Uwizeyemungu, S. et Bertrand, J. (2025). Job Market Competency Requirements for Accounting Professionals: A Comparative Analysis of Online Job Ads from SMEs and Large Enterprises. Accounting Perspectives (Vol. 24, p. 343–391). doi: https://doi.org/10.1111/1911-3838.12396. CC BY 4.0

Job Market Competency Requirements for Accounting Professionals: A Comparative Analysis of Online Job Ads from SMEs and Large Enterprises*

SYLVESTRE UWIZEYEMUNGU, *Université du Québec à Trois-Rivières*†

JACQUES BERTRAND, *Université du Québec à Trois-Rivières*

ABSTRACT

Compared to large enterprises (LEs), small and medium-sized enterprises (SMEs) have unique characteristics that may affect their needs in several areas. Thus, the "one-size-fits-all" approach to meeting the needs of both groups of enterprises would be inappropriate in different circumstances. In this study, we examine the current competency requirements of the Canadian market for professional accounting jobs with the following research question in mind: To what extent do SMEs' requirements for professional accounting positions differ from those of large companies? The study draws on person-environment fit theory and job market signaling theory. It is based on a content analysis of 310 online job postings (of which 111, or 35.8%, are from SMEs) for accounting professionals or for positions requiring strong accounting knowledge. Our results show a complex picture made up of similarities and differences between SMEs and LEs' requirements when recruiting professionals in accounting-related positions. The study points to some paradoxes and contributes to the debate about the evolution of accounting education in relation to specific business needs. In particular, the study suggests that SMEs' competency requirements are not necessarily commensurate with the needs dictated by their specific context. From a practical point of view, the results of the study could be of interest to SME managers and organizations dedicated to SMEs' development; recruitment services; national accounting organizations, such as the Chartered Professional Accountants of Canada; and the academic and professional communities involved in the training of professional accountants.

Keywords: accounting competency, job advertisement, large enterprise, person-environment fit theory, signaling theory, SME

* Accepted by Philippe Lassou. The authors thank Philippe Lassou (associate editor) and two anonymous reviewers for their helpful comments.

† Corresponding author.

AP Vol. 24 No. 2 — *PC* vol. 24, n° 2 (2025) pages 343–391 © 2025 The Author(s).
Accounting Perspectives published by Wiley Periodicals LLC on behalf of the Canadian Academic Accounting Association.
doi:10.1111/1911-3838.12396

EXIGENCES DU MARCHÉ DE L'EMPLOI EN MATIÈRE DE COMPÉTENCES POUR LES PROFESSIONNELS DE LA COMPTABILITÉ : ANALYSE COMPARATIVE DES OFFRES D'EMPLOI EN LIGNE DES PME ET DES GRANDES ENTREPRISES

RÉSUMÉ

Par rapport aux grandes entreprises, les petites et moyennes entreprises (PME) ont des caractéristiques uniques qui peuvent affecter leurs besoins dans plusieurs domaines. Par conséquent, dans bien de situations, il serait mal avisé de vouloir répondre uniformément aux besoins des deux groupes d'entreprises. Dans cette étude, nous examinons les exigences actuelles du marché canadien en matière de compétences pour les postes de professionnels comptables en gardant à l'esprit la question de recherche suivante : dans quelle mesure les exigences des PME en matière de postes de professionnels comptables diffèrent-elles de celles des grandes entreprises? L'étude s'appuie sur la théorie de l'adéquation personne-environnement et sur la théorie des signaux du marché de l'emploi. Elle repose sur une analyse de contenu de 310 offres d'emploi en ligne (dont 111 – 35.8 % proviennent de PME) pour des professionnels de la comptabilité ou des postes nécessitant de solides connaissances comptables. Nos résultats montrent une image complexe faite de similitudes et de différences entre les exigences des PME et des grandes entreprises lorsqu'elles recrutent des professionnels pour des postes liés à la comptabilité. L'étude met en évidence certains paradoxes et contribue au débat sur l'évolution de l'enseignement de la comptabilité par rapport aux besoins spécifiques des entreprises. En particulier, l'étude suggère que les exigences des PME en matière de compétences ne correspondent pas nécessairement aux besoins dictés par leur contexte spécifique. D'un point de vue pratique, les résultats de l'étude pourraient intéresser les dirigeants de PME et les organisations dédiées au développement des PME, les services de recrutement, les organisations comptables nationales telles que l'Ordre des comptables professionnels agréés du Canada, ainsi que les communautés académiques et professionnelles impliquées dans la formation des comptables professionnels.

Mots-clés : compétences comptables, grande entreprise, offres d'emploi, PME, théorie de l'adéquation personne-environnement, théorie des signaux de l'emploi

1. INTRODUCTION

The environmental context in which enterprises operate evolves, and sometimes the changes involved can be profound. One of the roles of managers is to ensure that their companies keep pace with these changes to survive and remain competitive. To do so, they need to ensure that the skills required of their employees meet the current and future needs of their organizations. Although the changing environment applies to small and medium-sized enterprises (SMEs) as well as to large enterprises (LEs), prior studies tend to demonstrate that both categories of enterprises may differently perceive, be affected by, or adapt themselves to the same changes. In other words, "size matters" in many aspects, due essentially to size-related discrepancies in objectives, resource constraints (Laukkanen et al., 2007), and organizational culture (Gray et al., 2003). In this study, we investigate potential differences between SMEs and LEs with regard to current competency requirements for accounting-related jobs. In accordance with the person-job fit

perspective, part of person-environment (P-E) fit theory (Jansen & Kristof-Brown, 2006; van Vianen, 2018), we assume that SMEs and LEs may seek different competency profiles for their jobs. Understanding these differences and their implications may help different stakeholders avoid the "one-size-fits-all" approach when addressing the competency needs of organizations with regard to professional accounting services. Thus, the guiding research question is as follows: To what extent do SMEs' requirements for professional accounting positions differ from those of large companies? The emphasis on the distinction between SMEs and large companies is a continuation of the "big GAAP/little GAAP debate" (Christie & Brozovsky, 2010; Morris & Campbell, 2006). Indeed, based on discussions of the subject in the scientific literature, the debate seems to have been put on hold with no satisfying conclusion having been reached (Wright et al., 2012). Our results will contribute to this debate by providing the empirical basis for comparisons of the accounting competencies required according to company size. This is also in line with calls to consider the differences between SMEs and large companies in terms of the competency requirements for accounting professionals (Schutte & Lovecchio, 2017; Subačienė et al., 2022). In the same vein, Armitage et al. (2016) have argued that "there is value in research specifically focused on the use of management accounting techniques by SMEs," particularly "given their distinctiveness relative to large firms" (p. 33).

Although this study builds on previous research, it does address some of the limitations of the latter. Prior research has shown that competencies required of accounting professionals are multifaceted and have been evolving, reflecting the dynamic nature of the economic and technological environment (Kroon et al., 2021; Melnyk et al., 2020). While traditional technical competencies remain crucial, there has been a growing emphasis on interpersonal and digital skills (Dolce et al., 2019; Subačienė et al., 2022; Weli & Marsudi, 2022). Despite this evolution, research continues to point to a persistent gap between the competencies developed through the training offered to accountants and the specific expectations of the labor market (Elbarrad & Belassi, 2023; Gupta & Marshall, 2010; Kroon & Alves, 2023). In particular, it appears that the relative level of importance of competencies does not translate into an equivalent level of proficiency of professional accountants (Budding et al., 2022). The persistence of these gaps shows that research has so far failed to suggest effective ways of bridging them. This failure seems to be the result of at least two research limitations. First, the research often lacks theoretical and empirical rigor or validation (Dyckman & Zeff, 2014; Kroon & Alves, 2023; Weigel & Hiebl, 2023; Wolcott & Sargent, 2021) and fails to provide actionable insights for curriculum development, thereby limiting its practical applicability in addressing the competency gaps in the accounting profession. Lastly, the research often fails to account for the diverse perspectives of various stakeholders, including employers, professional organizations, and the accountants themselves, leading to a fragmented understanding of competency requirements (Elbarrad & Belassi, 2023; Parvaiz et al., 2017). Considering the limitations of previous research, the present study is built on solid theoretical foundations and adopts a rigorous empirical approach. In addition, it considers different perspectives, notably by comparing employers' needs with the academic training sanctioned by the professional order of accountants.

Based on job market signaling theory (Spence, 1973) and following prior research (Dunbar et al., 2016; Gardiner et al., 2018), we assume that whenever enterprises' managers announce their job openings, they are giving relatively clear signals about their current and future needs. In accordance with this assumption, we collected and analyzed data from 310 online job advertisements (job ads) for accounting professional positions or for jobs requiring strong accounting content knowledge (such as CFO or controller). In the data collection process, we targeted job ads originating in Canada, whether published in English, French, or both languages. Through a content analysis of job ads, we highlight prominent accounting-related competencies that Canadian SMEs and LEs currently require from their prospective employees. We also highlight competencies that, although listed by Chartered Professional Accountants of Canada (CPA Canada), are absent or almost absent from the market requirements. After the content analysis, we proceed with a cluster analysis that allows us to uncover patterns in organizations' competency requirements.

The results show a complex picture of similarities and differences between SMEs and LEs' requirements when recruiting professionals in accounting-related positions. They highlight some paradoxes that should draw the attention of different stakeholders. For instance, when compared to LEs, SMEs recruit accounting professionals for higher-level positions, without requiring more work experience or a professional accreditation, requirements that would normally be justified by the responsibilities at that level. That level would also justify more requirements of enabling competencies by SMEs, but the results show no significant differences between SMEs and LEs in this regard. Overall, it seems that the requirements of SMEs do not necessarily reflect their specific needs. In addition, highlighting the competencies more or less required by LEs and SMEs provides a contribution to the debate on the practical choices regarding the relevance and the modalities of training on these competencies.

The remainder of this paper is organized as follows. Section 2 deals with the theoretical foundations of the study—in particular, the formulation of the research hypotheses. Section 3 deals with the methodological aspects, detailing the data collection and coding processes as well as the data analysis. We devote Sections 4 and 5, respectively, to the presentation and discussion of the results. In particular, we discuss the theoretical and practical contributions of the study in Section 5. Finally, we devote Section 6 to the concluding remarks.

2. THEORETICAL AND EMPIRICAL BACKGROUND

We begin by discussing the concepts of competency and competence before elaborating on the competency-based training approaches in the accounting profession. Then, we discuss to what extent SMEs present specific accounting competency requirements. After that, we present the theoretical perspectives adopted in this study before formulating the research hypotheses.

Competency or Competence?

As illustrated by prior studies over at least the last three decades (Delamare Le Deist & Winterton, 2005; Eraut, 1998; Norris, 1991; Teodorescu, 2006), the complexity of the concept of "competency" has contributed to confusion in its use in the context of

education and training in different professions. In particular, the use of the concept in its two variations (competency and competence) has been inconsistent (Delamare Le Deist & Winterton, 2005). In spite of the confusion and the inconsistency that shroud these concepts, we can infer from their discussions in the above-mentioned studies that competency refers to a set of generic or general characteristics, behaviors, attributes, or skills that are the hallmarks of successful individuals in different situations and for a reasonably long period of time, while competence is more context-specific and task-oriented. More specifically, competence refers to the "ability to perform the tasks and roles required to the expected standard" (Eraut, 1998, p. 129). Teodorescu (2006) argues that the focus of competence models is "the definition of measurable, specific, and objective milestones describing what people have to *accomplish* to consistently achieve or exceed the goals for their role, team, division, and whole organization" (p. 28).

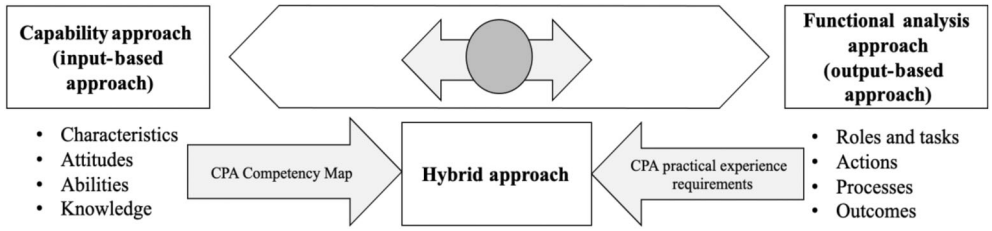
It also appears that competencies are necessary inputs for competence. Indeed, certain knowledge, behavior, and attributes prepare one to successfully accomplish the required tasks. Thus, competency-based training focuses "on the definition and achievement of 'competencies' which, when aggregated, [are] assumed to constitute competence in one particular kind of job" (Eraut, 1998, p. 131). However, one can analyze the relation in both directions, meaning that through the repeated accomplishment of a given task (competence), people end up developing or improving specific knowledge, behavior, and attributes (competency). This close link adds to the confusion one finds in the literature and practice related to competency-based training in many fields.

Competency-Based Training Approaches in Accounting

One may establish a parallel between competency/competence conceptions on the one hand and two main competency-based training approaches on the other. These approaches are the functional analysis approach (also called output-based approach) and the capability approach (also known as the input-based approach) (Uwizeyemungu et al., 2020). The output-based approach, which relies on the expected performance outcomes of job tasks based on the definition of requirements of such tasks, is more aligned with the concept of competence. As for the concept of competency, it is more aligned with the input-based approach, which relies on characteristics, attitudes, skills, or knowledge possessed by individuals that will have to perform a task or a set of tasks pertaining to a job role.

Conceptually speaking, these approaches, each in their pure form, reflect two opposite positions that we can place on the extreme ends of a continuum, as illustrated in Figure 1: at the first end, a pure input-based approach would be theoretical, emphasizing the acquisition of cognitive processes for a given task; on the other end, a pure output-based approach would be practical, emphasizing well-described, observable actions, and measurable outcomes of the task. However, the pure forms of both approaches are rather rhetoric, considering that, in reality, theory informs practice, and vice versa, in the sense that practice or experience may help to refine theory. It is undoubtedly with this in mind that Bassellier et al. (2003), studying the information technology (IT) competencies required of non-IT professionals, defined a competence as a duality of knowledge and experience. Thus, the paradigm shift advocated for in business education for the adoption

FIGURE 1 Competency-based training approaches in accounting



of a competence-based approach (Bratianu et al., 2020) is more about moving the needle toward the functional analysis (output-based) approach rather than scratching altogether the capability (input-based) approach. The question that remains, however, is to determine to what extent the needle (illustrated by the circle in Figure 1) should be moved.

The accounting profession in North America initiated the move toward a competency-based approach in 1989, in reaction to a report by the Big 8 CPA firms in the United States (Palmer et al., 2004). Nowadays, it appears that the CPA certification body has adopted a hybrid approach (see Figure 1), thus acknowledging the dual nature of the accounting profession that requires accounting professionals demonstrate a mix of knowledge and practical experience. The CPA Competency Map (CPA Canada, 2020) details specific competencies CPA candidates must develop "during the CPA certification program, including both the professional education program component and the practical experience component" (p. 2). CPA Canada (2021) complemented the Competency Map with an ad hoc document, *CPA Practical Experience Requirements*, focusing on the practical experience requirements. In line with these documents, new versions have been proposed (CPA Canada, 2022a, 2022b, 2023a, 2023b), including Competency Map 2.0 (CPA Canada, 2022c).

CPA Canada's competency frameworks do not specifically elaborate on potential differences between SMEs and LEs. But, as explained in the introduction, there are reasons to think that the specificities of SMEs may affect their accounting competency needs to some extent.

Accounting Competency Requirements for SMEs

For a long time, management science literature has denounced the practice of not differentiating between different sizes of organizations and of considering by default an SME as no more than a reduced form of a large company (Hadjimanolis, 2000; Torrès & Julien, 2005). Torrès and Julien (2005) emphasize the specific nature of SMEs, which, according to the literature, is based on at least six characteristics. First, SMEs generally operate with fewer resources. Second, their strategies and processes are often more intuitive and less formalized. Third, they are characterized by the centralization of management around the owner-manager. A fourth characteristic is the low level of specialization and functional differentiation in terms of management, employees, and equipment. A fifth characteristic concerns the generally informal and poorly organized information system of SMEs. Finally, SMEs are generally characterized by a greater proximity at different

levels, allowing direct contact between hierarchical levels and more informal, friendly working relationships.

