Scopus database with similar content. This

search returned 1574 results. The document type, language, and publication year filters were then applied, restricting the results to ‘articles’ written in ‘English’ in the last fifteen years. These restrictions reduced the sample to 655 studies, leaving 919 articles that meet the defined conditions.

Table 1. Final search key.

Search Key
(“skill” OR “skills” OR “competenc*”) AND (“accountan*” OR “account* profession*” OR “account* graduate*” OR “account* undergraduate*” OR “account* student*” OR “account* scholar*” OR “account* education” OR “account* study” OR “account* studies”)
Using the Boolean operators AND and OR, we guarantee that at least one of the concepts from the first and one from the second part is included.

The 1488 articles (569 of WoS and 919 of Scopus) obtained using the combined search sequences were exported to Excel. The first step was eliminating duplicates, leaving 1078 articles to be fully assessed. Explicit inclusion and exclusion criteria were defined (Table 2) to ensure that all papers could be consistently evaluated with less subjective opinions. These criteria are derived from our study’s objectives guided by the presented four research questions.

Table 2. Inclusion and exclusion criteria.

I/E Criteria	Reason for Inclusion/Exclusion
Exclusion criteria:	
No full text	NFT No full text available
Not empirical	NE The article does not present empirical research (e.g., literature reviews, commentaries, etc.)
Not related	NR The article does not address/focus on the accounting professional’s competencies
Loosely related	LR-1 The article addresses the accounting professional’s competencies as a measure of another construct
	LR-2 The article addresses the accounting professional’s competencies to perform functions that are not usually those of an accountant
	LR-3 The article addresses the accounting professional’s competencies as an output of a specific teaching format/case/application/choice.
	LR-4 The article presents a teaching case/teaching note/instructional case
Partially related	PR The article focuses on accounting professional’s competencies without approaching their actual or future supply or demand (university/market)
Inclusion criteria:	
Totally related	TR-1 The article focuses on the supply of accounting professional’s competencies (taught/acquired/developed in university)
	TR-2 The article focuses on the demand for accounting professional’s competencies (expected/desired/required by the market)
	TR-3 The article focuses on both the supply and the demand of accounting professional’s competencies
	TR-4 The article focuses on the fit between the supply and the demand of accounting professional’s competencies (gaps)

After removing duplicates, the 1078 preselected articles were reviewed by reading their titles and abstracts. This screening process was employed to exclude papers that (one) do not present empirical research (NE); (two) do not address the accounting professional’s competencies (NR); or (three) present teaching cases, teaching notes, or instructional

cases (LR-4). This process reduced the eligible articles to 302. Then the full-text articles were obtained. It was impossible to get five of them and they were excluded from the analysis (NFT). At this point, articles that do not focus on the demand or supply of the accounting professional's competencies were excluded (LR-1, LR-2, and PR). Similarly, papers that address these types of competencies from an experimental perspective (LR-3) were excluded, as the aim is to ascertain current standard supply and demand. Finally, the remaining articles were distributed into four 'totally related' categories (TR-1, TR-2, TR-3, and TR-4) that will be discussed further.

Finally, all eligible papers were introduced in Citavi 6.11 (reference management and knowledge organization software) to be subject to content analysis, which will answer the research questions.

2.2. Data Collection

Two types of information were collected from each of the included articles. First, the fundamental data of the papers were collected and placed in an Excel sheet. Then, data considered relevant to answer the stated research questions were extracted using Citavi 6.11. This software made it possible to create and manage a multilevel categorization system in a structured and comprehensive way. Thus, the content analysis included coding, abstracting, and clustering the contents of the selected articles. The starting point was identifying the units of analysis and how they were studied, providing answers to research questions one and two. To answer question three, it was necessary to identify the types of competencies studied and how they were approached. The final analysis was done in the Excel spreadsheet, allowing for the extraction of relative, aggregated, and comparative data. Both researchers worked collaboratively on the same Citavi project and Excel spreadsheet.

3. Results and Discussion

After applying the inclusion and exclusion criteria, the included articles were categorized into TR-1, TR-2, TR-3, and TR-4. Table 3 presents the distribution of these articles by the respective category.

Interestingly, the numbers of studies in the first three categories are quite similar (27%/34%/30%). Articles focusing on the convergence of the supply and demand side are far fewer, representing only 9% of all articles analyzed. The first of these articles was published in 2015, so it appears to be a more recent stream of study. It should also be noted that in 2021 alone, four articles of this category were published, evidencing a growing interest in this convergence.

Table 3. Articles by inclusion category.