In this study, we simply define SMEs as firms with fewer than 250 full-time employees, which is the threshold proposed by the OECD (2005), of which Canada is a member. We have adopted this threshold rather than the one of 500 full-time employees sometimes used in Canada (Innovation Science and Economic Development Canada, 2019), based on the observation that, as they grow, companies tend to adopt "denaturing" practices that distance them from the specificities of small businesses and make them more like large corporations (Torrès & Julien, 2005).

SMEs are an important component of the economic fabric of countries throughout the world. In Canada, for instance, firms with fewer than 100 employees make up 97.9% of all enterprises and account for 69.8% of the private workforce (Innovation Science and Economic Development Canada, 2019). Consequently, no professional body whose members are called upon to serve businesses can ignore SMEs. This is particularly true for the accounting profession as a significant amount of accounting professional activities is directed toward SMEs. Banham and He's (2014) study suggests that SMEs generate "about 71% of the total business in public practicing accounting firms" (p. 211). It is thus surprising to notice that little is actually known about accounting at the SME level (Armitage et al., 2016; Pan & Lee, 2020; Tudor & Muţiu, 2008). However, it is generally assumed that SMEs, due to their specificities when compared to LEs, may have different requirements with regard to accounting services. This acknowledgment has led to calls for the adaptation of GAAP to the reality of SMEs. The debate around this matter, called the "big GAAP/little GAAP debate," has been going on for many years (Burton & Hillison, 1979; Lippitt & Oliver, 1983; Morris & Campbell, 2006) and seems to have reached a crisis point, prompting some to wonder if it will ever end (Wright et al., 2012). In July 2009, following and in the midst of this debate, the IASB issued the *IFRS for Small and Medium-Sized Entities (IFRS for SMEs*; IFRS, 2009). In spite of its title, which suggests that the standard's applicability is limited to SMEs, its definition indicates that the *IFRS for SMEs* applies to all nonpublicly accountable entities, regardless of their size (Warren et al., 2020). Warren et al. (2020) suggest that the "perversity" of the title and the "contradictions" between the title and the scope of the standard were "the outcome of a complex political process of negotiation and compromise" (p. 125). In June 2013, acknowledging this confusion, the IASB issued a guide to help micro-sized entities apply the *IFRS for SMEs* (IFRS, 2013). However, all these developments did not put an end to the debate on the relevance of the "little GAAP." We are still far from reaching unanimity on this matter, and despite the remarkable promotional efforts of various institutions, many professional accountants still have doubts about the merits of the *IFRS for SMEs* (Ghio & Verona, 2018). There is at least one case reported in which the proposal to enforce the standard was deemed controversial, which led the standard setter to step back and work on addressing the "anomalies" in the standard (Arafat et al., 2020).

The application of the *IFRS for SMEs* to all nonpublicly accountable entities, regardless of their size, makes it comparable to the Accounting Standards for Private Enterprises (ASPE), released in Canada in 2009 (Durocher & Fortin, 2014). In both cases, even if company size is not the primary criterion for the application of these standards,

we have to recognize that SMEs are predominantly private companies and as such will be the main users of these standards.

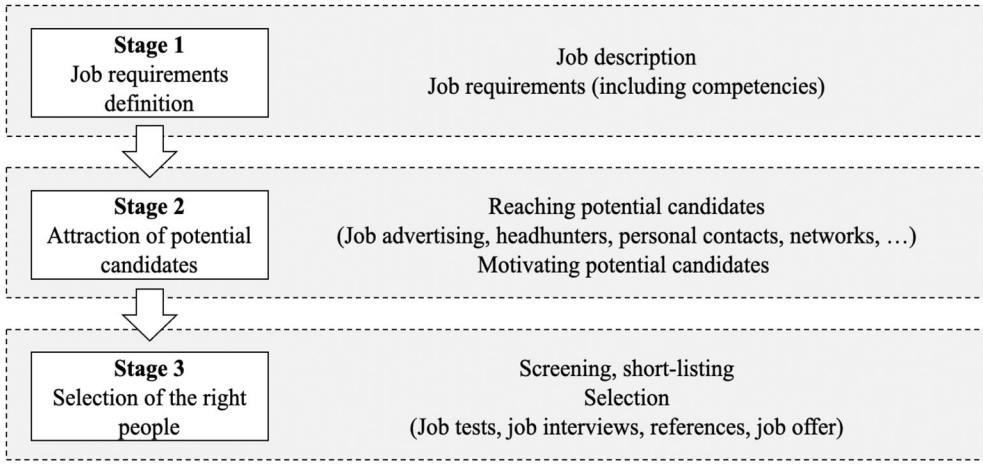
Despite the lack of unanimity and the controversies raised here and there, the *IFRS for SMEs* has progressed. The count from IFRS (2023) shows that as of July 2024, out of 168 jurisdictions listed, the standard was required or permitted by 86 jurisdictions (51.19%) and under consideration in 12 (7.14%), for a total of 98 (58.33%).

Theoretical Perspectives

The present study relies on job ads to identify the job market requirements, particularly in terms of competencies. However, job advertisement is only a portion of the hiring process. This process is one of the activities that has a significant impact on a company's success. Effective recruitment involves finding and hiring the best candidates to achieve the organization's strategic objectives (John, 2019). As summarized in Figure 2, the hiring process can be broken down into three broad stages: the job requirements definition stage, the attraction stage, and the selection stage (Ganesan et al., 2018; Hamilton & Davison, 2018; Hippolyte & Haruna, 2017; Stoilkovska et al., 2015). Within the second stage, one of the most common recruiting strategies used to attract the right candidates is job advertisement. To reach and attract potential candidates, job advertisement may use different channels, such as newspapers, Internet, formal or informal networks, television, and radio. Generally, when combining multiple channels, a job ad designer will try to use the same information, no matter the ad vehicle, to ensure consistency and equal employment opportunities (Stoilkovska et al., 2015). In this study, we have chosen online job ads as they are the recruiters' favorite tool and the most common approach used to reach job seekers (Ganesan et al., 2018).

As shown by a study by Mahjoub and Kruyen (2021), most ad-related studies are atheoretical. Only a few of them (11.5%) have explicitly applied one or more theoretical

FIGURE 2 Broad stages of the hiring process (adapted from Hippolyte & Haruna, 2017)



perspectives. In the few studies that applied theories, Mahjoub and Kruyen (2021) identified eight theories, among which the most used were P-E fit theory (36%), signaling theory (21%), and congruity theory (14%), for a total of 71% of the studies. We based the rationale of this study on the premises of both P-E fit theory and signaling theory, and we did not consider congruity theory, whose focus is on-the-job ads reception, and would thus require inputs from job seekers.

P-E fit theory (Jansen & Kristof-Brown, 2006; van Vianen, 2018) explains the attraction of a job seeker toward a particular organization by the level of compatibility between that individual and the work environment offered by the organization. Studies that use P-E fit theory as their theoretical perspective intend "to explain why some applicants or employees feel more inclined to pursue a job with a certain employer, intend to quit the organization, or are more committed" (Verwaeren et al., 2017, p. 2814). In a broader perspective, the P-E fit covers several subareas, such as person-organization fit, person-job fit, person-vocation fit, person-group fit, person-supervisor fit, and person-reward fit (Kristof-Brown et al., 2005; Verwaeren et al., 2017). The match between people's knowledge, skills, and abilities, on the one hand, and the requirements of the job, on the other hand, pertains to the person-job fit subarea, and it would be the most aligned with the present study.

Signaling theory explains, in particular, the behavior of two parties in communication while being in a situation of information asymmetry. In the absence of direct and complete information, each party tries to read between the lines to find cues (signals) that would allow them to complement the information it already has on the other party. Knowing this, any party may intentionally spread some cues to convey the desired message. The domain of the labor market is well suited to signaling theory and has provided the context of the initial development of that theory (Spence, 1973). There are previous studies that have used signaling theory to analyze job ads (Ganesan et al., 2018; Moore & Khan, 2020).

In accordance with P-E fit theory, we assume that companies recruiting accounting professionals express their requirements for candidates in terms of expected experience and competencies by taking into account their organizational context as well as the characteristics of the open job in that context. Also, based on signaling theory, we assume that job ads for accounting professionals contain plain or decipherable signals conveyed by the job market toward prospective employees in accounting positions, and we assume that those signals may be meaningful for accounting bodies and accounting educators. The focus is as much on single competencies signaled in job ads as competency sets that would result in accounting job profiles.

Research Hypotheses

Prior studies suggest that due to the scarcity of studies that have specifically focused on accounting in SMEs, little is known about the evolution of SMEs' accounting function (Pan & Lee, 2020; Tudor & Muţiu, 2008). However, based on a combination of (1) the results of the few existing studies, (2) the known specificities of SMEs, and (3) the accounting profession characteristics, we formulate hypotheses with regard to what one may expect

from SMEs' versus LEs' accounting job requirements. We begin with hypothesizing about the job position characteristics before elaborating on the nature of required competencies.

Job Position Characteristics

Generally, a simpler organizational structure is an important characteristic that distinguishes SMEs from LEs (Lavia López & Hiebl, 2015). An organizational structure is "a set of positions and parts of organizations that develop systematic and relatively long-lasting relationships"; it has been "understood more specifically in terms of the division and coordination of the job" (Marín-Idárraga & Hurtado González, 2021, p. 910).

Because of the simplicity of their organizational structure, SMEs are more likely to offer newly recruited professionals positions high up in the organizational hierarchy, involving them in decision-making, with a broader range of responsibilities (Moy & Lee, 2002). In their systematic review of research dealing with accountants in SMEs, Weigel and Hiebl (2023) conclude that accountants in SMEs often need to fulfill multiple roles, including providing reporting services, acting as advisors, and serving as intermediaries between capital providers and the business, which necessitates a broad skill set encompassing financial reporting, advisory capabilities, and strong interpersonal skills. They also highlight the fact that, compared with large firms, accountants in SMEs are very important human resources whose individual impact is more significant. We thus surmise that, in accordance with P-E fit theory (Jansen & Kristof-Brown, 2006; van Vianen, 2018), SMEs recruiting accounting professionals will be looking to fulfill higher-level positions. In accordance with signaling theory, SMEs will have to find ways to signal this job level (and the responsibilities that come with it) through their job ads. Such signals are usually reflected in the job titles offered as well as in the position of the immediate supervisor (Poba-Nzaou et al., 2020; Uwizeyemungu et al., 2020). In view of the above developments, we can expect the titles indicated in open positions for professional accountants, as well as the titles of immediate supervisors, to signal a higher level in the organizational hierarchy in SMEs than they would in LEs. Hence, we formulate the following research hypothesis:

HYPOTHESIS 1 (H1). *Job announcements for positions open for accounting professionals are more likely to signal a hierarchically higher level in SMEs than in large firms.*

When recruiting, it is common for organizations to require a certain level of experience that would help the newly recruited employees to be effective immediately or at least in the very short term. This is particularly true for employers recruiting accounting professionals, who, in addition to expecting basic accounting and strong analytical skills from their prospective employees, require business awareness or "real-life" experience (Kavanagh & Drennan, 2008). This last study showed that skills related to business awareness/real-life experience were highly valued by employers, especially since they are quite rare among candidates. Firms also value prior work experience as it helps candidates develop generic skills such as interpersonal capabilities, communication, and leadership (Courtis & Zaid, 2002; Jackling & De Lange, 2009). Thus, one could argue that

work experience in general, and especially when it is specific to an accounting context, is a major factor for accounting graduates' employability (Low et al., 2016).

Organizations will likely require more experience for senior positions than for junior ones. We assume that SMEs will need their newly recruited accounting professionals to have accumulated some work experience given that, as already mentioned, they will likely end up in decision-making positions and will have to take on a wide range of responsibilities (Moy & Lee, 2002; Weigel & Hiebl, 2023). As for LEs, the need for experience from their newly recruited employees is less acute or urgent: usually, unlike SMEs, large companies have well-established finance and accounting departments (Schutte, 2013; Schutte & Lovechio, 2014); it is thus more likely that LEs will already have at their disposal a large pool of experienced employees in their accounting departments and can, therefore, afford to hire junior employees whose lack of, or limited, experience would be compensated for by that of existing employees. Moreover, it is more likely that the newly recruited candidate in an LE will have to assume a narrowly defined activity requiring specific technical expertise (Hayes et al., 2018) and less work experience. In addition, it has been shown that the larger an accounting firm is, the more it has proactive learning mechanisms and financial means to update its employees' competencies (Hayes et al., 2018; Malo et al., 2024). The point here is that, to a greater extent than SMEs, large companies can afford to hire the least experienced employees. In other words, and with reference to P-E fit theory (Jansen & Kristof-Brown, 2006; van Vianen, 2018), the environment of large companies makes it easier for them to integrate less experienced people into their accounting departments.

Regarding the requirements of an accounting professional accreditation or any other professional accreditation, we can apply the same reasoning we applied to the work experience. In an earlier phase of this study (Uwizeyemungu et al., 2020), we noted that organizations expecting a wide range of competencies from their candidates were more likely to require an accounting professional accreditation. We concluded that an accounting professional accreditation somehow serves as a signal of the extent of competencies a candidate has developed. Therefore, as SMEs need accounting professionals with more versatile competencies (Hayes et al., 2018; Weigel & Hiebl, 2023), they would be more inclined to rely on an accreditation as a signal of that versatility. For LEs, we can expect that they will already have a large pool of employees in place in their generally well-established and well-staffed financial departments (Schutte & Lovechio, 2014), some of whom have an accounting accreditation. The considerations above allow the formulation of the following research hypothesis:

HYPOTHESIS 2 (H2). *Compared to jobs for accounting professionals open in LEs, job openings in SMEs are more likely to require more work experience and an accounting professional accreditation from prospective candidates*.

Job Competency Requirements

Prior studies have underlined the link between firm size and the degree of job specialization (Oesterreich & Teuteberg, 2019): the larger the firm, the greater the degree of job

specialization. Thus, an important characteristic that will likely be common in most SMEs is the low level of specialization in their jobs, which means that in many positions, there will be more generalists performing a variety of tasks (Yew Wong & Aspinwall, 2004). This means that newly recruited accountants in SMEs will have to assume a broader range of responsibilities, requiring a certain level of versatility in competencies for one recruit (Hayes et al., 2018; Weigel & Hiebl, 2023). By comparison, LEs will likely have well-defined positions with limited sets of competency requirements. Following the logic of P-E fit theory (Jansen & Kristof-Brown, 2006; van Vianen, 2018), the internal environment of SMEs would force them to look for candidates with broad competencies; otherwise, these candidates would find it difficult to meet the versatile needs of SMEs. With reference to signaling theory, the number and diversity of competencies required in a job announcement can be seen as signals of the scope of responsibilities associated with the open position. The developments above allow us to formulate the following hypothesis:

HYPOTHESIS 3 (H3). *Compared to LEs, SMEs are more likely to require more competencies for one accounting job announced.*

H3 refers to competencies in general, regardless of their type, and can be refined as the needs of SMEs and LEs with regard to the type of competencies required from their newly recruited accounting professionals, which may also vary. The CPA Canada competency framework (CPA Canada, 2020, 2022a) distinguishes two types of competencies: enabling competencies and technical competencies. The framework breaks down enabling competencies into seven areas and technical competencies into six areas (Table 1).

Enabling competencies, also referred to as pervasive, soft, behavioral, generic, or transversal skills (Barišić et al., 2021), are a set of overarching skills or meta-competencies which individuals require when utilizing other competencies (Morpurgo & Azevedo, 2021). These other competencies are technical competencies, which are task-specific, nonpersonal skills, referred to as hard skills. They are specific to an area of professional expertise or qualification.

The CPA framework acknowledges the importance of IT competencies but does not dedicate a separate category to them, considering that they are spread across the other six categories of technical competencies (CPA Canada, 2020, p. 137). While the rationale behind this decision is understandable, it results in IT competencies being overshadowed by the other technical competencies they are supposed to enable. Given their pervasive nature and their growing importance in professional jobs, and particularly the growing demand for accounting professionals to develop advanced IT competencies (Pan & Seow, 2016), we decided to treat them separately as a third type of competencies alongside the enabling and technical competencies.

Considering that, on the one hand, that accounting professionals recruited in SMEs will have to take on higher responsibilities upon their first day on the job, and on the other hand, that the importance of enabling competencies increases as one moves from lower to higher levels of job positions (Margheim et al., 2010; Uwizeyemungu

TABLE 1
Enabling and technical competency areas

Enabling competencies	Technical competencies
1. Acting ethically and demonstrating professional values	1. Financial reporting
2. Leading	2. Strategy and governance
3. Collaborating	3. Management accounting
4. Managing self	4. Audit and assurance
5. Adding value	5. Finance
6. Solving problems and making decisions	6. Taxation
7. Communicating	

Source: CPA Canada (2020, p. 8; 2022a, p. 2).

et al., 2020), we can assume that SMEs will be prone to expect their candidates to possess a good number of enabling skills.

The picture with technical competencies seems less clear. On the one hand, as the importance of technical skills decreases as one moves toward higher-level jobs, one can assume that SMEs whose newly recruited professionals will likely end up in top jobs (Moy & Lee, 2002) might be less inclined to require technical competencies. Moreover, given the more general nature of their jobs, SMEs will be less likely to seek out highly specialized accounting technical competencies. On the other hand, an accounting professional in an SME will be responsible for most of the accounting operations, a role that requires extensive technical skills. In an LE, a professional entering the workforce in an accounting position will likely be responsible for a narrowly defined area instead of the whole process and will simply need a set of limited (or specialized) technical competencies. The need to require both technical and enabling competencies from candidates has been empirically established for small to medium-sized accounting firms (Hayes et al., 2018). We thus assume that, in accordance with P-E fit theory (Jansen & Kristof-Brown, 2006; van Vianen, 2018), SMEs will value both technical and enabling competencies more than LEs. Hence, we formulate the following research hypotheses:

HYPOTHESIS 3a (H3a). *Job offers from SMEs will have more requirements for enabling competencies than those from LEs.*

HYPOTHESIS 3b (H3b). *Job offers from SMEs will have more requirements for technical competencies than those from LEs.*

As for IT competencies, the need for such competencies can be assumed to be commensurate with the extent of IT use in enterprises. Prior studies on IT adoption have consistently shown that adoption rates are higher in LEs than in SMEs, a phenomenon known as the digital divide between SMEs and LEs (Arendt, 2008; Bach et al., 2013). We thus propose that LEs will, more than SMEs, tend to require IT competencies from their candidates. Hence, we formulate the following research hypothesis:

HYPOTHESIS 3c (H3c). *Job offers from LEs will have more requirements for IT competencies than those from SMEs.*

3. METHOD

Data Source

For this study, we rely on secondary data in the form of online job ads posted on various job websites. As previously demonstrated and in line with job market signaling theory, online job ads constitute a reliable source of data in different research areas (Almgerbi et al., 2022; Kennan et al., 2006; Mahjoub & Kruyen, 2021; Poba-Nzaou et al., 2020). We rely solely on online job ads, which in the current digital age dominate the job market. Emerging around 1992, online job ads quickly spread across the World Wide Web, due notably to their numerous advantages when compared to offline job ads (Romanko & O'Mahony, 2022). They are more customizable and therefore more relevant, as they ensure a wider coverage while being more cost-efficient. Estimates are that online postings represent 60%–70% of all vacant positions, and 80%–90% for positions in which at least a bachelor's degree is a requirement (Carnevale et al., 2014), as is the case for professional accountants in Canada.

We collected job ads for accounting professionals in Canada over the period 2016–2020. After the removal of duplicates, we found a total of 310 job ads that met all the inclusion criteria. The first inclusion criterion was that the open position had to be either an accounting position or a position specifically requiring accounting skills. The second inclusion criterion was that the prospective employer had to be a Canadian organization. These criteria allow for the comparison of organizations that are under the same legal system and that refer to the same competency framework for the accounting profession. As a third inclusion criterion, the clear identification of the recruiting organization in the job ad allowed for the collection of data on prospective employers (size and sector of activity).

Job ads collected came from general job websites, as follows: Indeed (152 ads, 49.0%); Workopolis (73, 23.6%); Jobillico (40, 12.9%); Jobboom (30, 9.7%); Neuvoo (13, 4.2%); and other sources (2, 0.6%). One may combine Indeed and Workopolis statistics given that the first acquired the second in 2018 (Cheesman, 2018). This raises the representation of Indeed to 225 ads (72.6%). These statistics reflect the predominance of Indeed in the market of online job search engines in Canada (Dilmaghani, 2019). We completed the data gathered from job websites by consulting the official websites of recruiting organizations. This was necessary whenever the details provided in the ads were insufficient to portray the prospective recruiter, notably in terms of size (number of employees) and sector of activity.

Data Collection

We asked two research assistants to browse online job sites looking for job ads that met the inclusion criteria. The research assistants first identified the sites where online job ads were posted in Canada and then searched for ads using the following keywords:

accountant/accounting, finance/financial, audit/auditor, control/controller, tax/taxation. The first research assistant covered the period 2016–2017, and the second covered 2018–2020. Each research assistant collected the data in two phases. The first phase corresponded to the general data collection from online job sites and, whenever necessary, from recruiting organizations' websites. The second phase consisted of extracting competency requirements from each job ad and classifying them into different competency categories according to the coding scheme (presented in the next section). Whenever the research assistants identified a job ad that met all the criteria, they recorded it entirely in a PDF file and gave it an identification number. They then gathered relevant information from each job ad and entered it in a prepared Excel spreadsheet. The spreadsheet was prepared so that it could be used to collect relevant information for the two phases of data collection. This information includes general data on the job ad (website, date published, expected start date for the job, language); information on the recruiting organization (name, location of headquarters, size [number of employees], main activity sector, type of clientele); information about the advertised position (title, direct supervisor); and information about general requirements (qualification [training, experience, knowledge of the sector], professional accreditation); and competency requirements. The file thus formed assembled the raw data for the subsequent steps of data coding and analysis.

Coding Process

For general information regarding the job ad, the recruiting organization, and general requirements, we relied on an inductive coding process. This means that for each type of information, we elaborated a series of codes following a scoping review of the content of data collected. For the most part, this information was factual (e.g., number of employees, job websites), and the coding was meant to facilitate statistical analyses. For example, codes 1, 2, 3, and 4 represented, respectively, organizations with fewer than 100 employees; with 100 or more employees but fewer than 250; with 250 or more but fewer than 500; and organizations with 500 or more employees.

For the competency requirements, we mixed deductive and inductive approaches of coding. For the deductive approach, we elaborated a competency framework based mostly on CPA Canada's competency framework, using the 2020 version (CPA Canada, 2020),[1] the most recent available during the study.

1. The 2020 version of the competency framework came on the heels of the 2019 version, the second (after the 2013 initial version) published under the banner of CPA Canada, the professional body of accountants created by the 2013 merger of three professional bodies (Chartered Accountants, Certified Management Accountants, and Certified General Accountants). Background information about the former professional designations and the process leading to their merger, respectively, can be found in Boulianne and Keddie (2018) and in Pimentel and Boulianne (2022). Regarding competency frameworks, it is worth mentioning here that new versions have been proposed since 2019 (CPA Canada, 2022a, 2022b, 2023a, 2023b). In addition to the standardization of competencies, the most significant change in the versions of the competency maps since 2019 is the emphasis on IT competencies (data analytics and information systems). The acknowledgment of the profound impact of IT is particularly evident in the preparatory documents for Competency Map 2.0 (CPA Canada, 2022c).

To elaborate the initial coding scheme, we made a number of practical decisions. The first decision was to consider a third type of competencies, namely the IT competencies. We have already explained the rationale behind this decision. For this added type of competencies, we elaborated a coding scheme based on Bassellier et al.'s (2003) IT competency for business managers. We adapted the framework to take into account two main factors. First, considering the IT developments since the publication of the framework, we slightly adapted it to include competencies that arose along with enterprise-integrated software packages, Internet-based systems and cybersecurity concerns, data analytics, and knowledge-based systems. Second, as this study targets specifically accounting professionals, competencies related to functional software particularly applied in finance/accounting were included in the framework. We ended up with a well-developed coding scheme for IT competencies that can be found in a previous study (Uwizeyemungu et al., 2020). However, in this study, we have adopted a condensed version of this coding scheme, using the six broad categories of IT competencies of the scheme.

The second practical decision was with regard to the depth of our coding scheme. As the CPA framework progressively subdivides competencies into sub-competencies that are themselves subdivided into more detailed competencies, for the sake of parsimony we decided to limit ourselves to the second level of subdivision in each category of competencies. We present in Appendix 1 the competency coding scheme with which we started the coding process. In total, the coding scheme comprises 66 competencies distributed as follows: 27 enabling competencies (grouped into 7 subcategories), 33 technical competencies (grouped into 6 subcategories), and 6 subcategories of IT competencies.

We prepared an Excel spreadsheet detailing competencies as found in the coding scheme, and we reserved additional columns for potential competencies not already listed. With this last precaution, we wanted to make sure to account for any new competency required by prospective employers but not already listed in the CPA framework. This is in accordance with an inductive coding approach.

For the coding, we asked one of the two research assistants to code all the data based on the coding scheme. More precisely, for competency requirements, the research assistant read every competency requirement listed in a job ad and compared it to the list of competencies in the coding scheme. The assistant used a binary coding system: code one for each matched competency in the scheme, and zero otherwise. If the assistant did not find a required competency in the initial coding scheme, the instruction was to add it to the scheme. In Appendix 2, we provide an example of a typical job ad and show how it has been coded.

To improve and verify the reliability of the coding process, we took the following precautions. First, before the coding process per se, we randomly selected 10 cases from the data, and the research assistant, along with the two authors, coded them separately. We then met to discuss the results of our coding in order to develop a common interpretation of the coding scheme. Second, during the coding process by the research assistant, the two authors were available to discuss any doubts that arose during the process. The main coder (research assistant) had instructions to note any case that seemed unclear for discussion with the whole research team. Third, when the coding process was over, in

order to assess to what extent the process was reliable, the two coauthors independently coded 80 randomly selected excerpts of required competencies from the raw data, and we cross-compared the results of the three coders (research assistant plus the two coauthors) for the same segments. These cross-comparisons produced the following Cohen's kappa inter-coder reliability coefficients: 0.77 between coders 1 and 2; 0.79 between coders 1 and 3; and 0.73 between coders 2 and 3. From these coefficients, we can conclude that there is substantial inter-coder agreement (Stemler, 2004).

Clustering Analysis

We used the results of the content analysis to perform a clustering analysis. With this analysis, the intention was to uncover potential patterns of competencies required by prospective employers. The cluster analysis would then allow us to find *n* groups (clusters) of job ads, constituted such that each group contains ads that are similar to each other (in terms of required competencies) while being substantially different from ads in other groups. For this end, we used numbers of required competencies in different competency subcategories as the clustering variables. For each subcategory of competencies, we counted the number of competencies each organization in the sample required in its job announcement, and we used this value as an indication of the importance of that subcategory for the recruiting employer.

Taking into account that the maximum number of competencies varies from one competency subcategory to another, we first had to standardize the data to avoid giving more weight to subcategories with a high number of competencies (Balijepally et al., 2011; Brusco et al., 2017). We also made sure that multicollinearity among the clustering variables was not an issue: the correlation matrix in Appendix 3 shows negligible correlations varying from a minimum of −0.22 to a maximum of 0.31.

One of the major difficulties in a clustering analysis consists of determining the optimal number of clusters (Mur et al., 2016; Sinaga & Yang, 2020), a decision that weighs heavily on the quality of clustering results. The literature regarding the issue abounds, and there are a multitude of indices proposed to help decide (Charrad et al., 2014). The problem, however, is that different indices sometimes suggest divergent solutions, which raises the question of which indices one should pick. Charrad et al. (2014) proposed considering multiple indices and to take as optimal the number of clusters on which the majority of the indices converge (majority rule). For this purpose, they developed an R package (NbClust) allowing consideration of up to 30 indices simultaneously and different options for the number of clusters, in a single function call.

In this study, we relied on the R package NbClust to determine the number of clusters based on the majority rule. We then combined two types of clustering algorithms. We applied the agglomerative hierarchical clustering algorithm with Ward's minimum variance and squared Euclidian distances as grouping criteria. This allowed the determination of the clusters' centroids. Next, we used the determined optimal number of clusters and the centroids produced by the hierarchical clustering algorithm as initial seeds for a nonhierarchical clustering algorithm (k-means algorithm).

We then proceeded with a discriminant function analysis to validate the cluster analysis results (Hair et al., 2010). Overall, the results of the discriminant function analysis show that 94.0% of LEs and 97.3% of SMEs were correctly classified in their respective clusters. We finally performed a Tamhane's T2 (post hoc) test to ascertain pair-wise differences between clusters' means.

Data Sample

Table 2 presents the main characteristics of the sample. The table combines characteristics of recruiting organizations as well as characteristics of the announced job positions. SMEs, namely those under 250 employees according to the OECD's definition, represent 35.8% of the sample, and LEs (at least 250 employees) represent 64.2%.

For the industrial sector, we considered the manufacturing/service distinction since manufacturing firms may have different predispositions and motivations than service firms with respect to adopting contemporary accounting innovations (Preda & Watts, 2004) and would thus need different sets of accounting competencies. In the sample, service firms represent 59.0% against 41.0% for manufacturing firms.

The advertised jobs in the sample are mainly about recruiting a financial analyst (64.2%), and to some extent, they are about filling the controller position (28.7%). The two positions alone account for 92.9% of the jobs advertised for accounting professionals. Only 61.6% of job ads in the sample explicitly mention the reporting level (supervisor) of the prospective employee. The majority of job announcements identify as direct supervisor the CFO (31.0% of all ads, and half [50.2%] of ads that provide the information) and the controller (14.5% of all ads, and 23.5% of ads that provide the information).

In terms of required experience from the candidates, an overwhelming majority of organizations (84.9%) in the sample require a minimum work experience of at least 3 years. Organizations that require a minimum work experience of at least 5 years represent 45.5% of the sample. As for the specific experience related to the activity sector of the recruiting organization, 42.9% of employers deem it either as a required condition (24.8%) or a valuable asset (22.6%). Seven out of 10 employers (70.7%) seeking to recruit an accounting professional consider an accounting professional accreditation as a required condition (48.1%) or an asset (22.6%). A tiny proportion of employers (5.2%) requires any other type of professional accreditation. Examples of required certifications other than CPA include Project Management and Assessment Certification, Project Management Professional, or Chartered Financial Analyst.

4. PRESENTATION OF RESULTS

Job Position Characteristics

In a preliminary analysis of the data, we begin by assessing whether SMEs and LEs in the sample differ significantly with regard to the characteristics of job positions they

TABLE 2
Characteristics of the sample ($N = 310$)

Recruiting organization's characteristics		%
Size (number of employees)	< 250	35.8
	250–499	11.3
	> 499	52.9
Sector	Services	59.0
	Manufacturing	41.0
Job position characteristics		**%**
Job title	CFO	1.6
	Controller	28.7
	Accountant	5.5
	Analyst	64.2
Reporting level	CEO	6.5
	CFO	31.0
	Controller	14.5
	Senior analyst/director	9.7
	Not mentioned	38.4
Minimum experience required	2 years or less	15.2
	3–4 years	39.4
	5 years or more	45.5
Sector experience	Required	24.8
	Asset	18.1
	Not required	57.1
Accounting professional accreditation	Required	48.1
	Asset	22.6
	Not required	29.4
Other professional accreditation required	No	94.8
	Yes	5.2

announce and with regard to the general requirements they expect from candidates in accounting-related jobs. Table 3 presents the results of this comparison.

Among the data set of 310 job ads collected, a large portion (199; 64.2%) came from LEs. The overrepresentation of LEs in the sample is even more noticeable if one considers that LEs make up a tiny portion of Canadian enterprises (Tam et al., 2022). The same statistics show that small enterprises employ a significant portion (68.3%) of the total Canadian labor force. However, one may argue that statistics from the sample might be biased due to possible differences between SMEs and LEs with regard to the use of online-based recruitment. Indeed, the study by Campos et al. (2018) suggests that Internet recruitment is more likely in large firms. In this regard, the results of a study by Parry and Tyson (2008) are more nuanced. These authors found that while larger organizations are more likely to use and be successful in using their corporate website for online recruitment, it is the medium-sized organizations that are more likely

to choose commercial online job sites (which constitute the source of the data). Therefore, in conclusion for this point, we would argue that the overrepresentation of accounting-related jobs coming from LEs in the sample does not stem from a sampling bias in favor of LEs.