Inclusion Category	Articles
TR-1 Focus on the supply side. (33 articles)	de Lange et al. (2006); Kennedy and Dull (2008); Schmidt et al. (2009); Hassall et al. (2010); Keneley and Jackling (2011); Lakshmi (2013); Suttipun (2014); Towers-Clark (2015); Araujo et al. (2015); Rackliffe and Ragland (2016); Webb and Chaffer (2016); Zubairu et al. (2019); Chaffer and Webb (2017); Oussii and Klibi (2017); Ku Bahador and Haider (2017); de Villiers and Viviers (2018); Smith et al. (2018); Pitulice et al. (2018); Douglas and Gammie (2019); Reddrop and Mapunda (2019); Zubairu et al. (2019); Andiola et al. (2020); Berry and Routon (2020); Alshbili and Elamer (2020); Al Mallak et al. (2020); Junger da Silva et al. (2020); Mameche et al. (2020); Banasik and Jubb (2021); Berková et al. (2021); Irafahmi et al. (2021); King (2021); Mcbride and Philippou (2021); Terblanche and de Clercq (2021)

Table 3. Cont.

Inclusion Category	Articles
TR-2 Focus on the demand side. (42 articles)	Johnson et al. (2008); Gray (2010); Lai and Nurul (2010); Gray and Murray (2011); Albu et al. (2011); Onumah et al. (2012); Paulsson (2012); Stone and Lightbody (2012); van Akkeren et al. (2013); Yoon et al. (2013); Jones (2014); Siriwardane et al. (2014); Camacho (2015); Siriwardane et al. (2015); Spraakman et al. (2015); Tenedero and Vizconde (2015); Dunbar et al. (2016); Hamid et al. (2016); Paguio and Jackling (2016); Chaplin (2017); Ridwan (2017); Schutte and Lovecchio (2017); Ghani et al. (2018); Tan and Laswad (2018); Zhyvets (2018); Adhariani et al. (2019); Ghani and Muhammad (2019); Mosweu and Ngoepe (2019); Kunz and de Jager (2019a); Tan and Laswad (2019); Kunz and de Jager (2019b); Adhariani (2020); Debreceny et al. (2020); Ismail et al. (2020); Mhlongo (2020); Osmani et al. (2020); Pilipczuk (2020); Uwizemungu et al. (2020); dos Santos et al. (2021); Kokina et al. (2021); Leitner-Hanetseder et al. (2021); Oliveira et al. (2021)
TR-3 Focus on both the supply and demand sides. (36 articles)	Kavanagh and Drennan (2008); Mgaya and Kitindi (2008); Jackling and de Lange (2009); Wells et al. (2009); Mgaya and Kitindi (2009); Shahwan and Roudaki (2009); Awayiga et al. (2010); Memiyanty et al. (2010); Crawford et al. (2011); Pan and Perera (2012); Lin et al. (2013); Senik et al. (2013); Baker (2013); Ragland and Ramachandran (2014); Abayadeera and Watty (2014); Mandilas et al. (2014); Montoya-del-Corte and Fariás-Martinez (2014); Lim et al. (2016); Bhasin (2016); Abayadeera and Watty (2016); Riley and Simons (2016); Howcroft (2017); Nicolaescu et al. (2017); Bruna et al. (2017); Coady et al. (2018); Ballou et al. (2018); Yanto et al. (2018); Asonitou and Hassall (2019); Ahmed (2019); Maali and Al-Attar (2020); Aryanti and Adhariani (2020); Cernuşca (2020); Agrawal et al. (2021); Král et al. (2021); Moore and Felo (2021); Oyerogba (2021)
TR-4 Focus on the fit. (11 articles)	van Romburgh and van der Merwe (2015); Low et al. (2016); Anis (2017); Berková et al. (2019); Senan (2019); Dolce et al. (2020); Walker et al. (2020); Akande and Atiku (2021); Al-Aroud (2021); Al-Hattami (2021); Daff (2021)

3.1. Competency Assessment

To analyze the components of the fit between supply and demand of accounting professional's competencies, we used the framework elaborated by Kroon and Alves (2022), who adapted the SERVQUAL model to this field of knowledge. Their framework (Figure 2) represents the supply and demand side of the accounting professional's competencies. It assumes a logic in associating supply and demand and identifying the various constructs that must be aligned for the labor market to consider that its expectations are met. The connections between the constructs represent points where there may be misalignments, the so-called gaps.

To answer the first two research questions, we will identify the content of the constructs; that is, how each emerges in the literature. After that, we will find and categorize the competencies studied in the selected articles. Ultimately, an analysis of the fit between the supply and demand of these same skills will be made. With that, research questions three and four will be answered.