We hypothesized that the hierarchical level of announced positions would be relatively higher in SMEs than in LEs (H1). We can verify this hypothesis by analyzing statistics related to job titles and reporting levels in Table 3. For both variables, differences between SMEs and LEs are statistically significant. For job titles, it appears that notable differences come from two job titles—namely, controllers and analysts. When compared to LEs, SMEs seem to disproportionately seek to recruit more controllers. The opposite happens when we consider the recruitment of analysts: LEs are more likely to recruit analysts. With regard to reporting levels, the picture is less clear, maybe because more than 38% (119 out of 310) of the job ads do not provide this information. In this regard, LEs represent more than their fair share among firms that do not mention the reporting level. Nevertheless, it appears from the available

TABLE 3
Job position characteristics: SMEs versus LEs

		SMEs $N = 111$			LEs $N = 199$			Total	
Variable	Categories	O	E	R	O	E	R	$N = 310$	Chi-square
Job title	CFO	1	1.8	−0.8	4	3.2	0.8	5	47.089***
	Controller	58	31.9	26.1	31	57.1	−26.1	89	
	Accountant	5	6.1	−1.1	12	10.9	1.1	17	
	Analyst	47	71.3	−24.3	152	127.7	24.3	199	
Reporting level	CEO	17	7.2	9.8	3	12.8	−9.8	20	29.611***
	CFO	34	34.4	−0.4	62	61.6	0.4	96	
	Controller	19	16.1	2.9	26	28.9	−2.9	45	
	Senior analyst/director	4	10.7	−6.7	26	19.3	6.7	30	
	Not mentioned	37	42.6	−5.6	82	76.4	5.6	119	
Minimum experience required	2 years or less	14	16.8	−2.8	33	30.2	2.8	47	1.935
	3–4 years	41	43.7	−2.7	81	78.3	2.5	122	
	5 years or more	56	50.5	5.5	85	90.5	−5.5	141	
Sector experience	Required	28	27.6	0.4	49	49.4	−0.4	77	0.444
	Asset	22	20.1	1.9	34	35.9	−1.9	56	
	Not required	61	63.4	−2.4	116	113.6	2.4	177	
Accounting professional accreditation	Required	51	53.4	−2.4	98	95.6	2.4	149	4.166
	Asset	32	25.1	6.9	38	44.9	−6.9	70	
	Not required	28	32.6	−4.6	63	58.4	4.6	91	
Other professional accreditation required	No	107	105.3	1.7	187	188.7	−1.7	294	0.433
	Yes	4	5.7	−1.7	12	10.3	1.7	16	

Notes: O, observed frequency; E, expected frequency; R, residual (O − E). *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

information that the newly recruited accountants are more likely to report to a CEO when they are recruited by SMEs. Overall, the results from the data confirm H1.

From the results in Table 3, we cannot confirm H2. The results show that, whether for the minimum number of years of experience required or for the requirement of experience in the sector of activity, the differences between SMEs and LEs are not statistically significant. The results also suggest that the size of firms has no bearing on whether a professional accreditation (accounting accreditation or other) would be required or considered an asset.

Competency Requirements by Firm Size

Table 4 presents descriptive statistics showing the extent to which different competencies are, on average, prevalent in the requirements of the organizations in the sample. These statistics are broken down into two parts to assess whether there are significant differences in the competencies required by SMEs as compared to large companies.

Table 4 reflects statistics based on index scores in each of the 19 subcategories of competencies. An index score corresponds to the sum number of individual competencies a firm requires in each subcategory. For example, in the subcategory of financial reporting, which contains four items (competencies) according to the coding grid (Appendix 1), a firm may get an index score from 0 to 4 depending on the number of items its job ad displays in that subcategory. As suggested, whenever one uses index measures based on multiple items, it is necessary to ensure that multicollinearity among items is not an issue (Diamantopoulos & Winklhofer, 2001). This was done through the verification of the variance inflation factor (VIF) for the 19 subcategories. These values (Table 4) vary from a minimum of 1.08 to a maximum of 1.28, values far below the cut-off threshold of 3.3 (Diamantopoulos & Siguaw, 2006), meaning that there is no multicollinearity in the index scores.

We have formulated a number of research hypotheses on differences between SMEs and LEs with regard to competencies required. First, we expected that SMEs would generally require a higher number of competencies than LEs, all competency categories combined (H3). The overall mean across all subcategories of competencies (Total raw) shows that there are no significant differences between SMEs and LEs. Therefore, we cannot confirm H3.

In the broad category of enabling competencies, overall, our results show no significant differences between SMEs and LEs, thus invalidating H3a. In the broad category of technical competencies, we can confirm H3b as it appears that overall, the number of technical competencies required is significantly higher in SMEs than in LEs. As for the broad category of IT competencies, we found no overall significant differences between the two groups of firms, which leads us to invalidate H3c.

Table 4 also allows us to open up the broad competency categories and to scrutinize potential differences between SMEs and LEs at the level of the 19 competency subcategories. We found significant differences in only 6 out of 19 subcategories of competencies: 1 subcategory out of 7 from enabling competencies (communicating); 3 subcategories out

TABLE 4
Descriptive statistics, multicollinearity, and breakdown of competency types by firm's size

	All firms $N = 310$			SMEs (≤ 249) $n = 111$	LEs (≥ 250) $n = 199$	
	Mean	SD	VIF[a]	Mean	Mean	*t*-value
A: Enabling competencies	**0.80**	**0.40**		**0.78**	**0.81**	**−0.89**
A1—Acting ethically and demonstrating professional values	0.56	0.75	1.17	0.59	0.55	0.37
A2—Leading	0.49	0.71	1.17	0.40	0.55	−1.80
A3—Collaborating	1.02	0.76	1.16	0.97	1.05	−0.80
A4—Managing self	1.55	0.97	1.20	1.56	1.55	0.09
A5—Adding value	0.49	0.66	1.19	0.53	0.46	0.89
A6—Solving problems and making decisions	0.73	0.75	1.21	0.75	0.72	0.33
A7—Communicating	0.78	0.81	1.22	0.64	0.85	−2.25*
B: Technical competencies	**1.17**	**0.43**		**1.30**	**1.10**	**4.12*** **
B1—Financial reporting	2.04	1.14	1.16	2.26	1.92	2.56*
B2—Strategy and governance	0.78	0.91	1.28	0.86	0.73	1.13
B3—Management accounting	2.12	1.49	1.11	2.12	2.12	0.01
B4—Audit and assurance	0.42	0.56	1.16	0.49	0.38	1.67
B5—Finance	1.28	1.02	1.08	1.47	1.18	2.45*
B6—Taxation	0.38	0.81	1.22	0.61	0.25	3.83***
C: Information technology competencies	**0.29**	**0.18**		**0.30**	**0.30**	**−0.14**
C1—Generic knowledge	0.09	0.31	1.15	0.09	0.10	−0.15
C2—Knowledge of office productivity software	0.80	0.40	1.21	0.82	0.78	0.75
C3—Data, database, and analytics	0.11	0.34	1.18	0.04	0.15	−2.76**
C4—Enterprise integrated systems	0.43	0.50	1.19	0.40	0.45	−0.85
C5—Functional software applied in finance/accounting	0.25	0.47	1.17	0.34	0.19	2.77**
C6—IT governance and management	0.06	0.28	1.19	0.04	0.08	−1.20
Total	**0.76**	**0.22**		**0.79**	**0.74**	**1.82**

Notes: Boldface indicates aggregate values for each of the main competency categories (A, B, and C) and for the entire competency set (Total). [a]Variance inflation factor (VIF) = $1/(1 - Ri^2)$ (where Ri^2 is the unadjusted R^2 obtained when variable i is regressed against all other variables forming a construct). *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$ (two-tailed *t*-test).

of 6 from technical competencies (financial reporting, finance, and taxation); and 2 subcategories out of 6 from IT competencies (data, databases, and analytics; functional software applied in finance/accounting).

Configurations of Signaled Competencies

When stating their competency requirements in job ads, firms enumerate a number of competencies. One can assume that for similar jobs, companies will require more or less identical or comparable competencies. One would then expect to find competencies in

job ads that are generally and frequently required together in such a way that they form bundles of coherent competencies. This allows the analysis of required competencies with a configurational approach. This approach "views organizational phenomena as clusters of interconnected elements that need to be simultaneously apprehended" (Liu et al., 2022, p. 1281). Consequently, we expected to uncover some competency patterns or competency configurations offering, to some extent, a more holistic and integrated image of the job market competency needs in the accounting field—hence, the clustering analysis.

The main objective that was pursued with the clustering analysis in this study was to check whether one can uncover different configurations in competencies signaled by SMEs and those signaled by LEs. We split the data set into two subsamples, one of SMEs ($n = 111$) and the other of LEs ($n = 199$). We ran the R package NbClust (Charrad et al., 2014) on both subsamples. For the SMEs subsample, 9 indices from the 23 indices applicable on the data set proposed two as the optimal number of clusters. In second position was a solution with four clusters suggested by 5 indices. For the LEs subsample, 13 indices recommended as optimal a three-cluster solution, followed by a two-cluster solution proposed by 4 indices. Applying the majority rule, we considered, for further analysis, a two-cluster solution for SMEs, and a three-cluster solution for LEs. These results show that the SMEs group generates fewer competency configurations than the group of LEs. Although this difference may not seem particularly significant at first glance, it is worth noting, and it can be explained. As already pointed out, to meet their general needs, SMEs will tend to require a broad spectrum of competencies from their candidates, while large companies will tend to require specific competencies within the competency spectrum. As a result, there will be a greater possibility of variability in competency configurations among LEs than among SMEs.

Table 5 presents the results of a two-cluster solution for SMEs. There are two clusters of equivalent size, with few significant differences. Only 4 groups of competencies out of 19 distinguish the two clusters: 1 group of enabling competencies (communicating), 2 groups of technical competencies (management accounting and taxation), and 1 group of IT competencies (knowledge of office productivity software). As the differences between the two clusters are not sufficiently clear-cut, it is difficult to qualify them. However, based on the few demarcation points that emerge, we can say that the first cluster is made up of SMEs requiring more management accounting competency from their accounting professional, and the second cluster by SMEs requiring more tax competency.

Table 6 presents the results of a three-cluster solution for the subsample of LEs. It is worth noting that IT competencies do not play any role in differentiating the three clusters. The smallest cluster (Cluster 3, 18.6%) comprises firms that most value enabling competencies. They also value technical competencies, particularly strategy and governance, management accounting (at the same level as Cluster 1), and finance (at the same level as Cluster 2). Clusters 1 and 2 are comparable in size, but different in terms of competency requirements. While firms in Cluster 1 require at least three types of technical

TABLE 5
Results of a two-cluster solution for SMEs ($n = 111$)

	Cluster 1 $n = 55$; 49.5%	Cluster 2 $n = 56$; 50.5%	*t*-test
A: Enabling competencies			
A1—Acting ethically and demonstrating professional values	0.58	0.59	−0.049
A2—Leading	0.35	0.45	−0.898
A3—Collaborating	0.84	1.11	−1.878
A4—Managing self	1.4	1.71	−1.723
A5—Adding value	0.44	0.63	−1.430
A6—Solving problems and making decisions	0.73	0.77	−0.313
A7—Communicating	0.47	0.80	−2.378*
B: Technical competencies			
B1—Financial reporting	2.22	2.3	−0.423
B2—Strategy and governance	0.78	0.93	−0.836
B3—Management accounting	3.29	0.96	14.556***
B4—Audit and assurance	0.44	0.54	−0.974
B5—Finance	1.55	1.39	0.910
B6—Taxation	0.38	0.84	−2.485**
C: Information technology competencies			
C1—Generic knowledge	0.11	0.07	0.688
C2—Knowledge of office productivity software	0.91	0.73	2.470**
C3—Data, database, and analytics	0.02	0.05	−0.807
C4—Enterprise integrated systems	0.45	0.34	1.194
C5—Functional software applied in finance/accounting	0.35	0.34	0.061
C6—IT governance and management	0.04	0.04	0.018

Notes: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

competencies at a higher level (financial reporting, management accounting, and taxation), the only technical competency required at a high level by firms in Cluster 2 is finance competency. The nature of the dominant competencies in each cluster of LEs leads us to suggest that companies in Cluster 2 are essentially looking to fill the lower-level positions of accounting professionals (financial analysts); companies in Cluster 3 are mainly looking to fill the highest-level positions (senior or managerial positions); and companies in Cluster 2 are looking to fill the middle-level positions (top technical professionals).

Most and Least Required Competencies

A close look at the statistics in Table 4 gives a glimpse of which types of competencies firms require most or least frequently. After checking overall mean values in Table 4, we can conclude that employers tend to mostly require technical competencies before

TABLE 6
Results of a three-cluster solution for LEs

	Cluster 1 $n = 80$; 40.2%	Cluster 2 $n = 82$; 41.2%	Cluster 3 $n = 37$; 18.6%	$N = 199$ 100%	ANOVA
A: Enabling competencies					
A1—Acting ethically and demonstrating professional values	0.600_{a}	0.329_{b}	0.946_{a}	0.553	10.288***
A2—Leading	0.275_{c}	0.488_{b}	1.270_{a}	0.548	27.307***
A3—Collaborating	0.838_{b}	1.024_{b}	1.541_{a}	1.045	12.310***
A4—Managing self	1.563	1.500	1.622	1.548	0.213
A5—Adding value	0.313_{b}	$0.500_{a,b}$	0.703_{a}	0.462	5.263**
A6—Solving problems and making decisions	0.525_{b}	0.695_{b}	1.189_{a}	0.719	9.921***
A7—Communicating	0.700_{b}	0.829_{b}	1.243_{a}	0.854	5.641**
B: Technical competencies					
B1—Financial reporting	2.725_{a}	1.646_{b}	0.784_{c}	1.920	64.384***
B2—Strategy and governance	0.450_{b}	0.659_{b}	1.514_{a}	0.734	21.586***
B3—Management accounting	0.438_{a}	0.268_{b}	0.486_{a}	2.116	151.192***
B4—Audit and assurance	0.438	0.268	0.486	0.377	2.738
B5—Finance	0.863_{b}	1.354_{a}	1.459_{a}	1.176	6.164**
B6—Taxation	0.475_{a}	0.073_{b}	0.162_{b}	0.251	8.395***
C: Information technology competencies					
C1—Generic knowledge	0.063	0.098	0.162	0.096	1.179
C2—Knowledge of office productivity software	0.813	0.829	0.622	0.784	3.644
C3—Data, database, and analytics	0.075	0.159	0.270	0.146	3.483
C4—Enterprise integrated systems	0.425	0.488	0.405	0.447	0.479
C5—Functional software applied in finance/ accounting	0.200	0.159	0.243	0.191	0.55
C6—IT governance and management	0.025	0.061	0.216	0.075	4.942

Notes: Different subscript letters (a, b, c) within rows indicate significant ($p < 0.05$) pair-wise differences between means on Tamhane's T2 (post hoc) test. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

enabling competencies, with IT competencies being the least required. The top 5 out of the 19 subcategories of competencies are management accounting (in the first place; mean equals 2.12), financial reporting (2; 2.04), managing self (3; 1.55), finance (4; 1.28), and collaborating (5; 1.02). We also note that the 5 least popular subcategories are IT governance and management (1; 0.06); IT generic knowledge (2; 0.09); data,

database, and analytics (3; 0.11); functional software applied in finance/accounting (4; 0.25); and audit and assurance (5; 0.42). One cannot fail to note that 4 of the 5 subcategories of competencies least in demand by the market pertain to the broad category of IT competencies.

The results in Table 7 allow us to further portray the most required individual competencies. The table presents the 20 most required competencies overall and compares their rankings within our subsamples of SMEs and LEs. From a purely arithmetic point of view, we can note that 12 of the competencies ranked in the top 20 are technical competencies, as compared to 6 enabling competencies and 2 IT competencies. However, the most required individual competency is an IT-related competency, C20 (knowledge of office productivity software), present in 79.7% of job ads. Following, in second position, is an enabling competency, A41 (adaptability, resilience and agility; 75.2%), and in third position, a technical competency, B12 (accounting policies and transactions; 68.4%).