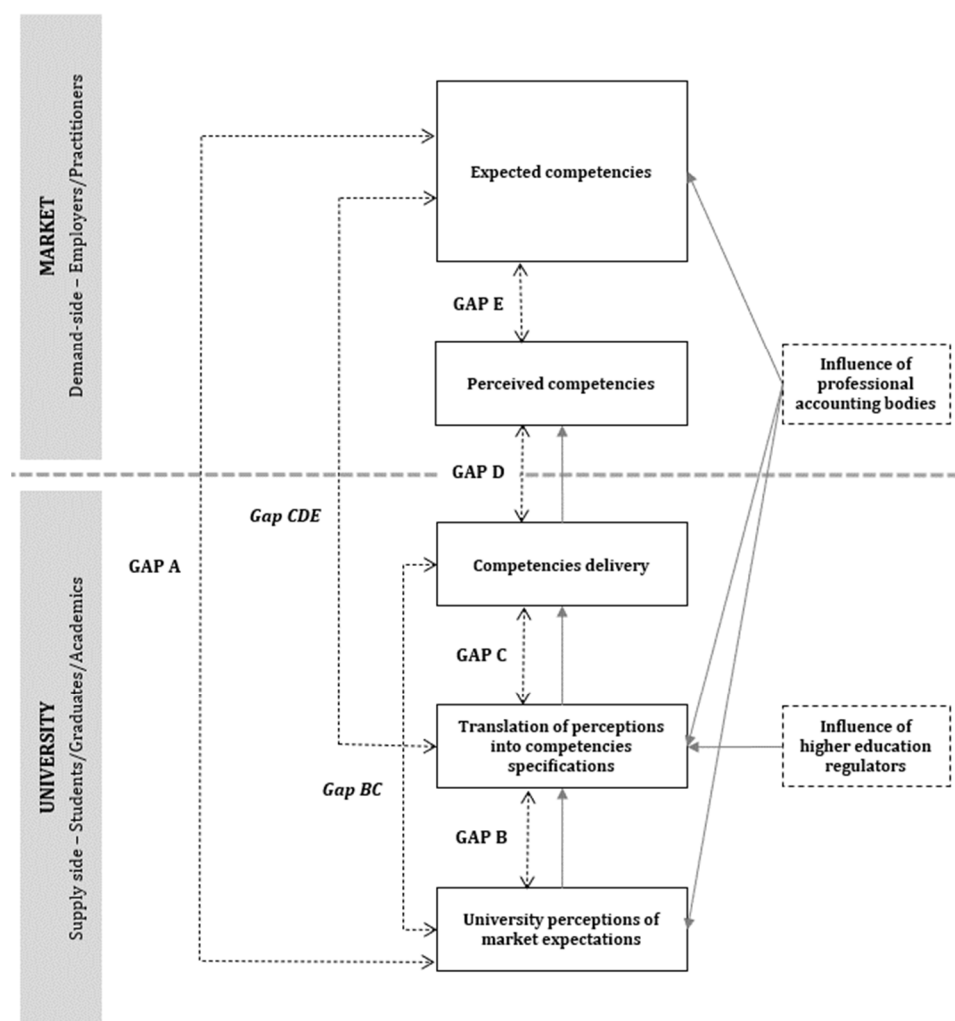


Figure 2. Conceptual model of the university–market adjustment of accounting professional’s competencies (Kroon and Alves 2022).

3.1.1. The Actors of the Market–University Relationship

Based on the analyzed articles, we conclude that there are five main actors: students, graduates, academics, employers, and practitioners. These are identified as the primary units of analysis. In this configuration, students, graduates, and academics represent the supply side; employers and practitioners represent the demand side.

There is a wide variety of typologies within each unit of analysis. For example, ‘students’ are represented by the following observation units: ‘accounting sciences students’, ‘accounting students’, ‘accounting undergraduates’, ‘graduate students’, ‘management accounting students’, ‘students’, ‘undergraduate chartered accountancy students’, and ‘university students’. Appendix A presents all units of analysis, observation frequencies, and the respective observation units.

Two other actors were found: professional bodies and the judiciary. It should be noted that professional bodies are represented in the framework (as influential entities), however, they rarely appear in the articles as active actors. Both were classified as ‘others’ for the following analyses.

3.1.2. Competency Assessment Perspectives

We gathered seven distinct analysis perspectives, which are listed in Table 4. The classification is based on the content analysis performed, and each article contains one or

several of the listed perspectives. These perspectives will be used later in the joint analysis of competency assessment.

Table 4. Perspectives and their definition as found in the articles.

Perspective	Definition
Competencies requirement	Competencies that are expected or required by employers when hiring new employees, in this case, particularly recent graduates.
Importance of the competencies	The importance of the competencies is measured in terms of the expected value that a given competency will have in an employee's career success.
Competencies that should be taught in university	Depending on the actors being questioned, the competencies that should be taught in university assume different sides of the conceptual model. For example, the perception of academics is on the supply side, whereas employers' perception is on the demand side.
Competencies taught in university	Competencies taught and competencies acquired are closely linked and, as such, are considered together in the conceptual model. It is possible that the competencies taught are not the same as those acquired, however, as a whole, they reflect the competencies developed in the higher education system.
Competencies acquired at university	
Demonstrated competencies	It represents the direct assessment or perception of effectively demonstrated competencies. This can be done, for example, by academics who assess their students or employers who assess their employees.
Gap existence	Some studies directly question participants about whether or not a competence/skills gap exists. It can assume any gap.