It is worth noting that the top 3 individual competencies are similarly ranked in the two subsamples of SMEs and LEs. The most significant discrepancies in competency ranking between SMEs and LEs among the top 20 are for the following competencies:

TABLE 7
Most frequently required competencies: Top 20

Competency code	Global ranking ($n = 310$)		Ranking in SMEs ($n = 111$)		Ranking in LEs ($n = 199$)		Difference (SMEs − LEs)	
	%	Rank	%	Rank	%	Rank	Diff. rank	Diff. %
C20	79.7	1	82.0	1	78.4	1	0	3.6
A41	75.2	2	76.6	2	74.4	2	0	2.2
B12	68.4	3	76.6	3	63.8	3	0	12.8
B32	62.3	4	63.1	6	61.8	4	2	1.3
B13	57.4	5	66.7	5	52.3	6	−1	14.4
A32	57.1	6	57.7	7	56.8	5	2	0.9
A62	52.3	7	54.1	8	51.3	7	1	2.8
A71	46.8	8	39.6	13	50.8	8	5	−11.2
A43	44.8	9	48.6	9	42.7	10	−1	5.9
B52	43.5	10	67.6	4	30.2	19	−15	37.4
B11	43.2	11	45.9	10	41.7	11	−1	4.2
C40	42.6	12	38.7	16	44.7	9	7	−6
B33	38.7	13	43.2	11	36.2	15	−4	7
B51	38.1	14	38.7	14	37.7	13	1	1
B36	37.4	15	38.7	15	36.7	14	1	2
B31	36.1	16	30.6	19	39.2	12	7	−8.6
B14	35.2	17	36.9	17	34.2	16	1	2.7
B24	32.6	18	35.1	18	31.2	17	1	3.9
B42	31.6	19	42.3	12	25.6	21	−9	16.7
A42	29.0	20	25.2	21	31.2	17	4	−6

Notes: The letter in the competency code indicates the broad category of competencies: A, enabling competencies; B, technical competencies; C, IT competencies.

treasury management (B52), ranked 4th in SMEs and 19th in LEs; internal and external audit requirements (B42), ranked 12th and 21st, respectively, in SMEs and LEs; and enterprise resource planning (ERP) systems (C40), ranked 16th in SMEs and 9th in LEs.

We can also note that there are competencies that, although they are for all practical purposes at the same rank in the SMEs and LEs subsamples, are present in substantially different proportions in the two groups. This is the case for competency B12 (accounting policies and transactions), which ranks third in both groups but is reported in 76.6% of SMEs and only 63.8% in LEs. This is also the case for competency B13 (financial report preparation), ranked 5th and 6th, respectively, in SMEs and LEs, but signaled in 66.7% of SMEs and 52.3% of LEs.

Analyzing the least required competencies (Table 8), we identified 3 individual competencies that are completely absent from the job ads we collected. These are inclusivity (A31), an enabling competency, and 2 technical competencies—namely, individual performance measurement (B37) and comprehensive audit projects (B44). For SMEs, there are 2 more competencies that are completely absent from the ads: objectivity (A15), from enabling competencies, and income taxation of nonresidents and part-year residents (B65), from technical

TABLE 8
Least frequently required competencies: Top 20

Competency code	Global ranking ($n = 310$)		Ranking in SMEs ($n = 111$)		Ranking in LEs ($n = 199$)		Difference (SMEs − LEs)	
	%	Rank	%	Rank	%	Rank	Diff. rank	Diff. %
A31	0.0	1	0	1	0	1	0	0
B37	0.0	1	0	1	0	1	0	0
B44	0.0	1	0	1	0	1	0	0
A15	0.3	4	0	1	0.5	5	−4	−0.5
B65	0.3	4	0	1	0.5	5	−4	−0.5
B21	1.3	6	0.9	6	1.5	8	−2	−0.6
B63	1.3	6	3.6	10	0	1	9	3.6
B66	1.3	6	2.7	8	0.5	5	3	2.2
A61	4.2	9	4.5	13	4	10	3	0.5
A24	4.8	10	3.6	10	5.5	12	−2	−1.9
B41	4.8	10	1.8	7	6.5	16	−9	−4.7
B43	5.2	12	4.5	13	5.5	12	1	−1
B61	5.2	12	7.2	20	4	10	10	3.2
C60	5.2	12	3.6	10	6	14	−4	−2.4
A64	5.8	15	5.4	15	6	14	1	−0.6
B64	5.8	15	10.8	28	3	9	19	7.8
A44	6.1	17	5.4	10	6.5	16	−6	−1.1
A13	7.1	18	6.3	17	7.5	20	−3	−1.2
A22	7.7	18	6.3	17	8.5	21	−4	−2.2
C10	8.7	20	9	22	8.5	21	1	0.5

Notes: The letter in the competency code indicates the broad category of competencies: A, enabling competencies; B, technical competencies; C, IT competencies.

competencies. For LEs, there is only 1 additional competency that is absent from job ads: personal income tax (B63), a technical competency. Overall, we count 11 individual competencies that are present in less than 5% of job ads (Table 8): 4 enabling competencies and 7 technical competencies. We count 2 IT competencies among the list of the 20 top least required competencies: IT governance and management (C60) and IT generic knowledge (C10).

5. DISCUSSION OF RESULTS

Frequency of Competency Signaling

Competency needs for firms recruiting professionals in accounting-related jobs seem to be very diversified. As illustrated in Figures 3 and 4, which present the distribution of competencies in SMEs and LEs, respectively, in both cases there are very few "mainstream" competencies that would be required by the majority of firms.

Out of 66 competencies analyzed in this study (Appendix 1), only a tiny portion is found in at least 70% of job ads. That portion represents only 3 competencies in SMEs (4.5%), and 2 in LEs (3.0%). For both groups of firms (SMEs and LEs), only 8 competencies (12.1%) are signaled in at least 50% of job ads. Only around 40% of competencies are found in at least 20% of job ads: 26 in LEs (39.4%) and 27 in SMEs (40.9%).

From Figures 3 and 4, we can note that the frequencies of required competencies are identical or close between SMEs and LEs. However, as shown in "Most and Least Required Competencies" in Section 4, there may be some qualitative differences: the composition of competencies in a range may vary, but these variations happen to be minimal.

FIGURE 3 Distribution of competencies ($n = 66$) across SMEs ($n = 111$)

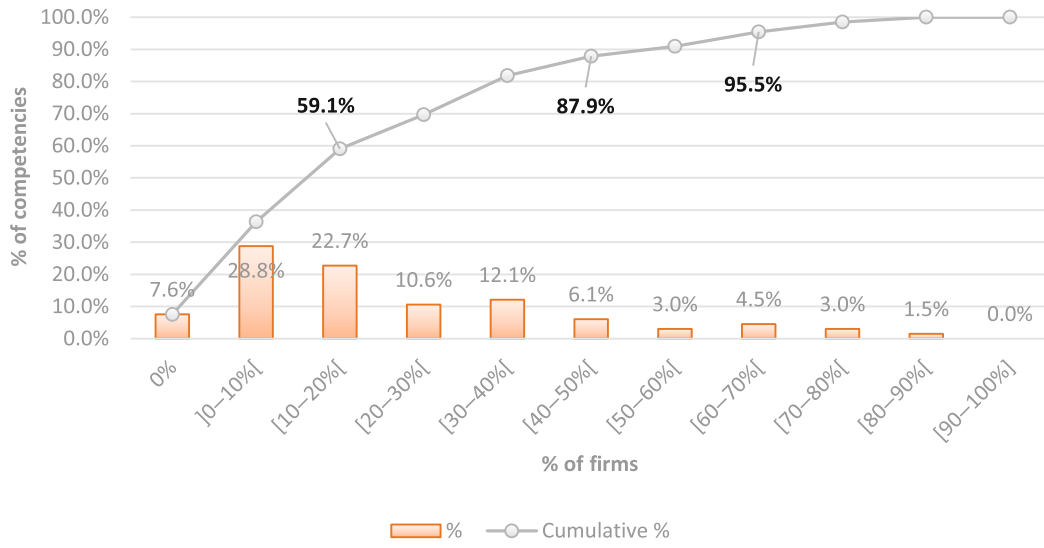
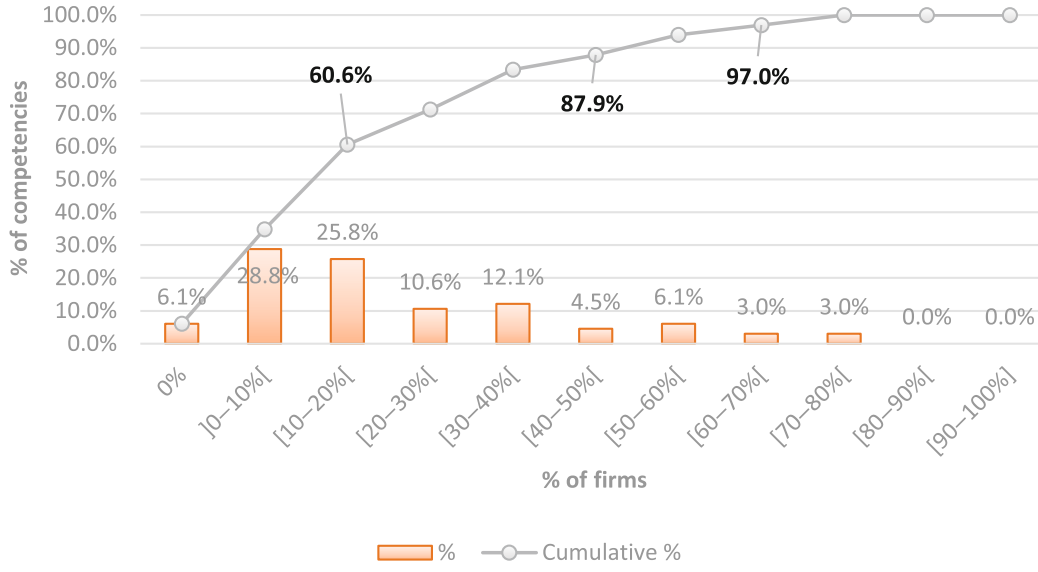


FIGURE 4 Distribution of competencies ($n = 66$) across LEs ($n = 199$)



Unexpected Results

In Section 2, we have formulated a number of research hypotheses, based on the analysis of prior research with regard to the accounting profession and to characteristics of SMEs and LEs. In Table 9, we wrap up the research hypotheses and compare them to the results.

The results of the present study allow us to confirm H1 and H3b. H2, H3, H3a, and H3c could not be confirmed based on our results. We have already explained the rationale behind the confirmed and nonconfirmed hypotheses in Section 2. Now, we will attempt to comprehend the meaning of the unexpected results (nonconfirmed hypotheses: H2, H3, H3a, and H3c).

Based on the needs of organizations and in line with P-E fit theory, we hypothesized that SMEs would be more inclined than LEs to require more experience and an accounting designation from new recruits (H2). We could not confirm this hypothesis with our results. Our hypothesis was based solely on the needs of organizations, and it could be argued that these needs are only one side of the equation, and that in preparing their job ads, organizations must also consider the context of the job market. In the job market, most candidates tend to consider SMEs as a "second choice," preferring LEs, which they believe are more likely to offer better career development opportunities on top of higher salaries (Baliyan & Baliyan, 2016; Cheng et al., 2016; Moy & Lee, 2002).[2] Besides,

2. The results of Moy and Lee's (2002) study suggest that this perception is wrong, and that to dissipate it, SMEs should better communicate about the opportunities they offer. Cheng et al. (2016) argue that this perception stems from the bias of higher education institutions in favor of large corporate business models. Whether false or not, and whatever its origin, the fact is that this perception is widespread and affects the decision-making of newly graduated candidates looking for their first job.

TABLE 9
Research hypotheses versus research results

Research hypothesis	Results	Confirmation
H1—Job announcements for positions open for accounting professionals are more likely to signal a hierarchically higher level in SMEs than in large firms	SMEs are more likely to recruit controllers, while LEs are more likely to recruit analysts. Newly recruited accounting professionals are more likely to report to a CEO when recruited in SMEs	Confirmed
H2—Compared to jobs for accounting professionals open in LEs, job openings in SMEs are more likely to require from prospective candidates more work experience and an accounting professional accreditation	Overall, SMEs and LEs appear to require comparable lengths of work experience (years) SMEs and LEs list sector experience as a requirement or an asset in the same proportions SMEs and LEs deem an accounting professional accreditation as a requirement or an asset in comparable proportions	Not confirmed
H3—Compared to LEs, SMEs are more likely to require more competencies for one accounting job announced	There is no significant difference between SMEs and LEs with regard to the overall average number of competencies required for one job	Not confirmed
H3a—Job offers from SMEs will have more requirements for enabling competencies than those from LEs	There is no significant difference between SMEs and LEs with regard to the average number of enabling competencies required for one job	Not confirmed
H3b—Job offers from SMEs will have more requirements for technical competencies than those from LEs	The average number of technical competencies required is significantly higher in SMEs than in LEs	Confirmed
H3c—Job offers from LEs will have more requirements for IT competencies than those from SMEs	There is no significant difference between SMEs and LEs with regard to the average number of IT competencies required for one job	Not confirmed

experienced professionals are more likely to seek higher wages, reflecting their accumulated knowledge and their aspirations of improved work conditions. Generally facing limited resources, SMEs will be at a disadvantage when competing with LEs to acquire more qualified professionals (with experience or with an accounting professional accreditation). Therefore, one can argue that SMEs, in order to attract candidates whose expectations of work conditions are within their reach, will tend to lower their requirements to a certain level. In summary, one could say that SMEs are compelled by their needs to search for candidates with experience, while being limited by their means (pushing them to seek less experienced workers they can afford). On the other hand, large companies have less need for experienced candidates, but they have the means to attract them. Our results in relation to H2 could, therefore, be explained by

the conjunction of these forces pulling in opposite directions for SMEs and LEs, leading the former to moderate their requirements, and the latter to amplify them.

Contrary to what we expected with H3, when compared to LEs, SMEs do not appear to require a larger set of competencies from their prospective accounting professionals. Our expectation stemmed from the fact that accounting professionals in SMEs will have to assume a broad range of responsibilities and will thus need many competencies. Our results suggest that SMEs fail to translate this need into their job announcements. This may be a consequence of the limits of SMEs in their human resource management function responsible for the recruiting process (Hornsby & Kuratko, 2003; Innes & Wiesner, 2012). With these constraints, SMEs would simply copy typical or "standard" job announcements for accounting professionals, irrespective of their specific needs. Our results with regard to competency configurations in SMEs seem to reinforce this impression: we found only two configurations, which are not so distinct. In accordance with P-E fit theory (Kristof-Brown et al., 2005), the failure to be more specific means that SMEs risk attracting prospective employees with lower levels of compatibility with their work environment, which will later affect their commitment and job performance (Verwaeren et al., 2017). An alternative explanation would be that the potential for SMEs to meet some of their accounting needs through external services (Banham & He, 2014) makes it less crucial to look for a broad range of competencies through recruitment: they would aim to hire professionals with basic accounting competencies and turn to third parties for highly specialized accounting services.

In relation to H3a, we did expect that SMEs, whose newly recruited accounting professionals are likely to occupy high hierarchical positions with extensive responsibilities, would require more enabling competencies than large companies. Our results do not support this hypothesis. As is the case for H3, the first explanation would be the inability of SMEs to properly translate their needs when devising their job offers. The alternative explanation would be that SMEs, desperate to meet their accounting technical competency needs, may overlook or undervalue enabling competencies. This would be unfortunate, given that enabling competencies are necessary to efficiently use technical competencies in an organizational setting (Morpurgo & Azevedo, 2021).