3.1.3. Perception vs. Existence

In the analyzed articles, the presence of competencies is generally measured in two ways: through the perception of those who evaluate this attribute or by directly evaluating its existence. Altogether, 242 items were classified within the analyzed articles, of which only 20 consider the existence of competencies.

The existence of competencies was assessed using three sources: job advertisements, (course) curricula of accounting programs, and students. The job advertisements represent the competencies employers are looking for in their future hires, classified by us as 'competencies requirements' (8 items). Course contents and adopted manuals represent the competencies taught at higher education institutions, so they were classified as 'competencies taught in university' (9 items). The remaining three items assessed the existence of competencies by directly testing students' aptitudes, which were therefore classified as 'demonstrated competencies'. The 222 identified perceptions will be analyzed in the next section.

3.1.4. Competency Assessment: A Joint Analysis

After analyzing the previous concepts, it is pertinent to proceed with their joint analysis. To explain the analysis carried out in each article, Table 5 presents an example.

Table 5. Example of the competencies analysis carried out in each article.

How	Who	What
Perception of	Academics	Importance of the competencies
Existence of	-	Competencies taught in university

At first, we determined whether we were in the presence of the perception of one of the actors (perception of) or the direct assessment of the existence of competencies (existence of). In the case of existence, the following field remains empty; in the case of perceptions, the following field identifies the respective actor (students, graduates,

academics, employers, practitioners, and others). Finally, the last column identifies the adopted analysis perspective, as stated in Table 5.

As already mentioned, 222 items were classified using the participants' perceptions, whose frequencies are shown in Table 6. By far, the perspective on the importance of competencies is the most studied. It represents 90 occurrences out of 222 (41%). In terms of actors, none stands out particularly, and even when we add the various actors on both sides (supply vs. demand), the balance remains stable. The least studied actor is the graduate, representing only 7% of the total.

Table 6. Frequencies of participants' perspectives.

Perspective/Actors	Supply				Demand			Others	Total
	Students	Graduates	Academics	Total	Employers	Practitioners	Total		
Competencies requirement	4		3	7	11	12	23		30
Importance of the competencies	19	3	19	41	23	24	47	2	90
Competencies that should be taught	3	2	4	9	7	3	10		19
Competencies taught in university	10	6	10	26			0		26
Competencies acquired at university	4	1	1	6			0		6
Demonstrated competencies	7	2	4	13	10	11	21		34
Gap existence	2	2	2	6	5	6	11		17
Total	49	16	43	108	56	56	112	2	222

Perhaps the only perspective worth highlighting, as it first occurred in 2015, is the 'gap existence'. The amount of previous research pointing towards a gap may explain its recent appearance. Instead of investigating the two sides to compare them and determine if there is a gap, these researchers decided to directly question the various actors about their perception of the presence of a particular gap.

3.2. Competencies

As there is no generally accepted definition of the competence concept, the categorization of its components is carried out in a very diverse way by various authors, even within the accounting research area. It is interesting to note that, in addition to 'competencies' and 'skills', the authors seek to identify or study 'knowledge', 'personal qualities', 'personal attributes', 'personal characteristics', 'ability', 'attributes', 'capability', 'attitudes', 'behavior', 'values', 'motives', and 'traits'. Our definition of competence, being quite comprehensive, incorporates all of them.

However, to obtain comparative data about competencies that have been studied, we needed to adopt a competency categorization that suits this purpose. Section 3.2.1 presents our competency classification dictionary and lists the competencies studied over the years. The subsequent section will present and discuss the fit between the supply and demand of competencies found in the articles.

3.2.1. Competency Categories

Some authors assume categorizations from previous studies or an adapted form of these to compare the obtained results (Bruna et al. 2017; Howcroft 2017; Moore and Felo 2021). Others constructed their categorization based on literature reviews, expert interviews, or focus groups (Keneley and Jackling 2011; Mandilas et al. 2014; Tan and Laswad 2019). Howsoever, it is not easy to find a standardization even in this relatively short period (2006–2021). In addition, there are (at least) two viewpoints in this research area, the educational and professional, which do not always line up. Considering that our SLR aims to identify the alignment between these two perspectives (demand and supply

of accounting professional's competencies), we tested several types of categorizations of competencies.

We found several frameworks developed by researchers in the accounting education field, highlighting [Birkett \(2002\)](#) and [Tsiligiris and Bowyer \(2021\)](#). The first was used as a basis for categorization by some authors of the included articles, and, although it is already a few years old, it appears to be quite up to date. The latter, a very recent publication based on various types of publications (scientific articles and professional associations' reports), would also be a viable option. However, both possibilities lack one key point: they do not incorporate the link between supply and demand.