With regard to H3c, the results do not correspond to our expectations. Considering the digital divide between SMEs and LEs, which favors LEs when it comes to the adoption and assimilation of IT (Arendt, 2008; Bach et al., 2013), we expected that LEs would require more IT competencies in their job ads than SMEs. The results show that regardless of firm size, IT competencies are generally not or only minimally required by firms in their ads for recruiting accounting professionals. There are two significant exceptions with two particular IT competencies, namely knowledge of office productivity software (C20) and enterprise integrated systems (C40). Mainly, these competencies refer to, respectively, "Microsoft Office package (Excel, Word, PowerPoint, Access) and equivalents" and to "enterprise resource planning (ERP) systems." As already pointed out in Table 7, the IT competency C20 comes at the top of the most required competencies in all categories, both in SMEs and LEs. As for the IT competency C40, it comes in at the 12th rank overall, at 9th rank in LEs, and at 16th place in SMEs. However, these two

exceptions should not lead us to overlook the underrepresentation of IT competencies among required competencies in job ads. This study confirms the results of a prior study (Spraakman et al., 2015) that has shown employers' low expectations/requirements of IT competencies from accounting professionals. From our results, we can infer that firms—SMEs as well as LEs—do not necessarily associate IT competencies with accounting-related jobs. This may represent a major problem given the increasing role of IT in non-IT processes, which make IT competencies necessary for non-IT business managers (Carlton et al., 2019; Ray et al., 2007), including accounting professionals (Kwarteng & Mensah, 2022; Pan & Seow, 2016; Stancheva-Todorova, 2019). The problem may be more acute for SMEs than for LEs due to the former's lack of specialized and well-staffed IT departments that would help alleviate to some extent the IT weaknesses in the accounting function.

Theoretical and Practical Implications

In general, this study's theoretical contributions stem from the fact that we shed light on the specificities of SMEs as compared to large companies when recruiting accounting professionals. This study thus improves our knowledge on SMEs' and LEs' needs with regard to the accounting profession.

Specifically, this study shows that SMEs recruit accounting professionals to positions with high responsibility in the organizational hierarchy. The study also shows that SMEs tend not to require the enabling competencies, which prior studies (e.g., Margheim et al., 2010) have deemed to be normally necessary for high-level positions. This could be detrimental to SMEs as they risk attracting and selecting candidates who lack key competencies to integrate into and succeed in their new roles.

Another theoretical contribution of this study is that it confirms that SMEs recruiting accounting professionals have almost the same general requirements as LEs in terms of experience and accreditation, despite their relatively lower attractiveness to candidates (Moy & Lee, 2002). This illustrates the dilemma of SMEs whose accounting needs will drive them to seek well-qualified candidates without necessarily having the means to attract them.

In the continuity of previous studies (e.g., Dunbar et al., 2016; Kardos & Farkas, 2016), this study contributes to a better appreciation of the degree of relevance of the competency framework used to train accounting professionals with respect to the current needs of SMEs and LEs. In this regard, our results show that the CPA Canada competency framework (CPA Canada, 2020) goes above and beyond the current accounting competency requirements of both SMEs and LEs. This study did not uncover any competencies required by the job market that are not listed in the competency framework. On the contrary, this study has shown that there are a number of competencies in the framework that are not at all or are very rarely sought after by employers today.

In relation to IT competencies for accountants, this study found that firms, regardless of their size, are far from requiring the competencies that reflect the predicted deep and broad impact of IT on the accounting profession (Cunha et al., 2022). By far the most

requested IT competency of accounting professional candidates remains knowledge of Microsoft Office or equivalent software (82.0% of SMEs; 78.4% of LEs)—in particular, the mastery of Excel, followed by knowledge of ERP systems (38.7% of SMEs; 44.7% of LEs). This is a far cry from the IT competencies that have been heralded as bringing profound changes to the accounting profession, such as (mega) data analytics (Appelbaum et al., 2017; Huerta & Jensen, 2017), artificial intelligence (Almufadda & Almezeini, 2022; Han et al., 2023; Hasan, 2021), and blockchain technology (Han et al., 2023; Pimentel & Boulianne, 2020). It is also at odds with the new collective identity that the accounting profession, at least through the competency maps since the 2019 version (CPA Canada, 2019), is trying to project: that of financial leaders in the digital age, with accountants no longer content to use IT as a mere support tool, but rather playing a key role in their profession (Pimentel & Boulianne, 2022).

In another theoretical contribution, this study shows that despite their characteristic heterogeneity (Marullo et al., 2020), SMEs require more or less similar competency configurations. This could reflect the institutional isomorphism of SMEs (Mandre et al., 2021) that would lead them to require the competencies that other organizations recruiting accountants generally require, regardless of their specific needs.

From a practical point of view, this study has implications for different categories of actors. First, for companies, the results of this study suggest that SMEs seeking to recruit accounting professionals should work to better define the competencies expected of them so that they reflect the specific needs of the organization. Once these needs have been identified, SMEs will need to find a way of signaling them in job ads so that they can attract suitable candidates for the open positions. In this task, SMEs needing assistance could be supported by recruitment professionals or by public or nonprofit institutions dedicated to their development.

The present study also shows the dilemma faced by SMEs: by their very nature, SMEs need experienced accounting professionals with broad competencies that, unfortunately, they cannot always afford due to limited resources. SME managers, assisted by the public and nonprofit organizations that support them, must find ways to resolve this dilemma. This can be done, for example, by encouraging SMEs to develop agreements to share resources or by developing external accounting services adapted to the needs of local SMEs.

The study also suggests that there is a need to accelerate the awareness of both SMEs and LEs of the necessity of IT competencies for accounting professionals in order to allow companies to benefit from the added value of IT in their finance and accounting function.

For accounting bodies and educators, the results of this study may contribute to the debate on the evolution of the training of accounting professionals. More specifically, with the analysis of the competencies that are most/least required by the labor market, we have demonstrated the absence of "mainstream" competencies that would be sought by a majority of companies. This may justify, for accounting bodies and educational institutions, maintaining a diversified offer to cover a broad spectrum of accounting competencies (Uwizeyemungu et al., 2020). However, all concerned

stakeholders can debate the merits and efficiency of this approach. One could question the relevance of offering all professional accounting candidates general training for competencies that are unlikely to be required by the market. Could we not, for example, think of training mechanisms whereby university training would be limited to developing the basics and would be supplemented by ad hoc training in companies? One could also think about complementing basic training with on-demand and online training offers for certain competencies.

Limitations and Research Avenues

Despite its theoretical and practical contributions, this study has a number of limitations that may lead to avenues for future research. The first is that the investigation was limited to Canadian firms. However, it must be emphasized that despite this, we believe that the results and conclusions drawn may be of interest to an international audience, particularly from countries with comparable accounting practices—in particular, countries whose accounting practices are inspired by IFRS, such as European countries and Australia (Bengtsson, 2021; Chapple, 2018; De George et al., 2016). Moreover, if we look at the professional knowledge and professional skills as well as the professional values, ethics, and attitudes proposed by the International Accounting Education Standards Board (IAESB, 2019), we realize that there are similarities to the technical and enabling competencies of CPA Canada's competency framework. Accordingly, studies like this one could be conducted in other contexts and provide empirical bases for international comparisons.

A corollary limitation to the first one mentioned is that our competency coding grid (except for IT competencies) was based on the CPA Canada competency framework (CPA Canada, 2020). As an avenue for future research, a coding grid could be designed by integrating multiple frameworks from several national accounting bodies. Then data assembled from an international sample of companies could be collected and analyzed using the new grid, thus allowing for direct international comparison. It would then be interesting to highlight similarities and differences between countries and investigate related determinants and outcomes.

Given the focus of the present study, which required us to collect data on the recruiting organization (size, sector of activity), we had an inclusion criterion that to be retained: the job ad had to clearly identify the recruiting organization. This criterion, although essential, obviously contributed to limiting the number of cases analyzed. It should, therefore, be noted that 310 job ads over a 5-year period may not be completely representative of job offers for accounting professionals over this period. This is a limitation that future research may seek to address.

In this study, we distinguish enabling competencies from technical and IT competencies. It should be noted that of all these competencies, enabling competencies are, due to their generic, pervasive, meta-competency nature (Barišić et al., 2021; Morpurgo & Azevedo, 2021), more difficult to identify and measure. This difficulty could affect the ability of recruiting organizations to clearly define their requirements

in terms of enabling competencies in their job ads. However, given the focus and methodology of this study, we could not specifically analyze the extent to which organizations overcome that difficulty, and this constitutes another limitation of the present study. As an avenue for further research, it would be interesting to explore how organizations overcome the difficulty of identifying and measuring enabling competencies.

The methodology adopted for this study only allowed for a snapshot, at an exact moment in time, of the competency requirements for accounting professionals. This provides a picture of needs in the present and near future. It could be possible, for example, that a company seeking to fill its management accounting needs today has already filled its financial reporting needs through a recruitment process 5 years ago, and that it plans to fill its tax needs a few years from now. But our methodology would not allow us to capture that reality. Therefore, to have a complete picture, including competency needs met in the past and projections for the medium and long terms, it would require surveys and longitudinal or prospective studies. This is another avenue of research.

Another limitation that is worth mentioning is related to our focus on job ads. While we would expect companies to signal their core expectations in these ads in order to attract the right candidates, they may have other expectations that they will check later on in the recruitment process through various means (resume analysis, interviews, referrals, etc.). Thus, to get the full picture of competency requirements, studies analyzing the entire process for completed recruitments could be carried out.

Another methodological limitation of the study is the use of secondary data. Based on these data, we have drawn conclusions that are certainly enlightening but which could probably be made more nuanced or supplemented by primary data. For example, our methodology and data allowed us to identify the presence (one) or absence (zero) of a given competency in the job ad, without knowing the level or depth that the candidate would need to demonstrate in that competency. Therefore, we suggest in-depth case studies, field studies, or surveys on professional accounting competency requirements in SMEs and LEs as avenues for future research.

6. CONCLUDING REMARKS

In this study, we started from the premise that SMEs and LEs offer different work environments, and we assumed that, according to P-E fit theory, the two groups should display some differences in their competency requirements when recruiting accounting professionals. In this regard, we formulated a number of hypotheses, based on the characteristics of SMEs and LEs on the one hand, and the features of the accounting profession on the other. Data collected from online advertisements for the recruitment of accounting professionals by Canadian firms were used to test these hypotheses. The competencies reported by both SMEs and LEs provide a picture of the current and publicly available market needs for professional accountants. By comparing these needs with the current

training offer, this study makes a contribution to the debate on the adequacy and evolution of training for professional accountants. However, our conclusions are far from being definitive, and we hope that future studies will complete this study and deepen certain aspects of it.

APPENDIX 1: COMPETENCY CODIFICATION GRID

A: Enabling competencies	
A1	**Acting ethically and demonstrating professional values**
A11	Ethical behavior
A12	Integrity and trustworthiness
A13	Questioning mindset
A14	Due care
A15	Objectivity
A2	**Leading**
A21	Strategic focus
A22	Risk management
A23	Organizational culture advocacy
A24	Influence and consensus building
A3	**Collaborating**
A31	Inclusivity
A32	Teamwork
A33	Relationship building
A34	Project management
A4	**Managing self**
A41	Adaptability, resilience and agility
A42	Initiative
A43	Continuous improvement
A44	Talent management
A5	**Adding value**
A51	Business context
A52	Creativity and innovation
A53	Performance evaluation and accountability
A6	**Solving problems and making decisions**
A61	Issue identification
A62	Analysis
A63	Recommendations
A64	Implementation and change management
A7	**Communicating**
A71	Audience and effectiveness
A72	Active listening
A73	Communication

(The table is continued on the next page.)

APPENDIX 1 (continued)

B: Technical competencies	
B1	**Financial reporting**
B11	Financial reporting needs and systems
B12	Accounting policies and transactions
B13	Financial report preparation
B14	Financial statement analysis
B2	**Strategy and governance**
B21	Governance
B22	Mission, vision, values, and mandate
B23	Strategy development
B24	Strategy implementation
B25	Enterprise risk management
B3	**Management accounting**
B31	Management reporting needs and systems
B32	Planning, budgeting, and forecasting
B33	Cost management
B34	Revenue management
B35	Profitability management
B36	Organizational performance measurement
B37	Individual performance measurement
B4	**Audit and assurance**
B41	Internal control
B42	Internal and external audit requirements
B43	Internal audit projects and external assurance engagements
B44	Comprehensive audit projects
B5	**Finance**
B51	Financial analysis and planning
B52	Treasury management
B53	Capital budgeting
B54	Valuation
B55	Financial risk management
B56	Corporate finance transactions
B6	**Taxation**
B61	General income tax concepts
B62	Corporate income tax
B63	Personal income tax
B64	Income tax administration
B65	Income taxation of nonresidents and part-year residents
B66	Other income tax matters
B67	GST matters

C: IT competencies	
C10	**IT generic knowledge** (a set of technologies and general applications that make up the IT architecture and that are not specific to a particular sector or organization)

(The table is continued on the next page.)

APPENDIX 1 (continued)

C: IT competencies	
C20	**Knowledge of office productivity software** (software packages meant to automate office tasks and increase work productivity)
C30	**Data, database, and analytics** (set of systems and tools for designing, managing and querying databases; exploitation of structured and unstructured data)
C40	**Enterprise integrated systems** (knowledge of complex and multifunctional software packages)
C50	**Functional software applied in finance/accounting** (knowledge of/experience with software applications that have been designed to fulfill specific mandates of the finance and accounting function)
C60	**IT governance and management** (mastering of the process of IT acquisition, implementation, and exploitation)

Notes: Boldface indicates the main categories (levels A, B, C) and subcategories (levels A1, A2, … C1, C2, …) of competencies.

APPENDIX 2: EXAMPLE OF JOB AD CODIFICATION

Job Ad Example

Accountant, Financial Accounting (Canada)

ABC Inc.* is a manufacturing company with nearly 400 employees experiencing significant growth since its founding in 1968. We are looking for a person in our Accounting & Finance department to fill the following position: Accountant.

RESPONSIBILITIES

Under the supervision of the Controller, you will be responsible for financial reporting and analysis (monthly/annually):

- Actively participate in the preparation of monthly financial statements under the direct supervision of the controller;
- Prepare various analyses of balance sheet items at the end of each month;
- Prepare monthly dashboards;
- Analyze customer programs and compile customer records for the process of preparing price lists by customer;
- Prepare annual budgets;
- Assist the controller in cash management;
- Prepare periodic statistical reports (Sales report, Forecast by customers, etc.);
- Help prepare the renewal of commercial insurance (e.g. insurance certificate).

The ideal candidate will meet the following requirements:

- Bachelor's degree in accounting;
- Minimum of 5 years of experience in a similar position;
- Proficiency in MS Office (Word, Outlook);
- Good knowledge of an ERP system;
- Good mastery of the month-end process and the entire accounting cycle;
- Experience in the manufacturing sector (asset);
- Be a CPA member (asset);
- Functional oral and written bilingualism (asset).

You possess the following qualities, so you are the person we are looking for:

- Have good analytical skills;
- Enjoy teamwork and have organizational skills;
- Be flexible and motivated at work;
- Ability to be solution-oriented and autonomous;
- Be able to work under pressure.

Coding (Sample)**

Section 1 - Organization (Recruiter)

Ad Code	Company Name	Employees	Size Category	Sector	Country
	Name	Number of Employees	1: SE (<250) 2: ME (250-499) 3: LE (500+)	1: Services B2C 2: Manufacturing B2C 3: Services B2B 4: Manufacturing B2B 0: Unspecified	1: Canada 2: USA 3: Other
1	ABC Inc.	400	2	4	1

Section 3 - Job description

Title	Immediate Superior	Years of Experience	Knowledge of the Sector of Activities	Professional Accounting Title (CPA)	Other Title Required
1: CFO 2: Controller 3: Accountant 4: Auditor 5: Analyst 6: Other	0: Not Mentionned 1: CEO 2: CFO 3: Controller 4: Director 5: Senior Analyst	Experience (Nb of Years)	1: Required 2: Asset 3: Not mentionned	1: Required 2: Asset 3: Not mentionned	No: 0 Yes: 1
3	3	5	2	2	0

4.2 Technical competencies

B1				B2				
B11	B12	B13	B14	B21	B22	B23	B24	B25
No: 0 Yes: 1	No: 0 Yes: 1	No: 0 Yes: 1	No: 0 Yes: 1	No: 0 Yes: 1	No: 0 Yes: 1	No: 0 Yes: 1	No: 0 Yes: 1	No: 0 Yes: 1
0	1	1	1	0	0	0	0	1

Coding Legend (Excerpt from the Coding Scheme)

B1	Financial Reporting (FR)	B2	Strategy & Governance
B11	FR needs and systems	B21	Governance
B12	Accounting policies and transactions	B22	Mission, vision, values, and mandate
B13	Financial report preparation	B23	Strategy development
B14	Financial statement analysis	B24	Strategy implementation
		B25	Enterprise risk management

*In this example, the company name has been changed to preserve its anonymity.
**To avoid overloading, in this illustration all the requirements are not coded.

APPENDIX 3: CORRELATION MATRIX

	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6
A1—Acting ethically and demonstrating professional values	—																		
A2—Leading	0.09	—																	
A3—Collaborating	0.04	0.21	—																
A4—Managing self	0.20	0.10	0.13	—															
A5—Adding value	0.16	0.15	0.20	0.12	—														
A6—Solving problems and making decisions	0.07	0.11	0.07	0.21	0.18	—													
A7—Communicating	0.11	0.15	0.20	0.23	0.14	0.24	—												
B1—Financial reporting	0.06	−0.07	−0.16	0.07	0.02	−0.09	−0.05	—											
B2—Strategy and governance	0.12	0.31	0.17	0.12	0.24	0.12	0.09	−0.08	—										
B3—Management accounting	−0.15	0.05	−0.01	−0.05	0.04	0.02	0.02	−0.05	0.02	—									
B4—Audit and assurance	0.18	0.05	0.09	−0.02	0.07	−0.09	0.08	0.09	0.19	−0.09	—								
B5—Finance	0.05	0.01	−0.03	0.01	−0.01	0.07	0.09	−0.07	0.11	0.10	−0.01	—							
B6—Taxation	0.15	0.00	−0.06	−0.03	0.01	−0.03	−0.07	0.19	0.04	−0.22	0.20	0.02	—						
C1—Generic knowledge	−0.05	−0.06	0.05	−0.04	0.01	0.12	0.13	0.00	−0.09	0.02	0.06	0.00	−0.03	—					

(The table is continued on the next page.)

APPENDIX 3 (continued)

	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6
C2—Knowledge of office productivity software	−0.04	−0.01	0.01	0.11	−0.07	−0.07	−0.03	0.09	−0.04	0.12	−0.06	0.00	−0.21	−0.13	—				
C3—Data, database, and analytics	0.03	0.05	0.06	0.01	0.10	−0.01	0.10	−0.16	0.06	−0.03	−0.05	0.02	−0.14	0.15	0.06	—			
C4—Enterprise integrated systems	0.07	−0.01	−0.04	0.07	0.02	0.13	−0.10	0.00	0.04	0.07	−0.04	−0.04	−0.12	−0.09	0.22	0.04	—		
C5—Functional software applied in finance/accounting	0.09	0.04	0.03	0.16	−0.07	0.04	0.08	0.05	0.13	0.00	0.01	0.07	0.09	0.11	0.11	0.04	−0.17	—	
C6—IT governance and management	0.05	0.11	0.09	0.10	0.05	0.13	0.13	−0.15	0.09	−0.03	−0.06	−0.13	−0.08	0.12	−0.03	0.27	0.07	0.06	—

DATA AVAILABILITY STATEMENT

Data used in this study were collected from the public sources identified in the text.

REFERENCES

Almgerbi, M., De Mauro, A., Kahlawi, A., & Poggioni, V. (2022). A systematic review of data analytics job requirements and online-courses. *Journal of Computer Information Systems*, *62*(2), 422–434. https://doi.org/10.1080/08874417.2021.1971579

Almufadda, G., & Almezeini, N. A. (2022). Artificial intelligence applications in the auditing profession: A literature review. *Journal of Emerging Technologies in Accounting*, *19*(2), 29–42. https://doi.org/10.2308/JETA-2020-083

Appelbaum, D., Kogan, A., Vasarhelyi, M., & Yan, Z. (2017). Impact of business analytics and enterprise systems on managerial accounting. *International Journal of Accounting Information Systems*, *25*, 29–44. https://doi.org/10.1016/j.accinf.2017.03.003

Arafat, I., Dunne, T., & Ahmed, A. H. (2020). Splitting accountability hairs: Anomalies in the adaptation of IFRS for SMEs in the UK and Ireland. *Accounting in Europe*, *17*(2), 183–203. https://doi.org/10.1080/17449480.2020.1764601

Arendt, L. (2008). Barriers to ICT adoption in SMEs: How to bridge the digital divide? *Journal of Systems and Information Technology*, *10*(2), 93–108. https://doi.org/10.1108/13287260810897738

Armitage, H. M., Webb, A., & Glynn, J. (2016). The use of management accounting techniques by small and medium-sized enterprises: A field study of Canadian and Australian practice. *Accounting Perspectives*, *15*(1), 31–69. https://doi.org/10.1111/1911-3838.12089

Bach, M. P., Zoroja, J., & Vukšić, V. B. (2013). Determinants of firms' digital divide: A review of recent research. *Procedia Technology*, *9*, 120–128.

Balijepally, V., Mangalaraj, G., & Iyengar, K. (2011). Are we wielding this hammer correctly? A reflective review of the application of cluster analysis in information systems research. *Journal of the Association for Information Systems*, *12*(5), 375–413. https://doi.org/10.17705/1jais.00266

Baliyan, P. S., & Baliyan, S. P. (2016). Employment preference of undergraduate accounting students in Botswana: Perceptional analysis of practitioners and students. *International Journal of Business and Management*, *11*(12), 271–282.

Banham, H., & He, Y. (2014). Exploring the relationship between accounting professionals and small and medium enterprises (SMEs). *Journal of Business & Economics Research*, *12*(3), 209–214.

Barišić, I., Novak, A., & Mališ, S. S. (2021, June). *Professional accountants skills expected from accounting employers: Evidence from recent research* [Paper presentation]. FEB Zagreb 12th International Odyssey Conference on Economics and Business, Zagreb, Croatia.

Bassellier, G., Benbasat, I., & Reich, B. H. (2003). The influence of business managers' IT competence on championing IT. *Information Systems Research*, *14*(4), 317–336. https://doi.org/10.1287/isre.14.4.317.24899

Bengtsson, M. M. (2021). Determinants of *de jure* adoption of international financial reporting standards: A review. *Pacific Accounting Review*, *34*(1), 156–173. https://doi.org/10.1108/PAR-10-2020-0193

Boulianne, E., & Keddie, L. (2018). Where is sustainability within the Canadian CPA education program? In V. Tauringana (Ed.), *Advances in environmental accounting & management: Vol. 7. Sustainability accounting* (pp. 71–112). Emerald Publishing.

Bratianu, C., Hadad, S., & Bejinaru, R. (2020). Paradigm shift in business education: A competence-based approach. *Sustainability*, *12*(4), 1–17. https://doi.org/10.3390/su12041348

Brusco, M. J., Singh, R., Cradit, J. D., & Steinley, D. (2017). Cluster analysis in empirical OM research: Survey and recommendations. *International Journal of Operations & Production Management*, *37*(3), 300–320. https://doi.org/10.1108/IJOPM-08-2015-0493

Budding, T., de Jong, G., & Smit, M. (2022). New development: Bridging the gap—Analysis of required competencies for management accountants in the public sector. *Public Money & Management*, *42*(7), 565–568.

Burton, E. J., & Hillison, W. (1979). Big GAAP/little GAAP: Is accounting for small business in the balance? *American Journal of Small Business*, *3*(3), 16–24. https://doi.org/10.1177/104225877900300303

Campos, R., Arrazola, M., & de Hevia, J. (2018). Finding the right employee online: Determinants of internet recruitment in Spanish firms. *Applied Economics*, *50*(1), 79–93. https://doi.org/10.1080/00036846.2017.1319560

Carlton, M., Levy, Y., & Ramim, M. (2019). Mitigating cyber attacks through the measurement of non-IT professionals' cybersecurity skills. *Information & Computer Security*, *27*(1), 101–121. https://doi.org/10.1108/ICS-11-2016-0088

Carnevale, A. P., Jayasundera, T., & Repnikov, D. (2014). *Understanding online job ads data—A technical report*. Center on Education and the Workforce, Georgetown University. https://cew.georgetown.edu/wp-content/uploads/2014/11/OCLM.Tech_.Web_.pdf

Chapple, S. (2018). IFRS adoption in Australia: A strong structuration perspective. *Accounting History*, *23*(3), 265–295. https://doi.org/10.1177/1032373217741142

Charrad, M., Ghazzali, N., Boiteau, V., & Niknafs, A. (2014). NbClust: An R package for determining the relevant number of clusters in a data set. *Journal of Statistical Software*, *61*(6), 1–36.

Cheesman, J. (2018, April 23). *Details of Indeed's acquisition of Canada's Workopolis are coming to light*. ERE. https://www.ere.net/details-of-indeeds-acquisition-of-workopolis/

Cheng, R., Lourenço, F., & Resnick, S. (2016). Educating graduates for marketing in SMEs: An update for the traditional marketing curriculum. *Journal of Small Business and Enterprise Development*, *23*(2), 495–513. https://doi.org/10.1108/JSBED-09-2014-0153

Christie, N. L., & Brozovsky, J. (2010). New standards available for private companies: At last a little GAAP? *Academy of Entrepreneurship Journal*, *16*(1), 55–69.

Courtis, J. K., & Zaid, O. A. (2002). Early employment problems of Australian accounting graduates: An exploratory study. *Accounting Forum*, *26*(3–4), 320–339. https://doi.org/10.1111/1467-6303.00092

CPA Canada. (2019). *The CPA Competency Map: Qualifications for the Canadian CPA designation*. https://www.cpacanada.ca/news/Accounting/The-Profession/2020-02-11-competency-map-updates

CPA Canada. (2020). *The Chartered Professional Accountant Competency Map: Understanding the competencies a candidate must demonstrate to become a CPA*. https://www.cpacanada.ca/en/become-a-cpa/why-become-a-cpa/the-cpa-certification-program/the-cpa-competency-map/the-2020-cpa-competency-map

CPA Canada. (2021). *CPA practical experience requirement*. https://www.cpacanada.ca/en/become-a-cpa/cpa-designation-practical-experience-requirements-overview

CPA Canada. (2022a). *The CPA Competency Map—Part 1: The CPA Competency Map*. https://www.cpacanada.ca/-/media/site/operational/ec-education-certification/docs/02928-ec_competency-map-2022-part1.pdf?rev=da45b82cf0d0415098e5b2fcfdae6041&hash=7B1B87BA8F05602B535291FD7CFF8F6E

CPA Canada. (2022b). *The CPA Competency Map—Part 2: Supplemental materials*. https://www.cpacanada.ca/-/media/site/operational/ec-education-certification/docs/02928-ec_competency-map-2022-part2.pdf?rev=9ca7ca18c69542eb8de318b5821343c7&hash=607068FA0BE3A7C7A38A8DD8CEC12812

CPA Canada. (2022c). *Leading the way: Competency Map 2.0—The path forward for our profession (CM2.0)*. https://www.bccpa.ca/news-events/latest-news/2022/march/leading-the-way-competency-map-2-0-the-path-forward-for-our-profession/

CPA Canada. (2023a). *CPA practical experience requirements*. https://www.cpacanada.ca/-/media/site/operational/ec-education-certification/docs/02639-ec_cpa-per_en.pdf?rev=8de06e55dc8c49299748d6ca3325156f&hash=9F2D0A2918C0E9D5E78E4428C70464DA

CPA Canada. (2023b). *Changes to the practical experience requirements*. https://www.cpacanada.ca/-/media/site/operational/ec-education-certification/docs/02639-ec_per-changes-april-2023.pdf?rev=6b744d811ba24b44837ec2da85b551a2&hash=8599570B01546AC90CA003640DDDDC20

Cunha, T., Martins, H., Carvalho, A., & Carmo, C. (2022). Not practicing what you preach: How is accounting higher education preparing the future of accounting? *Education Sciences*, *12*(7), 1–17. https://doi.org/10.3390/educsci12070432

De George, E. T., Li, X., & Shivakumar, L. (2016). A review of the IFRS adoption literature. *Review of Accounting Studies*, *21*(3), 898–1004. https://doi.org/10.1007/s11142-016-9363-1

Delamare Le Deist, F., & Winterton, J. (2005). What is competence? *Human Resource Development International*, *8*(1), 27–46. https://doi.org/10.1080/1367886042000338227

Diamantopoulos, A., & Siguaw, J. (2006). Formative versus reflective indicators in organizational measure development: A comparison and empirical illustration. *British Journal of Management*, *17*(4), 263–282. https://doi.org/10.1111/j.1467-8551.2006.00500.x

Diamantopoulos, A., & Winklhofer, H. M. (2001). Index construction with formative indicators: An alternative to scale development. *Journal of Marketing Research*, *38*(2), 269–277. https://doi.org/10.1509/jmkr.38.2.269.18845

Dilmaghani, M. (2019). Workopolis or The Pirate Bay: What does Google Trends say about the unemployment rate? *Journal of Economic Studies*, *46*(2), 422–445. https://doi.org/10.1108/JES-11-2017-0346

Dolce, V., Emanuel, F., Cisi, M., & Ghislieri, C. (2019). The soft skills of accounting graduates: Perceptions versus expectations. *Accounting Education*, *29*(1), 57–76. https://doi.org/10.1080/09639284.2019.1697937

Dunbar, K., Laing, G., & Wynder, M. (2016). A content analysis of accounting job advertisements: Skill requirements for graduates. *The e-Journal of Business Education and Scholarship of Teaching*, *10*(1), 58–72.

Durocher, S., & Fortin, A. (2014). New Canadian accounting standards for private enterprises and the adoption timing decision. *Australian Accounting Review*, *24*(3), 218–236.

Dyckman, T. R., & Zeff, S. A. (2014). Some methodological deficiencies in empirical research articles in accounting. *Accounting Horizons*, *28*(3), 695–712.

Elbarrad, S., & Belassi, W. (2023). Chartered professional accountant's competencies: The synergy between accounting education and employers' needs—Evidence from Alberta. *Higher Education, Skills and Work-Based Learning*, *13*(2), 423–442.

Eraut, M. (1998). Concepts of competence. *Journal of Interprofessional Care*, *12*(2), 127–139.

Ganesan, M., Antony, S. P., & George, E. P. (2018). Dimensions of job advertisement as signals for achieving job seeker's application intention. *Journal of Management Development*, *37*(5), 425–438. https://doi.org/10.1108/jmd-02-2017-0055

Gardiner, A., Aasheim, C., Rutner, P., & Williams, S. (2018). Skill requirements in big data: A content analysis of job advertisements. *Journal of Computer Information Systems*, *58*(4), 374–384. https://doi.org/10.1080/08874417.2017.1289354

Ghio, A., & Verona, R. (2018). Accounting practitioners' attitudes toward accounting harmonization: Adoption of IFRS for SMEs in Italy. *Journal of International Accounting Research*, *17*(2), 103–122. https://doi.org/10.2308/jiar-52278

Gray, J. H., Densten, I. L., & Sarros, J. C. (2003). Size matters: Organisational culture in small, medium, and large Australian organisations. *Journal of Small Business & Entrepreneurship*, *17*(1), 31–46. https://doi.org/10.1080/08276331.2003.10593311

Gupta, S., & Marshall, L. L. (2010). Congruence between entry-level accountants' required competencies and accounting textbooks. *Academy of Educational Leadership Journal*, *14*(1), 1–12.

Hadjimanolis, A. (2000). A resource-based view of innovativeness in small firms. *Technology Analysis & Strategic Management*, *12*(2), 263–281.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis*. Prentice Hall.

Hamilton, R. H., & Davison, H. K. (2018). The search for skills: Knowledge stars and innovation in the hiring process. *Business Horizons*, *61*(3), 409–419.

Han, H., Shiwakoti, R. K., Jarvis, R., Mordi, C., & Botchie, D. (2023). Accounting and auditing with blockchain technology and artificial intelligence: A literature review. *International Journal of Accounting Information Systems*, *48*, Article 100598.