From the professional perspective, professional bodies have drawn up several competency frameworks (e.g., AICPA, IFAC, and IMA). These are intended to guide skills assessment, career development, and talent management within the profession. On the other hand, several professionals, who apply competence management in practice, have dedicated books on identifying, categorizing, and using competencies and competency models ([da Camara 2017](#); [Lucia and Lepsinger 1999](#); [Sanghi 2016](#)). We highlight the book of [da Camara \(2017\)](#), as it presents a dictionary of competencies applicable to all professional areas, including accounting.

At the educational (international) level, there are the International Education Standards (IES) issued by the IAESB (in 2019, it passed to the responsibility of the International Panel on Accountancy Education). These standards are increasingly applied globally, leading more and more researchers to use their structure to study the supply of competencies. In the context of this study, technical competence (IES 2), professional skills (IES 3), and professional values, ethics, and attitudes (IES 4) are the competencies focused on.

Recalling the emphasis on the fit between supply and demand, a mixture of educational standards (supply) with a practical dictionary (reflecting demand) seems to be the most appropriate. Therefore, we opted to build our categorization of competencies, adapting IES 2, IES 3, IES 4, and [da Camara's \(2017\)](#) dictionary, as presented in Appendix B.

The competencies analyzed in each article are shown in Table 7, where their evolution over time is also evident. The vast majority of researchers started with competencies identified in previous research. Still, some approached the problem in a more inductive and exploratory way. These opted to primarily use interviews and focus groups.

Table 7. Competency categorization of articles and their distribution over the years.

International Education Standards and Competency Categories *	2006/07	2008/09	2010/11	2012/13	2014/15	2016/17	2018/19	2020/21	Total
IES 2									
Financial accounting and reporting				1					1
Foreign languages									1
Information technology		1	1	2	1	1		5	13
Miscellaneous						1	2	3	6
IES 2 + IES 3									
Information technology + Intellectual								1	1
Miscellaneous				1	1	1	5	10	19
IES 2 + IES 3 + IES 4									
Miscellaneous	1	6	6	4	4	5	10	9	53
IES 3									
Interpersonal and communication		1	2	2		1	1	1	12
Organizational		1							1
Miscellaneous					1			3	4
IES 3 + IES 4									
Miscellaneous						1	3	4	9
IES 4									
Miscellaneous							1		2
Total	1	9	9	10	7	10	22	36	122

* Competency categories were adapted from IES 2, IES 3, and IES 4.

Ninety-three articles (approximately 76% of the total) claim to cover a variety of competencies or do not indicate which specific competencies will be investigated. We included these articles in an additional category called ‘miscellaneous’. In these articles, data were collected regarding the most sought-after or most-offered competencies, which will be analyzed in Section 3.2.2.

For a brief analysis of the categories of competencies that are most studied, we present some summary information in Table 8. Two categories stand out in terms of the times they were studied: ‘information and communication technologies’ and ‘interpersonal and communication’. The remaining categories, explored only by one author each, are ‘financial accounting and reporting’ (Yoon et al. 2013), ‘foreign languages’ (Tenedero and Vizconde 2015), ‘information and communication technologies + intellectual’ (Pilipczuk 2020), and ‘organizational’ (Kennedy and Dull 2008). With the small number of articles in each category, it is irrelevant to draw any further analysis.

Table 8. Study frequency of competency categories.

IES	Competency Category	Total
IES 2	Financial accounting and reporting	1
	Foreign languages	1
	Information technology	13
IES 2 + IES 3	Information technology + Intellectual	1
IES 3	Interpersonal and communication	12
	Organizational	1
Total		29

Within the ‘interpersonal and communication’ competence category, there are four subcategories, namely (one) communication skills, (two) interpersonal skills, (three) teamwork skills, and (four) other interpersonal and communication skills. We found that only one of the articles in this category focuses on interpersonal skills (Paguio and Jackling 2016), who concentrated their study on the teamwork skills employers expect graduates to have. All other articles (11) approached communication skills, primarily in a generic way (Camacho 2015; Lin et al. 2013; Schmidt et al. 2009; Siriwardane et al. 2015). Others studied oral communication skills (Gray 2010; Gray and Murray 2011), listening skills (Reddrop and Mapunda 2019; Stone and Lightbody 2012), writing skills (Irafahmi et al. 2021; Riley and Simons 2016), and business communication skills (Oussii and Klibi 2017).

The competency category ‘information technology’ does not contain any subcategorization. Even so, it is possible to define some specificities regarding the type of technologies studied. Most authors study information technologies (Junger da Silva et al. 2020; Ku Bahador and Haider 2017; Mgaya and Kitindi 2008; Senik et al. 2013; Spraakman et al. 2015) or information and communication technologies (Daff 2021; Lai and Nurul 2010; Osmani et al. 2020). Two authors studied computer or technology skills (Andiola et al. 2020; Baker 2013), and Kokina et al. (2021) tried to understand the skills and competencies that accountants need to work successfully in a robotic process automation (RPA) environment. The remaining two articles approach Excel spreadsheets, one specifically on the most important Excel functions (Ragland and Ramachandran 2014) and the other on the Excel technological skills used in public accounting and accounting education (Rackliffe and Ragland 2016).