Hasan, A. R. (2021). Artificial intelligence (AI) in accounting and auditing: A literature review. *Open Journal of Business and Management*, *10*(1), 440–465.

Hayes, S., Freudenberg, B., & Delaney, D. (2018). Role of tax knowledge and skills: What are the graduate skills required by small to medium accounting firms? *Journal of the Australasian Tax Teachers Association*, *13*(1), 152–186.

Hippolyte, A. R., & Haruna, A. I. (2017). Examining the contribution of recruitment practices to business performance: A case study of three corporate giants. *Journal of Human Resource Management*, *1*(1), 3–17.

Hornsby, J. S., & Kuratko, D. F. (2003). Human resource management in US small businesses: A replication and extension. *Journal of Developmental Entrepreneurship*, *8*(1), 73–92.

Huerta, E., & Jensen, S. (2017). An accounting information systems perspective on data analytics and big data. *Journal of Information Systems*, *31*(3), 101–114. https://doi.org/10.2308/isys-51799

IFRS. (2009). *IFRS for Small and Medium-sized Entities*. IASB. https://www.ifrs.org/projects/completed-projects/2009/ifrs-for-smes-standard/

IFRS. (2013). *IFRS for SMEs: A guide for micro-sized entities applying the IFRS for SMEs (2009)*. IASB. https://www.ifrs.org/content/dam/ifrs/publications/ifrs-for-smes/english/2013/guide-for-micro-sized-entities-applying-the-ifrs-for-smes-2009.pdf

IFRS. (2023). *Who uses IFRS Accounting Standards?* IASB. https://www.ifrs.org/use-around-the-world/use-of-ifrs-standards-by-jurisdiction/#analysis-of-the-168-profiles

Innes, P., & Wiesner, R. (2012). Beyond HRM intensity: Exploring intra-function HRM clusters in SMEs. *Small Enterprise Research*, *19*(1), 32–51. https://doi.org/10.5172/ser.2012.19.1.32

Innovation Science and Economic Development Canada. (2019). *Key small business statistics*. Government of Canada.

International Accounting Education Standards Board (IAESB). (2019). *Handbook of International Education Pronouncements*. International Federation of Accountants. https://www.ifac.org/system/files/publications/files/Handbook-of-International-Education-Standards-2019.pdf

Jackling, B., & De Lange, P. (2009). Do accounting graduates' skills meet the expectations of employers? A matter of convergence or divergence. *Accounting Education: An International Journal*, *18*(4–5), 369–385. https://doi.org/10.1080/09639280902719341

Jansen, K. J., & Kristof-Brown, A. (2006). Toward a multidimensional theory of person-environment fit. *Journal of Managerial Issues*, *18*(2), 193–212.

John, J. (2019). Effective recruitment strategy to improve your hiring process. *ZENITH International Journal of Multidisciplinary Research*, *9*(3), 352–357.

Kardos, B., & Farkas, K. B. (2016). Employers' perceived competency gaps for entrants in accounting. *Forum on Economics and Business*, *19*(127), 40–78.

Kavanagh, M. H., & Drennan, L. (2008). What skills and attributes does an accounting graduate need? Evidence from student perceptions and employer expectations. *Accounting & Finance*, *48*(2), 279–300. https://doi.org/10.1111/j.1467-629X.2007.00245.x

Kennan, M. A., Cole, F., Willard, P., Wilson, C., & Marion, L. (2006). Changing workplace demands: What job ads tell us. *ASLIB Proceedings*, *58*(3), 179–196. https://doi.org/10.1108/00012530610677228

Kristof-Brown, A. L., Zimmerman, R. D., & Johnson, E. C. (2005). Consequences of individuals' fit at work: A meta-analysis of person–job, person–organization, person–group, and person–supervisor fit. *Personnel Psychology*, *58*(2), 281–342.

Kroon, N., & Alves, M. D. C. (2023). Fifteen years of accounting professional's competencies supply and demand: Evidencing actors, competency assessment strategies, and "top three" competencies. *Administrative Sciences*, *13*(3), 70. https://doi.org/10.3390/admsci13030070

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

Kwarteng, J. T., & Mensah, E. K. (2022). Employability of accounting graduates: Analysis of skills sets. *Heliyon*, *8*(7), Article e09937.

Laukkanen, S., Sarpola, S., & Hallikainen, P. (2007). Enterprise size matters: Objectives and constraints of ERP adoption. *Journal of Enterprise Information Management*, *20*(3), 319–334. https://doi.org/10.1108/17410390710740763

Lavia López, O., & Hiebl, M. R. (2015). Management accounting in small and medium-sized enterprises: Current knowledge and avenues for further research. *Journal of Management Accounting Research*, *27*(1), 81–119.

Lippitt, J. W., & Oliver, B. L. (1983). Big GAAP, little GAAP: Financial reporting in the small business environment. *Journal of Small Business Management*, *21*(3), 52–57.

Liu, J., Gong, Y., Zhu, J., & Titah, R. (2022). Information technology and performance: Integrating data envelopment analysis and configurational approach. *Journal of the Operational Research Society*, *73*(6), 1278–1293. https://doi.org/10.1080/01605682.2021.1907238

Low, M., Botes, V., De La Rue, D., & Allen, J. (2016). Accounting employers' expectations—The ideal accounting graduates. *e-Journal of Business Education & Scholarship of Teaching*, *10*(1), 36–57.

Mahjoub, A., & Kruyen, P. M. (2021). Efficient recruitment with effective job advertisement: An exploratory literature review and research agenda. *International Journal of Organization Theory & Behavior*, *24*(2), 107–125. https://doi.org/10.1108/IJOTB-04-2020-0052

Malo, A., Fortin, A., & Héroux, S. (2024). Small-and medium-sized accounting firms' learning processes regarding standards updates. *Journal of Small Business & Entrepreneurship*, *36*(5), 705–728. https://doi.org/10.1080/08276331.2022.2093048

Mandre, J., Ntayi, J. M., Kabagambe, L. B., & Kagaari, J. (2021). Institutional isomorphism, self-organisation and the adoption of management controls. *Accounting and Management Information Systems*, *20*(2), 332–364. https://doi.org/10.24818/jamis.2021.02007

Margheim, L., Hora, J. A., & Pattison, D. (2010). Educational competencies that mid-sized CPA firms value in their professional accounting staff. *American Journal of Business Education*, *3*(6), 69–80. https://doi.org/10.19030/ajbe.v3i6.444

Marín-Idárraga, D. A., & Hurtado González, J. M. (2021). Organizational structure and convergent change: Explanatory factors in SMEs. *Journal of Small Business and Enterprise Development*, *28*(6), 908–926. https://doi.org/10.1108/jsbed-09-2020-0347

Marullo, C., Minin, A. D., Martelli, I., & Piccaluga, A. (2020). Solving the "heterogeneity puzzle": A comparative look at SMEs growth determinants in open and closed innovation patterns. *International Journal of Entrepreneurship and Innovation Management*, *24*(6), 443–464. https://doi.org/10.1504/ijeim.2020.110099

Melnyk, N., Trachova, D. Y., Kolesnikova, O., Demchuk, O., & Golub, N. (2020). Accounting trends in the modern world. *Independent Journal of Management & Production*, *11*(9), 2403–2416.

Moore, K., & Khan, M. H. (2020). Signalling organizational commitment to employability through job advertisements: The communication of HRD practices to young inexperienced job seekers. *Human Resource Development International*, *23*(1), 25–45. https://doi.org/10.1080/13678868.2019.1679569

Morpurgo, M. T., & Azevedo, A. (2021). Investigating the role of professional accounting education in enhancing meta-competency development: Aligning with industry perceptions. In D. S. Harper (Ed.), *Integration and application of business graduate and business leader competency-models* (pp. 1–26). IGI Global.

Morris, P., & Campbell, J. E. (2006). Big GAAP-little GAAP: Does one-size-fits-all still work? *Journal of Business & Economics Research*, *4*(5), 73–82.

Moy, J. W., & Lee, S. M. (2002). The career choice of business graduates: SMEs or MNCs? *Career Development International*, *7*(6), 339–347. https://doi.org/10.1108/13620430210444367

Mur, A., Dormido, R., Duro, N., Dormido-Canto, S., & Vega, J. (2016). Determination of the optimal number of clusters using a spectral clustering optimization. *Expert Systems with Applications*, *65*, 304–314. https://doi.org/10.1016/j.eswa.2016.08.059

Norris, N. (1991). The trouble with competence. *Cambridge Journal of Education*, *21*(3), 331–341.

OECD. (2005). *OECD SME and entrepreneurship outlook 2005*. OECD Publishing. https://doi.org/10.1787/9789264009257-en

Oesterreich, T. D., & Teuteberg, F. (2019). The role of business analytics in the controllers and management accountants' competence profiles: An exploratory study on individual-level data. *Journal of Accounting & Organizational Change*, *15*(2), 330–356. https://doi.org/10.1108/JAOC-10-2018-0097

Palmer, K. N., Ziegenfuss, D. E., & Pinsker, R. E. (2004). International knowledge, skills, and abilities of auditors/accountants: Evidence from recent competency studies. *Managerial Auditing Journal*, *19*(7), 889–896. https://doi.org/10.1108/02686900410549411

Pan, G., & Lee, B. (2020). Leveraging digital technology to transform accounting function: Case study of a SME. *International Journal of Accounting and Financial Reporting*, *10*(2), 24–38. https://doi.org/10.5296/ijafr.v10i2.17052

Pan, G., & Seow, P.-S. (2016). Preparing accounting graduates for digital revolution: A critical review of information technology competencies and skills development. *Journal of Education for Business*, *91*(3), 166–175. https://doi.org/10.1080/08832323.2016.1145622

Parry, E., & Tyson, S. (2008). An analysis of the use and success of online recruitment methods in the UK. *Human Resource Management Journal*, *18*(3), 257–274. https://doi.org/10.1111/j.1748-8583.2008.00070.x

Parvaiz, G. S., Mufti, O., & Gul, S. (2017). Problems and challenges in skills development: A perspective from professional accounting education. *Business & Economic Review*, *9*(4), 83–110.

Pimentel, E., & Boulianne, E. (2020). Blockchain in accounting research and practice: Current trends and future opportunities. *Accounting Perspectives*, *19*(4), 325–361. https://doi.org/10.1111/1911-3838.12239

Pimentel, E., & Boulianne, E. (2022). Competency map development as an identity movement: A Canadian perspective. *Accounting Education*, *31*(5), 453–481.

Poba-Nzaou, P., Uwizeyemungu, S., & Clarke, C. (2020). Patterns underlying required HR and IT competencies: A content and cluster analysis of advertisements of HR manager positions. *The International Journal of Human Resource Management*, *31*(16), 2065–2088. https://doi.org/10.1080/09585192.2018.1424019

Preda, P., & Watts, T. (2004). Contemporary accounting innovations in Australia: Manufacturing versus service organisations. *Journal of Applied Management Accounting Research*, *2*(2), 17–27.

Ray, G., Muhanna, W. A., & Barney, J. B. (2007). Competing with IT: The role of shared IT−business understanding. *Communications of the ACM*, *50*(12), 87–91.

Romanko, O., & O'Mahony, M. (2022). *The use of online job sites for measuring skills and labour market trends: A review*. Technical Report ESCOE-TR-19. Economic Statistics Centre of Excellence, UK Office of National Statistics.

Schutte, D. (2013). Towards a competency framework for SME accountants—A South African perspective. *Global Journal of Management and Business Research*, *13*(5), 14–23.

Schutte, D., & Lovecchio, B. (2017). An evaluation of the competence requirements of South African accountants practising in the SME environment. *Journal of Social Sciences*, *53*(2), 61–72.

Schutte, D., & Lovechio, B. (2014). Towards a competency framework for SMEs—A South African case study. *Studia Universitatis Babes Bolyai – Negotia*, *59*(1), 5–20.

Sinaga, K. P., & Yang, M. S. (2020). Unsupervised K-means clustering algorithm. *IEEE Access*, *8*, 80716–80727. https://doi.org/10.1109/ACCESS.2020.2988796

Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics*, *87*(3), 355–374. https://doi.org/10.2307/1882010

Spraakman, G., O'Grady, W., Askarany, D., & Akroyd, C. (2015). Employers' perceptions of information technology competency requirements for management accounting graduates. *Accounting Education*, *24*(5), 403–422. https://doi.org/10.1080/09639284.2015.1089177

Stancheva-Todorova, E. (2019, October). *The knowledge and skills profile of Accountant 4.0*. Paper presented at the 11th International Conference, Digital Transformation of the Economy and Society: Shaping the Future, Prilep, North Macedonia.

Stemler, S. E. (2004). A comparison of consensus, consistency, and measurement approaches to estimating interrater reliability. *Practical Assessment, Research & Evaluation*, *9*(4), 1–11. https://doi.org/10.7275/96jp-xz07

Stoilkovska, A., Ilieva, J., & Gjakovski, S. (2015). Equal employment opportunities in the recruitment and selection process of human resources. *University of Tourism and Management in Skopje Journal of Economics*, *6*(2), 281–292.

Subačienė, R., Budrionytė, R., Žemgulienė, J., & Faituša, I. (2022). Modern accounting specialist in new economic reality: Cases of Lithuania and Latvia. *Administrative Sciences*, *12*(4), 124. https://doi.org/10.3390/admsci12040124

Tam, S., Sood, S., & Johnston, C. (2022). Analysis on small businesses in Canada, first quarter of 2022. Statistics Canada. https://www150.statcan.gc.ca/n1/en/pub/11-621-m/11-621-m2022004-eng.pdf?st=u7zh3zHx

Teodorescu, T. (2006). Competence versus competency. What is the difference? *Performance Improvement*, *45*(10), 27–30.

Torrès, O., & Julien, P. A. (2005). Specificity and denaturing of small business. *International Small Business Journal*, *23*(4), 355–377.

Tudor, A. T., & Muţiu, A. (2008). Pro and contra opinions regarding a SME accounting standard. *Annales Universitatis Apulensis Series Oeconomica*, *1*(10), 4–15. http://oeconomica.uab.ro/upload/lucrari/1020081/04.pdf

Uwizeyemungu, S., Bertrand, J., & Poba-Nzaou, P. (2020). Patterns underlying required competencies for CPA professionals: A content and cluster analysis of job ads. *Accounting Education*, *29*(2), 109–136. https://doi.org/10.1080/09639284.2020.1737157

van Vianen, A. E. M. (2018). Person–environment fit: A review of its basic tenets. *Annual Review of Organizational Psychology and Organizational Behavior*, *5*, 75–101. https://doi.org/10.1146/annurev-orgpsych-032117-104702

Verwaeren, B., Van Hoye, G., & Baeten, X. (2017). Getting bang for your buck: The specificity of compensation and benefits information in job advertisements. *The International Journal of Human Resource Management*, *28*(19), 2811–2830. https://doi.org/10.1080/09585192.2016.1138989

Warren, R., Carter, D. B., & Napier, C. J. (2020). Opening up the politics of standard setting through discourse theory: The case of IFRS for SMEs. *Accounting, Auditing & Accountability Journal*, *33*(1), 124–151. https://doi.org/10.1108/AAAJ-04-2018-3464

Weigel, C., & Hiebl, M. R. W. (2023). Accountants and small businesses: Toward a resource-based view. *Journal of Accounting & Organizational Change*, *19*(5), 642–666. https://doi.org/10.1108/JAOC-03-2022-0044

Weli, W., & Marsudi, A. S. (2022). The initial accountant competency of final year accounting students. *International Journal of Evaluation and Research in Education*, *11*(3), 1534–1543.

Wolcott, S. K., & Sargent, M. J. (2021). Critical thinking in accounting education: Status and call to action. *Journal of Accounting Education*, *56*, Article 100731. https://doi.org/10.1016/j.jaccedu.2021.100731

Wright, G. B., Fernandez, D., Burns, J., Hawkins, R., Hornsby, C., & Patel, S. (2012). Big GAAP/little GAAP: Will the debate ever end? *Journal of Business & Economics Research*, *10*(5), 291–302. https://doi.org/10.19030/jber.v10i5.6981

Yew Wong, K., & Aspinwall, E. (2004). Characterizing knowledge management in the small business environment. *Journal of Knowledge Management*, *8*(3), 44–61. https://doi.org/10.1108/13673270410541033