3.2.2. Competencies Supply and Demand Convergence

The content analysis of the articles in the miscellaneous categories allowed us to obtain data on the most offered and most sought-after competencies. These data were framed in the constructs identified by Kroon and Alves (2022). Thus, 72 perspectives were obtained from 32 articles that were classified in the miscellaneous category. With these data, the competency rankings were calculated for each construct. The five most relevant competencies of each construct are presented in Figure 3. The complete data is available in

Appendix C. Competencies are given by the ranking of importance, where competencies with equal importance were assigned an equal ranking.

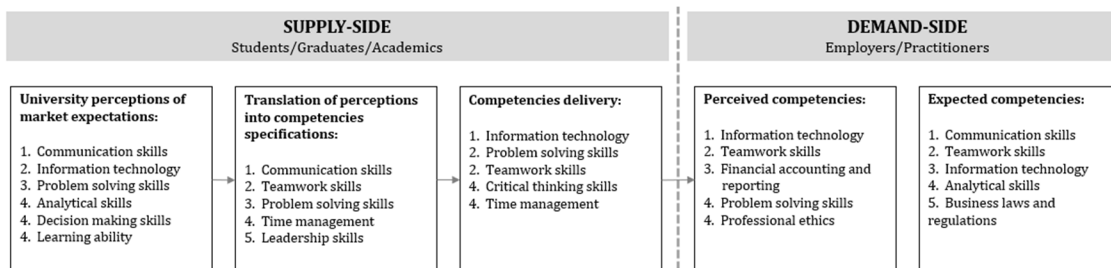


Figure 3. Ranking of the most relevant competencies using Kroon and Alves's (2022) framework.

Based on the expected competencies, we conclude that there is some misalignment between supply and demand. Although the supply side perceives the most expected competency (communication skills) as such, it is not part of the most delivered and perceived competencies. This indicates that the development of this competency within the university is not being accomplished as intended, despite the awareness of its importance. Something similar happens with the competency that appears in the fourth place of the most expected competencies: analytical skills. This competency was not delivered or perceived at all, indicating an even bigger failure of the university.

The fifth most expected competency (business laws and regulations) is the one with the most significant misalignment. It does not appear as one of the most relevant in any of the remaining constructs, which denotes a general flaw. If their need is not communicated correctly, the university does not include them in their competencies to be developed, leading to their omission in the delivery of final competencies.

On the other hand, the second and third most expected competencies (teamwork skills and information technology) seem quite well aligned. Although the university does not see teamwork skills as one of the most important competencies to develop, they are developed according to the job market's needs. As for information technology, it is seen as essential by almost all actors. The only time its importance is not recognized is in its specification, which may indicate that its importance is intrinsically assumed and not explicitly stated in the accounting course curricula.

4. Conclusions, Limitations, and Future Research Suggestions

In this systematic literature review, 122 articles were analyzed to gather information about what has already been written about the fit between the demand of the labor market and the supply by higher education of accounting professional's competencies. The focus was on the competencies assessed in the literature and how this is done.

The first two research questions addressed the actors identified and strategies used in the literature to assess competencies' supply and demand. Five anticipated actors were identified, three on the supply side (students, graduates, and academics) and two on the demand side (employers and professionals). However, other actors could be approached, such as professional bodies, education regulators, and accountants' clients. All of them are stakeholders in this relationship. It should be noted that a professional body representative appeared in one of the articles and the judiciary in another. However, to conclude about their contribution, these studies should have a much higher frequency. In this sense, it is recommended that future research expands the actors used in the studies, incorporating the perceptions of all stakeholders. Proposed research questions could be as follow. How do accounting bodies influence employers' expectations in practice? How can they help reduce or eliminate the gap between supply and demand? Are higher education regulators contributing to or hindering the elimination of identified gaps? The identification of other stakeholders that have not yet been studied can also be a contribution to be obtained from future investigations. Are there other actors that impact the fit between supply and

demand? For example, can professional associations, accounting services clients, or the government affect this relationship? If so, in what way?

As for the strategies adopted, seven perspectives were identified under which the actors were questioned, or the competencies were assessed. The most studied perspective was the 'importance of the competencies', representing around 40% of the total. The least studied perspective is the 'competencies acquired in university', which may be related to our article's selection. We excluded articles that focused on specific pedagogical practices, which may have reduced the articles that addressed this perspective. In future research, it would be interesting to see if more authors have studied this perspective and what are the resulting findings. On the other hand, the perspective of demonstrated skills may still have several paths to explore. Instead of surveys that refine the views of the various actors, investigating the existence of competencies can add a lot of value to the field. The direct application of tests to graduates has been practically nonexistent, as have tests to practitioners. Even though these tests may not be easy to design and apply, the benefits they can generate far outweigh their possible limitations.

In the second part of the article, the competencies of the accounting professional and the fit between supply and demand are addressed, answering research questions three and four. After creating the competencies dictionary and classifying the competencies studied in the selected articles, it was concluded that there are two streams of analysis: one in which the authors identify a specific category of competencies to be studied and another where the authors seek to obtain the competencies most demanded and supplied inductively. In all, 29 articles were identified that explore specific competencies. Within these, two major categories stand out: 'information technology' and 'interpersonal and communication'.

As for the remaining articles, the 'top three' competencies elected by each actor were collected. With these data, competency rankings were calculated, which allowed us to conclude about the convergence between them. The main inference is that there is a satisfactory convergence in two of the most relevant competencies, namely 'teamwork skills' and 'information technology'. The same cannot be said of the remaining three competencies, which reveal a pertinent lack of convergence (communication skills, analytical skills, and business laws and regulations).

Analyzing the mismatches between the various constructs makes it possible to see where the problem lies. In the case of 'communication skills' and 'analytical skills', it appears to be a problem of competence development at the university, even though they are aware of their importance. As there is an awareness that these competencies are critical, some internal factor within the universities is conditioning their development. Future research should try to understand why they are not being sufficiently developed and how to reverse this situation. In the case of business laws and regulations, the problem is more severe since it is not identified in any of the supply constructs as being important. This absence means the university is unaware of its importance and is not investing in developing it. Future research should specifically focus on this competency. Understanding the reasons for misalignment is crucial to finding solutions to reduce or eliminate the problem.

A final conclusion emerges from the ranking of competencies, specifically regarding the supply side. It is curious to note that all supply-side competencies are generic skills and that there are no specific technical skills in the accounting area to be worked on. Although there may be several explanations for this phenomenon, it seems to be assumed that technical skills are developed "naturally", as they have been reflected directly in curricula for a long time. Only in the relatively recent reforms in education have generic skills begun to be incorporated. This strengthening of generic skills may have increased the relative importance of generic skills to the detriment of technical skills. The deepening of this issue would be another excellent opportunity for future investigations.

Other suggestions for future research are:

1. Expanding the number of articles focusing on the fit between demand and supply, as these represent only about 9% of the articles found. This focus can help in locating gaps to overcome them then;

2. To continue the study of information technology competencies. The continuous technological evolution has made digital competencies widely studied over the years. Even so, and because this evolution is still ongoing, this competency should continue to deserve the attention of researchers (Banasik and Jubb 2021; Daff 2021; Waller and Gallun 1985);
3. To explore each component (actors, perspectives, constructs, and gaps) of the Kroon and Alves (2022) framework to analyze the convergence of specific competencies or contexts.

The general contribution of this study is mapping the literature on the accounting professional's competencies convergence. As such, a first contribution is the systematization of studies presented in Table 3, supporting researchers who want to study any of these topics. A second contribution is the identification of the actors in the relationship between demand and supply and, more importantly, how these actors are related and originate the various constructs that allow assessing the existence of gaps. In the same way, competencies were identified and categorized. Researchers may continue building theories and study practical problems evolving the various actors and competencies identified.

Another considerable contribution is the analysis of the competencies' supply and demand convergence. A cross analysis was conducted following a separate study of the most desired and most developed competencies. Based on the convergence of the five most relevant competencies, it was concluded that the fit between demand and supply is satisfying in only two. This unsatisfactory conclusion indicates that the study of convergence should be continued to identify and subsequently correct existing misalignments.

As this article is an SLR, we had to make some choices that may be considered limitations of the study. Only two reference databases of peer-reviewed literature were used to collect the articles (WoS and Scopus). Articles in languages other than English were excluded, and the period was limited to the last 15 years. Although the keywords were defined very broadly, they may have limited the scope of the study. Finally, inclusion and exclusion criteria were specified in detail. Nevertheless, their evaluation contains a subjective component.

A final constraint should be considered when analyzing the results of this study. Identifying the competencies' convergence by geographic area or educational system was impossible. This impracticality is related to the fact that the convergence analysis had to be global to achieve the defined objectives. They would not have been achieved if the analysis had been done by countries or educational systems. Nevertheless, the culture of a country and its educational system influence the expected and offered competencies (Al Mallak et al. 2020; Johnson et al. 2008), so they should be considered in the convergence analysis of competencies in specific contexts. Therefore, the framework's application is recommended to be broadened and deepened in future research. Including the specificities of each country and each educational system could bring new and contextual-specific findings.

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Appendix A

Unit of Analysis	Unit of Observation	Frequency
Students	accounting sciences students; accounting students; accounting undergraduates; students; undergraduate chartered accountancy students; undergraduate students; university students	51
Graduates	accounting graduates; CIMA trainees; graduates; ICAS trainees; newly graduated students; university graduates	16
Academics	academic staff; academics; accounting academics; accounting educators; accounting faculty; accounting lecturers; accounting teachers; department chairs; educators; faculty; lecturers; professors; teachers; university accounting educators; university educators; university professors; university teachers	41
Employers	accounting employers; accounting firms; audit managers; CFO; employers; human resource and branch managers; human resource managers from accounting firms; practitioner employers; recruiters; recruitment managers from auditing firms; staff of federal parastatals; * practicing chartered accountants; * practitioners; * professional accountants; * public accountants	56
Practitioners	accountants; accounting practitioners; accounting professionals; auditors; business professionals; external auditors; finance consultants; financial managers; graduates who were between three to five years out from graduation; management accountants; managerial accounting personnel; organizations undergoing RPA implementations; practicing chartered accountants; practicing forensic auditors; practicing accountants; practicing forensic professionals; practitioners; professionals; public accountants; records management professionals, information and communication technology (ICT) professionals, and auditors; senior and junior tax practitioners; senior trainees, managers, and partners; small and micro enterprises and IT companies managers; top managers	56
Others	judiciary; professional bodies	2

* Practitioners representing employers.

Appendix B

IES 2 Technical Competence	Competencies
Technical competencies as provided in IES 2	audit and assurance; business and organizational environment; business laws and regulations; business strategy and management; economics; finance and financial management; financial accounting and reporting; governance, risk management, and internal control; information technology; management accounting; taxation.

Technical competencies not provided in IES 2	administrative and secretarial activities; foreign languages; human resource management.
IES 3 Professional skills	Competencies
Intellectual	analytical skills; critical-thinking skills; decision-making skills; numerical analysis; problem-solving skills.
Interpersonal and communication skills	communication skills; empathy; interpersonal skills; negotiation; persuasion; teamwork skills.
Organizational skills	ability to manage priorities; attendance and punctuality; business knowledge; customer orientation; employee development; leadership skills; make things happen; organizational sensitivity; planning and organization; strategic vision.
Personal	adaptability; ambition; attention to detail; autonomy; conformity; creativity; determination; energy; flexibility; humility; initiative; innovation; learning ability; proactivity; rationalization; resilience; results orientation; rigor; self confidence; self development; stress tolerance; tenacity; work motivation.
IES 4 Professional values, ethics, and attitudes	Competencies
Commitment to the public interest	professional ethics; independence; integrity;
Ethical principles	responsibility; confidentiality and discretion.
Professional skepticism and professional judgment	

Appendix C

FULL DATA ON COMPETENCY RANKING

SUPPLY			DEMAND						
Ranking	1. University perceptions of market expectations	Ranking	2. Translations of perceptions into competencies specification	Ranking	3. Competencies delivery	Ranking	4. Perceived competencies	Ranking	5. Expected competencies
1	Communication skills	1	Communication skills	1	Information technology	1	Information technology	1	Communication skills
2	Information technology	2	Teamwork skills	2	Problem solving skills	2	Teamwork skills	2	Teamwork skills
3	Problem solving skills	3	Problem solving skills	2	Teamwork skills	3	Financial accounting and reporting	3	Information technology
4	Analytical skills	4	Time management	4	Critical thinking skills	4	Problem solving skills	4	Analytical skills
4	Decision making skills	5	Leadership skills	4	Time management	4	Professional ethics	5	Business laws and regulations
4	Learning ability	6	Analytical skills	6	Autonomy	6	Autonomy	6	Determination
7	Teamwork skills	6	Critical thinking skills	6	Communication skills	6	Communication skills	6	Professional ethics
8	Critical thinking skills	6	Financial accounting and reporting	6	Flexibility	6	Communication skills	8	Time management
9	Deadline accomplishments	6	Intellectual skills	9	Adaptability	9	Communication skills	9	Finance and financial management
10	Ability to manage priorities	6	Self development	9	Business laws and regulations	9	Communication skills	9	Financial accounting and reporting
10	Financial accounting and reporting	6	Work motivation	9	Work motivation	9	Communication skills	9	Problem solving skills
12	Business laws and regulations	12	Information technology	9	Work motivation	9	Communication skills	9	Work motivation
12	Finance and financial management	12	Self confidence					9	Work motivation
14	Business knowledge	14	Learning ability					13	Business knowledge
14	Conformity	14	Numerical analysis					13	Customer orientation
14	Time management	14	Other technical competence*					15	Ability to manage priorities
17	Leadership skills							15	Learning ability
17	Organization							17	Creativity
17	Personal skills							17	Critical thinking skills
20	Make things happen							17	Foreign languages*
20	Professional ethics							17	Leadership skills
20	Stress tolerance							17	Make things happen
20	Work motivation							17	Planning
								17	Self development
								17	Stress tolerance

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